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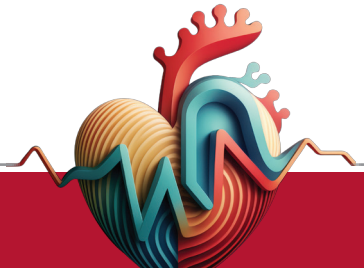
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ARITMIE

ARITMIE 508
ABLAZIONE TRANSCATETERE (ARITMIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
MECCANISMI DELLE ARITMIE (ARITMIE)

REPEATED ABLATION PROCEDURE IN A PERSISTENT ATRIAL FIBRILLATION POPULATION. THE ROLE OF VEIN OF MARSHALL ETHANOL INFUSION COMBINED WITH AN ANATOMICAL ABLATION SETUP

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Procedural strategy for repeated ablation in persistent atrial fibrillation (PeAF) patients is a great challenge.
Vein of Marshall ethanol infusion (VOM-EI) is a promising but poorly investigated approach for PeAF treatment.
39 PeAF patients were scheduled for repeated ablation, classified by AF type into early PeAF (<3 months), PeAF (3–12 months), and long-lasting PeAF (>12 months).

We applied a systematic anatomical ablation setup after VOM-EI:
- Eventual PVI reconnections were targeted,
- Bidirectional block across prior ablation lines was assessed and touch-up ablation performed if needed,
- Ablation of the left atrial dome, lateral mitral isthmus, and areas of low voltage was performed and validated.

Antiarrhythmic drugs were stopped after 1 month.
The primary endpoint was AT/AF recurrences lasting >30 seconds.

RESULTS According to the previous ablation setup, 26/39 (67%) and 13/39 (33%) patients were PVI and PVI+, respectively. According to AF duration, 11 patients (27%) were early PeAF, while 10 (27%) and 18 (46%) were PeAF and long-lasting PeAF, respectively.
Mean follow-up was 14.4 ± 7.5 months.
8/39 patients (21%) had documented recurrence of AF/AT during the follow-up.
Recurrences happened in 5/26 (19%) PVI patients vs 3/13 (23%) PVI+ ones (p=0.76).
At univariate analysis, PVs (p=0.05 and p=0.04, respectively).
Interestingly, PVI reconnection, especially in the PVI group, was strongly associated with arrhythmia-free outcome (p=0.006).
VOM-EI in addition to PVI and anatomical scheme validation represents a valid option in PeAF management. Patients treated with PVI reconnection showed a better outcome compared to those with PVI already intact, who had worse outcomes.

CONCLUSION regardless of previous procedural

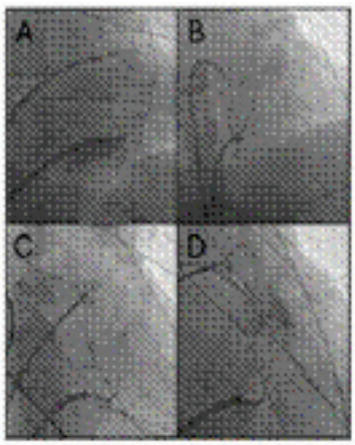


Figure 1

setup, VOM-EI in addition to PVI and anatomical scheme validation represents a valid option in repeated ablation for PeAF patienta. Patients treated with PVI reconnection showed a bett er autcome compared to those with PVI already obtained Long lasting PeAF patients had worse outcome.

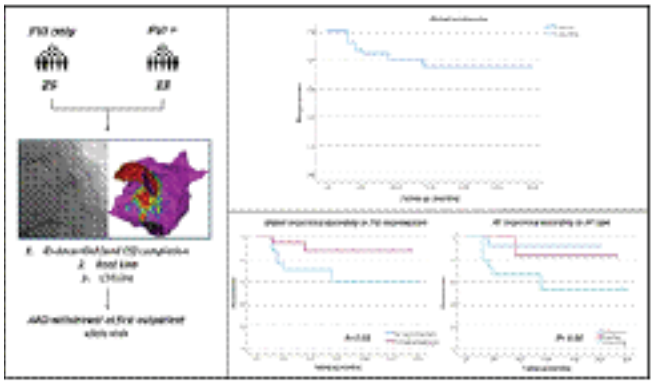


Figure 2

ARITMIE 292
GESTIONE DELLA COMPLICANZE PM / ICD (ARITMIE)
DEFIBRILLATORE IMPIANTABILE (ARITMIE)
ELETTROSTIMOLAZIONE (ARITMIE)

VALORE PROGNOSTICO DEI REPERTI PET INDICATIVI DI INFEZIONE DISSEMINATA NEI PAZIENTI CON INFEZIONE DI DISPOSITIVO CARDIACO IMPIANTABILE

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Introduzione. L'infezione dei dispositivi elettronici cardiaci impiantabili (CIEDI) costituisce una complicanza gravata da rilevante morbilità e mortalità. La PET/TC CON 18F-FDG rappresenta un'importante metodica di imaging funzionale in grado di valutare l'estensione del processo infettivo. Scopo del presente studio è analizzare i pattern di captazione PET nei pazienti affetti da CIEDI, con particolare attenzione ai reperti a distanza compatibili con infezione e al loro valore clinico e prognostico.

Metodi. Sono stati inclusi 195 pazienti consecutivamente ricoverati per infezione di CIED e sottoposti a PET/TC con 18F-FDG . Sono state raccolte variabili cliniche e strumentali. Le immagini PET sono state analizzate da specialisti in Medicina Nucleare per identificare captazioni a livello della tasca d'impianto del generatore, degli elettrocateteri e in sedi a distanza dal dispositivo. La misura di outcome è la sopravvivenza a 6 e 12 mesi dopo la procedura di estrazione del dispositivo.

Risultati. 170 (87,2%) dei 195 pazienti arruolati presentavano una PET positiva per infezione del dispositivo. Le captazioni a distanza dal dispositivo sono state osservate in 97 casi (49,7%). Di questi, 64 casi sono stati giudicati compatibili con infezione disseminata (32,8%), prevalentemente a livello polmonare (20%).
I focolai infettivi extra-CIED sono risultati più frequenti nei pazienti con infezione sistemica, coinvolgente la porzione intravascolare degli elettrocateteri, rispetto a quelli che presentavano infezione localizzata a livello della tasca d'impianto (26,4% vs 39,8% p 0.035). Le captazioni infettive polmonari sono risultate associate all'infezione sistemica (28,2% vs 71,8% p 0.02) e alla presenza di vegetazioni endocarditiche (46,2% vs 53,9% p <0.01). Tali reperti polmonari sono inoltre correlati a minore sopravvivenza a 6 (92,8±2,1% vs 80,9±6,% p 0.02) e 12 mesi (88,2±2,6% vs 76,2±6,6% p 0.04). Nessuna associazione significativa è emersa per captazioni a livello osseo o intestinale.

Conclusioni. La PET/TC con 18FDG si conferma uno strumento diagnostico e prognostico rilevante nella gestione delle CIEDI. In maniera particolare, le captazioni polmonari compatibili con infezione disseminata sembrano associati a un fenotipo clinico più severo e ad un outcome peggiore. Tali dati supportano l'impiego della PET/TC nella stratificazione prognostica dei pazienti con CIEDI.

ARITMIE 656
ABLAZIONE TRANSCATETERE (ARITMIE)
ARITMIE VENTRICOLARI (ARITMIE)
MECCANISMI DELLE ARITMIE (ARITMIE)

COMPARATIVE EFFICACY OF STEREOCTATIC BODY RADIOTHERAPY VERSUS RADIOFREQUENCY CATHETER ABLATION. IN REFRACTORY VENTRICULAR TACHYARRHYTHMIA: RESULTS FROM THE VT-ART CONSORTIUM

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Background: Refractory ventricular tachycardia (rVT) in patients with structural heart disease remains a major clinical challenge, being associated with high morbidity, frequent hospitalizations, and increased mortality. Radiofrequency catheter ablation (RFCA) is the current standard, but its efficacy is often limited in advanced disease and repeat procedures carry procedural risks. In this scenario, stereotactic body radiotherapy (SBRT) has emerged as an innovative, non-invasive option, with promising results in early studies. However, comparative data between SBRT and RFCA remain scarce.

Methods: We conducted an ambispective, matched-pair analysis of 64 patients with structural heart disease and rVT: 15 underwent SBRT and 49 received RFCA at two Italian referral centers. The primary endpoint was a composite of cardiovascular death, sustained ventricular tachyarrhythmias, and rehospitalization. Secondary endpoints included arrhythmic burden reduction, rehospitalization rates, and safety outcomes. Multivariate analysis was used to identify independent predictors of adverse events.

Results: Patients in the SBRT group presented with more advanced disease, lower baseline LVEF, and a significantly higher arrhythmic burden prior to treatment. During follow-up, the composite endpoint occurred in 60% of SBRT patients and 39% of RFCA patients ($p = 0.16$). SBRT achieved a significant 85% reduction in sustained VT/VF episodes ($p < 0.001$), while RFCA showed a 79.5% reduction. Rehospitalization rates were similar (20% vs. 31%; $p = 0.50$). No major cardiac or pulmonary complications were reported after SBRT, whereas RFCA was associated with cases of pericarditis, endocarditis, and pneumonia. Multivariate analysis identified LVEF <45% as the only independent predictor of adverse outcomes ($p = 0.013$).

Conclusions: SBRT may represent a safe and effective non-invasive alternative to RFCA for patients with rVT and structural heart disease. Despite being applied to a higher-risk population, SBRT resulted in a marked and statistically significant reduction of arrhythmic burden. Larger prospective trials are needed to confirm these findings and better define the role of SBRT in clinical practice.

ARITMIE 1085
DEFIBRILLATORE IMPIANTABILE (ARITMIE)
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)
ARITMIE VENTRICOLARI (ARITMIE)
GESTIONE DELLA COMPLICANZE PM / ICD (ARITMIE)

EXTRAVASCULAR ICD IMPLANTATION IN A PATIENT UNDERGOING TRANSVENOUS LEAD EXTRACTION AND BILATERAL AXILLO-CAVAL STENTING FOR SUPERIOR VENA CAVA SYNDROME

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Background: Patients with Brugada syndrome often require ICDs for sudden death prevention. Venous occlusion along the lead pathway, though rare, may cause superior vena cava syndrome, making complete system extraction necessary. In chronic bilateral occlusion, transvenous lead removal is technically demanding and may require advanced endovascular techniques.

Case Presentation: A 60-year-old man with Brugada syndrome received a single-chamber ICD in 2011 for primary prevention. In July 2025, he developed superior vena cava syndrome with facial and limb edema; venography showed complete bilateral subclavian–SVC occlusion. Given symptom severity, ICD extraction and bilateral axillo-caval stenting were performed in the same session.

Transvenous lead extraxtion procedure: Complete right ventricular lead extraction was successfully performed using an LLD-2 locking stylet, mechanical sheaths (Cook 8.5 and 10 Fr), and TightRail powered sheaths (11 and 13 Fr). TTE excluded pericardial effusion, and angiography confirmed vascular integrity.

Venous stenting: Under ultrasound guidance, right axillary vein access (6F) was obtained; a Perclose ProStyle closure device was pre-positioned at the right femoral venous site, and a 22F×33 cm Gore DrySeal sheath was placed. From the right axillary approach, the right brachiocephalic vein was recanalized endoluminally using an Aquatrack J wire and Navicross catheter. A Storq wire was snared in the inferior vena cava, establishing a right axillo-femoral rail. Similarly, a left axillo-femoral rail was established: a Flexor 7F×90 cm sheath and hydrophilic wire were advanced across the occluded left axillary venous segment up to the humeral vein, and then exchanged for an Amplatz J wire. Intravascular ultrasound (IVUS) confirmed bilateral recanalization and revealed severe stenosis at the right innominate–SVC junction and diffuse stenosis of the distal left brachiocephalic trunk. After IVUS sizing, bilateral "double-barrel" stenting of the axillo-caval axis was performed using self-expanding Venovo stents (12×60 mm left, 12×40 mm right), positioned parallel within the SVC. High-pressure post-dilatation with Atlas Gold 12×60 mm balloons achieved complete stenosis resolution on IVUS and venography.

Extravascular ICD Implantation: Subsequently, an extravascular ICD was implanted with retrosternal lead tunneling and generator placement in the left anterior axillary region. Electrical parameters were optimal, and defibrillation testing successfully terminated induced ventricular fibrillation with a single 30-J shock. The patient was discharged two days after EV-ICD implantation on full anticoagulation therapy and one-month follow-up was without complications

Conclusion: Extravascular ICD represents a valuable alternative for a broad range of patients, particularly younger individuals and those at high risk of infection. Although complete superior vena cava occlusion secondary to transvenous leads is uncommon, it constitutes a major contraindication to transvenous device reimplantation. In such cases, EV-ICD provides a valid alternative to conventional systems.

ARITMIE 540
ABLAZIONE TRANSCATETERE (ARITMIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
MECCANISMI DELLE ARITMIE (ARITMIE)

HAEMOLYSIS AND RENAL SAFETY PROFILE OF NANOSECOND PULSED FIELD ABLATION IN PAROXYSMAL ATRIAL FIBRILLATION

Tommaso Barbati (b), Marco Marino (b), Vincenzo Mirco La Fazia (b), Andrea Giovanni Parato (b), Lorenzo Gerardi (b), Alessandro Di Francesco (b), Laura Colarocchio (b), Francesca Scipione (b), Mariapia Cerone (b), Gianpaolo Novelli (a), Giuseppe Stifano (a), Gaetano Chiricolo (a, b), Andrea Natale (a, b)
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Background: Pulsed Field Ablation (PFA) is a novel non thermal energy that uses high-voltage, ultra-rapid electrical pulses to create nanopores in cell membranes. This alters membrane permeability and disrupts cellular homeostasis, leading cells to apoptosis. Its high selectivity for myocardial tissue improves safety by sparing surrounding structures, avoiding the typical complications of radiofrequency or cryoablation. While conventional PFA systems deliver microsecond pulses, nanosecond PFA (nsPFA) represents one of the innovative technologies now under investigation. Although considered generally safe, PFA has been linked to intravascular haemolysis, with incidence rates varying across different systems.

Aim: The study aims to assess changes in haemolysis biomarkers and renal function after nsPFA.
Methods: Patients with paroxysmal atrial fibrillation (AF) were enrolled in this prospective, single-center, open-label, non-randomized feasibility study. All patients underwent AF ablation with nsPFA (CellFX® System, Pulse Biosciences Inc.), including pulmonary vein isolation (PVI) and posterior wall isolation (PWI), and received 1 L of Ringer's lactate plus 1 L of 0.7% normal saline prior to the procedure. Laboratory markers of haemolysis (indirect bilirubin, LDH, haptoglobin) and creatinine were assessed at baseline (T0) and 24 hours post-procedure (T1).

Results: A total of 30 patients (mean age 58.9 ± 9.5 years; 66.7% male) undergoing first-time AF ablation were included. The mean procedure, fluoroscopy, and left atrial dwell times were 39 ± 7, 18 ± 4, and 11 ± 4 minutes, respectively. Patients received an average of 18.5 ± 5.6 PFA applications.
A significant increase in haemolysis markers was observed 24 hours post-procedure: 2.19 ± 1.74 mg/dL for indirect bilirubin, 306.2 ± 111.6 U/L for LDH, and −106.2 ± 26.8 mg/dL for haptoglobin (all $p<0.001$). However, renal function remained preserved under the hydration protocol, with no significant change in creatinine (0.11 ± 0.34 mg/dL, $p=0.320$). Only one patient (3.3%) developed acute kidney injury requiring temporary dialysis after 36 PFA applications. No other major device-related complications occurred. A linear correlation was found between the number of nsPFA applications and LDH increase (Pearson $r = 0.740$; $p < 0.05$), while variations in haemolysis markers did not correlate with age, BMI, or baseline creatinine.

Conclusions: nsPFA is an effective and well-tolerated approach during PVI and PWI in patients with paroxysmal AF. In this series a significant rise in haemolysis markers was observed, underscoring the need for careful monitoring of haemolysis and renal function.

ARITMIE 548
ARITMIE VENTRICOLARI (ARITMIE)
MECCANISMI DELLE ARITMIE (ARITMIE)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)

PREMATURE VENTRICULAR CONTRACTIONS DUE TO OCCUPATIONAL EXPOSURE: A CASE REPORT

Francesco Pocelli (b), Marco Marino (b), Vincenzo Mirco La Fazia (a), Lorenzo Gerardi (b), Alessandro Di Francesco (b), Weili Marco Xu (b), Andrea Giovanni Parato (b), Laura Colarocchio (b), Valerio Marongiu (b), Tommaso Barbati (b), Gianpaolo Novelli (a), Giuseppe Stifano (a), Gaetano Chiricolo (a, b), Andrea Natale (a, b)
(a) UOC CARDIOLOGIA POLICLINICO TOR VERGATA; (b) SCUOLA DI SPECIALIZZAZIONE IN MALATTIE DELL'APPARATO CARDIOVASCOLARE UNIVERSITÀ DEGLI STUDI ROMA TOR VERGATA

Background: Crystalline silica is a naturally substance present in most rocks and released into the air during cutting, drilling, or crushing. Inhalation of silica particles increases the risk of chronic obstructive pulmonary disease, lung cancer, kidney disease, and cardiovascular conditions such as acute myocardial infarction, constrictive pericarditis, and atrial fibrillation. Its role in ventricular arrhythmias is rarely described. Frequent premature ventricular complexes (PVCs) may cause significant symptoms and, in some cases, lead to PVC-induced cardiomyopathy. PVC management involves pharmacological therapy, catheter ablation, and identification of reversible triggers.

Case presentation: We report the case of a 64-year-old male, non-smoker, employed in the marble industry, with a history of hypertension and frequent monomorphic PVCs. His main symptoms were palpitations and dyspnea, with no history of syncope, chest pain, or family cardiac disease. Cardiac magnetic resonance revealed a mildly dilated left ventricle with mildly reduced ejection fraction (45%) and no late gadolinium enhancement, while cardiac CT excluded coronary artery disease. Holter monitoring documented a high PVC burden (9,300/24h) with occasional NSVT, predominantly during the daytime and decreasing with exercise. Beta-blocker therapy failed to suppress arrhythmias. After one year of discontinued occupational exposure to marble dust and chemical agents, the patient demonstrated marked improvement: Holter monitoring showed a minimal PVC burden (37/24h), echocardiography confirmed preserved systolic function (LVEF 65%), and symptoms had completely resolved with restored exercise tolerance.
This case highlights a possible association between chronic occupational particle exposure and ventricular arrhythmia. Although occupational lung diseases are well recognized, their arrhythmic counterparts are often overlooked. Early identification and elimination of such triggers may preserve cardiac function, reduce the need for invasive therapies, and significantly improve quality of life.

Conclusion: In patients with idiopathic ventricular arrhythmia, a detailed occupational and environmental history is crucial. Removal of potential triggers may significantly reduce arrhythmic burden. The use of appropriate personal protective equipment, together with structured risk-awareness training, is fundamental to mitigating health risks associated with toxic occupational exposures.

ARITMIE 554
ELETTROSTIMOLAZIONE (ARITMIE)
GESTIONE DELLA COMPLICANZE PM / ICD (ARITMIE)
TERAPIA DI RESINCRONIZZAZIONE (ARITMIE)

LBBAP TRICUSPID VALVE ENTANGLEMENT: A CASE REPORT

Andrea Giovanni Parato (b), Marco Marino (b), Vincenzo Mirco La Fazia (a), Francesco Pocelli (b), Lorenzo Gerardi (b), Alessandro Di Francesco (b), Weili Marco Xu (b), Laura Colarocchio (b), Valerio Marongiu (b), Aurora Valente (b), Tommaso Barbati (b), Gianpaolo Novelli (a), Giuseppe Stifano (a), Gaetano Chiricolo (a, b), Andrea Natale (a, b)
(a) UOC CARDIOLOGIA POLICLINICO TOR VERGATA; (b) SCUOLA DI SPECIALIZZAZIONE IN MALATTIE DELL'APPARATO CARDIOVASCOLARE UNIVERSITÀ DEGLI STUDI ROMA TOR VERGATA

Background: Conduction System Pacing (CSP) is a term that encompasses both His bundle pacing (HBP) and left bundle branch area pacing (LBBAP). This is a relatively novel technique that offers the possibility of achieving a more physiological stimulation compared to traditional right ventricular pacing (RVP), which has been associated with detrimental hemodynamic effects.

Case presentation: We report two cases of tricuspid valve chordae tendineae entanglement occurring during left bundle branch pacing attempts with stylet-driven leads: the Ingevity+ lead (Boston Scientific) and the Solia S lead (Biotronik). Initial attempts to free the lead by counter-clockwise rotation and gentle traction were unsuccessful, causing helix elongation. Thus, a snare catheter was used to grasp the lead distal to the entanglement site and apply controlled traction in the opposite direction, successfully. Both leads were safely retrieved, and a new ventricular lead was implanted in the interventricular septum in both patients. A worsening of pre-existing tricuspid regurgitation was observed.
Entanglement of the pacing lead within the tricuspid valve chordae tendineae is a rare but potentially serious complication of left bundle branch pacing, previously described only with lumenless leads. To the best of our knowledge, these are the first documented cases involving a stylet-driven lead (SDL). The standard manoeuvre recommended by the EHRA Consensus Statement is often ineffective in such cases. As a result, alternative techniques have been used, such as radiofrequency ablation to disrupt the wrapped chordae tendineae, and laser sheath application to vaporize the surrounding tissue. In both of our cases, standard retrieval manoeuvres were ineffective. In contrast, the use of a snare catheter emerged as a safe, practical, and cost-effective bailout strategy. Compared to energy-based methods, which require specialized equipment and may involve a higher risk of complications, the snare technique offers several advantages: it is widely available in electrophysiology and pacing laboratories, provides immediate tactile feedback, and allows precise control over traction forces during extraction.

Conclusion: These cases highlight the importance of careful lead selection and accurate positioning during LBBAP procedures, as well as the need for operators to have immediate access to a basic set of bailout tools, including snare catheters or extraction equipment, to promptly manage unexpected complications.

ARITMIE 79
ELETTROSTIMOLAZIONE (ARITMIE)
GESTIONE DELLA COMPLICANZE PM / ICD (ARITMIE)
TERAPIA DI RESINCRONIZZAZIONE (ARITMIE)

WHEN THE LEAD MEETS THE BONE: A HYBRID APPROACH TO A CHALLENGING TRANSVENOUS LEAD EXTRACTION-A CASE REPORT

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Introduction: As transvenous lead extraction (TLE) becomes more common, cardiac electrophysiologists increasingly encounter complex cases, particularly those involving long-standing leads. While various factors can complicate TLE, dense fibrotic tissue is a primary challenge. We present a rare and technically demanding case of a Cardiac Resynchronization Therapy with Defibrillator (CRT-D) lead extraction complicated by calcified fibrous tissue firmly adhered to the periosteum of the first rib, necessitating a hybrid procedural approach.

Case Report: A 73-year-old male with a 15-year history of CRT-D implantation presented for generator replacement. A physical examination revealed a chronic cutaneous-to-pocket fistula with purulent discharge, prompting complete system extraction due to high infectious risk. Initial TLE attempts using a rotating dilator sheath were met with unexpected resistance near the first rib, preventing advancement of the sheath into the subclavian vein. We attempted to isolate the subclavian vein with the assistance of a vascular surgeon but the visual inspection revealed that the ventricular lead was coursing very close to the periosteum of the first rib, with a calcified reaction that prevented the passage of the sheaths. Efforts to create a dissection plane were unsuccessful and deemed unsafe due to the proximity of major vascular structures. Consequently, a hybrid approach was adopted. An alternative access was established via the right femoral vein, and the leads were successfully snared and extracted using a Needle's Eye Snare retriever under careful fluoroscopic guidance and hemodynamic monitoring.

Discussion: This case highlights an atypical complication in TLE, where periosteal adherence of fibrotic tissue can mimic more common radiographic findings like fibrosis or ossified thrombus. Standard transvenous extraction techniques proved insufficient due to the unique anatomical challenge. The successful outcome hinged on a multidisciplinary strategy, utilizing a hybrid approach with femoral or giugular snaring. This case underscores the critical importance of preoperative imaging, vigilant intraoperative assessment, and procedural flexibility to ensure patient safety when facing unusual anatomical obstacles.

Conclusion: Calcified fibrotic adherence to the first rib's periosteum is a very rare but significant obstacle in TLE. This case demonstrates the necessity of adapting the procedural strategy, collaborating with surgical colleagues, and considering alternative access routes to achieve successful and safe lead removal in complex cases.

CardioSic

ARITMIE 792
SINCOPE (ARITMIE)
MECCANISMI DELLE ARITMIE (ARITMIE)
STUDI ELETTROFISIOLOGICI INVASIVI (ARITMIE)

VAGAL INFLUENCE ON ATRIAL ELECTROGRAMS: DIFFERENTIATING STRUCTURAL VS. FUNCTIONAL FRAGMENTATION IN GANGLIONATED PLEXI

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Background and aims: Ganglionated plexi (GPs) are the primary target of ablative therapies for neurally mediated syncope (NMS); however, the optimal method for their endocardial localization remains unclear. This study analyzed bipolar atrial electrograms (EGMs) and their response to a vagolytic agent to elucidate their relationship with the parasympathetic network.

Methods: High-density right atrial mapping was performed before and after 2 mg atropine in healthy patients without structural heart disease undergoing electrophysiological study for standard indications. Offline analysis compared pre- and post-atropine maps, focusing on fragmentation patterns and spectral analysis.

Results: The study included 13 patients (mean age: 34±12 years, 9 males). Baseline maps exhibited a consistent fragmentation pattern in the posterior-septal wall, reflecting anatomical right GPs distribution. No difference in density of points between the pre-post atropine map was detected (p=0.97). Three primary areas were identified in the supero-(A), mid-(B), and infero-posterior-(C) regions. Fragmentation of EGMs was found to increase from the periphery toward the core of each area. In fact, the fragmentation pattern was consistent across all analyzed GPs areas: a centrally located, rounded high-fragmentation area (≥6 deflections) was surrounded by a low-fragmentation area (≥4 deflections), with a transition zone (≥5 deflections) in between (Figure, Upper Section). Atropine significantly reduced fractionated areas ($p<0.001$ for A and C, $p<0.05$ for B, Figure, Upper and Central Section). External areas exhibited "functional" fragmentation, sensitive to vagal output, whereas central cores displayed "structural" fragmentation, resistant to vagolysis.

Conclusion: Fragmentation of atrial EGMs is a dynamic property, related to parasympathetic output. Standard fragmentation criteria may overestimate GPs areas. These results could suggest a more selective approach on central core of GPs, potentially reducing procedural risks and improving long-term outcomes.

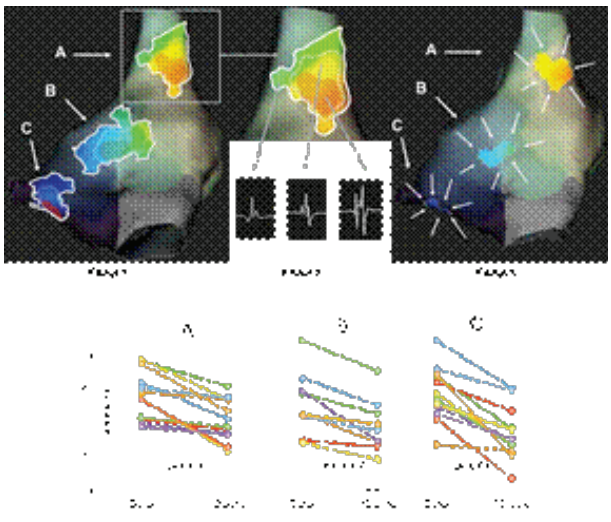


Figure 1

ARITMIE 289
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
ELETTROCARDIOGRAFIA/ CARDIOVERSIONE/ DEFIBRILLAZIONE (ARITMIE)
BIOLOGIA MOLECOLARE CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)

ATRIAL FIBRILLATION AND FRAILTY DEVELOPMENT IN OLDER PATIENTS. DO THERAPEUTIC OPTIONS EXERT A PROTECTIVE EFFECT? THE CAFFE STUDY

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The CAFFE study is a prospective observational investigation conducted to evaluate the efficacy of rhythm control strategies in managing atrial fibrillation (AF) in elderly frailty patients.

AF is a cardiac arrhythmia highly prevalent among the elderly, associated with severe complications and rapid functional decline leading to frailty and disability. Currently, AF therapy is based on two different therapeutic approaches: a rhythm control strategy and a rate control strategy.

The literature underscores the lack of clarity regarding the effects of rhythm control versus rate control strategies, especially concerning crucial endpoints for elderly patients, such as the incidence of frailty and disability and the impairment of quality of life (HRQL). The CAFFE study aims to fill these knowledge gaps by focusing on fundamental aspects in the management of older subjects with AF, providing data essential to support therapeutic options finalized at improving clinical outcomes and HRQL.

The multicenter CAFFE study, conducted in Centers of the Universities of Florence, Pisa, and Bologna, evaluates AF management strategies in diverse clinical settings and patient groups.

The study includes a baseline and a follow-up visit (1 month), comprising traditional cardiological and clinical evaluations, and the Comprehensive Geriatric Assessment with frailty estimation; in particular, different tests will be performed, including the "Short Physical Performance Battery" (SPPB), the "Mini-Mental State Examination" (MMSE), the 15-item Geriatric Depression Scale (GDS-15), the "12-item Short Form Health Survey" (SF-12), the the Katz Activities of Daily Living (Katz ADL), the Lawton Instrumental Activities of Daily Living (Lawton IADL), and the "Frail non-Disabled" (FiND) questionnaire.

Specific laboratory analyses will also be performed, defining the state of chronic inflammation and the metabolomic/lipidomic profiles, aiming at characterizing some of the biological mechanisms influencing clinical outcomes and potential predictors of treatment efficacy.

The study will be focused on the comparison of the improvements of functional status and reductions of frailty between patients undergoing a rhythm-control and a rate-control strategy of the arrhythmia. Additionally, the study aims to understand the differential effects of the interventions on depressive symptoms and HRQL, and to investigate the effects of treatment on the neuro-cognitive profile of older AF patients.

Moreover, secondary objectives of the study include

the assessment of age-related different responses to therapy in functional and cognitive status, frailty condition, depressive symptoms, and HRQL.
Concluding, the CAFFE study seeks to provide valuable insights to optimize AF management strategies in order to reduce frailty and to improve functional outcomes, HRQL, and cognitive performance of older patients with the persistent forms of the arrhythmia, thereby addressing some knowledge gaps of current evidence.

The CAFFE Study, as a PRIN (Progetti di Ricerca di Rilevante Interesse Nazionale - 2022L9NPKH), is financed by the Italian Ministry of the University and the Research, and by the European Union (NextGenerationEU).

ARITMIE 782
DISTURBI DEL RITMO E COVID-19 (COVID-19)
ELETTROSTIMOLAZIONE (ARITMIE)
MECCANISMI DELLE ARITMIE (ARITMIE)

SINUS NODE DYSFUNCTION AND ATRIOVENTRICULAR BLOCK IN COVID-19: A LITERATURE ANALYSIS

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Introduction: Cardiac arrhythmias are a known complication of SARS-CoV-2 infection. Bradyarrhythmias, although less common, are a documented complication and may present as either sinus node dysfunction (SND) or atrioventricular block (AVB). There are no strong recommendations regarding the treatment of these conduction disturbances, nor clear guidelines on the necessity and timing of permanent pacemaker implantation.

Aim of the study: to characterize the different bradyarrhythmic manifestations in patients with COVID-19, to assess the persistence of bradyarrhythmias after resolution of the infection and determine the consequent need for permanent pacemaker implantation.

Materials and methods: we performed a literature review, searching PubMed and Embase for all peer-reviewed articles reporting cases of bradyarrhythmias related to SARS-CoV-2 infection from October 2020 to December 2024. Exclusion criteria were the absence of a confirmed molecular diagnosis of SARS-CoV-2 and a lack of detailed description of the bradyarrhythmia.

Results: We selected 102 articles for a total of 151 cases of bradyarrhythmias during COVID-19 infection (55.2% male, median age 54.5 [IQR: 36–70]). Admission to intensive care was required in 59% of patients and respiratory failure occurred in 64%. Advanced AVB was documented in 49.7% of the cases, while SND was present in 50.3% and in particular, sinus bradycardia (SB) (33.8%) was more frequent than sinus arrest (SA) (16.5%).
Bradyarrhythmias were transient in 64.9% of the cases and 31.8% of the patients underwent permanent pacemaker implantation. Overall mortality was 11.2 % mainly due to respiratory failure.
Comparing SND patients with those who developed advanced AVB, some differences emerged:

- SND was more often a transient complication (62 (81.6%) vs 36 (48%); $p < 0.001$)
- Antiviral drugs were more frequently associated with SND (51 (67.1%) vs 20 (26.7%); $p < 0.001$)
- Temporary pacing was required less often in SND (13 (17.1%) vs 25 (33.3%) $p = 0.03$)

- Permanent pacing was likewise more frequent in AVB (13 (17.1%) vs 35 (46.7%); p < 0.001)
- Troponin I was more often elevated in AVB (11 (14.5%) vs 23 (30.7%); p = 0.04).

Comparing patients with permanent and transient forms of bradyarrhythmias, we observed:

- Higher median age in permanent forms of AVB (58 [IQR: 45-79] vs 48,5 [IQR: 26-62.5];p=0.011)
- A more frequent use of antibiotics in transient AVB (5 (16.1%) vs 13 (43.3%); p=0.04), suggesting the presence of a higher rates of bacterial super infections in these patients
- A significant latency in occurrence of permanent forms of SA (21.5 median days after admission [IQR: 7.75-30.75] vs 2 days [IQR: 1.00-7.00] p= 0.022) possibly suggesting a different pathophysiological mechanism.
- A trend towards higher mortality in non-transient forms of AVB (9 deaths (23.1%) vs 2 (5.7%); p=0.05) and more significantly in SA (4 (44.4%) vs 1 (6.2%); p = 0.040)

Conclusions: Bradyarrhythmias are a well-documented complication of COVID-19 and can be linked to myocardial injury. There is a high percentage of transient events, especially among SND, which was strongly related to the use of antiviral therapy. Permanent pacemaker implantation is not always necessary, but is more frequently required in case of AVB, in the elderly or late-onset SA.

Permanent forms of arrhythmias seem to be linked to higher mortality.

ARITMIE 845
GESTIONE DELLA COMPLICANZE PM / ICD (ARITMIE)
PATOLOGIA DELLE VENE (MALATTIE DEI VASI)
ELETTROSTIMOLAZIONE (ARITMIE)

INFEZIONE DELLA TASCA E SINDROME DELLA VENA CAVA SUPERIORE ELETTROCATETERE DIPENDENTE: UN CASO DI APPROCCIO INTERVENTISTICO MULTIDISCIPLINARE CON SUCCESSO

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Riportiamo il caso di un uomo di 59 anni, portatore di pacemaker (PM) bicamerale dall'aprile 2018 per blocco atrioventricolare avanzato parossistico. Non comorbidità di rilievo. Il paziente aveva ricevuto diagnosi di sindrome della vena cava superiore (VCS) nel luglio 2022 formulata dopo una lunga e complessa storia di edema facciale, linguale e degli arti superiori, all'inizio attribuita erroneamente ad angioedema su base allergica. La diagnosi era stata confermata tramite flebografia e TC con mezzo di contrasto che mostravano un restringimento severo e intrinseco della VCS, in assenza di masse toraciche. Il paziente aveva iniziato terapia anticoagulante orale con iniziale beneficio clinico e radiologico.

Nel corso del follow-up il paziente aveva mostrato, ad una visita di controllo, segni di infezione della tasca del dispositivo (tumefazione con piccola escara e associata modesta secrezione purulenta) e di impegno dell'asse venoso axillo-succlavio-cavale (distensione venosa giugulare con evidenti circoli collaterali venosi superficiali e tumefazione del tronco superiore).

Al fine di escludere un'eventuale infezione subclinica e/o del dispositivo, si decideva per il ricovero. Si procedeva a toilette chirurgica della ferita, con evidenza di esposizione superficiale della porzione prossimale degli elettrocateteri. Venivano prelevati campioni per esami microbiologici e raccolti quattro set di emocolture (tutti risultati, poi, negativi).

Venivano, inoltre, eseguiti ecocardiogramma transtoracico, transesofageo e PET/TC con 18F-FDG. All'ecocardiografia transtoracica e transesofagea non si rilevavano immagini suggestive di endocardite sugli elettrocateteri. La PET/TC con 18F-FDG evidenziava lieve ipercaptazione a livello degli elettrocateteri del PM, non francamente indicativa di processo infiammatorio attivo.

Durante la degenza, non si osservava miglioramento dell'ortopnea o della tumefazione del tronco superiore, nonostante INR in range. L'origine cardiaca veniva esclusa. Alla luce del quadro clinico si concordava, con i colleghi radiologi interventisti, per procedura interventistica in due fasi con estrazione del sistema di sti-

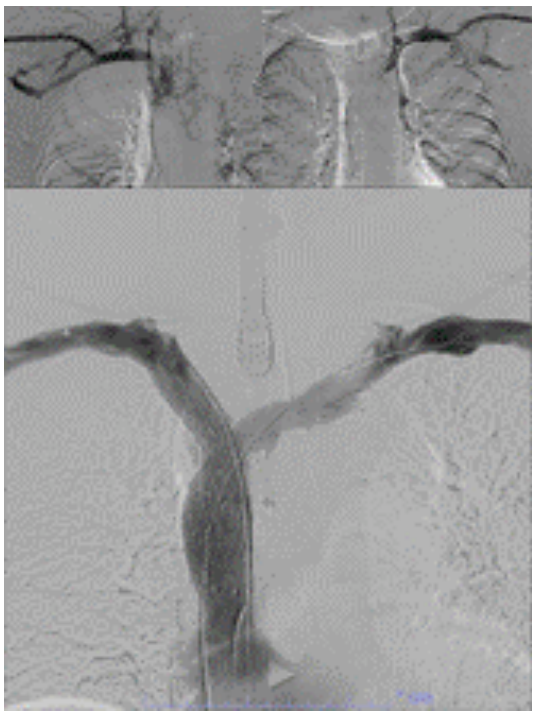


Figura 1

molazione e successiva angioplastica e stenting della vena cava superiore. A seguito dell'estrazione degli elettrocateteri mediante estrattore meccanico, veniva, quindi, effettuata la venoplastica con impianto di due stent nel tronco brachiocefalico e nella VCS con tecnica "crush". L'angiografia di controllo mostrava completa ricanalizzazione del circolo venoso. Si osservava netto e immediato miglioramento clinico che veniva confermato alle visite di follow-up. L'iter terapeutico del paziente si è concluso con l'impianto di un PM leadless ventricolare.

Questo caso rappresenta un raro esempio di estrazione di elettrocateteri per infezione della tasca associata a stenting della VCS per sindrome cava superiore elettrocatetere-dipendente.

Questo è un esempio emblematico di collaborazione multidisciplinare efficace che ha portato alla scelta terapeutica migliore in un contesto clinico ad alto rischio.

ARITMIE 273
ASPETTI GENETICI DELLE ARITMIE (ARITMIE)
ELETTROCARDIOGRAFIA/ CARDIOVERSIONE/ DEFIBRILLAZIONE (ARITMIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
MECCANISMI DELLE ARITMIE (ARITMIE)

CHADVA ED INCIDENZA DI FIBRILLAZIONE ATRIALE NEI PAZIENTI CON ICTUS CRIPTOGENETICO: UN INDICE SEMPLICE PER UNA SFIDA COMPLESSA

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Introduzione: La fibrillazione atriale (FA) asintomatica rappresenta una delle principali sfide nella gestione dell'ictus criptogenico. Individuarla tempestivamente significa poter intervenire con terapie anticoagulanti e strategie di prevenzione più efficaci, riducendo da una parte il rischio di recidive e dall'altra di complicanze tromboemboliche. Tuttavia, non tutti i pazienti hanno la stessa probabilità di sviluppare FA e attualmente non vi sono validi strumenti predittivi semplici e affidabili. In questa prospettiva, il punteggio CHADVA può rappresentare un alleato prezioso.

Metodi: Studio multicentrico, retrospettivo, osservazionale. Sono stati analizzati 148 pazienti consecutivi sottoposti a impianto di loop recorder per ictus criptogenico. L'età media era di 68,8 ± 13,7 anni con un punteggio CHADVA medio di 4,7 ± 1,4. Durante il follow-up, la FA è stata documentata nel 25% dei pazienti. La popolazione è stata suddivisa in tre gruppi in base al CHADVA (<4; 5–6; ≥7). È stata inoltre eseguita una regressione logistica per valutare la relazione tra CHADVA e rischio di FA.

Risultati: L'incidenza di FA cresce progressivamente all'aumentare del punteggio CHADVA: 12,2% nei pazienti con valori <4, 30,0% nei soggetti con punteggi 5–6 e 30,8% nei punteggi ≥7 (Tabella 1). La regressione logistica ha confermato una correlazione significativa: per ogni incremento di 1 punto CHADVA, aumenta il rischio di FA di circa 1,53 volte (OR 1,53; IC95% 1,13–2,06) evidenziando una relazione diretta, progressiva e statisticamente significativa tra CHADVA e rischio di FA, dimostrando la robustezza del modello predittivo e la sua potenziale trasferibilità alla pratica clinica (Figura 1).

Conclusioni: Il CHADVA emerge come un indice semplice e rapido, capace di stratificare il rischio di FA nei pazienti post-ictus criptogenico. La sua adozione nella valutazione di routine consentirebbe di selezionare i pazienti da sottoporre a monitoraggi prolungati, favorendo un approccio realmente personalizzato alla prevenzione secondaria.

Figura 1. Relazione tra punteggio CHADVA e probabilità di sviluppare fibrillazione atriale (FA). I punti rappresentano i dati osservati per ciascun paziente (FA presente = 1, assente = 0). La linea rossa mostra la curva stimata tramite regressione logistica, che evidenzia l'aumento progressivo del rischio di FA all'incrementare del punteggio CHADVA.

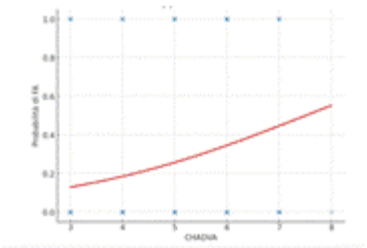


Tabella 1. Incidenza di FA nei pazienti post-ictus criptogenico in base al punteggio CHADVA

CHADVA score, number (%)	FA, number (%)	FA no nnumber (%)
<4	5 (12,2%)	36 (87,8%)
5-6	27 (30,0%)	63 (70,0%)
≥7	4 (30,8%)	9 (69,2%)

Figura 1

ARITMIE 459
GESTIONE DELLA COMPLICANZE PM / ICD (ARITMIE)
TERAPIA DI RESINCRONIZZAZIONE (ARITMIE)
ELETTROSTIMOLAZIONE (ARITMIE)
DEFIBRILLATORE IMPIANTABILE (ARITMIE)

UNA CLASSIFICAZIONE SEMPLIFICATA DELLE INFEZIONI DEI DISPOSITIVI ELETTRONICI CARDIACI IMPIANTABILI COMBINANDO I CRITERI DIAGNOSTICI CHIAVE

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Background: Le infezioni dei dispositivi elettronici impiantabili cardiaci (CIED) sono la complicanza più comune e grave associate all'impianto di questi device, con potenziali implicazioni fatali. Nonostante gli sforzi di numerose società scientifiche, le infezioni CIED non hanno ancora criteri diagnostici standardizzati e universalmente accettati.

Obiettivi: L'obiettivo di questo studio è valutare le implicazioni fisiopatologiche e prognostiche della classificazione delle infezioni CIED in base ai risultati dell'ecocardiografia transesofagea (TEE) e delle emocolture (BC).

Metodi: Questo è uno studio retrospettivo monocentrico che ha coinvolto pazienti con infezione da CIED raccolti tra il 2000 e il 2023. I pazienti sono stati suddivisi in quattro gruppi in base ai risultati di TEE e BC: Gruppo 1: TEE+/BC+ (100 casi), Gruppo 2: TEE+/BC− (37 casi), Gruppo 3: TEE−/BC+ (14 casi), Gruppo 4: TEE−/BC− (17 casi).

Risultati: Un totale di 168 pazienti con infezione CIED è stato analizzato. I pazienti con TEE e BC positivi hanno mostrato livelli significativamente più elevati di marker infiammatori, come la proteina C-reattiva (p<0,001), e una maggiore incidenza di febbre (p<0,001). Inoltre, il coinvolgimento settico e/o embolico polmonare è stato più frequente nei pazienti con TEE positivo (27% contro 9,2%; p=0,09). La dimensione mediana delle vegetazioni è risultata significativamente maggiore nel Gruppo 1 (BC+) rispetto al Gruppo 2 (BC−) [17 mm (10 – 20,2) vs 10 mm (8 – 17); p=0,015]. Non sono emerse differenze nel tipo di dispositivo impiantato (p=0,487), sebbene il CRT-D fosse il dispositivo più comune nei Gruppi 3 (42,8%) e 4 (41,2%) con TEE negativo. Il tempo tra l'insorgenza dell'infezione e la rimozione del dispositivo non ha mostrato differenze significative tra i gruppi (p=0,885) (Figura 1). La mortalità intraospedaliera è stata del 15% nel Gruppo 1, del 5,4% nel Gruppo 2 e nulla nei Gruppi 3 e 4 (p=0,071), risultando significativamente più alta nei pazienti con TEE positivo (p=0,039). L'analisi di Kaplan-Meier non ha rivelato differenze statisticamente significative nella sopravvivenza cumulativa a un anno tra i gruppi (log-rank p=0,106).

Conclusioni: La distinzione tradizionale tra infezione della tasca del dispositivo e infezione sistemica nei portatori di CIED potrebbe necessitare di una revisione. L'infezione CIED è un processo dinamico e multifattoriale, che non può essere ridotto ad una classificazione dicotomica. Il concetto di "infezione della tasca" risulta quindi limitante, in quanto non coglie la complessità del coinvolgimento sistemico e del biofilm. La nostra proposta di classificazione, basata sui risultati di ecocardiografia transesofagea ed emocolture, fornisce una valutazione diagnostica e prognostica chiara, diretta e in sintonia con la fisiopatologia sottostante. Questo approccio potrebbe rappresentare un punto di svolta nella gestione delle infezioni CIED, offrendo un valido strumento per personalizzare il trattamento e migliorare gli esiti clinici.

ARITMIE 394
ABLAZIONE TRANSCATETERE (ARITMIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
MECCANISMI DELLE ARITMIE (ARITMIE)

LONG TERM CLINICAL OUTCOME AND PROCEDURAL CHARACTERISTICS OF AN ANATOMICAL ABLATION SETUP INCLUDING VEIN OF MARSHALL ETHANOL INFUSION IN PATIENTS WITH PERSISTENT ATRIAL FIBRILLATION. A "REAL LIFE" EXPERIENCE FROM THE VOMALC-PEAF REGISTRY

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Background: Pulmonary vein isolation (PVI) represents the cornerstone for the treatment of atrial fibrillation (AF); however, its efficacy in persistent atrial fibrillation (PeAF) is constrained. An anatomical ablation strategy with vein of Marshall (VOM) ethanol infusion (EI), PVI, and the transection of the three primary isthmuses has yielded encouraging outcomes.
We assessed long-term outcomes and procedural characteristics of this approach in first-time PeAF ablation.

Methods: This is a retrospective single-arm observational study of consecutive PeAF patients undergoing the first procedure of catheter ablation. All patients underwent VOM-EI, PVI and linear lesions for the left atrial dome, lateral mitral isthmus (MI) and cavotricuspid isthmus.
Freedom from any atrial arrhythmias (AA) lasting >30s during follow-up was the primary endpoint. Procedural characteristics and safety data were also collected.

Results: 151 consecutive patients were included in this study. 21 patients (13.9%) having non-detection of the VOM and 6 patients (3,9%) not resulting suitable for the VOM-EI received PVI-only ablation.
124 patients completing the whole ablation setup were considered for the analysis. PVI was achieved and validated in all subjects. Dome-line block was achieved in 96 (77.4%) patients; MI block in 113 (91.1%). The whole ablation scheme was completed in 81/124 (65.3%). After a mean follow-up of 18.8±13.1 months, 100/124 (80,6%) and 111/124 patients (89.5%) remained free from any AA recurrence lasting >30s without antiarrhythmic drugs (AADs) and with/without AADs, respectively. Acute ablation setup completeness demonstrated a better outcome (Log Rank 3.97, p = 0.046). MI block was the strongest independent predictor of freedom from any AA (HR=0.114 (95%CI:0.041–0.321), p<0.001).
Patients with long-lasting(LL)-PeAF phenotype demonstrated a worse outcome when compared to those with early PeAF/PeAF (HR=2.68 (95% CI: 1.240–5.812), p=0.012).

Conclusions: VOM-EI combined with an anatomical ablation scheme represents a feasible, safe, and promising strategy for PeAF treatment.
Acute completeness of the anatomical ablation scheme–particularly MI bidirectional block–and AF duration are key determinants of long-term ablation efficacy.

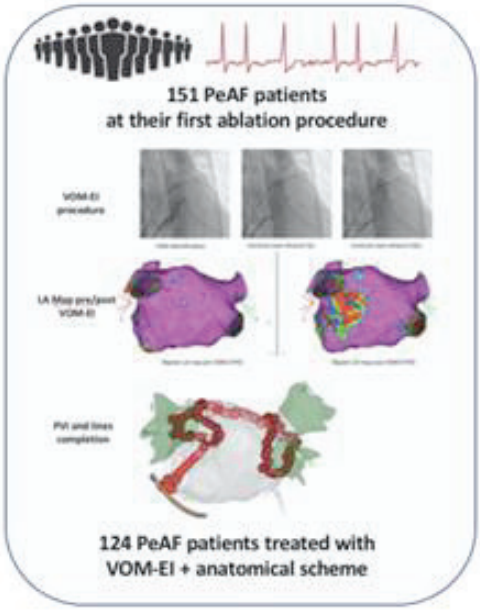


Figure 1

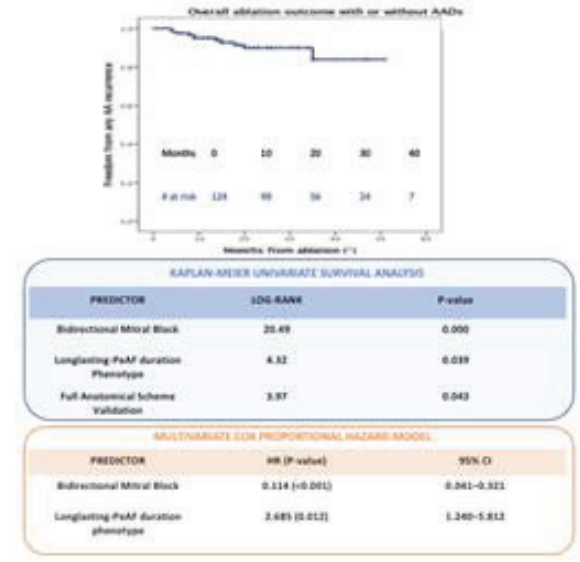


Figure 2

ARITMIE 52
ARITMIE SOPRAVENTRICOLARI (ESCLUSA FA) (ARITMIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
CARDIOPATIE CONGENITE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)

FROM ANATOMICAL CURE TO ELECTRICAL FAILURE: THE HIDDEN SEQUELAE OF CARDIAC REPAIR

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Late-onset conduction disturbances remain an under-recognized sequela in patients with surgically corrected congenital heart disease. We report the case of a 53-year-old man who, decades after surgical repair of Scimitar Syndrome with concomitant mitral annuloplasty, developed paroxysmal atrial fibrillation, atrial flutter, and intermittent second-degree atrioventricular (AV) block. The anatomical proximity of the annuloplasty ring to the AV node and bundle of His likely contributed to nodal injury, potentiated over time by progressive fibrosis. Mechanical trauma, ischemic compromise of the AV nodal artery, and chronic structural stress may all have played a role.

Comprehensive echocardiographic evaluation—including tissue Doppler imaging and speckle-tracking strain analysis—showed preserved left atrial volume, normal intra-atrial conduction time, and mechanical synchrony, with only mild segmental strain reduction (Fig. 1). These findings indicated intact atrial electromechanical integration and supported a conservative, non-ablative rhythm strategy. Pulmonary vein isolation was deferred, as the atrial substrate appeared functionally healthy and unlikely to benefit from ablation.

Management focused on rate control, anticoagulation, and prevention of bradyarrhythmic events. Given recurrent AV block and syncope, a leadless ventricular pacemaker was implanted (Fig. 2), offering bradycardia

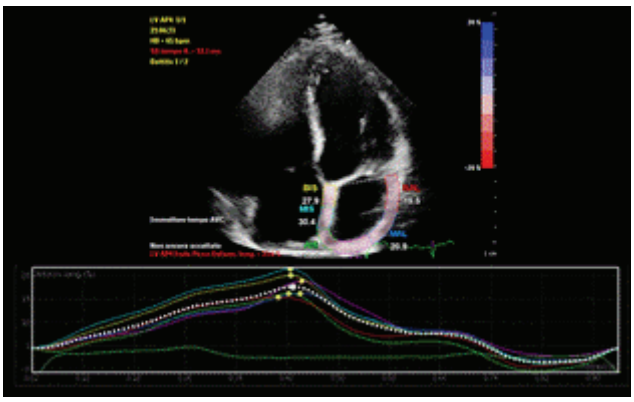


Figure 1

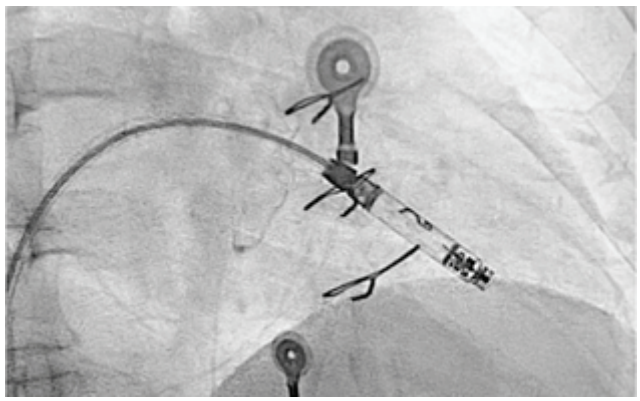


Figure 2

protection while avoiding the challenges and risks of transvenous leads in a surgically altered heart. The modular nature of the device preserves the option for future atrial pacing should AV synchrony become necessary. This case underscores the enduring impact of early surgical interventions on the conduction system and the central role of multimodal echocardiography in guiding therapeutic decisions.

Long-term rhythm surveillance and individualized pacing strategies are essential in this patient population, particularly when structural interventions have been performed near the conduction tissues.

ARITMIE 54
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
ABLAZIONE TRANSCATETERE (ARITMIE)
STUDI ELETTROFISIOLOGICI INVASIVI (ARITMIE)

ECHOCARDIOGRAPHIC BIOMARKERS FOR PRECISION MANAGEMENT OF PAROXYSMAL ATRIAL FIBRILLATION: A THREE-CASE EXPERIENCE

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Paroxysmal atrial fibrillation (PAF) arises from heterogeneous electrical and structural substrates, influencing the success of rhythm- and rate-control strategies. While standard risk scores address thromboembolic and bleeding risk, they do not quantify atrial remodeling. Advanced echocardiographic tools—speckle-tracking atrial strain and tissue Doppler imaging of conduction time (PA-TDI)—enable noninvasive assessment of reservoir function, synchrony, and conduction, serving as indirect markers of fibrosis.

Case 1: A 54-year-old man, no structural heart disease, normal atrial dimensions, preserved strain (reservoir >40%), and PA-TDI within normal limits (Fig, 1). Findings suggested a trigger-dependent arrhythmia. Underwent cryoballoon pulmonary vein isolation (PVI) with no recurrence at 12 months.

Case 2: A 62-year-old obese woman with hypertension, increased epicardial adipose tissue (EAT 9 mm), mild left atrial enlargement, reduced reservoir strain (22%), and prolonged PA-TDI, indicating mixed trigger–substrate AF. Relapsed after initial cryo-PVI; underwent posterior wall pulsed-field ablation (Fig. 2), maintaining sinus rhythm for 9 months.

Case 3: An 80-year-old man with hypertension, CKD, and low symptom burden. Echocardiography revealed moderate atrial enlargement, reduced strain (18%), and conduction delay, consistent with advanced substrate. High procedural risk prompted a conservative approach: rate control and renal-adjusted anticoagulation, with no thromboembolic events in 12 months.

These cases illustrate how integrating imaging biomarkers with clinical context can refine therapeutic pathways: identifying candidates for early ablation, tailoring lesion sets, or supporting conservative management. Such an approach promotes precision medicine in PAF, optimizing rhythm stability and avoiding unnecessary interventions.

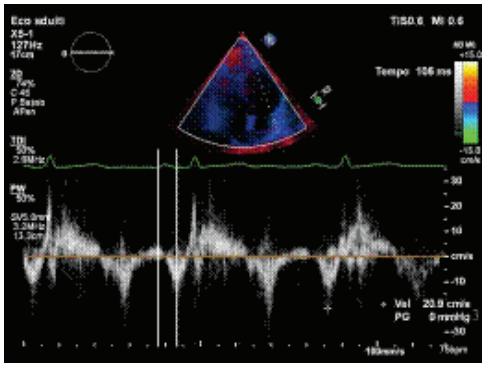


Figure 1

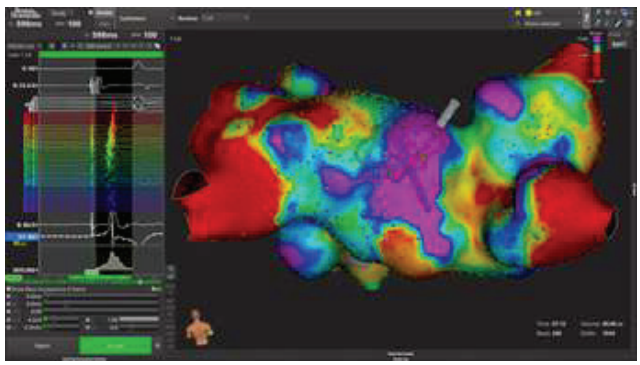


Figure 2

ARITMIE 57
GESTIONE DELLA COMPLICANZE PM / ICD (ARITMIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
ELETTROSTIMOLAZIONE (ARITMIE)

LEADLESS PACEMAKER RESCUE IN EARLY DUAL-CHAMBER FAILURE WITH LIMITED VENOUS ACCESS

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Dual-chamber pacemakers are highly effective in restoring atrioventricular synchrony, but procedural imperfections during implantation may lead to late and sometimes abrupt system failure. We report the case of a 78-year-old man who had received a dual-chamber pacemaker one year earlier for complete atrioventricular block. At a routine follow-up in August 2025, the patient was found to have newly detected atrial fibrillation and device interrogation revealed rapid deterioration of the ventricular lead, with impedance shifting from 145 Ω to over 30 kΩ within three months, accompanied by elective replacement indicator activation. Fluoroscopy demonstrated focal narrowings of the atrial and ventricular leads near the clavicle, highly suggestive of suture-related mechanical injury from the initial implant, likely due to the absence of protective sleeves. Left subclavian venous access was not usable because of arterial overlap and subclavian spasm. Given these constraints, a leadless pacemaker was implanted via right femoral access (Fig. 1).

The procedure was technically challenging because the delivery system was hindered by the presence of the damaged transvenous leads, requiring multiple repositioning attempts. Final deployment on the mid-septal right ventricular wall yielded stable fixation and optimal electrical performance. The post-operative course was uneventful, and device function remained stable at one-month follow-up.

This case highlights the long-term consequences of seemingly minor technical errors at the time of pacemaker implantation, the need for thorough pre-procedural assessment of venous access, and the role of leadless pacing as a safe and effective solution in complex device revision scenarios with both access limitations and intracardiac obstacles.

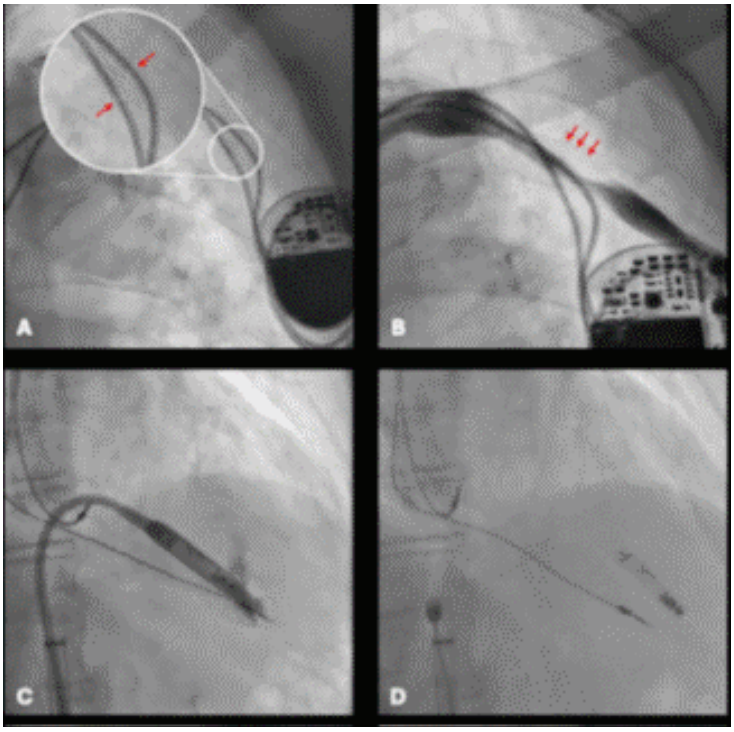


Figure 1

ARITMIE 621
ARITMIE VENTRICOLARI (ARITMIE)
MECCANISMI DELLE ARITMIE (ARITMIE)
INTELLIGENZA ARTIFICIALE (TELECARDIOLOGIA ED E-HEALTH)

NON-PHARMACOLOGICAL EARLY DETECTION OF CONCEALED BRUGADA SYNDROME VIA BASAL ECG ANALYSIS

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Background e scopo dello studio: Il percorso diagnostico della Sindrome di Brugada prevede in molti casi l'utilizzo di un test provocativo con farmaci bloccanti dei canali del sodio, il quale presenta limitazioni e rischi. Obiettivo dello studio è dunque costruire un metodo non invasivo e non farmacologico, basato esclusivamente sull'analisi dell'elettrocardiogramma (ECG) basale, in grado di discriminare i pazienti affetti da Sindrome di Brugada occulta dai soggetti sani.

Metodi: Sono stati arruolati 196 pazienti consecutivi presso il nostro Centro, tutti con caratteristiche cliniche ed elettrocardiografiche suggestive per Sindrome di Brugada, tuttavia in assenza di pattern di tipo 1 spontaneo. Per ciascun soggetto è stato registrato un ECG standard a 12 derivazioni in formato digitale, prima dell'esecuzione del test all'Ajmalina. L'esito del test provocativo è stato poi interpretato come positivo o negativo in maniera indipendente da tre elettrofisiologi.
I tracciati ECG, dopo una fase di processazione del segnale digitale, sono stati sottoposti ad analisi avanzate quali delayed cross-Poincaré plot analysis, topological data analysis, functional data analysis, e correspondence analysis. Tali analisi si sono concentrate prevalentemente sulle derivazioni V1 e V2, ovvero quelle che esplorano più direttamente la regione anatomica in cui si sviluppano le anomalie della ripolarizzazione.

Risultati: I risultati hanno evidenziato differenti pattern di attività elettrica ventricolare nei pazienti Brugada rispetto ai controlli sani, specialmente nelle fasi della ripolarizzazione, come si evince dai Poincaré plots generati. In particolare, sono state identificate sottili alterazioni del tratto ST, più evidenti nella regione anatomica corrispondente al tratto di efflusso del ventricolo destro (RVOT), coerentemente con i noti squilibri delle correnti di sodio e potassio a tale livello.Ai fini di contestualizzazione clinica è stato adottato un duplice approccio. Un'analisi quantitativa mediante functional data analysis ha raggiunto un'Area Under the Curve (AUC) di 0,87 per la stratificazione del rischio. Parallelamente, una correspondance analysis ha offerto un'interpretazione qualitativa, rivelando associazioni distinte tra i casi Brugada e i controlli.

Conclusioni: I risultati di questo studio dimostrano una solida capacità di differenziare i pazienti affetti da Sindrome di Brugada dagli individui sani, sottolineando il potenziale di questo metodo quale strumento non farmacologico e non invasivo per una diagnosi precoce della Sindrome di Brugada.
A differenza degli approcci di "black-box machine learning", il metodo utilizzato affonda le radici nell'elettrofisiologia cardiaca, offrendo interpretabilità e rilevanza clinica. I risultati ottenuti sono coerenti con le note anomalie della ripolarizzazione che si verificano nei pazienti affetti da Sindrome di Brugada – specialmente tra i versanti epicardico ed endocardico del RVOT – dando origine ai fenomeni di phase-2 re-entry alla base dell'aritmogenesi di questa patologia.
Correlando direttamente le caratteristiche computazionali ai substrati elettrofisiologici, il nostro approccio consente di formulare una valutazione del rischio e di pianificare potenziali interventi preventivi, il tutto a partire da un ECG standard, senza necessità di test farmacologici.

ARITMIE 623
ELETTROSTIMOLAZIONE (ARITMIE)
GESTIONE DELLA COMPLICANZE PM / ICD (ARITMIE)
ARITMIE SOPRAVENTRICOLARI (ESCLUSA FA) (ARITMIE)

TINE-BASED LEADLESS PACEMAKER END-OF-LIFE MANAGEMENT THROUGH MULTIPLE RETRIEVAL/REIMPLANTATION STRATEGY

Gianmarco Arabia (a), Gianfranco Mitacchione (a), Emiliano Calvi (a), Manuel Cerini (a), Alessio Nicolai (a), Sofia Del Gigante (c), Diego La Maestra (d), Antonio Curnis (a, b)
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Background: Tine-based leadless pacemaker (LPM), such as the Micra™ Transcatheter Pacing System (TPS; Medtronic, Minneapolis, MN, USA), is an attractive alternative to conventional transvenous systems by reducing lead- and pocket-related complications. However, long-term management and transition strategies are still debated. We present the case where the end-of-service of a tine-based LPM was managed with twice device removal during the clinical course, despite device long dwelling time.

Case Presentation: In April 2016, a 41-year-old woman with congenital complete atrioventricular (AV) block was implanted with a Micra-VR LPM following transvenous lead extraction of conventional pacemaker failure and left subclavian/superior vena cava occlusion. The LPM was implanted in the low right ventricular septum and showed satisfactory pacing threshold at implantation (0.88V@0.24), with a final device programming of VVI pacing mode at 65 bpm. During subsequent follow-up, the patient showed a progressive increase of pacing threshold up to 4.0V@0.24 ms, thus negatively affecting battery longevity needing device revision for end-of-service 2,5 years since implantation. Given the patient's young age and the need of high burden of pacing (complete AV block) the choice to retrieval the LPM was preferred over to abandon it.

First Device Retrieval (2018): The retrieval procedure was performed under fluoroscopic guidance using a snare-based technique adapted from the Micra delivery system. A 23F introducer was advanced via the right femoral vein, and Micra delivery system - microsnare (7-mm Loop Snare, Amplatz Goose Neck Microsnare) system was deployed to hook the proximal retrieval feature (Figure 1). Countertraction manoeuvre applied with the Micra delivery system permitted fixation tines release and device extraction (Figure 2). Transthoracic echocardiography (TTE) excluded pericardial effusion or structural complications, and a new Micra-VR TPS was then implanted in a different right ventricle position (high septum) to avoid interference with the previous abandoned transvenous lead, achieving more reliable electrical parameters (0.38 V @ 0.24 ms).

Clinical Course (2018–2025): During 2024 outpatient control, the patient reported symptoms consistent with pacemaker syndrome (exertional fatigue and mild dyspnoea) associated to left ventricular ejection fraction deterioration (LVEF 40%, septal and atrioventricular dyssynchrony). These findings were due to inappropriate right ventricle stimulation (VVI pacing during sinus rhythm), being a LPM with AV synchrony capability not yet available in 2018.

Second Device Retrieval (2025). In May 2025, a new Micra-AV was implanted in a lower septal position showing optimal electrical parameters (pacing threshold 0.38V@0.24ms). Removal of the Micra-

VR implanted 7-years before was attempted during same procedure with 7 mm loop snare that resulted ineffective to hook the device. A larger snare (12 mm loop snare) was used over the Micra dilator sheath, having this snare a size mismatch with the Micra delivery system. After hooking the 2018 Micra-VR, a continuous pulling manoeuvre was applied until device detachment and complete removal. TTE control showed no pericardial effusion neither tricuspid valvular apparatus damage.
Subsequent hospital stay was free of events, and the patient was discharged after 48 hours. She was enrolled in a structured follow-up program, including device interrogation and echocardiographic assessments. At the time of reporting, early follow-up confirmed good device performance, improved clinical symptoms, and LVEF recovery.

Discussion: We presented for the first time a case of LPM end-of-life device management with multiple removals after a long dwelling time (2,5 and 7 years, respectively), using different devise recapture strategies.
The key points of this case can be summarized as follow:

- End-of-service of tine-based LPM can be managed with multiple device retrieval in the same patient also after a consistent dwelling time (2,5 and 7 years).
- Even if snaring/countertraction must be the preferred approach for tine-based LPM removal, simple traction until device detach can be considered.

Conclusions: Despite Micra LPM are not designed to be removed, this choice should be accounted in young patients to avoid overload of abandoned devices. Apart end-of-service, when considering continuous advancements of LPM technology, a such strategy needs to be considered to offer an updated technological solution to patients needing a more appropriate cardiac stimulation.

ARITMIE 481
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
ASSISTENZA INTENSIVA CARDIOVASCOLARE IN ACUTO (ASSISTENZA CARDIACA IN ACUTO)
FARMACI ANTIARITMICI (ARITMIE)

PERCUTANEOUS LEFT STELLATE GANGLION BLOCK IN REFRACTORY ATRIAL FIBRILLATION: A CASE REPORT

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Introduction: Percutaneous left stellate ganglion block (PLSGB), a neuromodulation procedure increasingly used for drug-refractory ventricular arrhythmias, has a less established role in supraventricular arrhythmias (SVAs).

Case: An 83-year-old man with no prior cardiovascular history presented to the emergency department with 48 hours of remitting epigastric and retrosternal pain. ECG showed a subacute right-inferior myocardial infarction (MI) with sinus rhythm, inferior Q waves, and persistent ST-segment elevation in inferior and right leads. High-sensitivity troponin (TnI) was markedly elevated (23392 ng/L). Echocardiography revealed a mildly reduced left ventricular ejection fraction (LVEF 45%) with basal inferior, inferolateral, and inferior septal akinesia, and a mildly dilated, hypokinetic right ventricle.
Coronary angiography showed two-vessel disease involving the mid left anterior descending coronary artery and the right coronary artery, the latter with a complete proximal occlusion with a significant thrombotic burden. Slow coronary flow persisted despite multiple thrombus aspiration attempts and the placing of a single drug eluting stent, prompting to intracoronary adrenaline and adenosine administration. This resulted in refractory atrial fibrillation (AF) with a ventricular rate of 160 bpm, unresponsive to cardioversion and amiodarone, causing hemodynamic instability. An intra-aortic balloon pump (IABP) and intravenous noradrenaline/dobutamine were initiated. In the ICU, persistent biventricular cardiogenic shock and tachyarrhythmia limited IABP effectiveness, prompting ultrasound-guided PLSGB (100 mg lidocaine plus 100 mg ropivacaine), which successfully restored sinus rhythm and hemodynamic stability within 3 minutes. The procedure was uncomplicated.
During the subsequent hospitalization, other two self-terminating episodes of paroxysmal AF occurred after the acute PLSGB effect had subsided and despite amiodarone infusion, respectively on day 3 and day 5 upon admission, but neither required additional treatments: both were under 24 hours of duration with moderate ventricular rate and no hemodynamic compromise.
The patient was discharged without any antiarrhythmic drug and no further AF episodes occurred in the subsequent year, highlighting the importance of the acute triggers in promoting AF in this case.

Conclusions: Intracoronary adenosine, commonly used to manage no reflow scenarios, can trigger AF by decreasing atrial refractory period duration while simultaneously increasing atrial refractory period dispersion.
This case highlights the effectiveness of PLSGB in acutely controlling refractory supraventricular arrhythmias in critical care, suggesting an additional value over standard medical therapy and electrical cardioversion.

Neuromodulation interventions are particularly effective in patients with high sympathetic tone, such as those with ischemia-mediated arrhythmias complicated by cardiogenic shock and/or pharmacological triggers further increasing AF susceptibility, like intracoronary adenosine and adrenaline. Due to its ease of use, rapid effect, and strong rationale, PLSGB should be considered for new-onset rapid AF driven by sympathetic hyperactivity in emergency settings.

ARITMIE 574
ARITMIE VENTRICOLARI (ARITMIE)
ELETTROCARDIOGRAFIA/ CARDIOVERSIONE/ DEFIBRILLAZIONE (ARITMIE)
MECCANISMI DELLE ARITMIE (ARITMIE)
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)
SINCOPE (ARITMIE)

A NOVEL MECHANISM OF VENTRICULAR FIBRILLATION IN HYPERTHYROIDISM: QT SHORTENING OVER AN EARLY REPOLARIZATION PATTERN

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Background: the association between hyperthyroidism and several rhythm disorders, mostly supraventricular arrhythmias, is well known. Ventricular arrhythmias are also described, usually as isolated PVCs, rarely as ventricular tachycardia (VT) and ventricular fibrillation (VF). The effect of thyroid hormones on ventricular repolarization and QT interval are less well-established. Both QT interval prolongation and worsening of an early repolarization pattern (ERP) have been described in hyperthyroidism, but no QT interval shortening.

Case Report: a 41-years-old man of African origin, without prior cardiological history, came to our attention after two episodes of loss of consciousness accompanied by seizures, occurring during sleep. The ECG at admission is shown in figure 1 (A).

A coronary angiography ruled out coronary lesions. During the first hours of ICU monitoring, a torsade de pointe, degenerating in VF, was interrupted by DC-shock (figure 1 (B)). Isolated PVCs, a 1st-degree atrio-ventricular block (AVB) and sporadic episodes of 2nd-degree type-1 AVB were noticed. Blood tests revealed an overt hyperthyroidism, so anti-thyroid therapy and metoprolol were started. A cardiac MRI ruled out infiltrative or inflammatory myocardial diseases. Thyroid function improvement and normalization ran parallel to the ECG evolution: progressively, the J wave reduced its amplitude, the QTc interval reached normal values, while the ERP was still present. An influence of hyperthyroidism in triggering life-threatening arrhythmias was considered. Anyway, given the high probability of arrhythmic recurrence and the potential

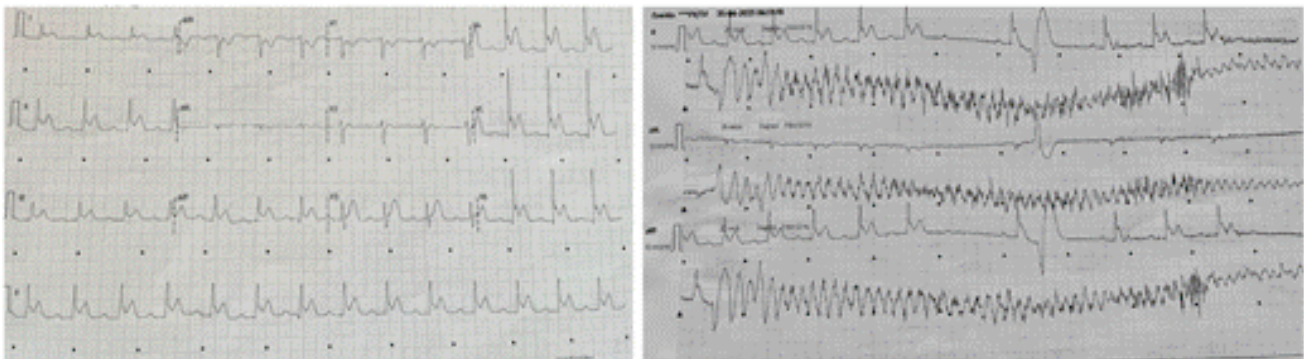


Figure 1 A) ECG showing an early repolarization pattern (ERP), a prominent J wave, with a relatively short QTc interval (QT 318 ms, QTC 358 ms); B) The analysis of the VF episode revealed a bradycardia-related trigger: alternating long/short/long RR interval, during 2nd degree and 2:1 AVB, led to an R on T phenomenon.

Table 1

co-existent genetic substrate, an ICD was considered. The persistence of 2nd degree AVB episodes despite the normalization of thyroid function led to the implantation of a trans-venous device. Genetic test is under way.

Conclusion: this case reminds us that thyrotoxicosis can rarely cause life-threatening arrhythmias, even in the absence of underlying structural heart disease. Thyroid hormones are potential modifiers of ventricular repolarization, throughout genomic and nongenomic mechanisms.
The exacerbation of the transmural epicardium-endocardium voltage gradient has been mentioned as implied in early repolarization – related VF during thyrotoxicosis. The association with a short QTc interval has never been described before, so the overlap between genetic and hormonal arrhythmic mechanism was suspected. β-Blockers and parasympathetic activation can exacerbate the J-point elevation. That could make treatment of thyroid storm more challenging in patients with ERP. In our case, the ECG evolution guided the therapeutic approach: β-Blockers were withdrawn during the follow-up, when the patient reached euthyroid status, without arrhythmic recurrence.

ARITMIE 728
ARITMIE VENTRICOLARI (ARITMIE)
ELETTROCARDIOGRAFIA/ CARDIOVERSIONE/ DEFIBRILLAZIONE (ARITMIE)
INTELLIGENZA ARTIFICIALE (TELECARDIOLOGIA ED E-HEALTH)

NONINVASIVE ELECTROCARDIOGRAPHIC IMAGING (ECGI): CONFRONTO TRA I SISTEMI DISPONIBILI

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Introduzione: L'elettrocardiografia non invasiva (ECGi) è una tecnica innovativa di mappaggio elettroanatomico che consente la ricostruzione tridimensionale dell'attività elettrica cardiaca attraverso l'integrazione di segnali multicanale di superficie con imaging tomografico. Questa metodica permette di identificare l'origine di aritmie atriali e ventricolari e la caratterizzazione di substrati aritmici complessi in maniera non invasiva.
I pazienti con aritmie non mappabili o con controindicazioni a procedure invasive (quali fragilità, comorbidità significative, protesi valvolari meccaniche, trombi intracavitari) rappresentano i candidati ideali all'impiego di questa tecnologia.

Obiettivi: Scopo dell'analisi è fornire una panoramica dei sistemi ECGi disponibili, con attenzione a caratteristiche tecniche, applicazioni cliniche e limiti principali.

Sintesi della letteratura: I sistemi attuali differiscono per numero di elettrodi, necessità di imaging associato (TC/RMN) e capacità di mappare l'attivazione cardiaca epi e/o endocardica. Sono stati applicati nel mappaggio di fibrillazione atriale e tachicardia ventricolare, nonché nella pianificazione della terapia di resincronizzazione cardiaca. Tuttavia, ciascun sistema presenta limiti tecnici, in particolare nel mappaggio delle strutture settali e di aree sotto-aortiche o sotto-polmonari.

Conclusioni: L'elettrocardiografia non invasiva rappresenta uno strumento innovativo, con importanti potenzialità diagnostiche e prognostiche rispetto alle metodiche convenzionali.
Ad oggi nessun sistema ha sostituito il mappaggio invasivo, che rimane il gold standard ove applicabile. Il costo elevato e la limitata disponibilità condizionano l'impiego nella pratica clinica dei sistemi non invasivi, in attesa di studi prospettici per validarne l'affidabilità diagnostica e definirne l'impatto clinico nelle diverse popolazioni di pazienti.

Legenda: ECGi = elettrocardiografia non invasiva; RMN = risonanza magnetica nucleare; TC = tomografia computerizzata.

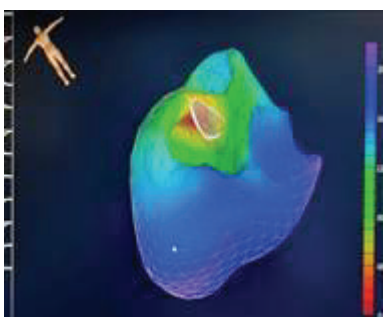


Figura 1

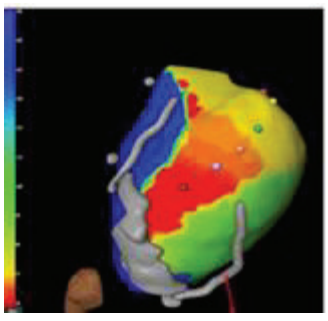


Figura 2

ARITMIE 730
ARITMIE VENTRICOLARI (ARITMIE)
ARITMIE SOPRAVENTRICOLARI (ESCLUSA FA) (ARITMIE)
MECCANISMI DELLE ARITMIE (ARITMIE)

STAR: RADIOABLAZIONE STEREOTASSICA DELLE ARITMIE

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Introduzione: La gestione di pazienti con tachicardia ventricolare (TV) refrattaria a terapia farmacologica e/o ablativa nella cardiopatia strutturale è complessa. La radioablazione stereotassica delle aritmie (STAR) è un trattamento emergente in grado di offrire una opzione non invasiva anche per i pazienti più avanzati.
Il target terapeutico (substrato aritmogeno) viene identificato integrando imaging avanzato e mappaggio elettro-anatomico, sia invasivo che non invasivo. Su tale regione viene erogata una singola dose di fotoni (25 Gy) mediante sistemi di radioterapia stereotassica, con elevata accuratezza spaziale e minimo coinvolgimento dei tessuti circostanti.

Metodi: Si tratta di uno studio retrospettico e prospettico che include pazienti sottoposti a STAR da febbraio 2020 a luglio 2025 presso un singolo centro di terzo livello, per episodi di TV monomorfa refrattaria o con controindicazione ad ablazione transcatetere e/o farmaci antiaritmici in cardiopatia strutturale avanzata, condizionanti ripetuti interventi del defibrillatore impiantabile (ICD).

Risultati: Sono stati trattati 11 pazienti (età media 69±6 anni, range 60-78, 100% maschi), con frazione di eiezione media del ventricolo sinistro del 28±9% (range 15-43%). Di questi, il 46% era affetto da cardiomiopatia dilatativa primitiva (DLVC), il 27% su base ischemica, il 18% valvolare ed il 9% (n=1) da una forma mista (valvolare e non ischemica). Buona parte dei pazienti (n=6, 55%) era in classe funzionale NYHA 2, il 36% in NYHA 3 e un paziente (9%) in NYHA 4; un paziente era portatore di dispositivo di assistenza ventricolare sinistra (LVAD). Tutti erano portatori di ICD (82% con resincronizzazione, 9% monocamerale, 9% sottocutaneo con associato Loop Recorder).
La quasi totalità (n=11, 91%) era stata sottoposta ad almeno 1 mappaggio invasivo/procedura ablativa tradizionale (mediana 1, range assoluto tra 1 e 5), in 3 casi anche con approccio epicardico (in 4 casi impedito da pregressa cardiochirurgia), fatto salvo 1 paziente con trombosi endocavitaria.
Quasi tutti i pazienti (92%) erano in amiodarone eccetto uno con pregressa tireotossicosi da farmaco, e 2 (18%) erano stati sottoposti anche a denervazione simpatica cardiaca bilaterale, con persistenza di TV condizionanti interventi dell'ICD (in forma di storm aritmico nel 92%, con necessità di shock nell' 82%). Tutti i pazienti sono stati sottoposti a TC cardiaca pre-STAR, nel 91% dei casi con caratterizzazione tissutale e studio coronarico. Il substrato aritmogeno, ossia la presunta sede di origine della TV clinica recidivante target della STAR, è stato definito in 5 casi tramite sistemi di mappaggio non invasivo (VIVO in 1 caso e Cardioinsight nei restanti), nei restanti tramite mappe della più recente procedura ablativa, con sede epicardica o presunta tale 72% dei casi, settale nel 18%. Non si sono verificate complicanze intra o periprocedurali, con un tempo di trattamento inferiore a 10 minuti.

In un follow up mediano di 8 mesi (IQR 2-20, range 1-28 mesi), la mortalità complessiva è stata del 45% (5/11), prevalentemente dovuta alla selezione di pazienti con insufficienza cardiaca avanzata e non correlata alla procedura. Dei 7 pazienti con follow up fuori dal blanking period (3 mesi), 4 (57%) sono rimasti liberi da aritmie dopo tale periodo.

Conclusioni: La STAR rappresenta una terapia innovativa e promettente per la TV refrattaria, riducendo il carico aritmico con un profilo di sicurezza che sinora, in follow-up di breve/media durata, si è dimostrato favorevole, con significativo potenziale di miglioramento della sintomatologia e della qualità di vita.
Sono necessari studi randomizzati e follow up a lungo termine per consolidare le indicazioni cliniche e valutarne la sicurezza nel lungo periodo e l'impatto sulla sopravvivenza.

ARITMIE 731
ARITMIE VENTRICOLARI (ARITMIE)
MECCANISMI DELLE ARITMIE (ARITMIE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

ABLAZIONE DI TV IN CARDIOPATIA STRUTTURALE AVANZATA, ESPERIENZA DI UN SINGOLO CENTRO

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INTRODUZIONE: L'impatto dell'ablazione transcatetere di tachicardia ventricolare (TV) monomorfa in pazienti affetti da cardiopatia strutturale avanzata, il timing ottimale della procedura e l'indicazione al supporto avanzato del circolo peri-procedurale rimangono da definire. Scopo primario di questo studio è quello di valutare l'efficacia nel medio-lungo periodo dell' ablazione transcatetere di TV nelle cardiopatie strutturali. Obiettivi secondari sono stati: ricercare la presenza di eventuali predittori di efficacia e di sopravvivenza libera da trapianto cardiaco/morte.

METODI: Si tratta di uno studio osservazionale, retrospettivo, monocentrico, in cui sono stati inclusi i pazienti affetti da cardiopatia strutturale avanzata sottoposti ad ablazione transcatetere di TV tra maggio 2015 e maggio 2024. Sono state valutate variabili cliniche e procedurali (incluso lo score PAINESD) e, nel follow-up, le recidive aritmiche, sia isolate che in forma di tempesta aritmica, la mortalità e la necessità di trapianto cardiaco. Le curve di sopravvivenza sono state ottenute secondo il modello di Kaplan-Meier, mentre per l'analisi multivariata è stato impiegato il modello di Cox.

RISULTATI: Sono stati inclusi 76 soggetti (93% maschi, età mediana 67 anni, IQR 60-74) con cardiopatia strutturale (59% con cardiopatia ischemica, 74% portatori di ICD, 29% di CRT-D, 23% con insufficienza renale cronica avanzata), per un totale di 85 procedure, compresi 18 (22%) redu: 21% con approccio endo-epicardico, 4% con assistenza meccanica inclusi 1 ECMO, 1 LVAD e 1 contropulsatore, FE alla procedura 34 ±13%, 33% con insufficienza mitralica≥moderata, 21% con NYHA ≥3, 25% con PAINESD ≥15. La maggior parte dei casi (78%) presentavano storia TV recidivanti (50% storia di storm), 50% erano già in terapia con amiodarone. La durata mediana del follow-up e' stata di 15 mesi (IQR 9-37). La libertà da recidive aritmiche sostenute/trattate a 12 mesi e' stata 65% (80% negli ischemici e 50% nei non ischemici, p=0,02), senza correlazione significativa con la classe di rischio PAINESD. La libertà da tempesta aritmica a 12 mesi e' stata del 91% (95% nei pazienti ischemici e 87% nei pazienti non ischemici, p=0,27).
Due pazienti (3%) sono stati sottoposti a trapianto cardiaco e 20 (27%, sia in cardiopatia ischemica che non ischemica) sono morti durante il follow-up. Abbiamo individuato 3 predittori indipendenti di recidive aritmiche (FE, eziologia non ischemica e inducibilità al SEF preprocedurale di > 2 TV sostenute) e 3 di morte/trapianto (FEVS, età e recidiva post-ablazione in forma di tempesta aritmica). In aggiunta ai 3 pazienti già portatori di supporto al circolo, nessuno ha necessitato supporto meccanico intra o post procedurale, anche in presenza di PAINESD elevato. Lo score di rischio PAINESD, pur risultando correlato con correla con morte/trapianto all'analisi univariata, ha perso di significatività all'analisi multivariata.

CONCLUSIONI: La gestione delle TV monomorfe nei pazienti con cardiopatia strutturale è complessa e i

trattamenti attuali presentano limitazioni. L'ablazione transcatetere, sebbene in grado di ridurre il carico aritmico, ha un'efficacia subottimale nel prevenire recidive a lungo termine, soprattutto nei pazienti con cardiomiopatia non ischemica. Il nostro studio suggerisce che molti pazienti possano evitare il supporto meccanico pre-procedurale con una preparazione adeguata. Sono stati identificati predittori di successo dell'ablazione e di sopravvivenza, sottolineando l'importanza della selezione dei pazienti per ottimizzare i risultati terapeutici.

ARITMIE 715
ARITMIE VENTRICOLARI (ARITMIE)
DEFIBRILLATORE IMPIANTABILE (ARITMIE)
GESTIONE DELLA COMPLICANZE PM / ICD (ARITMIE)
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)
MECCANISMI DELLE ARITMIE (ARITMIE)

FIBRILLAZIONE VENTRICOLARE INDOTTA DA UN ALGORITMO DI AUTOSOGLIA ATRIALE IN UNA PAZIENTE CON LQT3

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Nei pazienti affetti da sindrome del QT lungo (LQTS) i defibrillatori cardiaci impiantabili (ICD) riducono il rischio di morte improvvisa, ma in rare occasioni alcune funzioni o algoritmi possono agire da trigger aritmogeni. Presentiamo il primo caso noto di fibrillazione ventricolare (FV) innescata da un algoritmo di auto-soglia atriale dell'ICD in una paziente con LQT3.

Una donna di 37 anni affetta da LQT3 (mutazione E1784K di SCN5A), portatrice di un ICD bicamerale impiantato nel 2010, nonostante terapia medica ottimizzata con nadololo e mexiletina ha subito negli anni 3 interventi del dispositivo, giudicati come interventi appropriati. Tali episodi sono tutti avvenuti di notte, mentre la paziente stava dormendo. In seguito all'ultimo di questi episodi la paziente si è presentata presso la nostra clinica per una valutazione aritmologica. L'analisi del dispositivo (Fortify Assura DR, Abbott) ha evidenziato un episodio di elevata frequenza ventricolare in finestra FV (292 bpm) terminato con successo da un singolo shock.

In seguito ad una più accurata analisi dei tracciati, è stato riconosciuto un comportamento particolare: l'episodio iniziava con un ritmo interamente spontaneo, bradicardia sinusale a 56 bpm. Successivamente, era riconoscibile un singolo battito elettroindotto, anticipato di circa 200 ms rispetto al ciclo basale, seguito da una extrasistole ventricolare ad accoppiamento breve che portava all'insorgenza dell'episodio di fibrillazione ventricolare.

La presenza sul canale atriale di un doppio spike subito precedente il battito elettroindotto in ventricolo è compatibile con l'attivazione dell'algoritmo di autosoglia atriale (ACap™ Confirm).

Sulla scorta di questa osservazione sono stati analizzati anche gli episodi aritmici precedenti, con l'identificazione di 3 ulteriori episodi di torsione di punta/FV sorprendentemente simili, tutti notturni, insorti immediatamente dopo l'attivazione dell'autosoglia atriale, due dei quali hanno portato a shock mentre il quarto è stato autolimitante. E' da notare che gli episodi descritti costituiscono tutti gli episodi aritmici registrati dal dispositivo negli anni: ognuno degli episodi vissuti dalla paziente è insorto subito dopo l'attivazione dell'autosoglia. E' stata pertanto disattivata l'auto-soglia atriale e ventricolare, impostando uscite fisse e programmazione in DDI 40 bpm per minimizzare la stimolazione ventricolare. In 18 mesi di follow-up non ci sono state recidive aritmiche.

Nella LQTS il fenomeno che più di frequente scatena le aritmie ventricolari è l'R su T, ma simulazioni computerizzate suggeriscono che mentre da un lato sia possibile che tali battiti anticipati siano extrasistoli che casualmente incontrano una regione miocardica in fase di ripolarizzazione ("R to T"), più frequentemente tali battiti siano causalmente legati al battito precedente ("R from T"). Tipico della LQTS è un incremento della dispersione transmurale della durata della ripolarizzazione, dispersione che può essere ulteriormente incrementata da modifiche improvvi-

se della frequenza cardiaca e da pacing artificiale, come in seguito a battiti elettroindotti anticipati, favorendo la comparsa di extrasistoli mediate da early afterdepolarizations, responsabili di fenomeni di R su T ed induzione di aritmie. Nei pazienti con LQT3 e ICD, anche algoritmi ritenuti sicuri possono, in rare circostanze avere effetti proaritmici. In tali pazienti è indicato minimizzare il pacing ventricolare non necessario, privilegiando il pacing atriale, e valutare criticamente la necessità e la frequenza dei test di auto-soglia preferendo il monitoraggio dei parametri di soglia in follow-up programmati.

ARITMIE 120
ABLAZIONE TRANSCATETERE (ARITMIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
STUDI ELETTROFISIOLOGICI INVASIVI (ARITMIE)

ATRIAL FIBRILLATION AND SEVERE PSORIASIS: A CASE REPORT

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Introduction: Atrial fibrillation (AF) is the most common arrhythmia worldwide. Psoriasis is a chronic skin disorder characterized by hyperproliferation of keratinocytes. Recently, a significant association has been found between the onset of atrial fibrillation and psoriasis.

Case report: A 39-year-old man with a long history of psoriasis vulgaris presented to the Emergency Department complaining of palpitations and dyspnea. The physical examination showed mild signs of heart failure and generalized red scaling plaque and papules on his chest, shoulders, arms, abdomen, neck and red-violaceous erythema widespread on the back. Electrocardiogram showed atrial fibrillation with rapid ventricular response. The transthoracic echocardiogram showed left ventricle ejection fraction severely reduced and left atrium dimensions increased. Transesophageal echocardiogram was performed and the presence of thrombosis has been ruled out. An attempt of pharmacological cardioversion failed. Therefore, an electrical cardioversion was performed but it was followed by an early recurrence of AF. A coronary angiography showed normal epicardial coronary arteries. In the hypothesis of AF-induced-cardiomyopathy, the patient underwent a procedure of transcatheter ablation with pulmonary vein isolation. The patient was also started on oral therapy for treatment of psoriasis with methotrexate. At the follow-up after 6 months, the patient was asymptomatic and with normal sinus rhythm. The echocardiogram showed normal left ventricle ejection fraction and normal left atrial dimensions.

Discussion: AF is one of the most prevalent heart rhythm disorders. Recent evidence has linked inflammatory mechanisms in the pathogenesis of AF, demonstrated by the infiltration of inflammatory cells into atrial tissue and elevated circulating levels of inflammatory biomarkers and oxidative stress markers. Psoriasis is a chronic inflammatory skin disease with a strong genetic predisposition and autoimmune features. Persistent inflammation lead to excessive keratinocyte proliferation and abnormal differentiation.
Elevated levels of inflammatory biomarkers promote immune cell infiltration, oxidative stress, and fibrosis. These factors contribute to atrial remodeling, leading to the structural and electrical changes that characterize AF. Due to increased risk of AF in psoriasis patients, particularly those with severe psoriasis, their management should include careful cardiovascular monitoring.

ARITMIE 638
ARITMIE VENTRICOLARI (ARITMIE)
ABLAZIONE TRANSCATETERE (ARITMIE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

EARLY VERSUS VERY LATE RECURRENCE OF VENTRICULAR TACHYCARDIA IN DILATED CARDIOMYOPATHY: RESULTS FROM A SINGLE-CENTER STUDY

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Background. This study examined whether the VT recurrence following scar homogenization was due to progression of the disease after successful ablation or incomplete ablation during the index procedure, in patients with dilated cardiomyopathy (DCM).

Methods: Consecutive DCM patients undergoing their first VT ablation were prospectively followed up. All patients underwent bipolar substrate mapping with standard scar setting of <1.5 mV and severe scar <0.5 mV. Unipolar voltage maps were also obtained, with <8.3 mV cut off for abnormal tissue. Endocardial scar homogenization was performed first followed by epicardial ablation. Recurrence within 12 months was considered as early recurrence.

Results: A total of 371 DCM patients were followed up for 5 years after first procedure, of which 106 (28.7%) experienced recurrence. Of the 106, 32 (30.2%) received repeat ablation at 5.14 ± 1.62 months (early recurrence) and the remaining 74 patients had the redo at 32.04 ± 7.18 months (late recurrence). In these 106 patients, mean LVEF was significantly lower at redo (pre-index 36.1 ± 9.87; pre-redo 30.9 ± 8.11%, p<0.001). In the early recurrence group, 28 (87.5%) had ablation sites located within the index scar (incomplete ablation) and 5 (15.6%) had extension of the scar area (disease progression) detected. In the late recurrence cohort, extension of the index scar area was detected in 28 (37.8%) and new scar were mapped in 57 (77%); incomplete ablation was detected in none.

Conclusion: In DCM patients, early VT recurrence was mostly associated with incomplete ablation, whereas disease progression was prevalent in patients with very late recurrence.

ARITMIE 241
ABLAZIONE TRANSCATETERE (ARITMIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
STUDI ELETTROFISIOLOGICI INVASIVI (ARITMIE)
MECCANISMI DELLE ARITMIE (ARITMIE)
ARITMIE SOPRAVENTRICOLARI (ESCLUSA FA) (ARITMIE)

MODIFICAZIONE DELLE CONNESIONNI INTER-ATRIALI E DEI FRONTI DI COLLISIONE DOPO ISOLAMENTO DELLE VENE POLMONARI TRAMITE ELETTROPORAZIONE

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Introduzione: Recenti studi, attraverso il mappaggio ad alta densità bi-atriale hanno dimostrato che, in ritmo sinusale, l'attivazione atriale e la conduzione dell'impulso elettrico tra i due atri seguono pattern variabili ed ha identificato due possibili fronti di collisione nell'atrio sinistro (AS): all'istmo mitralico e nella parte posteriore del tetto (dome). Pertanto, è stato suggerito che, nelle procedure di ablazione di Fibrillazione Atriale (FA), le linee di ablazione in aggiunta all'isolamento delle vene polmonari (IVP) vengano eseguite nelle aree sede dei suddetti fronti di collisione per rispettare la normale attivazione AS, evitare ripercussioni sull'emodinamica atriale e fenomeni di pro-aritmia (sviluppo di FLA atipici). Tuttavia, non è ancora chiaro se l'IVP mediante elettroporazione (PFA) modifichi l'attivazione bi-atriale ed il numero e la sede di collisione dei fronti d'onda in AS.

Metodi: Per questo studio sono stati presi in esame 5 pazienti con fibrillazione atriale parossistica senza segni di sostituzione fibrotica in sede atriale. Per ogni paziente è stata eseguita una mappa di attivazione bi-atriale pre e post-PVI mediante PFA; 3 pazienti sono stati mappati con sistema RYTHMIA e 2 con sistema CARTO.

Risultati: In 3 pazienti Il passaggio dell'impulso dall'atrio destro (AD) all'AS, nella mappa basale, è avvenuto attraverso il fascio di Bachmann (FB) e negli altri 2 attraverso i fascicoli posteriori (FP) (superiore ed inferiore). I 3 pazienti, che presentavano connessione interatriale attraverso il FB, mostravano linee di collisione in AS lungo il dome, al contrario gli altri due pazienti presentavano fusione dei due fronti d'onda a livello dell'ostio della vena polmonare superiore di destra; tutti e 5 i pazienti presentavano una linea di collisione in corrispondenza dell'istmo mitralico. L'IVP mediante PFA ha determinato i seguenti cambiamenti nella modalità di trasmissione dell'impulso interatriale: attivazione dell'AS post-IVP attraverso il FB nei pazienti che presentavano, pre-IVP, attivazione dell'AS attraverso i FP. Nessuna modifica nei pazienti con connessione interatriale, pre-IVP, attraverso il FB. Relativamente alle modificazioni dei fronti di collisione: nei soli pazienti che presentavano attivazione dell'AS, pre-IVP, attraverso i FP, è stata osservata, non più la fusione dei due fronti d'onda, ma la collisione dei due fronti d'onda in corrispondenza del dome. Non è stata osservata nessuna modificazione della linea di collisione in corrispondenza dell'istmo mitralico post-PVI.

Conclusioni: L'IVP tramite PFA determina modificazioni nella modalità di trasmissione dell'impulso interatriale e nella presenza e localizzazione dei fronti di collisione in AS nei pazienti con attivazione basale attraverso i FP. Al contrario, nei pazienti con attiva-

zione basale attraverso il FB non sono state registrate sostanziali modificazioni, pre e post-IVP, nell'attivazione dell'AS e nella distribuzione dei fronti di collisione. È pertanto ipotizzabile che l'IVP comporti la lesione dei FP lasciando inalterate le capacità conduttive del FB. Questi risultati suggeriscono l'opportunità di una rivalutazione, in un particolare sottogruppo di pazienti, delle sedi più idonee all'esecuzione di linee di lesione dopo l'IVP per rispettare una fisiologica attivazione elettrica e meccanica dell'AS, evitare ripercussioni negative sull'emodinamica atriale e fenomeni di pro-aritmia (sviluppo di FLA atipici).

ARITMIE 243
ELETTROCARDIOGRAFIA/ CARDIOVERSIONE/ DEFIBRILLAZIONE (ARITMIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
FARMACI ANTIARITMICI (ARITMIE)

IMPATTO PROGNOSTICO DELLA CARDIOVERSIONE SPONTANEA IN PAZIENTI CON FIBRILLAZIONE ATRIALE PAROSSISTICA SINTOMATICA

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Introduzione: La fibrillazione atriale (FA) è una patologia sottesa da rimodellamento anatomico-funzionale dell'atrio sinistro; tale progressivo rimodellamento determina nel tempo il passaggio della patologia da parossistica (FAP) a persistente/permanente (FAPe). La progressione è associata ad un maggior rischio di complicanze cardiovascolari (CV) e di ospedalizzazione. Individuare pazienti che presentano un maggior rischio di progressione della FA permetterebbe di intraprendere precocemente terapie per il controllo del ritmo, limitando la progressione della malattia e le complicanze associate. La cardioversione spontanea (CVS) in ritmo sinusale (RS) potrebbe riflettere la qualità del substrato atriale e la probabilità di progressione della malattia. Tuttavia, la relazione tra CVS e burden/progressione della FAP non è stata ancora dimostrata.

Obiettivi: Evidenziare il significato prognostico della CVS in RS in pazienti con FAP di nuovo riscontro, sintomatica ed emodinamicamente stabile.

Metodi: Lo studio si basa su una popolazione composta da 158 pazienti che accedevano presso il pronto soccorso (PS) dell'ospedale Policlinico Umberto I con diagnosi di FAP di nuovo riscontro, sintomatica ed emodinamicamente stabile. La popolazione dello studio è stata divisa in un gruppo composto da 106 pazienti che non hanno sperimentato CVS (non-CVS) e che sono stati sottoposti a cardioversione farmacologica (CVF) (n=45, 42.5%), elettrica (CVE) (n=31, 29,2%) od entrambe (n=30, 28.3%) ed un gruppo di 52 pazienti che hanno sperimentato CVS di FA in RS entro le 6 ore dall'ingresso in PS.
Le popolazioni sono state sottoposte a propensity score matching (PSM) per ridurre il rischio di bias, ottenendo un totale di 104 pazienti (52 con CVS vs 52 non-CVS). Questi pazienti sono stati seguiti per un follow-up (FU) mediano di 519 giorni. L'outcome primario dello studio è un outcome composito di progressione in FAPe, prescrizione di nuovi farmaci antiaritmici (FAA), ablazione di FA, CVF/CVE durante il follow-up. Gli outcome secondari includono il numero di episodi di FA durante il FU e ogni singolo componente dell'outcome composito primario.

Risultati: Nella popolazione unmatched nel gruppo non-CVS si è osservato un minor tasso di precedenti CVS (p-value 0.008), maggior tasso di precedenti CVE/CVF (p-value < 0.001) ed un maggior tasso di episodi di FA (p-value 0.05). Durante il FU, nella popolazione unmatched, non si sono trovate differenze significative tra i due gruppi per quanto riguarda l'outcome primario (p-value 0.884) e secondario. Nella popolazione PSM l'outcome primario risulta più rappresentato nel gruppo non-CVS (41) rispetto al gruppo CVS (21) (p-value <0.001) con maggior burden di FA (27 CVS vs 49 non-CVS, p-value < 0.001), maggior tasso di CVF/CVE (p-value 0.008) e di ablazione transcatetere, (7 in SCV vs 15 in non-SCV, p-value 0,05). Non si sono osservate differenze tra le due popolazioni per quanto riguarda progressione della FA (p-value 0.484) e prescrizione di nuovi FAA (p-value 0.525).

Conclusioni: In pazienti con FAP, la CVS in RS entro le 6 h dall'accesso in PS si associa ad un minor numero di episodi di FA e minore necessità di ripristino del RS invasivo attraverso CVE, CVF o ablazione transcatetere rispetto alla popolazione non-CVS.

ARITMIE 64
INTELLIGENZA ARTIFICIALE (TELECARDIOLOGIA ED E-HEALTH)
TELEMEDICINA IN CARDIOLOGIA (TELECARDIOLOGIA ED E-HEALTH)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
SINCOPE (ARITMIE)

OTTIMIZZAZIONE DEI FALSI ALLARMI AI LOOP RECORDER CON INTELLIGENZA ARTIFICIALE: IMPATTO SULL' ACCURATEZZA DIAGNOSTICA E SUL CARICO CLINICO IN FUNZIONE DELL' AMPIEZZA DELL' ONDA R

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Titolo: Ottimizzazione degli allarmi dei Loop Recorder con Intelligenza Artificiale: impatto sull'accuratezza diagnostica e sul carico clinico in funzione dell'ampiezza dell'onda R

Background: Gli alert falsi positivi (FP) generati dai loop recorder impiantabili (ILR) rappresentano una criticità nella gestione del monitoraggio remoto (RM), aumentando il carico di lavoro clinico. AccuRhythm™ AI, un algoritmo basato su intelligenza artificiale (AI), è stato progettato per ridurre questi FP nei dispositivi Reveal Linq™ e LINQ II™. Lo studio ha valutato l'efficacia dell'algoritmo nella pratica clinica reale, con particolare attenzione all'ampiezza dell'onda R come fattore predittivo di accuratezza dell'AI.

Metodi: Studio retrospettivo multicentrico su 800 pazienti portatori di Reveal Linq™ o LINQ II™, con valutazione di tutti i report automatizzati AI. Nei pazienti con Reveal Linq™, è stata effettuata un'analisi "pre-post" AI a livello individuale. È stato inoltre analizzato il rapporto tra ampiezza dell'onda R e incidenza di FP.

Risultati: L'AI ha ridotto del 62% i falsi allarmi per pause e del 33% quelli per fibrillazione atriale, con un risparmio stimato di 210 ore di lavoro clinico in 6 mesi. Nei pazienti con Reveal Linq™ (n=465), la percentuale di FP+ è scesa dal 55.5% al 15.1% dopo l'upgrade AI ($p<0.001$), risparmiando ulteriori 1.128 ore di lavoro stimato per il RM. Tutti i FP residui si sono verificati in soggetti con ampiezza dell'onda R <0.4 mV. La regressione di Poisson ha confermato un'associazione inversa tra ampiezza dell'onda R e incidenza di FP (IRR per mV: 0.016; $p<0.001$).

Conclusioni: L'adozione dell'AI nei loop recorder ha determinato una rilevante riduzione dei FPs e del carico clinico, mantenendo l'accuratezza diagnostica. Tuttavia, un sensing ottimale dell'onda R resta cruciale per massimizzare l'efficacia dell'algoritmo, sottolineando l'importanza delle tecniche d'impianto anche nell'era dell'intelligenza artificiale.

Parole chiave: Intelligenza artificiale, loop recorder, falsi positivi, monitoraggio remoto, onda R

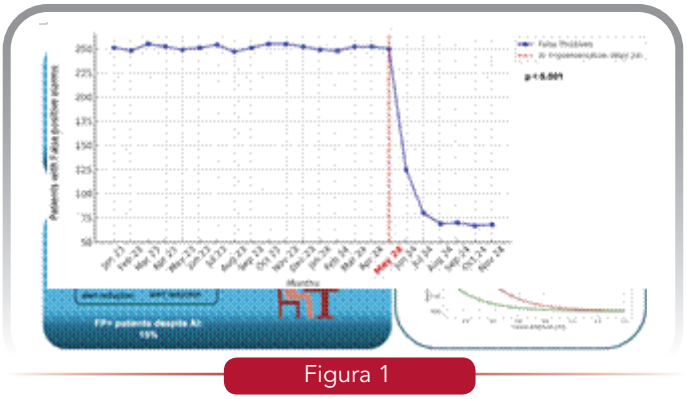


Figura 1

ARITMIE 65
TELEMEDICINA IN CARDIOLOGIA (TELECARDIOLOGIA ED E-HEALTH)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
ARITMIE SOPRAVENTRICOLARI (ESCLUSA FA) (ARITMIE)
SINCOPE (ARITMIE)
ARITMIE VENTRICOLARI (ARITMIE)

DURATA OTTIMALE DEL MONITORAGGIO CON LOOP RECORDER: LA SINDROME DI BRUGADA COME ECCEZIONE

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Background: I loop recorder impiantabili (ILR) sono strumenti efficaci per la diagnosi di aritmie, ma la durata ottimale del follow-up rimane incerta. È particolarmente rilevante stabilire quando interrompere il monitoraggio nei diversi sottogruppi clinici, per ottimizzare le risorse sanitarie.

Obiettivi: Valutare il tempo alla diagnosi e il rendimento clinico degli ILR in base all'indicazione clinica, identificando i pazienti che potrebbero trarre beneficio da un monitoraggio prolungato oltre i 25 mesi.

Metodi: Studio retrospettivo multicentrico su 1.500 pazienti sottoposti a impianto di ILR per sincope, palpitazioni, ictus criptogenico o sindrome di Brugada. Sono stati analizzati tempo alla diagnosi, eventi clinici rilevanti per indicazione e numero necessario da monitorare (NNF). Il punto di cut-off ottimale di 25 mesi è stato individuato tramite statistiche di rango massimale.

Risultati: La maggior parte delle diagnosi si è verificata entro i 25 mesi per sincope (NNF: 3.54 vs ∞), palpitazioni (NNF: 4.26 vs 25.33) e ictus (NNF: 5.88 vs 19.07), con significativa riduzione del rendimento oltre tale soglia (tutti p<0.001). Al contrario, nei pazienti con sindrome di Brugada, il tasso di eventi si è mantenuto costante oltre i 25 mesi (NNF: 9.82 vs 10.01; p=0.815), con riscontro tardivo di tachicardie ventricolari e pause.

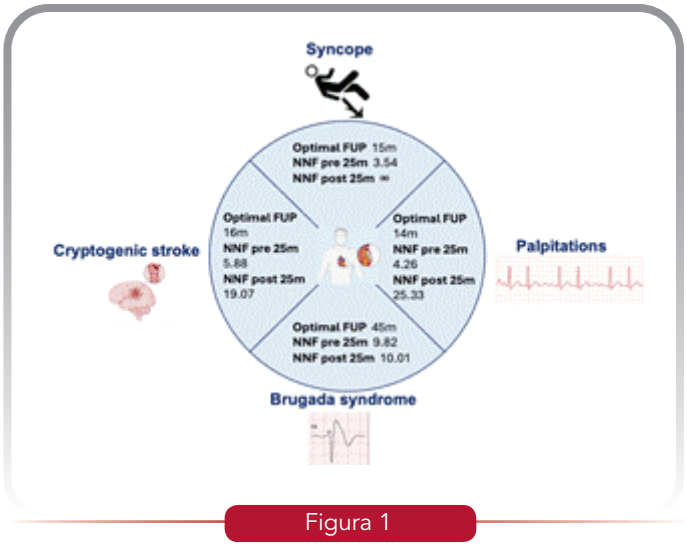


Figura 1

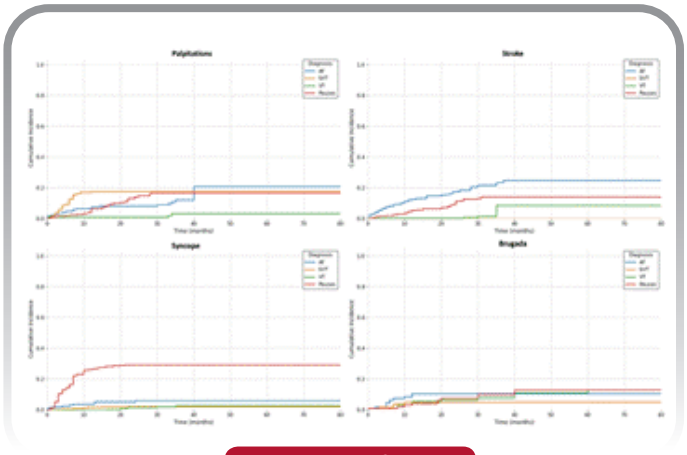


Figura 2

Conclusioni: Il monitoraggio con ILR può essere limitato a 14–16 mesi nella maggior parte delle indicazioni (sincope, palpitazioni, ictus) senza perdita di efficacia diagnostica. Tuttavia, nei pazienti con sindrome di Brugada, il beneficio del monitoraggio prolungato è confermato e giustifica un follow-up esteso.
Questo studio supporta un approccio personalizzato alla durata del monitoraggio con ILR, migliorando l'efficienza clinica e l'utilizzo delle risorse.

Parole chiave: Loop recorder, monitoraggio aritmico, sincope, Brugada, ictus criptogenico, durata ottimale, diagnosi

ARITMIE 95
ABLAZIONE TRANSCATETERE (ARITMIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
MECCANISMI DELLE ARITMIE (ARITMIE)

VEIN OF MARSHALL ETHANOL INFUSION RELATED LESION DURABILITY: LOOKING FOR THE REAL SCAR

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INTRODUCTION. Vein of Marshall ethanol infusion (VOM-EI) in patients with AFib triggers local injury which may increase the subsequent radiofrequency catheter ablation (RFCA) success rate in persistent atrial fibrillation (PeAF).
The long-term durability of VOM-EI induced low-voltage area (LVA), might condition the success of RFCA after VOM-EI. We hypothesized that the amount of LVA after VOM-EI decreases over time.

METHODS. Consecutive patients with recurrent PeAF and no history of previous ablation were enrolled in this prospective, center-cluster, case-control study. In the experimental group, RFCA was performed 1 month after VOM-EI. In the control group, VOM-EI and RFCA were performed concomitantly.
The primary endpoint was the bipolar VOM-EI LVA measured immediately prior to RFCA.

RESULTS. We studied 80 consecutive patients who met the inclusion criteria. The two groups did not differ in baseline characteristics. The mean bipolar VOM-EI-LVA measured before RFCA was significantly smaller in the 40 patients who underwent VOM-EI 1 month earlier than in the group of 40 patients who underwent the standard procedure (2.6±2.4 vs. 10.0±7.0 cm^2, p=0.012). At a mean follow-up of 19.6±7.3 months, freedom from AF/AT recurrences were promisingly higher in the investigational group compared to the control group (90.0% vs. 82.5%).

CONCLUSION. These data suggest that the endocardial newly-formed lesion induced by VOM-

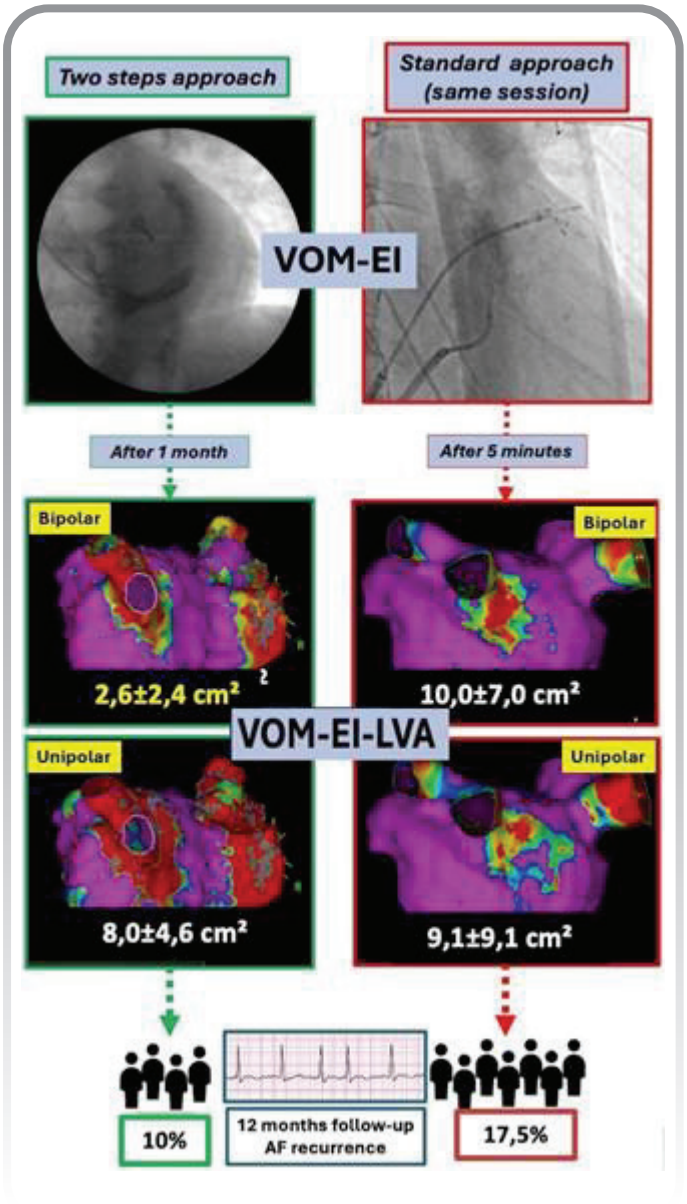


Figure 1

EI decreases over time probably for to progressive resolution of perilesional oedema. These results merit larger studies testing the hypothesis that postponing RFCA one month after VOM-EI may increase its effectiveness in terms of fewer recurrences of atrial fibrillation.

ARITMIE 1059
ARITMIE VENTRICOLARI (ARITMIE)
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)

MAD WITH HIGH ARRHYTHMIC RISK: 5 CASE REPORTS

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(c) ASST G.O.M. NIGUARDA

Introduction: itral annular disjunction (MAD) is defined as the separation between the mitral annulus and the left ventricular myocardium. It may simulate a "pseudo-MAD," where the mitral leaflet is close to the atrial wall without true separation. Once considered rare, its prevalence is now estimated to be up to 96% thanks to magnetic resonance imaging and CT. Mitral valve prolapse (MVP) is the most common valvulopathy in the West: generally benign, but associated with a twofold higher risk of sudden cardiac death compared to the general population. In about 4% of cases, severe ventricular arrhythmias occur.
The presence of MAD in MVP represents a strong arrhythmic risk factor, especially when associated with myocardial fibrosis documented by MRI.

Case series: Five patients with MAD and high-risk ventricular arrhythmias are described, who underwent implantable cardioverter-defibrillator (ICD) placement. The main characteristics are reported in Table 1.

Discussion: MAD causes excessive mobility of the mitral annulus and curling of the myocardium, promoting papillary hypertrophy, fibrosis, and arrhythmias. The risk increases in the presence of fibrosis and ECG abnormalities (inverted T waves, frag-

AGE	GENDER	ONSET SYMPTOMS	ECG	ARRHYTHMIAS	RMI	SEF
50	M	Pre-Syncope after exercise	-	-TVS	- MAD 4 mm - No fibrosis	Performed Negative
58	M	Syncope	- T negative inferior wave	-TVNS	- MAD 5 mm - No fibrosis	Not performed
43	F	-	- Low peripheral voltages - T negative inferior wave	- TVNS	- MAD 7 mm - LGE inferolateral papillary	Not performed
33	F	-	Spontaneous Brugada pattern type 1	- No	- MAD 6 mm - TAD 4 mm - LGE Posterior medial papillary	Performed, positive
70	M	-	-	- TVS	- MAD 8 mm - LGE settal	Performed, Negative

Table 1

mented QRS, NSVT). Multimodality imaging (echo + MRI) is crucial for diagnosis and arrhythmic risk stratification.

Therapy: Options include antiarrhythmic drugs (e.g., beta-blockers, flecainide), ablation, and ICD implantation. Mitral valve surgery reduces arrhythmias, but does not always eliminate the need for an ICD.

Conclusions: MAD should not be considered merely an anatomical variant, but a possible arrhythmogenic cardiomyopathy. A multimodal and personalized risk assessment is necessary. Larger prospective studies are essential to clarify the mechanisms and possible genetic basis.

ARITMIE 1006
ELETTROSTIMOLAZIONE (ARITMIE)
GESTIONE DELLA COMPLICANZE PM / ICD (ARITMIE)
TERAPIA DI RESINCRONIZZAZIONE (ARITMIE)

UNINTENTIONAL SEPTAL ARTERY ENTRY DURING LEFT BUNDLE BRANCH AREA PACING

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(b) DIPARTIMENTO DI SCIENZE CLINICHE INTERNISTICHE ANESTESIOLOGICHE E CARDIOVASCOLARI
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Introduction: Left bundle branch area pacing (LBBAP) is a novel pacing technique that preserves ventricular synchrony and reduces the risk of pacing-induced cardiomyopathy, particularly in patients with high expected ventricular pacing burden (1). However, deep lead placement within the interventricular septum may occasionally lead to unexpected findings.

Case Description: A 70-year-old woman with a history of hypertension presented with advanced atrioventricular block. She had no other significant cardiac history. Baseline echocardiography revealed a left ventricular ejection fraction of 52%. Given an anticipated pacing burden exceeding 20%, LBBAP was selected. Venous access was obtained via fluoroscopically guided puncture of the left axillary vein, and a Medtronic SelectSecure 3830 lead (Medtronic, Minneapolis, MN) was delivered using a C315HIS sheath.
Septal mapping was performed by pacing the right ventricular septum and observing a W pattern in lead V1 with a discordant pattern in leads II and III. The lead was advanced until the notch from the nadir of the QRS in V1 ascended and evolved into a terminal R wave. To assess septal penetration depth, contrast injection was performed in the right anterior oblique (RAO) projection. Unexpectedly, this revealed opacification of the left anterior descending artery and a septal perforator branch, indicating inadvertent vascular entry of the pacing lead (Video 1).
The lead was promptly unscrewed and repositioned in a more proximal septal location. Final electrical parameters were satisfactory: paced RBBB morphology, paced V6 R59 wave peak time 70 ms, sensing 10 mV, threshold 1.2 V @ 0.4 ms, impedance 900 Ω.
The patient remained asymptomatic. Transthoracic echocardiography performed post61 procedure showed no pericardial effusion or septal hematoma. Follow-up echocardiography at 1 month confirmed preserved LV function and stable lead performance.
The interventricular septum is supplied by small perforating branches of the left anterior descending artery. During deep septal lead deployment, unintentional contact with these vessels may occur, particularly when the lead trajectory is directed too anteriorly.
Contrast injection in RAO or LAO projections can promptly reveal vascular staining and confirm the nature of the finding. To the best of our knowledge, this is the first published case to provide direct angiographic documentation of opacification of the left anterior descending artery and its septal perforator branch during LBBAP. While previous reports have described septal hematoma as a possible consequence (2,3), these cases resolved spontaneously within weeks and without significant sequelae. Our case reinforces the notion that such findings are generally benign when promptly recognized and appropriately managed.

ARITMIE 367
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
MECCANISMI DELLE ARITMIE (ARITMIE)
ELETTROCARDIOGRAFIA/ CARDIOVERSIONE/ DEFIBRILLAZIONE (ARITMIE)

WHEN SODIUM IS THE CULPRIT: HYPONATREMIA-INDUCED REPOLARIZATION ABNORMALITIES

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(b) CARDIOLOGY UNIT, "MADONNA DELLE GRAZIE" HOSPITAL, MATERA

Case description: A 74-year-old woman, active smoker with paroxysmal atrial fibrillation and hypercholesterolemia, presented with profound asthenia and loss of appetite for ~1 month. Emergency-department ECG showed diffuse T-wave inversion (I, II, aVL, V4), giant negative T waves in V5–V6, and a markedly prolonged QTc (610 ms), absent on a prior tracing. The differential diagnosis included hypokalemia, intracranial hemorrhage, acute myocardial infarction, and electrolyte disorders.

Investigations: Blood tests revealed severe hyponatremia (Na^+ 112 mmol/L; normal 136–145) with other electrolytes within normal limits (K^+, Cl^-, Ca^{2+}, Mg^{2+}). Transthoracic echocardiography showed normal biventricular size and systolic function, normal valves, atrial dimensions, aortic root and ascending aorta, and no pericardial effusion. Non-contrast head CT was unremarkable.

Management and outcome: Gradual correction of serum sodium led to progressive normalization of ventricular repolarization with QTc shortening and resolution of T-wave inversion.

Conclusions: Severe hyponatremia can mimic ischemia on ECG, producing diffuse T-wave inversion and marked QTc prolongation in the absence of structural heart disease. In patients with repolarization abnormalities and long QT—especially with nonspecific symptoms—prompt assessment of serum electrolytes, including sodium, is essential for accurate diagnosis and timely treatment.

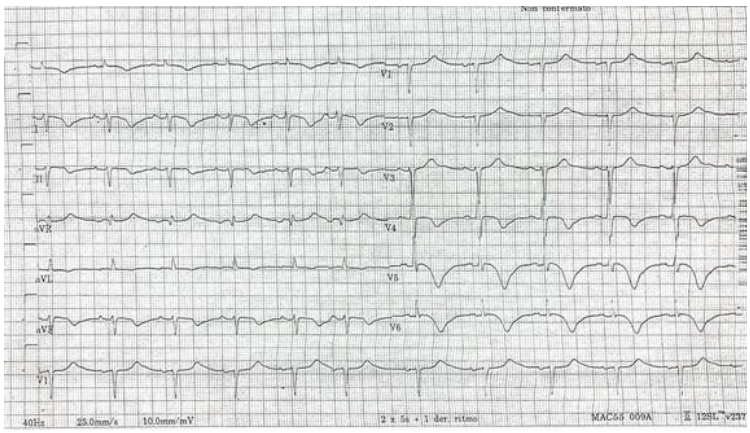


Figure legend (ECG). Initial tracing: diffuse T-wave inversion and QTc 610 ms.

Figure 1

ARITMIE 370
ARITMIE SOPRAVENTRICOLARI (ESCLUSA FA) (ARITMIE)
MECCANISMI DELLE ARITMIE (ARITMIE)
ELETTROCARDIOGRAFIA/ CARDIOVERSIONE/ DEFIBRILLAZIONE (ARITMIE)

WHEN ST BEATS THE R: TROMBSTONE STEMI SIGNALING PROXIMAL LAD OCCLUSION

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ECG Diagnosis: Acute ST-elevation myocardial infarction (STEMI) with "tombstone" ST morphology in the anterior leads.

Case description: A 70-year-old man, active smoker with hypertension and hypercholesterolemia, presented to the emergency department with 2 hours of crushing chest pain and profuse sweating. The 12-lead ECG showed extensive ST-segment elevation with a "tombstone" appearance from V1 to V5. Differential considerations included hyperkalemia, paced rhythm, and ventricular tachycardia; however, the ECG pattern and clinical picture were most consistent with acute anterior STEMI.

ECG features: "Tombstone" ST elevation is characterized by: (a) absent or very small R waves (R duration <0.04 s), (b) an ascending, convex ST segment that merges with the descending limb of R or the ascending limb of QS/QR, (c) an ST peak higher than the R wave, and (d) fusion of the ST segment with a broad T wave.
This morphology reflects extensive transmural ischemia and portends large infarct size, depressed



Figure legend (ECG). Presentation ECG with massive, upward-convex ST-segment elevation V1–V5, loss of R waves, ST peak exceeding R amplitude, and ST–T fusion—classic "tombstone" morphology of extensive anterior STEMI.

Figure 1

LV function, high risk of cardiogenic shock, and poor prognosis.

Management and outcome: Emergent coronary angiography revealed a proximal occlusion of a wrap-around left anterior descending (LAD) artery.
Primary PCI with stent implantation was performed under mechanical circulatory support (Impella). Despite revascularization, the patient developed pulseless electrical activity (electromechanical dissociation) and died.

Conclusions: The "tombstone" ST-elevation pattern in the anterior leads signifies a catastrophic anterior STEMI—typically proximal LAD occlusion—and mandates immediate reperfusion therapy; even with timely PCI and MCS, mortality remains high.

ARITMIE 393
ARITMIE SOPRAVENTRICOLARI (ESCLUSA FA) (ARITMIE)
ELETTROCARDIOGRAFIA/ CARDIOVERSIONE/ DEFIBRILLAZIONE (ARITMIE)
MECCANISMI DELLE ARITMIE (ARITMIE)

MINUTES AFTER BIRTH: ACCESSORY-PATHWAY-MEDIATED NEONATAL SVT TERMINATED BY ADENOSINE

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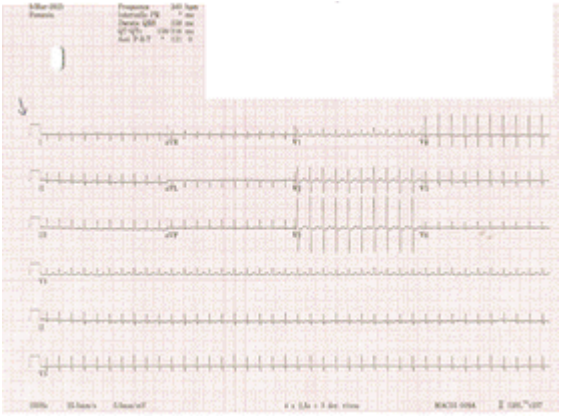
Background. Supraventricular tachycardia (SVT) is the most common neonatal arrhythmia. Rapid recognition and targeted therapy are essential to avert hemodynamic compromise and prevent tachycardia-induced cardiomyopathy.

Case. A term female neonate (3.4 kg; Apgar 9/10) developed sustained narrow-complex tachycardia at 240 bpm within minutes of birth. Vagal maneuvers failed. Intravenous adenosine (0.2 mg/kg) abruptly restored sinus rhythm and unmasked a short PR interval (80 ms). Echocardiography and laboratory testing were unremarkable. During tertiary-center monitoring no recurrences occurred; prophylactic oral flecainide (2 mg/kg/day) was initiated.
At two months, the infant remained asymptomatic with sinus rhythm (PR 98 ms).

Interpretation. Immediate adenosine termination, coupled with a persistently short PR, strongly supports orthodromic atrioventricular re-entrant tachycardia via an accessory pathway (probable WPW physiology). In this age group, AVNRT is uncommon and does not explain marked PR shortening; atrial flutter typically shows saw-tooth activity and is seldom terminated by adenosine; focal atrial tachycardia usually displays warm-up/cool-down and rarely stops abruptly.

Management and implications. Adenosine is both diagnostic and therapeutic in neonatal SVT, helping reveal concealed pre-excitation that informs risk stratification. Current pediatric practice favors inpatient observation after a first episode and selective prophylaxis; flecainide is effective for early-life recurrence prevention.
Electrophysiological study/ablation is generally deferred unless drug-refractory recurrences, drug intolerance, or high-risk pre-excitation persists.

Conclusion. This case underscores that prompt ECG-based diagnosis and adenosine-guided management enable safe early stabilization of neonatal accessory-pathway–mediated SVT, with excellent short-term outcomes.



Twelve-lead ECGs. (A) Presentation: sustained narrow-complex SVT at ~240 bpm. (B) Post-adenosine conversion: sinus rhythm with short PR interval (80 ms). Follow-up at two months confirmed sinus rhythm with PR 98 ms (not shown).

Figure 1

ARITMIE 755
ELETTROSTIMOLAZIONE (ARITMIE)
ELETTROCARDIOGRAFIA/ CARDIOVERSIONE/ DEFIBRILLAZIONE (ARITMIE)
TERAPIA DI RESINCRONIZZAZIONE (ARITMIE)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)

THE CHALLENGE OF NARROWING THE QRS COMPLEX BY CONDUCTION SYSTEM PACING: REPORT OF A PRELIMINARY EXPERIENCE

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(a) UNIVERSITÀ DEGLI STUDI DELL'INSUBRIA; (b) OSPEDALE DEL CIRCOLO E FONDAZIONE MACCHI VARESE

Background. Over the past few years, remarkable progress in pacing strategies has been achieved, with an increasing emphasis on conduction system pacing (CSP) to minimize pacing-induced cardiac dysfunction.

Aim. To evaluate the change in QRS duration during left bundle branch area pacing (LBBAP) compared to baseline.

Methods. Between August 2022 and May 2025, consecutive patients implanted with a LBBAP in our Center according to the established indications were considered regardless of the type of ventricular lead used and underlying heart disease. Implantation was considered successful if correct LBBAP capture was confirmed by predefined parameters, such as left ventricular activation time (LVAT), and the RV6RV1 interpeak interval, a QRS duration reduction of at least 10 ms, and a QRS morphology rsr' or rsR' in V1. For the purpose of our study, we assessed QRS duration prior to device implantation and immediately after implantation. The QRS duration was measured on ECG monitor with sweep speed of 50 mm/sec.

Results. The study population consisted of 23 patients (19 males, 82%), with a mean age of 78±12.1 years old (range 73-81) and a mean left ventricular ejection fraction of 46±12.1% (range 32-60%). Intraventricular conduction disturbances were frequently observed at baseline (13/23 patients, 56.7%), with left bundle branch block (LBBB) being the most common (11/13, 85%). Twenty-one patients (91%) were successfully implanted with a certified CSP system: 14 patients received dual-chamber pacemaker, 6 single-chamber devices, and 1 underwent CSP combined with an internal cardioverter/defibrillator lead as an alternative to chronic resynchronization therapy (CRT). The remaining 2 patients underwent conventional right ventricular mid-apical septal pacing due to unsuccessful access to the left bundle branch area. In the table, the variations in QRS duration is reported both in the general population and in the subgroup with intraventricular conduction disturbances. A statistically significant reduction in QRS duration was observed in both groups, being more remarkable in the second group in which a 25% reduction in the average value of QRS duration was observed.

Conclusions. LBBAP represents an advanced pacing strategy associated with a significantly shorter QRS complex duration compared to baseline. Narrowing of QRS complex can be achieved also in patient with intraventricular conduction disturbances, most of them presenting with LBBB

	Number of patients	Mean baseline QRS duration (ms)	Mean QRS paced duration (ms)	p value
Overall population	23	127.6 ± 34.4	108.8 ± 13.2	0.015
Patients with wide QRS complex at baseline	13	148.5 ± 24.4	111.6 ± 15.9	0.0014

Table 1

ARITMIE 288
ELETTROCARDIOGRAFIA/ CARDIOVERSIONE/ DEFIBRILLAZIONE (ARITMIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
ABLAZIONE TRANSCATETERE (ARITMIE)

ATRIAL FIBRILLATION IN THE ELDERLY. CLINICAL COMPLEXITY AND FRAILTY: A PRELIMINARY ANALYSIS OF THE CAFFE STUDY

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Background: Atrial fibrillation (AF) is the most common arrhythmia in the elderly. Its management in older patients remains controversial, particularly regarding the choice between rate-control and rhythm-control strategies. To address this issue, the CAFFE Study ("Cardioversion of Atrial Fibrillation and Frailty in the Elderly") was designed as a prospective, observational, multicentric study aimed at providing insights for selecting the most appropriate treatment in this complex population. Frailty and disability significantly complicate the management of elderly patients. The aim of this preliminary analysis, conducted on the still ongoing CAFFE cohort, was to assess the combined role of a clinical complexity indicator (CHA_2DS_2-VA) and a tool specifically developed to measure frailty and disability, the FiND ("Frail Non-Disabled") questionnaire.

Methods: Patients with persistent AF enrolled in the CAFFE Study were assessed through standard cardiological evaluations as well as Comprehensive Geriatric Assessment.
Alongside MMSE, GDS-15, and SPPB, the FiND questionnaire was administered, which consists of five items: two exploring disability (difficulty walking 400 m and climbing a flight of stairs) and three exploring frailty (unintentional weight loss of >4.5 kg, exhaustion, and physical activity level).

Results: So far, 31 patients have been enrolled in CAFFE (mean age: 78±9 years; women: 25.8%; Body mass index, BMI: 26.5±3.8 kg/m²; CHA_2DS_2-VA: 4.2±1.2). Overall, mean scores were MMSE: 28.2±2.0, GDS-15: 3.3±2.5, and SPPB: 8.8±2.6. According to the FiND questionnaire, 43.3% were classified as robust, while 20.0% were frail and 36.7% disabled. No significant differences by FiND category were observed in age, sex, BMI, baseline heart rate, systolic blood pressure, left ventricular ejection fraction, MMSE, or GDS-15 scores. In contrast, CHA_2DS_2-VA (robust: 3.7±0.9, frail: 5.2±1.0, disabled: 4.2±1.3; p=0.040) and SPPB (robust: 10.5±1.4, frail: 8.8±2.0, disabled: 6.6±2.6; p<0.001) were significantly associated with FiND scores. Patients with CHA_2DS_2-VA of 2-3, 4, and >4 accounted for 25.8%, 45.2%, and 29.0% of the cohort, respectively. Heart rate (2-3: 73±18; 4: 85±15; >4: 68±7 bpm; p=0.018) and ejection fraction (2-3: 61±8; 4: 60±13; >4: 46±6%; p=0.005) differed significantly across CHA_2DS_2-VA categories, while MMSE, GDS-15, and SPPB did not.

Conclusions: Elderly patients with persistent AF present high clinical complexity and are frequently frail or disabled. Their evaluation should therefore combine clinical indicators, such as CHA_2DS_2-VA, with Comprehensive Geriatric Assessment tools, especially those

measuring functional status and frailty. These complementary sources of information allow for more accurate phenotyping of this patient population. The CAFFE Study will help determine the most appropriate therapeutic strategy for AF in the elderly, with a focus on this multidimensional approach.The CAFFE Study, as part of the PRIN (Progetti di Ricerca di Rilevante Interesse Nazionale, Prot. 2022L9NPKH), is funded by the Italian Ministry of University and Research and the European Union (NextGenerationEU).

ARITMIE 536
ARITMIE VENTRICOLARI (ARITMIE)
FARMACI ANTIARITMICI (ARITMIE)
MECCANISMI DELLE ARITMIE (ARITMIE)

BEYOND CONVENTIONAL NEUROMODULATION: FIRST EUROPEAN CASE SERIES OF STELLATE GANGLION ABLATION USING CONTINUOUS RADIOFREQUENCY FOR REFRACTORY VENTRICULAR ARRHYTMIAS

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Introduction: Surgical bilateral cardiac sympathetic denervation (BCSD) is currently recommended for the prevention of refractory ventricular tachycardias (VT) in patients with cardiomyopathies (CMP), but sometimes anesthetic risk can be prohibitive. For these patients, in addition to percutaneous pharmacological left stellate ganglion block (PLSGB) in the acute setting, permanent percutaneous stellate ganglion ablation (PSGA) can be performed. We describe three cases.

Clinical cases: The first is a 57-year-old woman with severe systemic sclerosis leading to bilateral interstitial pneumopathy, suffering a concomitant biventricular arrhythmogenic CMP with prevalent right ventricle involvement and associated severe mitral regurgitation (MR) due to mitral valve prolapse. Due to drug refractory monomorphic VTs of different morphology, she first underwent an attempted endocardial VT ablation, then ICD implantation. In March 2024 she suffered recurrent ICD shocks (12 episodes in 2 hours) with syncope due to fast monomorphic VTs of different morphologies (200-300 bpm). At first, she received chronic amiodarone and mexiletine, then VT recurred and a bilateral PSGA was performed in July 2024.

The second is an obese 85-year-old man with severe pneumopathy and a concomitant hypokinetic-dilated CMP (LVEF 45%) who had previously (2019) received an ICD and then undergone transcatheter VT ablation of an intramyocardial focus. In October 2024, he was hospitalized for an electrical storm (ES), with multiple monomorphic and pleomorphic VT (170–195 bpm) requiring ICD shocks. Acute PLSGB was effective. Side effects limited titration of chronic amiodarone, mexiletine, and nadolol, therefore bilateral PSGA was performed in December 2024.

The third is a 71-year-old man with previous lung carcinoma requiring left upper lobectomy, with a concomitant desmoplakin-related CMP (LVEF 26%, severe MR) with extensive LV fibrosis. In October 2024, he suffered multiple ICD shocks due to fast, poorly tolerated, VTs (220 bpm), with good response to acute PLSGB. Therapeutic optimization with LCSD and mexiletine at first and then with chronic amiodarone was performed, but symptomatic VTs (170 bpm) recurred, therefore right-sided PSGA was performed in March 2025.

The procedure was performed bilaterally in two separate sessions in the first two cases, unilaterally (right) in the third patient. For each side, 3 lesions of 90 seconds each were delivered using continuous RF and increasing temperatures (50,55, 60°). Ablation was performed under ultrasound and radiological guidance and preceded by sensory and motor stimulation.

In 2 out of 5 procedures, a mild transient ipsilateral miosis and ptosis occurred. Patient 1 experienced a reduction in the arrhythmic burden after PSGA, but unfortunately died after 8 months due to acute respiratory failure. Patient 2 is still free from recurrences after 5 months. Patient 3 had early, slower recurrences (150 bpm) of a single morphology that were successfully treated with ablation.

Conclusions: Our case series of PSGA is the first European and the second in the world. Our data suggest that in selected patients with recurrent VTs and a prohibitive anesthetic risk, the procedure, albeit incomplete compared to BCSD (gold standard), could be taken into consideration to reduce the risk of life-threatening VTs. A local expertise in both cardiac neuromodulation and pain therapy is essential.

ARITMIE 1057
MECCANISMI DELLE ARITMIE (ARITMIE)
STUDI ELETTROFISIOLOGICI INVASIVI (ARITMIE)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)

A CASE OF COMPLETE HEART BLOCK IN A YOUNG PATIENT: LITTLE EVIDENCE ON THE CRIME SCENE

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An 18-year-old male patient presented at the attention of his Cardiologist after fortuitous evidence of severe bradycardia and complete atrioventricular block at a routine 12-lead EKG requested for admission at a local gym.
During the visit a complete anamnesis was put together, showing no personal nor familiar history of heart diseases. Physical examination was normal, apart from the slow rhythm. The patient reported no use of medications. Furthermore, he referred being absolutely asymptomatic for manifestations such as fatigue, dizziness or syncope. A 30 seconds EKG was recorded, showing isorhythmic atrioventricular dissociation, so the young man was advised to be admitted to hospital for a closer look.
Once hospitalized, an electrophysiological study was performed confirming both II and III grade AV block with supra-Hisian localization. Moreover, intravenous isoprenaline infusion during the test caused a physiological increase of heart rate, thus indicating that ventricular chronotropism was preserved. After the EP study, a loop recorder was implanted for long lasting record of electrical activity.

Complete AV block is a relatively common finding in older patients, especially those with history of ischemic cardiac disease, since fibrotic tissue can interfere with the physiological conduction system of the heart, including AV node. However, his presence in such a young patient is particularly rare, implying a different explanation.
Transthoracic ultrasonography was first taken and showed no abnormalities in heart function, motion and structure. Later, a contrast cardiac RMN was done to provide further investigation, showing no late gadolinium enhancement suggestive of fibrosis or oedema. This, together with the silent medical history, led physicians to exclude most of the causes of AV block in younger patients, like congenital heart defects, cardiomyopathies and myocarditis. Autoimmune antibodies have been tested, but the results were normal (ANA <1:160, ENA panel in range). Eventually a blood sample for ACE levels was taken to test the hypothesis of sarcoidosis, and the result was above the upper limit (75U/L, normal range: 8-52U/L), while a chest X-ray excluded lung and lymph nodes involvement, raising the subtle doubt that this could be a rare case of cardiac sarcoidosis at a very early stage.

This clinical case shows how current medicine lacks complete knowledge of atrioventricular block pathophysiological mechanisms, especially when it comes to young patients. For this patient, a long-term follow up has been established to gain new data and the result of a genetic test is awaited to provide physicians with new essential information, shedding light not only on this particular case, but more generally on this uncommon condition.

ARITMIE 830
ABLAZIONE TRANSCATETERE (ARITMIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
STUDI ELETTROFISIOLOGICI INVASIVI (ARITMIE)

ANALYSIS OF ELECTROCARDIOGRAPHIC PARAMETERS AS POTENTIAL PREDICTORS OF ARRHYTHMIC RECURRENCE AFTER TRANSCATHETER ABLATION OF ATRIAL FIBRILLATION: A SINGLE-CENTER OBSERVATIONAL STUDY

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Background: Arrhythmic recurrence (AR) remains a common issue affecting a significant percentage of patients undergoing Transcatheter Ablation (TCA) of Atrial Fibrillation (AF). It might be important to predict AR to improve risk stratification and optimize follow up. The use of Artificial Intelligence (AI), for identification of electrocardiographic predictors of post-ablation recurrence, may offer a valuable and cost-effective approach for improving risk stratification and optimizing follow-up

Objective: Aim of the study was to evaluate whether AI might be useful to investigate the relationship between post-procedural electrocardiographic (ECG) parameters of the P-wave and AF recurrence in patients undergoing transcatheter ablation (TCA).

Methods: Seventy-four patients (age 62,36 ± 10,4 years) with AF, treated with TCA were retrospectively studied. AR was investigated by Injectable Loop Recorder (ILR) or by other cardiac implantable electronic device (CIED). P wave related variables were studied by using AI software.

Results: At one-year follow-up, 30% of TCA-patients had AF recurrence with an average arrhythmic burden >6%. Interestingly, in these patients we observed that post-procedural P-wave amplitude (PwA) was higher in lead II (PwA in lead II) as compared to patients who did not have AR (Figure).

Conclusions: Our findings point out the potential role of PwA in lead II as AR predictor in patients undergoing TCA and explore the role of AI in helping the ECG analysis, in order to obtain an early risk stratification and optimize the follow up strategies after TCA.

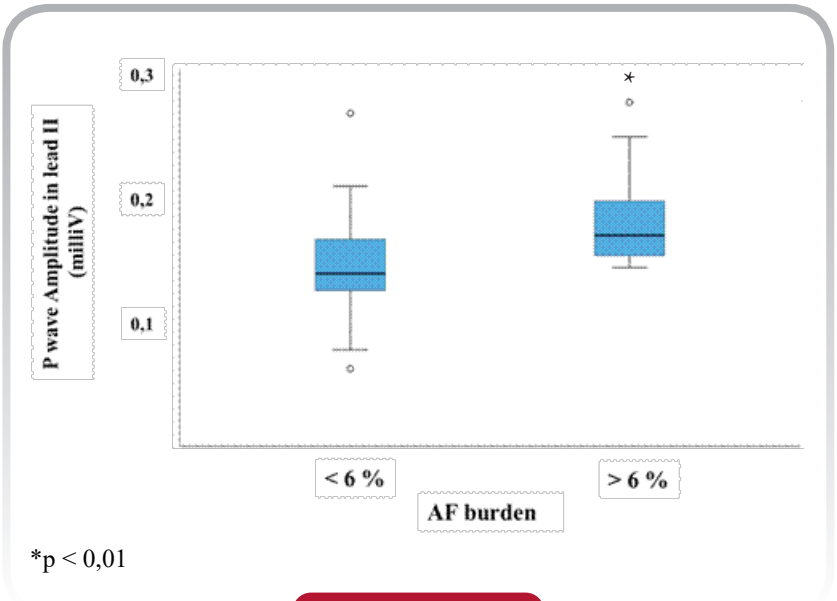


Figure 1

ARITMIE 679
ASPETTI GENETICI DELLE ARITMIE (ARITMIE)
ARITMIE VENTRICOLARI (ARITMIE)
CARDIOLOGIA DELLO SPORT
(ATTIVITÀ FISICA E CARDIOLOGIA DELLO SPORT)
IDONEITA' SPORTIVA (ATTIVITÀ FISICA E CARDIOLOGIA DELLO SPORT)
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)

SINDROME DEL QT LUNGO E SPORT: ESPERIENZA DI UN SINGOLO CENTRO

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(d) AZIENDA OSPEDALIERA SS ARRIGO E BIAGIO E CESARE ARRIGO, ALESSANDRIA

Introduzione: La sindrome del QT lungo (LQTS) è una canalopatia ereditaria caratterizzata da riduzione della riserva di ripolarizzazione ventricolare e predisposizione a tachiaritmie ventricolari maligne. La relazione tra LQTS e attività sportiva è complessa: da un lato l'esercizio fisico può rappresentare un trigger aritmico e potenzialmente ridurre ulteriormente la riserva di ripolarizzazione, dall'altro la sedentarietà imposta può compromettere la qualità di vita e aumentare il profilo di rischio cardiovascolare e non solo. Dal 2023 anche in Italia i criteri per la concessione dell'idoneità all'attività agonistica in soggetti LQTS sono più liberali, in casi selezionati.

Obiettivo: Lo scopo di questo studio è analizzare retrospettivamente le caratteristiche cliniche, genetiche, terapeutiche e comportamentali di una coorte di pazienti affetti da LQTS, con particolare attenzione all'impatto della diagnosi sulla pratica sportiva, al carico di attività fisica e all'applicazione dei criteri COCIS 2023 per l'idoneità agonistica.

Metodi: Sono stati analizzati pazienti affetti da LQTS in follow-up presso un singolo centro di riferimento. Sono stati raccolti dati anamnestici (compreso il carico di attività fisica settimanale in MET·min/settimana), elettrocardiografici, genetici e terapeutici. I pazienti sono stati suddivisi in tre gruppi: "Mai sportivi", "Sportivi interrotti dopo la diagnosi" e "Sportivi dopo la diagnosi". È stata infine valutata la candidabilità ad idoneità agonistica secondo i criteri COCIS 2023.

Risultati: Lo studio include 108 pazienti (età mediana alla diagnosi 27 anni, range 8-65, 64% femmine, QTc medio alla diagnosi 473 ± 47 ms), di cui 43% probandi e 87% asintomatici per sintomi aritmici alla diagnosi; il 96% dei soggetti è stato genotipizzato (di cui 38% LQT1, 30% LQT2, 22% genetica negativa) nei restanti la genetica è ancora in corso. Il 56% praticava sport prima della diagnosi (31% a livello agonistico), ma solo il 31% ha continuato dopo ($p< 0.01$), di cui il 6% a livello agonistico. I "Mai sportivi" erano meno frequentemente probandi (20%), rispetto a quelli con (65%) e senza (58%) interruzione dello sport dopo la diagnosi ($p<0.001$). I 3 gruppi non presentavano differenze significative come durata del QTc e percen-

tuale di sintomatici. La diagnosi è stata posta tramite visita medico-sportiva nel 25% dei pazienti (54% degli "Sportivi interrotti", 39 degli "Sportivi dopo la diagnosi", 0% nei "Mai sportivi"; $p < 0.001$).
L'assunzione di β-bloccanti (Nadololo nel 98% dei casi) risultava significativamente più frequente nei pazienti sportivi dopo la diagnosi (94%) rispetto a quelli con interruzione (88%) e soprattutto ai non sportivi (69%; $p = 0.04$). Durante un follow-up medio di 9 anni, il 2% (n=2) dei soggetti ha avuto eventi aritmici (sincope), di cui nessuno tra gli sportivi attivi.
Il carico settimanale di attività fisica prima della diagnosi, espresso in MET·min/settimana, era più elevato nei pazienti che hanno continuato a praticare sport dopo la diagnosi. Il 52 % della popolazione soddisfa i criteri COCIS per l'idoneità agonistica.

Conclusioni: La diagnosi di LQTS comporta un'interruzione significativa dell'attività sportiva, con solo il 31% dei giovani pazienti che inizia/continua a praticare sport dopo la diagnosi.
I soggetti che continuano a praticare sport mostrano una migliore aderenza alla terapia betabloccante rispetto sia a quelli che interrompono la pratica sportiva che soprattutto ai sedentari, e non hanno eventi aritmici nel follow-up; il 51% soddisfa anche i criteri COCIS 2023 per la concessione dell'idoneità agonistica per gli sport richiesti.

ARITMIE 841
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
ABLAZIONE TRANSCATETERE (ARITMIE)
STUDI ELETTROFISIOLOGICI INVASIVI (ARITMIE)

LEFT SUBCLAVIAN ACCESS FOR PENTASPLINE PULSED FIELD ABLATION SYSTEM: A FEASIBLE OPTION IN BILATERAL FEMORAL VEIN THROMBOSIS

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Introduction: Pulsed field ablation (PFA) has emerged as an established strategy for the pulmonary vein isolation (PVI) in patients with atrial fibrillation (AF). While the femoral venous access is standard approach to access the left atrium (LA), superior venous access is an alternative when femoral routes are not feasible, though with increased technical and logistical complexity.

Case Report: A 73-year-old man with paroxysmal AF and extensive thrombophilia (antithrombin III deficiency with prior deep vein thrombosis, pulmonary embolism and spleno-portal thrombosis) had CT evidence of bilateral femoral, precluding femoral access. Given these findings, alternative venous access was planned. Following left subclavian venous access, a fixed curve diagnostic catheter (Viking ™, Boston Scientific, Boston, MA) was placed in the coronary sinus. Transseptal puncture was performed using the VersaCross™ system (Boston Scientific, Boston, MA) and an 8.5F steerable sheath (AGILIS™, Abbott, Abbott Park, IL, USA) was used to optimize directional control. For enhanced safety, a transesophageal echocardiography (TEE) probe was placed in esophagus for image guidance. Intravenous heparin was administered to maintain an activated clotting time (ACT) >300 seconds. Atropine 0.5 mg was administered to prevent vagally mediated bradycardia during energy delivery.
After dilation of the iatrogenic ASD, a Pentaspline PFA system (FaraWave™, Boston Scientific, Boston, MA) and a 16.6 F steerable sheath (FARADRIVE™, Boston Scientific, Boston, MA) were used to perform the PVI. PFA catheter were advanced into the LA and sequentially into each pulmonary vein; circumferential electroporation using a standard "basket" and "flower" protocol achieved electrical disconnection (Figure 1). Procedure time was 117 minutes, with no complications and next-day discharge.

Discussion: The inability to access the LA via the femoral route represents a significant technical challenge in transcatheter ablation procedures. To date, a few previous cases describe use of the Pentaspline PFA system through a superior venous access. This case supports the feasibility and safety of PFA-guided PVI via subclavian access, expanding the procedural toolkit in patients with complex venous pathology. However, this approach should be reserved for centers with advanced expertise in imaging, transseptal techniques, ablation strategy and vascular complication management.

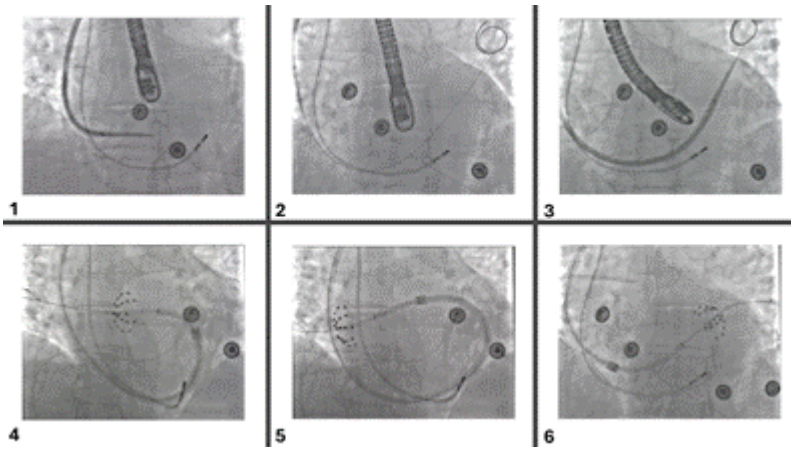


Figure 1

ARITMIE 844
ABLAZIONE TRANSCATETERE (ARITMIE)
ARITMIE SOPRAVENTRICOLARI (ESCLUSA FA) (ARITMIE)
STUDI ELETTROFISIOLOGICI INVASIVI (ARITMIE)
PATOLOGIA DELLE VENE (MALATTIE DEI VASI)

HIGH IMPEDANCE DROP IN CORONARY SINUS: PULSED FIELD ABLATION APPROACH IN PATIENT WITH FOCAL ATRIAL TACHYCARDIA AND PERSISTENCE LEFT SUPERIOR VENA CAVA

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Background: Persistent left superior vena cava (PLSVC), a remnant of the left cardinal vein, occurs in 0.5% of the general population and 4% of patients with congenital heart disease. PLSVC is known to be a source of ectopy in the genesis of supraventricular arrhythmias (SVA); however, catheter ablation using thermal energy in this site presents procedural complications, such as left phrenic nerve injury, cardiac tamponade and atrioventricular block. Pulsed field ablation (PFA), , a non-thermal modality, offers tissue selectivity and a potentially safer profile, yet experience at non-pulmonary sites remains limited.

Case report: A 34-year-old man with PLSVC and prior radiofrequency (RF) ablation for AV re-entrant tachycardia re-presented with recurrent palpitations. Cardiac MRI confirmed PLSVC draining into a markedly dilated coronary sinus (CS). An electrophysiology study reproducibly induced a 1:1 atrial tachycardia (AT) with warm-up/cool-down behavior. Decapolar CS recordings alternated between proximal-to-distal and distal-to-proximal activation, suggesting multiple foci along the PLSVC–CS axis. High-density electroanatomic mapping (Rhythmia™/ IntellaMap Orion™, Boston Scientific, Boston, MA) identified two earliest sites in the superior CS/PLSVC and inferomedial CS. RF ablation at 40 W (IntellaNav MiFi OI™, Boston Scientific, Boston, MA) terminated but did not eliminate inducibility and caused a marked local impedance drop (−60 Ω), prompting conversion to PFA. A Pentaspline PFA system (FaraWave™, Boston Scientific, Boston, MA) and a 16.6 F steerable sheath (FARADRIVE™, Boston Scientific, Boston, MA) were positioned within the PLSVC/CS, and circumferential applications were delivered in basket configuration with rotation after every two applications (five biphasic pulses at 2.0 kV, 2.5 s) at both targets (Figure 1).
AT became non-inducible, including with isoproterenol. Remapping confirmed complete electrical isolation of the CS and PLSVC. A transient right bundle branch block resolved before discharge; the patient remained asymptomatic and arrhythmia-free at 6-month follow-up.

Conclusions: In a patient with complex venous anatomy, PFA enabled safe ablation of focal AT arising from the PLSVC–CS region, where thermal energy posed safety limits. To our knowledge, this is the first report of focal AT originating from the PLSVC successfully treated with PFA. These findings support further study to standardize PFA protocols for non-pulmonary targets and to define selection criteria in anatomically sensitive areas.

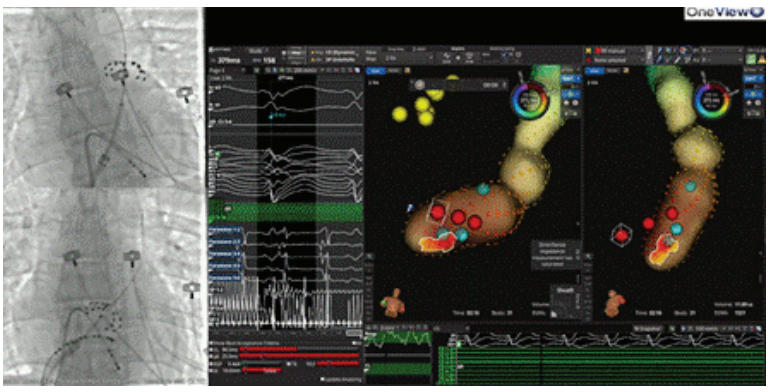


Figure 1

ARITMIE 639
ABLAZIONE TRANSCATETERE (ARITMIE)
ARITMIE VENTRICOLARI (ARITMIE)
DEFIBRILLATORE IMPIANTABILE (ARITMIE)
PROGNOSI (SCOMPENSO CARDIACO)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)

CATHETER ABLATION VS. MEDICAL THERAPY FOR VENTRICULAR TACHYCARDIA IN PATIENTS WITH ADVANCED HEART FAILURE WAITING HEART TRANSPLANTATION: A SINGLE-CENTER EXPERIENCE

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(a) ASST GRANDE OSPEDALE METROPOLITANO NIGUARDA - CARDIOLOGIA 3

Background: Patients with ventricular arrhythmias and advanced heart failure waiting for heart transplantation are at high risk for adverse outcomes, including the necessity of urgent transplantation or mechanical cardiac support devices as a bridge-to-transplantation. Catheter ablation of ventricular tachycardia is a therapeutic option, but efficacy and safety in this cohort have not been previously explored.

Methods: In this single-center trial, we retrospectively evaluated patients affected by end-stage HF, eligible for heart transplantation with at least two episodes of ventricular arrhythmias treated with ICD shock therapy to receive catheter ablation (CA group) or optimal anti-arrhythmic therapy (MT group) for ventricular arrhythmias management. All the patients had an ICD. The primary end-points were the recurrence of ventricular arrhythmias, Heart Transplantation, pre-transplantation mortality, and all-cause mortality. Secondary end-points were the length of in-hospital stay, LVAD necessity implantation and time-to-transplantation.
Safety outcomes were serious adverse events resulting in death or procedural complications of CA.

Results: We retrospectively enrolled a total of 32 patients who were followed for a median of 1.7 years. After a multidisciplinary evaluation, 17 patients (53%) were judged suitable for CA versus 15 patients (47%) treated with MT. Patients treated with CA reported a lower ventricular arrhythmias recurrence (4 vs. 9, $p = 0.036$), a lower length of in-hospital stay (30 ± 18 vs. 67 ± 26 days, $p < .01$) and a lower need for heart transplantation (4 vs. 10, $p = .014$). Total mortality was reduced in the CA group (1 vs. 6, $p = .020$), while no differences were reported in pre-transplantation mortality (1 vs. 2, $p = .541$). No significant changes between the two groups were observed in time-to-transplant (206 ± 120 vs 201 ± 151, $p = 0.920$), and LVAD implantation (1 vs. 2, $p = .471$). Finally, the CA group has not reported major peri and post-procedural complications connected to the CA procedure.

Conclusions: Among patients with ventricular tachycardia and end-stage heart failure waiting for heart transplantation, CA is a safe procedure if performed in a high-volume specialized center and it is associated with better arrhythmic control during short and long follow-ups, reducing the need for HTx and death for all-cause

ARITMIE 1044
DEFIBRILLATORE IMPIANTABILE (ARITMIE)
ELETTROCARDIOGRAFIA/ CARDIOVERSIONE/ DEFIBRILLAZIONE (ARITMIE)
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)
GESTIONE DELLA COMPLICANZE PM / ICD (ARITMIE)

QUALITÀ DELLA VITA E DISAGIO PSICOLOGICO NEI PAZIENTI PORTATORI DI DEFIBRILLATORE CARDIACO IMPIANTABILE - LO STUDIO PSY-ICD

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Introduzione. Il defibrillatore cardiaco impiantabile (ICD) rappresenta un presidio terapeutico consolidato per la prevenzione primaria e secondaria della morte cardiaca improvvisa. Tuttavia, la convivenza con il dispositivo può associarsi a distress psicologico, depressione, ansia e riduzione della qualità di vita (QoL). Lo studio PSY-ICD ha come obiettivo quello di valutare in una coorte di pazienti portatori di ICD la prevalenza di tali disturbi e i fattori ad essi associati.

Metodi. È stato condotto uno studio prospettico osservazionale presso la Divisione di Cardiologia Universitaria della Città della Salute e della Scienza di Torino. Da febbraio a maggio 2025 sono stati arruolati pazienti candidati a impianto o già portatori di ICD (endovascolare monocamerale o bicamerale, dispositivo di resincronizzazione cardiaca, sottocutaneo). I criteri di esclusione comprendevano compromissione cognitiva grave (esaminata tramite il Mini Mental State Examination) e disturbi psichiatrici maggiori preesistenti. I partecipanti hanno completato otto questionari psicometrici validati (PsychoSocial Index (PSI), Depression Anxiety Stress Scales 21 (DASS-21), Euthymia Scale, Florida Patient Acceptance Scale (FPAS), questionario per lo stato di benessere del WHO (WHO-5), Demoralization scale-6 (DS-6), Mental Pain Questionnaire (MPQ), Implanted Device Adjustment Scale (IDAS)).

Risultati. Sono stati arruolati 99 pazienti (età mediana 62, IQR 52-70; 76% maschi; tempo medio dall'impianto 6.6±6.5 anni, 79% in prevenzione primaria). L'analisi del PSI ha mostrato che il 56% dei pazienti presentava stress lieve-moderato, mentre solo l'1-2% livelli elevati. Tuttavia, circa il 25% ha evidenziato distress significativo, con associazione statisticamente significativa con il genere femminile e con l'avere subito un shock nell'ultimo anno (11.4 ± 6.8 per le donne, p=0.0018 e 14.4 ± 8.8, p=0.018 per coloro che hanno ricevuto lo shock). La stessa associazione è emersa all'analisi del dolore mentale mediante MPQ (donne 2.4 vs. 1.3, p-value 0.0357; pazienti che hanno subito shock 3.4 vs. 1.3, p-value 0.0156). La DASS-21 ha documentato livelli significativi di sintomi depressivi, ansiosi e da stress in una minoranza (5%), ma una quota consistente presentava livelli subclinici. La FPAS ha mostrato buona accettazione dell'ICD nel 75% dei pazienti, con il 50% che riportava tuttavia distress dispositivo-correlato clinicamente rilevante.

Discussione. I risultati dello studio PSY-ICD evidenziano che, nonostante la maggioranza dei pazienti mostri un buon adattamento psicologico e accettazione dell'ICD, persiste una quota rilevante con distress, ansia o depressione subclinica, specialmente in alcuni sottogruppi, quali donne e pazienti con pregressi interventi del device.

Conclusioni. Lo studio PSY-ICD conferma la complessità della risposta psicologica all'impianto di ICD, sottolineando la necessità di percorsi di valutazione psicologica integrata e supporto multidisciplinare per identificare precocemente i pazienti a rischio di disagio, migliorando così QoL, ansia, senso di benessere e accettazione del dispositivo.

ARITMIE 649
ELETTROSTIMOLAZIONE (ARITMIE)
GESTIONE DELLA COMPLICANZE PM / ICD (ARITMIE)
SINCOPE (ARITMIE)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PERICARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

BRECCIA ATRIALE E TAMPONAMENTO CARDIACO DOPO ESTRAZIONE DI ELETTROCATETERE INFETTO: CASO DI UNA PAZIENTE TESTIMONE DI GEOVA

Riccardo Canonaco (a, d), Yu Fu Ferrari Chen (a, b, d), Valentina Barletta (c), Stefano Marco Viani (c), Giulio Zucchelli (c), Raffaele De Caterina (a, d)
(a) UNIVERSITÀ DI PISA; (b) HEALTH SCIENCE INTERDISCIPLINARY CENTER, SCUOLA SUPERIORE SANT'ANNA, PISA; (c) U.O.C. CARDIOLOGIA 2, AZIENDA OSPEDALIERO-UNIVERSITARIA PISANA, PISA; (d) U.O.C. CARDIOLOGIA 1, AZIENDA OSPEDALIERO-UNIVERSITARIA PISANA, PISA

Background. L'estrazione transvenosa di elettrocateteri comporta un rischio di complicanze maggiori (tamponamento, perforazione, lesioni vascolari), talora richiedenti cardiochirurgia urgente. Nei Testimoni di Geova (TdG) il rifiuto di emocomponenti rende la gestione emorragica particolarmente critica.

Caso clinico. Donna TdG giungeva per febbre e decubito di tasca un mese dopo la sostituzione di pacemaker monocamerale impiantato 15 anni prima per malattia del nodo del seno. Dalle emocolture si isolava Staphylococcus aureus meticillino-sensibile, per cui veniva avviata terapia con oxacillina.
L'ecocardiogramma transesofageo evidenziava vegetazione (4 mm) sulla parte distale dell'elettrocatetere atriale. Veniva programmata estrazione completa del sistema impiantato (indicazione di classe IB NR) in anestesia generale e con monitoraggio cruento continuo della pressione arteriosa. Il tentativo di retrazione della vite dell'elettrocatetere a fissazione attiva risultava inefficace e si effettuava dilatazione del decorso intravascolare dell'elettrocatetere con sheath meccaniche non potenziate, utilizzate anche in modalità telescopica, ottenendo la liberazione dalle aderenze e il distacco della punta (Fig 1). Dopo pochi minuti, si verificava ipotensione severa (PAS 65 mmHg) con segni ecocardiografici di versamento pericardico tamponante. Si eseguiva pericardiocentesi con evacuazione e autotrasfusione di 200 ml di sangue, associata a infusione di poligelina, fluidi e supporto vasopressorio, fino alla stabilizzazione emodinamica.
In cardiochirurgia si procedeva a sternotomia mediana, riparazione di breccia (1x1 cm) alla base dell'auricola destra e accurata emostasi con applicazione di punti di polipropilene su pledget. Vista l'assenza di indicazioni, si soprassedeva a impianto di nuovo pacemaker al momento della dimissione.
Alle visite di controllo a 3 e a 6 mesi la paziente ha

Estrazione dell'elettrocatetere

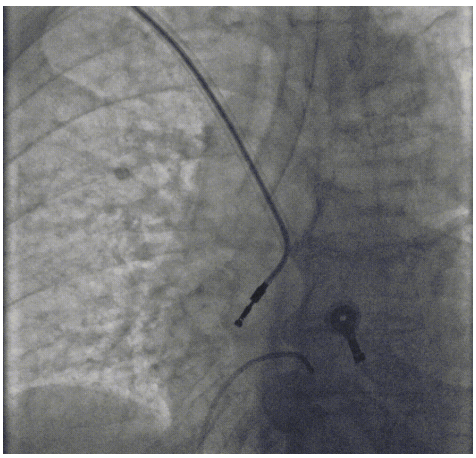


Figura 1

presentato sostanziale stabilità clinica in buon compenso emodinamico.

Conclusioni. Il caso rappresenta un evento raro, in cui tre sfide maggiori si sono sovrapposte nello stesso scenario clinico: estrazione di elettrocatetere infetto, complicanza meccanica con breccia atriale e tamponamento, e necessità di gestione "blood-sparing" in paziente TdG.
L'esito favorevole sottolinea il valore dell'approccio multidisciplinare, dell'esperienza e capacità di coordinamento del team di estrazione nel riconoscere e gestire eventuali complicanze, delle risorse cardiochirurgiche, delle strategie di risparmio ematico e del rispetto dell'autonomia del paziente, come previsto dalla legge 219/2017.

Elettrocatetere a vite estratta

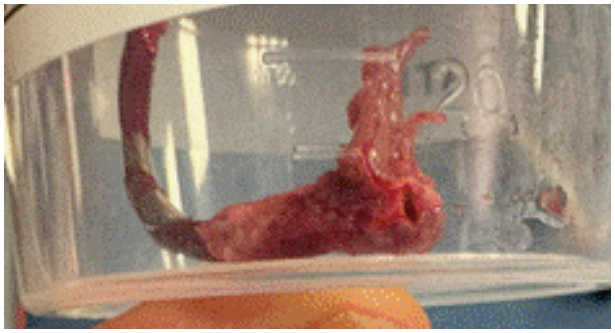


Figura 2

ARITMIE 820
ARITMIE SOPRAVENTRICOLARI (ESCLUSA FA) (ARITMIE)
ABLAZIONE TRANSCATETERE (ARITMIE)
ELETTROSTIMOLAZIONE (ARITMIE)
CARDIOPATIE CONGENITE NELL´ADULTO
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
IPERTENSIONE POLMONARE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)

DAL FLUTTER AL DIFETTO INTERATRIALE: UNA SFIDA ARITMOLOGICA

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Background. La progressiva dilatazione delle sezioni destre, conseguenza dello shunt intracardiaco sinistro-destro associato a difetto interatriale (DIA) tipo ostium secundum (OS), può favorire l'insorgenza di aritmie sopraventricolari, che spesso rappresentano l'esordio del difetto. Nei casi più complessi, il percorso terapeutico richiede un intervento multidisciplinare.

Caso clinico. Un uomo di 40 anni e di origine bengalese giungeva in pronto soccorso (settembre 2024) per episodio sincopale, preceduto da dispnea e astenia. All'ingresso, l'ECG (Figura 1) mostrava tachicardia a complessi larghi (210 bpm) con morfologia a blocco di branca destra compatibile con flutter atriale atipico a conduzione 1:1, trattato con cardioversione elettrica efficace nel ripristino del ritmo sinusale. L'angio-TC polmonare documentava marcata dilatazione delle sezioni destre ed ectasia del circolo polmonare, mentre l'ecocardiogramma (Figura 2) evidenziava FE 55%, DIA tipo OS con severa dilatazione delle sezioni destre, funzione ventricolare destra ai limiti inferiori e severa ipertensione polmonare. Il cateterismo cardiaco destro confermava la presenza di shunt sinistro-destro (Qp/Qs 1,7) e quadro emodinamico compatibile con ipertensione polmonare precapillare. La RM cardiaca mostrava un quadro di cuore polmonare cronico secondario a DIA. Discusso il caso collegialmente, nel dicembre 2024, il paziente veniva sottoposto a chiusura chirurgi-

Flutter atriale atipico



Figura 1

Elettrocardiogramma DIA tipo OS

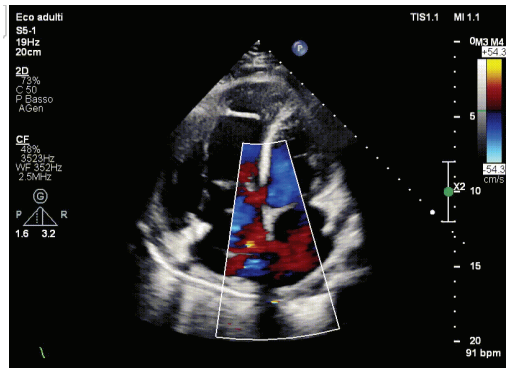


Figura 2

ca del difetto con patch pericardico bovino fenestrato (6 mm) e plastica tricuspidalica. Il decorso post-operatorio si complicava con recidiva di flutter atriale cardiovertita spontaneamente. Si procedeva quindi ad ablazione elettiva di flutter atriale, complicata da sindrome bradi-tachi, che rendeva necessario l'impianto di pacemaker bicamerale. Seguivano regolari visite di controllo fino a un nuovo accesso in pronto soccorso (maggio 2025) per cardiopalmo con rilievo di nuova recidiva di flutter atriale a conduzione 1:1. Dato il riscontro di flutter atriale tipico comune allo studio elettrofisiologico, il paziente veniva sottoposto a nuova procedura di ablazione con RF dell'istmo cavo-tricuspidalico, in assenza di complicanze periprocedurali. Al follow-up il paziente manteneva un buon compenso clinico in assenza di recidive aritmiche.

Conclusioni. Il caso sottolinea come un DIA misconosciuto fino all'età adulta possa evolvere in un quadro di cuore polmonare cronico, ipertensione polmonare severa e aritmie atriali recidivanti, richiedendo un approccio terapeutico multidisciplinare.
La gestione stepwise e personalizzata ha permesso non solo di correggere l'anomalia strutturale, ma anche di stabilizzare il burden aritmico e migliorare la qualità di vita del paziente.

ARITMIE 643
DEFIBRILLATORE IMPIANTABILE (ARITMIE)
GESTIONE DELLA COMPLICANZE PM / ICD (ARITMIE)
ELETTROSTIMOLAZIONE (ARITMIE)

PERSONALIZED SELECTION OF IMPLANTABLE CARDIOVERTER DEFIBRILLATORS: DEVELOPMENT OF A MULTI-VARIABLES SCORING SYSTEM

Danilo Ricciardi (a), Lorenzo Frau (a), Paola Liporace (a), Enrico Crispino (a), Daniele Valente (a), Vito Calabrese (a), Flavio Angelo Gioia (a), Francesco Picarelli (a), Gian Paolo Ussia (a), Francesco Grigioni (a)
(a) FONDAZIONE POLICLINICO UNIVERSITARIO CAMPUS BIO-MEDICO

Transvenous implantable cardioverter-defibrillators (ICDs) have been a cornerstone in the prevention of sudden cardiac death for several years. However, their use remains associated with both acute and chronic complications due to the presence of leads within the vascular system. Lead extraction, whether for infection or rupture, is a high-risk procedure with a significant rate of intra- and peri-procedural complications.
As an alternative, the subcutaneous ICD (S-ICD) has been available for many years. In this system, the lead is placed extrathoracically, between the sternum and the skin. While the S-ICD provides effective and safe electrical therapy comparable to transvenous ICDs for the treatment of ventricular arrhythmias, it lacks the capability for cardiac resynchronization therapy, anti-bradycardia pacing, and anti-tachycardia pacing (ATP).
To combine the benefits of transvenous and subcutaneous ICDs, the extravascular ICD (EV-ICD) was recently introduced. In this device, the lead is positioned below the sternum in the anterior mediastinum, outside the vascular system like the S-ICD, but closer to cardiac structures. This intrathoracic placement

CATEGORY	PARAMETER	TV-ICD	S-ICD	EV-ICD
Technical aspects	Need for pacing	+4	-4	+2
	Need for ATP	+4	-4	+3
	Need for resynchronization	+5	0	0
	Presence of transvenous PMK	+3	-3	-3
	Presence of a leadless PMK	-3	+2	+2
	Positive result at S-ICD vector screening	0	+2	0
Anatomical aspects	Unsuitable venous anatomy	-2	+2	+2
	Complex anatomy of anterior mediastinum	0	+2	-2
	History of median sternotomy	0	0	-3
Infectious risk	Immunosuppression	-3	+1	+1
	Diabetes	-2	+1	+1
	Chronic Kidney Disease	-2	+1	+1
	Low socio-cultural level	-1	+1	+1
	History of drug abuse	-3	+1	+1
Clinical conditions	Permanent atrial fibrillation	+1	0	0
	Obesity	+1	-2	+1
	Complex congenital anomalies	+2	-1	0
	Age < 50 years	-1	+1	+2
	High levels of physical activity	0	+1	+2
	Previous CIED infection and extraction	-3	+2	+2
	History of pericarditis	0	0	-1
Quality of life	Physical quality of life	0	0	+1
Economics	Cost and healthcare expenditure	+1	-1	-1

table 1

enables defibrillation thresholds similar to those of transvenous ICDs, while also allowing ATP and pacing functionalities.
Today, three types of ICDs with different characteristics are available. The aim of this work is to provide practical guidance for selecting the most appropriate device based on patient-specific variables, grouped into categories such as:

- Technical aspects
- Anatomical considerations
- Infectious risk
- Clinical conditions

Particular attention is given to infectious risk, as the extraction of transvenous devices remains considerably more challenging compared to devices with extravascular leads. Consideration must also be given to the need for additional functionalities beyond ventricular arrhythmia therapy, such as cardiac resynchronization or pacing.

How to interpret? To every patient will be assigned a score for each device; the one with the higher score could be identified as the best option for the patient himself.
In conclusion, given the absence of specific recommendations in current guidelines, a standardized approach to guide the selection of the type of permanent defibrillator implantation should be developed. The proposed scoring system, if validated in future prospective studies, could assist clinicians in choosing the most appropriate device for each individual patient.

ARITMIE 666
DEFIBRILLATORE IMPIANTABILE (ARITMIE)
GESTIONE DELLA COMPLICANZE PM / ICD (ARITMIE)
ARITMIE VENTRICOLARI (ARITMIE)

EMI / OVERSENSING: A SINGLE CENTER CASE-SERIES ON EV-ICD

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Negli ultimi anni, l'introduzione del S-ICD ha rappresentato un'alternativa significativa all'ICD transvenoso convenzionale per la prevenzione della morte cardiaca improvvisa, in particolare nei pazienti che non richiedono pacing, CRT o ATP. Questo approccio ha il vantaggio di ridurre le complicanze legate alla presenza di elettrocateteri nel sistema vascolare. Nel 2024, Medtronic ha introdotto l'EV-ICD, una soluzione che, pur mantenendo le caratteristiche del S-ICD, presenta una differenza anatomica significativa, con l'elettrocatetere posizionato nel mediastino anteriore al di sotto dello sterno. L'EV-ICD offre funzionalità aggiuntive, come la possibilità di trattare aritmie tramite shock e ATP, con una maggiore autonomia e dimensioni ridotte del generatore.

In questa case series, vengono descritti tre casi clinici di impianto di EV-ICD. Nel primo caso, un paziente giovane con anamnesi familiare di morte cardiaca improvvisa ha ricevuto l'impianto di un EV-ICD in prevenzione primaria, con successivo aggiustamento dei parametri a causa di fenomeni di oversensing da EMI e da miopotenziali.

Il secondo caso riguarda una donna di 46 anni con episodi recidivanti di palpitazioni, per la quale è stato necessario riprogrammare il dispositivo dopo un episodio di shock inappropriato dovuto a oversensing dell'onda P, riducendo la sensibilità modificando la soglia di sensitivity e la polarità di sensing da Anello 1 Anello 2 a Coil 1 Cassa

Nel terzo caso, una paziente di 52 anni con cardiomiopatia dilatativa ha subito un episodio di shock inappropriato durante una camminata in salita. Alle immagine in sala di elettrofisiologia in proiezione latero-laterale si è notato come, come duranti gli atti respiratori ci sia un notevole spostamento del catetere, in particolare durante profonda inspirazione, portando il catetere in prossimità dell'atrio, verosimilmente da qualche aderenza pleurica. Durante inspirazione si riscontrava contestualmente un aumento del sensing atriale ed una riduzione del sensing ventricolare. La camminata in salita della paziente ha quindi portato a aumenta della frequenza cardiaca, e respiratoria, combo perfetta per la genesi dello shock inappropriato.

In considerazione del mancato successo delle revisione e riposizionamento del catetere, si è optato alla fine per sostituzione dell'EV-ICD con un S-ICD a causa di problemi nel posizionamento del catetere.

I dati disponibili in letteratura indicano un tasso significativo di shock inappropriati nei primi anni dopo l'impianto, spesso correlati a oversensing dell'onda P o miopotenziali. Questo studio sottolinea le sfide nella gestione delle anomalie di sensing dei defibrillatori e la necessità di un attento monitoraggio e riprogrammazione del dispositivo per ottimizzare il trattamento dei pazienti.

ARITMIE 105
SINCOPE (ARITMIE)
ABLAZIONE TRANSCATETERE (ARITMIE)
STUDI ELETTROFISIOLOGICI INVASIVI (ARITMIE)

CARDIONEUROABLAZIONE DELL'ATRIO DESTRO NELLA SINCOPE RIFLESSA ASISTOLICA

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La cardioneuroablazione (CNA) dovrebbe concentrarsi sui gangli vagali situati nell'atrio destro vicino ai nodi senoatriale e atrioventricolare. Il nostro studio mirava a valutare l'efficacia e la sicurezza della CNA nell'atrio destro. I pazienti con sincope riflessa asistolica grave identificata mediante registratore a loop impiantabile (ILR) o test da tilt sono stati sottoposti a CNA dell'atrio destro e successivamente monitorati utilizzando l'ILR. La popolazione comprendeva 28 pazienti con un'età media di 40,5 ± 13,4 anni, di cui il 71% erano uomini. Durante un periodo di follow-up mediano di 12,5 mesi, 8 pazienti hanno sperimentato 44 episodi di asistolia della durata superiore a 3 secondi, come registrato da un ILR. Il carico degli episodi di asistolia si è ridotto significativamente da 0,89 episodi al mese prima della CNA (145 su 163 pazienti-mesi) a 0,11 episodi al mese dopo la CNA (44 su 397 pazienti-mesi), con una riduzione del rischio relativo di 0,12, P = 0,0001. Analogamente, il carico degli episodi sincopali è diminuito da 0,23 episodi al mese prima della CNA a 0,06 episodi al mese dopo la CNA, con una riduzione del rischio relativo di 0,24, P = 0,0001. La frequenza cardiaca mediana è aumentata da 75 bpm (intervallo interquartile: 72-79) prima dell'ablazione a 83 bpm (intervallo interquartile: 78-85) dopo l'ablazione, con una durata fino a 9 mesi dopo la procedura. Nessun paziente ha manifestato complicanze durante la procedura. Durante il follow-up, 2 pazienti hanno ricevuto un pacemaker, 1 è stato sottoposto a una nuova procedura e 4 hanno manifestato sintomi transitori lievi: 3 hanno avuto palpitazioni e 1 ha avuto dispnea, nessuno dei quali ha richiesto una terapia. Dunque, la CNA dell'atrio destro ha ridotto gli episodi di asistolia dell'88% e gli episodi sincopali del 76% durante il follow-up a medio termine. Gli eventi avversi sono stati rari e lievi.

ARITMIE 986
ELETTROSTIMOLAZIONE (ARITMIE)
ENDOCARDITI (VALVULOPATIE)
GESTIONE DELLA COMPLICANZE PM / ICD (ARITMIE)

BATTERIEMIA CATETERE-CORRELATA DA E. COLI IN PORTATORE DI PACEMAKER LEADLESS: GESTIONE CONSERVATIVA

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Le batteriemie nei pazienti in emodialisi sono frequenti e spesso correlate a cateteri venosi centrali (CVC). Nei portatori di pacemaker leadless (LP) – privi di tasca sottocutanea ed elettrocateteri transvenosi – le indicazioni all'espianto in corso di sepsi non sono ancora ben definite e la decisione va integrata con microbiologia e imaging. Un uomo di 66 anni, iperteso, nefropatia terminale da nefroangiosclerosi/diabete in emodialisi trisettimanale tramite CVC Tesio giugulare destro, a marzo 2025 veniva ricoverato per cardiomiopatia ipertrofica verosimilmente ipertensiva e coronaropatia bivasale trattata con PCI (DES su IVA e D2; DEB su CX e OM3). A maggio sincope a riposo; ECG: BAV I, BBDx ed emiblocco anteriore sinistro (già noti). Impiantato pacemaker bicamerale, l'elettrocatetere atriale andava incontro a macro-dislocazione per conflitto con il Tesio mal posizionato (punta in atrio destro invece che in giunzione cavo-atriale).

Dopo riposizionamento del CVC, per rischio di nuova dislocazione, il sistema transvenoso veniva rimosso e sostituito con LP. L'8 luglio accesso per febbre 40–41 °C, dispnea e disuria; avviata terapia empirica con vancomicina + piperacillina/tazobactam. Emocolture periferiche e da CVC risultavano positive per Escherichia coli multisensibile, con tempi di crescita compatibili con batteriemia catetere-correlata. La terapia veniva adeguata a piperacillina/tazobactam a dosaggio dialitico in infusione prolungata, associata a lock con amikacina (8–14 luglio) ed emocolture seriali. L'11 luglio posizionato CVC femorale temporaneo.

Il 14 luglio TTE mostrava formazioni filamentose mobili nelle sezioni destre, sospette per vegetazioni; veniva pertanto indicata la rimozione del CVC tunnellizzato, verosimile focus, e del LP. Si procedeva alla sola rimozione del CVC, per controindicazione cardiologica all'espianto del device. Al TEE del 17 luglio non si rilevavano vegetazioni valvolari né su device, con LP in sede regolare e completa scomparsa delle formazioni. Il caso inizialmente rispondeva ai criteri Duke/ESC di endocardite possibile, ma l'identificazione del focus extra-device (CVC), la sua rimozione, la rapida defervescenza (dal 10 luglio) e il TEE negativo portarono a riclassificarlo come endocardite esclusa. Nonostante iniziale orientamento infettivologico all'estrazione, la cardiologia sconsigliava l'espianto del LP per: assenza di franco coinvolgimento ecocardiografico; focus identificato e rimosso; risposta clinico-microbiologica rapida; mancanza di evidenza in letteratura di infezione su LP (solo rari casi descritti, in genere candidemie, regredite dopo rimozione del device ma in assenza di imaging francamente positivo per endocardite su device). In un paziente fragile e con accessi venosi complessi, i rischi procedurali erano considerati superiori ai benefici. Scelta quindi conservativa, con completamento della terapia antibiotica mirata e gestione degli accessi senza manipolazione del device.

Dimesso il 29 luglio apiretico, con emocolture negative e nuovo CVC funzionante. Al follow-up precoce: assenza di recidive, pacemaker leadless in sede e parametri stabili. In un emodializzato portatore di LP, una batteriemia catetere-correlata da E. coli con imaging negativo e pronta risposta alla terapia consente gestione conservativa con mantenimento del device, in coerenza con i criteri Duke/ESC e con la rarità delle infezioni su LP. Il caso supporta l'uso del pacemaker leadless in pazienti fragili ad alto rischio infettivo e ribadisce che, in batteriemia catetere-correlata senza coinvolgimento documentato del device, l'espianto non è indicato.

ARITMIE 945
STUDI ELETTROFISIOLOGICI INVASIVI (ARITMIE)
MECCANISMI DELLE ARITMIE (ARITMIE)
ELETTROSTIMOLAZIONE (ARITMIE)

FROM WHEEZE TO WENCKEBACH: SULFITE-TRIGGERED BRONCHOSPASM PRECIPITATING VAGALLY MEDIATED AV NODAL BLOCK IN A STRUCTURALLY NORMAL HEART

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Introduction: Sulfite is a potent toxic substance causing harm to multi-organ in human. Despite toxicity, it is widely used as preservative, anti-browning and anti-oxidant in foods, beverages, and pharmaceuticals, which cause easy admission of sulfite in human. Wine appears to be a significant trigger for asthma. Although sulfite additives have been implicated as a major cause of wine induced asthma, direct evidence is limited.

Case Presentation: A middle-aged Chinese asthmatic woman reported 2 months of chest tightness and dyspnoea temporally exacerbated to first-time red-wine intake and daily dried teas/fruits (plausible sulfite sources). ECG Holter and continuous telemetry consistently showed a nodal-vagal pattern on narrow QRS: progressive sinus cycle lengthening (PP) immediately preceding events; beat-to-beat PR prolongation on conducted beats with a non-conducted P wave consistent with Mobitz I; rapid alternation between Wenckebach and 2:1 AV conduction within minutes despite stable QRS morphology/axis and no bundle-branch alternation; clustering at rest and nocturnally. At least one diary-flagged chest-tightness episode occurred in sinus rhythm 80-85 bpm, arguing against ischaemia-linked conduction disturbance at that time. Echocardiography and CMR were normal. At electrophysiology study (St. Jude Supreme quadripolar 5-5-5 mm and Josephson 4-mm tip catheters): sinus rhythm 90 bpm; AH 90 ms; HV 44 ms; SNRT 116 ms; corrected SNRT 716 ms; anterograde AV-nodal Wenckebach point 270 ms; retrograde VA Wenckebach point 260 ms; no infra-Hisian delay on His-bundle electrograms. On examination she was diffusely wheezy; inhaled salbutamol (two puffs every 20 minutes) on top of maintenance budesonide-formoterol promptly relieved chest tightness and breathlessness.

Discussion and Conclusions: the convergence of telemetry features (PP+PR prolongation with narrow QRS and rest/night clustering), structurally normal imaging, and normal invasive conduction parameters supports an extrinsic, vagally mediated nodal block precipitated by sulfite-triggered bronchospasm. In the literature, sulfite-associated asthma is well described, and bronchospasm can elicit exaggerated vagal reflexes capable of transiently depressing AV-nodal conduction; recognising this bronchospasm-vagal link in structurally normal hearts can guide management toward optimising bronchodilation and considering trigger avoidance before contemplating device therapy.

ARITMIE 528
STUDI ELETTROFISIOLOGICI INVASIVI (ARITMIE)
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)
ASPETTI GENETICI DELLE ARITMIE (ARITMIE)

REPOLARIZATION AND DEPOLARIZATION ABNORMALITIES ARE PREFERENTIALLY IMPAIRED BY AJMALINE IN BRUGADA PATIENTS COMPARED TO CONTROLS: THE ROLE OF ENDOCARDIAL MAPPING ON UNVEILING THE CRITICAL SUBSTRATE

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Background: Repolarization abnormalities induce localized slow-conducting area on the RVOT epicardium representing a crucial substrate for arrhythmogenesis in BrS. No data exist on the electrical substrate analysis using high-density unipolar endocardial

Purpose: To investigate the repolarization mapping through endocardial unipolar J-elevation variation of RVOT in BrS patients and in controls undergoing ajmaline and their relations with local activation time (AT).

Methods: 23 consecutive BrS patients and 3 controls underwent pre/post ajmaline RV endocardial mapping. J-elevation for each point was calculated as the amplitude in mV of the unipolar signal at J-point from zero-line. AT was defined as the difference between local depolarization (minimum -dV/dt of the unipolar signal) and surface ECG depolarization. Pre-post AT and J-elevation maps were created. Highest variation area of J-point was selected considering the third quartile of the entire RVOT.

Results: BrS revealed unipolar J point elevation reduction and AT prolongation after ajmaline mainly in the anterior part of RVOT, while controls did not (1.12±0.58 mV vs 0.32±0.20, p=0.01 and 14.27±13.05 ms vs 1,02±0.97, p=0.01).
Considering BrS population, ATs significantly increase in the area of maximal J-point variation in RVOT (18.69±17.01 ms upper quartile of J-point variation vs 13.56±13.30 lower quartiles, p=0.04). A point-by-point linear correlation between J-point and AT variation in the RVOT was found in 16/23 BrS subjects.

Conclusions: Localized repolarization and depolarization abnormalities in the RVOT are typically found in BrS patients but not in controls. Unipolar endocardial mapping unveils the critical substrate unmasking local repolarization and depolarization dispersion area.
In BrS, higher repolarization dispersion area, typically located in the RVOT, correlates with slow-conducting zones.

ARITMIE 989
ABLAZIONE TRANSCATETERE (ARITMIE)
ARITMIE SOPRAVENTRICOLARI (ESCLUSA FA) (ARITMIE)
STUDI ELETTROFISIOLOGICI INVASIVI (ARITMIE)

ABLATION OF FREQUENT ATRIAL PREMATURE CONTRACTIONS FROM LEFT ATRIAL APPENDAGE USING OCTARAY CATHETER INTEGRATED WITH 3D MAPPING SYSTEM: A CASE REPORT

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Background. Atrial premature contractions (APCs) are frequently observed in clinical practice. They may be completely asymptomatic or cause symptoms, such as palpitations, dizziness, and syncope. Very frequent APCs can lead to arrhythmia-related cardiomyopathy and heart failure. Radiofrequency transcatheter ablation (RFTA) has proven to be an effective option in ablating APCs when they are symptomatic, frequent, and resistant to antiarrhythmic drugs (AADs).

Case presentation. A 75-year-old woman with a history of symptomatic APCs was admitted to our hospital due to a recent worsening of palpitations after a long period of effective therapy with flecainide. The 24-h Holter monitoring revealed a significant increase in APCs burden. Physical examination and biochemical tests were unremarkable. Echocardiography showed a slight enlargement of the left atrium (LA) size and normal left ventricular (LV) size and function. Given the failure of AAD therapy, RFTA was discussed with the patient, who opted for the procedure. At the beginning of the electrophysiological study, the patient was in sinus rhythm with frequent APCs. Mapping was performed using the 3 D mapping system CARTO 3 and the Octaray multielectrode catheter. After mapping the right atrium, the LA was mapped following a transseptal puncture under pressure and fluoroscopic guidance (maintaining ACT > 250-300 ms). The earliest atrial activation was identified on the left side of the interatrial septum, near the base of the LA appendage, where the local electrograms preceded the onset of the P-wave by 20 ms, with a unipolar QS configuration. After confirming the absence of phrenic nerve capture, RF energy was delivered at this site using the ablation catheter with immediate disappearance of APCs.
Additional consolidation burns were applied, based on impedance drop. Finally, isoproterenol infusion and aggressive programmed stimulation were performed without inducing tachycardia or APCs. During the subsequent hospital stay, the patient remained asymptomatic and no APCs were observed on ECG monitoring.

Discussion. This case confirms the feasibility of managing APCs with RFTA and highlights

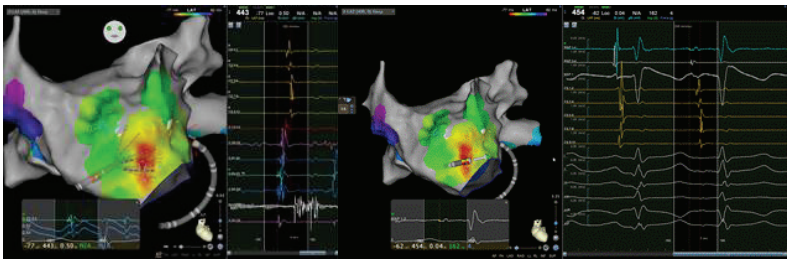


Figure 1

the effectiveness of the Octaray catheter for 3D electroanatomical mapping. The catheter demonstrated excellent ability to rapidly identify ectopic signals, particularly in rare and unexpected locations such as the basal LA appendage, which may be more challenging to detect with traditional mapping systems.

ARITMIE 510
ARITMIE VENTRICOLARI (ARITMIE)
ASPETTI GENETICI DELLE ARITMIE (ARITMIE)
ELETTROCARDIOGRAFIA/ CARDIOVERSIONE/ DEFIBRILLAZIONE (ARITMIE)
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)

CLINCAL IMPLICATIONS OF MUTATIONAL HOTSPOTS IN DESMOSOMAL CARDIOMYOPATHIES

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Background: Desmosomal gene variants (DGVs) have been associated to remarkable spectrum of phenotypic manifestations within arrhythmogenic cardiomyopathy and predispose carriers to life-threatening arrhythmias (LAEs). Differently from other inherited arrhythmia syndromes, the contribution of genetic data for the diagnosis and prognosis of patients with arrhythmogenic cardiomyopathy is limited.

Purpose: The study aimed to identify mutational hotspots in PKP2 and DSP genes and determine the association between different types of variants and clinical outcomes.

Methods: We included consecutive probands, carriers of PKP2 and DSP gene variants, and their genotype-positive family members. Genetic analysis was conducted using next-generation sequencing (Ion Torrent Personal Genome Machine; Thermo Fisher) on a cardiomyopathy gene panel or Sanger sequencing (ABI PRISM 330; Thermo Fisher) on desmosomal genes, depending on the year of enrolment. For the topological characterization of missense DGVs, we defined their location according to Mohammed et al. To identify domains overrepresented in our cohort relative to controls, we compared the distribution of the missense variants found in our cohort with rare (MAF<0.01%) missense variants from the Genome Aggregation Database.

Results: We included n=150 probands carriers of PKP2 and DSP gene variants, and their n=222 genotype-positive family members, for a total of n=372 individuals. For PKP2 gene variants, the comparison of n=18 rare missense variants identified in our cohort and n=524 missense variants in healthy controls identified ARD6 as an enriched domain (AA 680-710; Odds Ratio, OR 7.3, 95% CI 1.9-28.1; p=0.006). For DSP gene variants, the comparison of n=43 rare missense variants identified in our cohort and n=1,867 missense variants in healthy controls found that the following domains were significantly enriched in patients: SR4 (amino acids [AA] 272-375; OR 4.6, 95% CI 1.7-12.1; p=0.0084) and GSR (AA 2828-2844; OR 7.5, 95% CI 1.6-34.8; p=0.0276). We found that non-missense DSP variants (HR 2.2, 95% CI: 1.2-3.9; p=0.011), missense DSP variants in hotspot domains (HR 3.0, 95% CI: 1.4-6.6; p=0.006) and missense PKP2 variants in hotspot domains (HR 3.3, 95% CI: 1.9-5.8; p<0.001) were associated to a higher risk of first LAE during life compared to non-missense PKP2 variants.

Conclusions: Rare missense variants located within specific mutational hotspots in PKP2 (ARD6) and DSP (SR4 and GSR) were associated with a significantly increased risk of first life-threatening arrhythmic events. Our results support the diagnostic and prognostic value of variant localization, suggesting that topological analysis may enhance current risk stratification strategies in arrhythmogenic cardiomyopathy and aid in the clinical interpretation of desmosomal gene variants.

ARITMIE 515
ARITMIE VENTRICOLARI (ARITMIE)
ASPETTI GENETICI DELLE ARITMIE (ARITMIE)
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)

DESMOSOMAL CADHERINS: IMPLICATIONS FOR CLINICAL MANAGEMENT

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Background: Variants in genes encoding for desmosomal cadherins represent a fairly common cause of arrhythmogenic cardiomyopathy but hitherto remain poorly characterized. Further complicating management, evidence regarding the clinical relevance of heterozygous mutations remains contrasting.

Purpose: The study aimed to determine the contribution of a heterozygous variants in genes encoding for desmosomal cadherins (DSG2 and DSC2) towards arrhythmic outcomes.

Methods: We included consecutive probands, carriers of DSG2 and DSC2 gene variants, and their genotype-positive family members.
Genetic analysis was conducted using next-generation sequencing (Ion Torrent Personal Genome Machine; Thermo Fisher) on a cardiomyopathy gene panel or Sanger sequencing (ABI PRISM 330; Thermo Fisher) on desmosomal genes, depending on the year of enrolment.
Arrhythmogenic right ventricular cardiomyopathy (ARVC) was defined according to the revised 2010 Task Force Criteria and further subdivided into "lone right ventricular (RV)" and "biventricular" forms according to disease extension. Patients who did not satisfy the 2010 Task Force Criteria but had left ventricular (LV) involvement were defined as affected by "LV-dominant phenotype", while those without LV involvement were considered "phenotype negative".
To investigate outcomes, we used Cox regression analysis from birth, with age as the time scale, to the time of the last follow-up or the occurrence of the life-threatening arrhythmic event (LAE), whichever occurred first.

Results: We included n=131 carriers of DSG2 and DSC2 variants (n=43 probands and their n=88 genotype-positive family members. Interestingly, DSC2 carriers were a decade older than DSG2 carriers at presentation (DSC2 47 years [29-57 years] vs. DSG2 33 years [20-52 years], p=0.05). Conversely, there were no significant phenotypical differences: a third of patients presented with lone RV disease (DSG2 35% vs. DSC2 32%), a third with LV dominant disease (DSG2 23% vs. DSC2 36%) and about less than a third were phenotype negative (DSG2 28% vs. DSC2 21%) (p=ns for all). Over the course of their lives, 12% of individuals carrying variants in genes encoding for desmosomal cadherins suffered a first LAE (DSG2: 12/97, 12% vs. DSC2: 4/34, 12%; p=ns), with comparable age at first LAE (DSC2 49 years [42-52 years] vs. DSG2 38 years [33-45 years], p=ns).

Conclusions: We show here that heterozygous variants in genes encoding for desmosomal cadherins cause a distinct form of arrhythmogenic cardiomyopathy with predominant biventricular involvement. Interestingly, there were no significant phenotypical differences between carriers of DSG2 and DSC2 gene variants, suggesting that desmosomal cadherins variant carriers had similar clinical phenotype. Relevantly, carriers of heterozygous variants in genes encoding for desmosomal cadherins experienced a substantial amount of LAEs, without significant gene-related differences.

ARITMIE 447
ABLAZIONE TRANSCATETERE (ARITMIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
STUDI ELETTROFISIOLOGICI INVASIVI (ARITMIE)

FEASIBILITY AND SAFETY OF PULSED FIELD ABLATION DURING CORONARY SINUS AND LEFT ATRIAL APPENDAGE ISOLATION AND MITRAL ISTHMUS ABLATION: ACUTE AND CHRONIC FINDINGS

Vincenzo Mirco La Fazia (a), Marco Marino (a), Sanghamitra Mohanty (b), Andrea Parato (a), Francesco Pocelli (a), Tommaso Barbati (a), Gian Paolo Novelli (a), Gaetano Chiricolo (a), Giuseppe Stifano (a), Andrea Natale (a, b)
(a) POLICLINICO TOR VERGATA; (b) TEXAS CARDIAC ARRHYTHMIA INSTITUTE

Background: The safety and efficacy of pulsed field ablation for pulmonary vein and posterior wall isolation in atrial fibrillation ablation are well established; however, evidence regarding its use in extra-pulmonary vein areas remains limited. The aim of this study was to assess the feasibility and durability of pulsed field ablation for coronary sinus (CS) and left atrial appendage (LAA) isolation and mitral isthmus (MI) ablation.

Methods: We analyzed data from consecutive patients who underwent repeat atrial fibrillation ablation with pulsed field ablation between February and October 2024. MI ablation, CS isolation, and LAA isolation were attempted in all patients using the Farapulse (Boston Scientific) ablation system.
Acute isolation was assessed after a 20-minute waiting period and an adenosine challenge, while chronic durability was evaluated during a repeat procedure for LAA closure at 3 months.

Results: A total of 236 patients (145, 61.4% male) were included in our analysis. Acute CS isolation was achieved in 147 (62.2%) patients for the CS and in all patients for the LAA. Acute MI block was obtained in all patients. After a 20-minute waiting time, the adenosine challenge revealed dormant conduction in 52 (26.4%) cases for the CS, in 4 (1.7%) for the LAA, and MI block regression in 35 (14.8%). All patients underwent remapping at the time of left atrial appendage occlusion, which showed CS and LAA isolation in only 3 (1.3%) and 10 (4.6%) patients, respectively, and MI block in 13 (5.5%) cases.

Conclusions: Pulsed field ablation is a feasible and acutely effective method for CS and LAA isolation and MI block; however, lesion durability remains a significant limitation.

ARITMIE 448
ABLAZIONE TRANSCATETERE (ARITMIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
STUDI ELETTROFISIOLOGICI INVASIVI (ARITMIE)

ORGANIZZATION IN ATRIAL FLUTTER DURING PULSED FIELD ABLATION FOR ATRIAL FIBRILLATION

Vincenzo Mirco La Fazia (a), Marco Marino (a), Sanghamitra Mohanty (b), Andrea Parato (a), Francesco Pocelli (a), Tommaso Barbati (a), Gaetano Chiricolo (a), Gian Paolo Novelli (a), Giuseppe Stifano (a), Andrea Natale (a, b)
(a) POLICLINICO TOR VERGATA; (b) TEXAS CARDIAC ARRHYTHMIA INSTITUTE

Introduction: Pulse Field Ablation (PFA) has been acknowledged as an effective and safe tool for ablation of Atrial Fibrillation (AF). It is known that during AF ablation, the arrhythmia may organize into atrial flutter. The left atrial posterior wall is identified as a critical source of non-Pulmonary Vein (PV) triggers that facilitate maintenance of atrial fibrillation.

Aim: The purpose of this study is to investigate the phenomenon of atrial flutter organization from AF during the application of PFA.

Methods: This prospective multicentric study encompasses 117 consecutive patients with persistent AF across American and European institutions, undergoing first time catheter ablation.
All receive isolation of the Pulmonary Veins (PV) plus Posterior Wall (PW) isolation.
The PW isolation procedure targeted the standard area between the PVs and extended to the area demarcated by the line connecting the inferior borders of the inferior PV-encircling lesions to the coronary sinus defined lower part of PW.
We prospectively report the specific locations where AF organized into atrial flutter with a stable cycle length during PFA.

Results: Organization of AF to atrial flutter during PFA was observed in 72 (61.5%) patients.
Analysis of the organization of flutter revealed that in 41 (56.9%) of these cases, flutter began while ablating the lower part of the PW.
Moreover, 9 (12.5%) initiated at one of the PVs, and 22 (30.5%) during the ablation of the posterior wall.
Notably, the flutter was described as perimitral flutter in 33 (45.8%), as typical flutter in 24 (33.3%), and as roof-dependent flutter in 15 (20.8%) of cases.

Conclusion:
The findings underscore that during PFA for AF, there is a pronounced tendency for the arrhythmia to organize into atrial flutter, particularly during the ablation of the lower posterior wall.
Of note, ablation in the left atrium organized AF in typical atrial flutter at a considerable rate.

ARITMIE 449
ABLAZIONE TRANSCATETERE (ARITMIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
STUDI ELETTROFISIOLOGICI INVASIVI (ARITMIE)

COMPARISON OF ATRIAL ELECTROGRAMS BETWEEN DUAL ENERGY ABLATION CATHETER AND A CONVENTIONAL MAPPING CATHETER

Vincenzo Mirco La Fazia (a), Elio Zito (b), Marco Marino (a), Sanghamitra Mohanty (b), Francesco Pocelli (a), Andrea Parato (a), Tommaso Barbati (a), Gian Paolo Novelli (a), Gaetano Chiricolo (a), Giuseppe Stifano (a), Andrea Natale (a, b)
(a) POLICLINICO TOR VERGATA; (b) TEXAS CARDIA ARRHYTHMIA INSTITUTE

Background: Pulse field ablation (PFA) has emerged as a novel non-thermal energy source for atrial fibrillation (AF) ablation. Most PFA systems lack mapping features. The Sfere-9™ is the first FDA-approved catheter integrated with a mapping system (Affera, Medtronic Inc.) and capable of delivering both radiofrequency and pulsed field energy. The aim of our study is to compare the signals detection properties of the Sphere-9™ catheter with a diagnostic multipolar mapping catheter (Lasso™, Biosense Webster).

Methods: After intracardial echocardiogram (ICE) guided transeptal access, the Sfere-9 catheter was inserted in the left atrium for electroanatomical map. The ablation catheter was then removed, and a 20 poles Lasso was inserted in the left atrium to compare signal in pulmonary veins, posterior wall, mitral isthmus, roof and left atrial appendage. The Signals were recorder in a bipolar configuration using the Prucka 3 with CardioLab™ digital recording electrophysiology system (GE Healthcare). Electrograms were filtered with a bandpass range of 30–500 Hz, using a gain setting of 5000. A qualitative assessment of amplitude (mV) and duration (msec) of each signal was performed. Accurate position and contact of the ablation and the mapping catheter were confirmed with both fluoroscopy and ICE. Two independent operators analyzed the signals, and a third opinion was taken in the event of disagreement between the two experts.

Results: A total of 35 (30, 85.7% male) patients with a median age of 70 years (IQR: 65–76 years) and a persistent AF rate of 82.7%. The quality of EGMs recorded from both catheters was comparable during mapping of the pulmonary veins and posterior wall. However, in the remaining anatomical regions (mitral

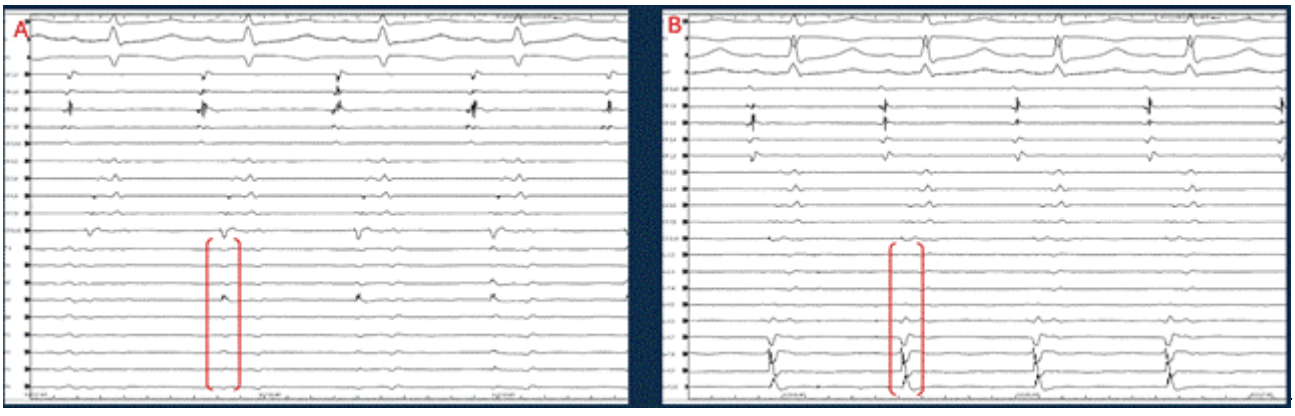


Figure 1

isthmus, left atrial appendage, roof), EGMs obtained with the LASSO catheter were superior in terms of sharpness. (Right panel shows EGM recorded with the Sfere9 catheter and left panel with Lasso catheter).

Conclusions: Operators should be aware of EGM quality, particularly in areas outside the pulmonary veins and posterior wall, as the signals may differ significantly from those typically observed with standard mapping catheters.

ARITMIE 1098
ABLAZIONE TRANSCATETERE (ARITMIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
STUDI ELETTROFISIOLOGICI INVASIVI (ARITMIE)

COMPARATIVE ANALYSIS OF HEMOLYSIS ACROSS DIFFERENT PULSED ABLATION CATHETER

Marco Marino (a), Andrea Parato (a), Francesco Pocelli (a), Tommaso Barbati (a), Gaetano Chiricolo (a), Gian Paolo Novelli (a), Giuseppe Stifano (a), Andrea Natale (a)
(a) POLICLINICO TOR VERGATA

Background: Haemolysis is a recognized side effect of pulsed field ablation (PFA). Severe haemolysis can lead to acute kidney injury, affecting the morbidity of patients undergoing PFA for atrial fibrillation (AF). The aim of our study was to characterize the degree of haemolysis across different PFA technologies.

Methods: We analyzed data from patients with paroxysmal atrial fibrillation who underwent pulsed field ablation (PFA) between October 2024 and July 2025. Three different catheters were evaluated: Farawave (Farapulse, Boston Scientific), Sfere-9 (Affera, Medtronic), and CellFx (CellFx). Patients treated with Farawave or CellFx received 1 liter of Ringer's lactate and 1 liter of 0.9% saline, whereas those treated with Sfere-9 did not receive intravenous fluids. Renal function (creatinine and urea) and hemolysis markers (direct bilirubin, LDH, and haptoglobin) were assessed at baseline (T0) and on the first postoperative day (T1).

Results: A total of 140 patients were included in the analysis. Of these, 60 (42.9%) underwent AF ablation with the Farawave catheter, 50 (35.7%) with the Sphere-9 catheter, and 30 (21.4%) with the CellFX catheter. Baseline characteristics were similar across the three groups. All patients underwent pulmonary vein and posterior wall isolation. The mean number of applications was 70 ± 31 for Farawave, 106 ± 46 for Sphere-9, and 18 ± 5 for CellFX.
Changes in creatinine levels were comparable among the three groups (p = 0.871), with only one patient in the CellFX group experiencing kidney injury requiring dialysis.
A significant degree of haemolysis, defined as a >10% reduction in haptoglobin, was observed in all patients. Changes in haemolysis markers were comparable between Farawave and CellFx, whereas the Sfere-9 catheter was associated with the smallest variation.

Conclusions: PFA-induced hemolysis is common, with different PFA technologies exhibiting variable degrees of hemolysis, lower with the focal PFA catheter Sphere-9 when compared to "single-shot" PFA catheters.

ARITMIE 1026
MECCANISMI DELLE ARITMIE (ARITMIE)
ARITMIE VENTRICOLARI (ARITMIE)
STUDI ELETTROFISIOLOGICI INVASIVI (ARITMIE)
SINCOPE (ARITMIE)
ELETTROSTIMOLAZIONE (ARITMIE)

NAVIGATING POSTOPERATIVE CHALLENGES AFTER AORTIC VALVE SURGERY: SUPRA AND INFRA-HISIAN CONDUCTION DISTURBANCES

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(a) DIVISION OF CARDIOLOGY, CARDIOVASCULAR AND THORACIC DEPARTMENT, CITTÀ DELLA SALUTE E DELLA SCIENZA ; (b) DIVISION OF CARDIOLOGY, DEPARTMENT OF MEDICAL SCIENCES, UNIVERSITY OF TURIN

Background: Supra-hisian and sub-hisian conduction disturbances frequently occur after aortic valve surgery, often manifesting as varying degrees of combined blocks. While the management of conduction disturbances occurring intra-operatively during surgery is better characterized, the postoperative evolution and potential for resolution are less understood. We present a case of a young patient who developed a complex and dynamic combination of supra-hisian and sub-hisian conduction disturbances following aortic valve repair.

Case Report: A 43-year-old male, a noncompetitive athlete engaged in biking and downhill sports, was evaluated for a heart murmur discovered during a sports screening. He was diagnosed with severe aortic regurgitation due to a bicuspid aortic valve with a raphe between the non-coronary and right coronary cusps. In November 2024, he underwent aortic valve repair with the implantation of a HAART 200 ring (25 mm) and reconstruction of the free edge of the fused leaflet. Immediately following the procedure, he developed first-degree AVB and RBBB.
On postoperative day 2, he presented with an HR of 40 bpm and was found to have an advanced AV block with dominant 2:1 conduction, intermittent 3:1 conduction, fixed RBBB, and intermittent LPFB. During an exercise stress test (EST) on postoperative day 10, a dual AV nodal pathway with alternating conduction between the fast and slow pathways despite a stable P-P interval was initially observed, followed by a transient 3:1 AV block with competitive ventricular rhythm at 55 bpm. Dromotropism progressively improved during exertion, achieving stable 1:1 AV conduction with RBBB and LPFB for sinus rates between 117 and 141 bpm.
At peak exertion (141 bpm), a fascicular couplet (non-early but relatively rapid) led to complete AV block (5 non-conducted P waves, 2.9-second pause), likely at a Hisian level (fatigue phenomenon). AV conduction then resumed with 3:1 ratio for 8 seconds, followed by stable 1:1 AV conduction, alternating between two nodal pathways, while RBBB and LPFB persisted through recovery. Some fascicular couplets occurred during recovery, but did not trigger complete AV block, indicating that the conduction fatigue phenomenon was likely HR-dependent.
Despite recommendations for permanent pacemaker implantation due to persistent RBBB, intermittent LPFB, and combined AV block (with supra- and hisian/sub-hisian components), the patient preferred close monitoring avoiding high-intensity activities. On January 9th, an EST was repeated. The baseline EKG showed sinus rhythm at 90 bpm, with 1:1 AV conduction, RBBB, and LPFB. Regular AV conduction was maintained up to peak exertion (179 bpm, 101% of maximum expected HR). PVCs began occurring from the third minute, initially isolated and then repetitive, culminating in a non-sustained polymorphic ventricular

tachycardia run at peak exertion, without subsequent AV block.

On January 17th, 2025, an electrophysiological study revealed no significant Hisian disease (AA 630 ms, AH 148 ms, HV: 58 ms). Based on these findings, a loop recorder was implanted for continuous monitoring. Since implantation, no significant arrhythmic events have been recorded, and a cardiac MRI has been scheduled to rule out underlying cardiomyopathy at this early stage.

Stretch with partial damage of the conduction system due to valve displacement and annular positioning, and dynamic myocardial edema were advocated as potential mechanisms of the observed conduction disturbances.

Conclusions: This case emphasizes the critical need for extended EKG monitoring in the context of postoperative conduction disturbances. It also highlights the value of stress testing for distinguishing between nodal and subnodal conduction delays, as well as the importance of electrophysiological study and long-term monitoring. Furthermore, it suggests that MRI could be a valuable tool for evaluating the progression of postoperative edema and scar tissue following surgery.

ARITMIE 269
ABLAZIONE TRANSCATETERE (ARITMIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT) (IMAGING CARDIOVASCOLARE)

LEFT ATRIAL INTRAMYOCARDIAL FAT AT PULMONARY VEIN RECONNECTION SITES DURING ATRIAL FIBRILLATION REDO ABLATION

Federico Landra (a), Giulio Falasconi (a), Diego Penela (c), David Soto-iglesias (a), Emanuele Curti (a), Bruno Tonello (a), Paula Franco-ocaña (a), Julio Martí-almor (a), Matteo Cameli (d), Antonio Berruezo (a)
(a) ARRHYTHMIA DEPARTMENT, TEKNON HEART INSTITUTE, TEKNON MEDICAL CENTER, BARCELONA, SPAIN; (b) CITTA´ DELLA SALUTE E DELLA SCIENZA HOSPITAL, TURIN, ITALY; (c) IRCCS HUMANITAS RESEARCH HOSPITAL, ROZZANO, MILAN, ITALY; (d) DEPARTMENT OF MEDICAL BIOTECHNOLOGIES, DIVISION OF CARDIOLOGY, UNIVERSITY OF SIENA, ITALY

BACKGROUND AND AIMS: Electrical reconnections between pulmonary veins (PVs) and the left atrium (LA) are frequently responsible for atrial fibrillation (AF) recurrences after pulmonary vein isolation (PVI). Multidetector computed tomography (MDCT)-derived images can be post-processed to detect intramyocardial fat (inFAT) by signal radiodensity thresholding. The role of inFAT on PV-LA reconnections remains unknown. The aim of this study was to analyze the relationship between inFAT localization at pre-procedural MDCT-derived inFAT maps from first AF ablation and PV-LA reconnections in patients with AF recurrence undergoing redo ablation.

METHODS: We included 45 consecutive patients who underwent AF redo ablation presenting at least one PV-LA reconnection. First AF ablation preprocedural MDCT-derived data were post-processed with ADAS 3DTM to create 3D LA inFAT maps, that were loaded into CARTO3 navigation system and merged with the electroanatomical map for reconnection site analysis.

RESULTS: In 103 out of 156 (66.0%) PV-LA reconnection points inFAT was identified in the 6mm diameter tag point depicted in the navigation system. When dividing the PVI line into standardized segments, those identified as containing PV-LA reconnection points (i.e. reconnection segments) exhibited significantly higher total inFAT volumes compared with non-reconnection segments (8.05±6.56 vs. 5.40±5.18 μL, p<0.001). Additionally, reconnection segments showed greater volumes of inFAT components, specifically dense inFAT (0.06±0.06 vs. 0.03±0.04 μL, p<0.001) and fat-myocardial admixture (7.98±6.52 vs. 5.37±5.16 μL, p<0.001).

CONCLUSION: InFAT is co-localized with two thirds of PV-LA reconnection points in patients undergoing AF redo ablation. Reconnection segments exhibit significantly higher inFAT volumes compared to non-reconnection segments. This proof-of-concept study suggests that inFAT may play a role in PV-LA electrical reconnections following PVI.

ARITMIE 704
ELETTROSTIMOLAZIONE (ARITMIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
ABLAZIONE TRANSCATETERE (ARITMIE)

A MULTI-CENTER STUDY COMPARING LEADLESS PACEMAKER VS. STANDARD PACEMAKER IN PATIENTS WITH INDICATION TO ABLATE AND PACE FOR ATRIAL FIBRILLATION (LEAD-AP)

Ingrid Overeinder (a), Luigi Pannone (a), Domenico Laviola (a, f), Wael Zaher (a, b), Giacomo Mugnai (c), Gianmarco Arabia (d), Ivan Eltsov (a), Ioannis Doundoulakis (a), Domenico Giovanni Della Rocca (a), Paul-adrian Calburean (a), Vedran Pasara (a), Ludovica Carmagnola (a), Tommaso Sattin (a), Antonio Sorgente (a), Alvise Del Monte (a), Giacomo Talevi (a), Gezim Bala (a), Alexandre Almorad (a), Erwin Ströker (a), Juan Sieira (a), Ali Gharaviri (a), Mark La Meir (e), Pedro Brugada (a), Andrea Sarkozy (a), Gian Battista Chierchia (a), Antonio Curnis (d), Serge Boveda (b), Carlo De Asmundis (a)

(a) HEART RHYTHM MANAGEMENT CENTRE, UZ BRUSSEL, HEART RHYTHM RESEARCH BRUSSEL; (b) HEART RHYTHM MANAGEMENT DEPARTMENT, CLINIQUE PASTEUR, TOULOUSE, FRANCE; (c) DIVISION OF CARDIOLOGY, CARDIO-THORACIC DEPARTMENT, UNIVERSITY HOSPITAL OF VERONA, ITALY; (d) INSTITUTE OF CARDIOLOGY, ASST SPEDALI CIVILI, UNIVERSITY OF BRESCIA, ITALY; (e) CARDIAC SURGERY DEPARTMENT, UZ BRUSSEL, BELGIUM; (f) DEPARTMENT OF CLINICAL, INTERNAL, ANESTHESIOLOGY AND CARDIOVASCULAR SCIENCES, POLICLINICO UNIVERSITARIO UMBERTO I, SAPIENZA UNIVERSITY OF ROME, ITALY

Background and aims: In patients with symptomatic permanent atrial fibrillation (AF) who are not candidates for rhythm control, atrioventricular node (AVN) ablation followed by ventricular pacing "ablate-and-pace" offers reliable rate control and symptom relief.
Conventional transvenous systems are effective but associated with lead- and pocket-related complications. Leadless pacemakers represent a promising alternative, yet comparative data in this setting remain scarce.
The aim is to compare clinical outcomes of leadless versus transvenous single-chamber pacemakers in patients undergoing AVN ablation for permanent AF.

Methods: We conducted a retrospective, multicenter study (LEAD-AP) of 168 consecutive patients undergoing ablate-and-pace between 2017 and 2024 across four European centers. Patients received either a leadless pacemaker (n=56) or a conventional transvenous VVI pacemaker (n=112). The co-primary efficacy endpoints were: (1) device-related hospitalizations or reinterventions; and (2) a composite of all-cause mortality, cardiovascular mortality, AF-related hospitalizations, unplanned outpatient visits, and device-related hospitalizations/reinterventions.
The primary safety endpoint was acute complications within 30 days.

Results: Patients in the leadless group more frequently underwent a single-step ablate-and-pace strategy (96.4% vs 10.9%, p<0.001), resulting in shorter

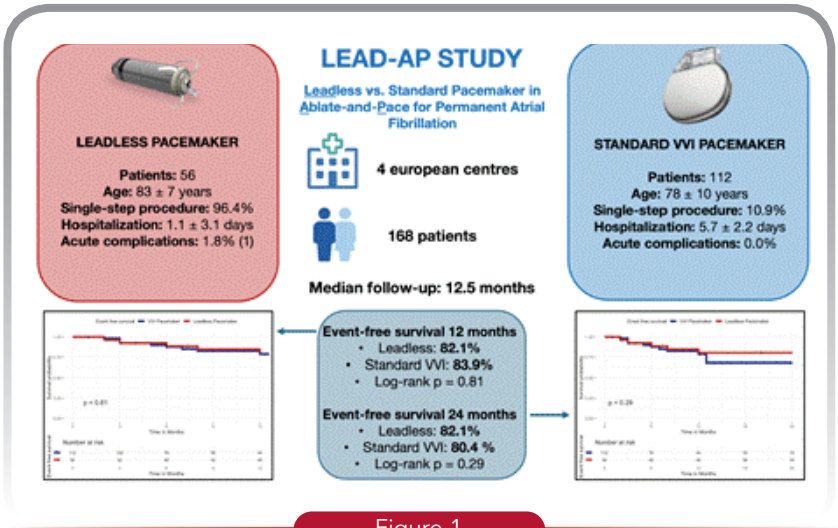


Figure 1

hospitalization (1.1 days ± 3.1 vs 5.7 days ± 2.2, p=0.008). At 24 months of follow-up, there was no statistically significant difference between patients with leadless pacemaker vs standard single-chamber VVI pacemaker in the event-free survival for the composite clinical efficacy endpoint (82.1 % vs 80.4 % Log-Rank p = 0.29).

Conclusion: Leadless pacemakers provide comparable safety and efficacy to transvenous systems in ablate-and-pace patients, while enabling shorter hospitalization through a streamlined single-step approach.

ARITMIE 938
ARITMIE SOPRAVENTRICOLARI (ESCLUSA FA) (ARITMIE)
MECCANISMI DELLE ARITMIE (ARITMIE)
MONITORAGGIO DELLA PRESSIONE AMBULATORIALE (IPERTENSIONE ARTERIOSA)

SYSTOLIC BLOOD PRESSURE VARIABILITY AND ATRIAL ARRHYTHMIAS RISK: AN ANALYSIS USING SIMULTANEOUS APPLICATION OF BOTH 24-HOUR BLOOD PRESSURE MONITORING AND HOLTER ECG

Davide Lazzeroni (b), Alessandro Guglielmetti (b), Valentina Ziveri (b), Elisa Lazzaro (b), Simone Geroldi (b), Umberto Camaiora (b), Giovanna Cacciola (b), Marta Rossetti (b), Matteo Bini (b), Lorenzo Brambilla (b), Giampaolo Niccoli (a), Aderville Cabassi (c)

(a) U.O. DI CARDIOLOGIA - UNIVERSITA' DEGLI STUDI DI PARMA; (b) CENTRO DI PREVENZIONE CARDIOVASCOLARE - FONDAZIONE DON GNOCCHI, PARMA;
(c) DIPARTIMENTO MEDICINA E CHIRURGIA - UNIVERSITA' DI PARMA

Background: Blood Pressure Variability (BPV) has been proposed as a potential marker of cardiovascular risk, independent of average blood pressure values, and has been associated with an increased risk of cerebrovascular events such as stroke and vascular dementia. However, the association between BPV and atrial tachycardia (AT)- an arrhythmic condition potentially related to autonomic nervous system dysfunction remains poorly defined.

Aims The primary aim of this study was to evaluate whether 24-hour ambulatory blood pressure data can predict the risk of atrial tachyarrhythmias (AT), by analysing hemodynamic, autonomic, and arrhythmic parameters collected simultaneously through 24-hour ABPM and ECG Holter monitoring. A secondary objective was to explore the relationship between blood pressure variability, autonomic function, and atrial arrhythmic risk.

Methods: A total of 499 patients underwent simultaneous 24-hour ABPM and ECG Holter.

Results: Patients with AT showed significantly higher systolic BP variability during both the 24-hour and daytime periods, as expressed by SD and CoV ($p < 0.05$). The risk of AT increased by 8% for each 1 mmHg increase in 24h SBP SD (OR: 1.08; 95% CI: 1.01–1.15; $p = 0.027$) and by 12% for each unit increase in daytime SBP CoV (OR: 1.12; 95% CI: 1.03–1.20; $p = 0.005$). A graded increase in arrhythmic risk was observed across quintiles of SBP CoV. Autonomic analysis revealed a significant association between higher sympathetic fractal complexity (HDFA Day) and AT risk (OR: 1.60; 95% CI: 1.01–2.54; $p = 0.045$). Moreover, the combination of high SBP variability and elevated HDFA conferred a threefold increase in AT risk compared to lower-risk profiles.

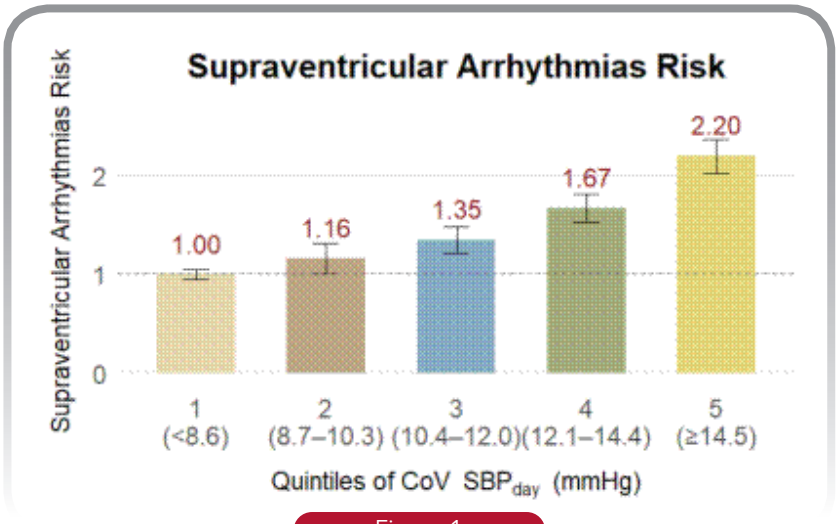


Figure 1

Conclusion: Increased systolic blood pressure variability over 24 hours is independently associated with atrial tachycardia, particularly during the daytime period. This relationship appears to be mediated by elevated sympathetic activity, as indicated by fractal HRV metrics. The combined presence of hemodynamic lability and autonomic dysregulation significantly amplifies arrhythmic risk, supporting the integration of both BP variability and autonomic markers in arrhythmia risk stratification.

ARITMIE 821
ELETTROSTIMOLAZIONE (ARITMIE)
GESTIONE DELLA COMPLICANZE PM / ICD (ARITMIE)
ASPETTI GENETICI DELLE ARITMIE (ARITMIE)

LEADLESS PACING: THE PRESENT AND THE FUTURE. A TABLE SCORE FOR HEALT TECHNOLOGY ASSESSMENT

Danilo Ricciardi (a), Paola Liporace (a), Lorenzo Frau (a), Daniele Valente (a), Flavio Angelo Gioia (a), Vito Calabrese (a), Francesco Picarelli (a), Francesco Grigioni (a), Gian Paolo Ussia (a)
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Leadless pacing has evolved rapidly in recent years, the introduction of these devices offering the possibility of atrioventricular synchronized pacing in VDD mode, atrial pacing, dual chamber pacing and with increased battery life. Leadless innovations allow to respond more broadly to many therapeutic needs. Leadless pacemakers were developed to reduce complications associated with transvenous pacemaker implantation. The existing ESC guidelines predate the market entry of new leadless technologies lack detailed instructions on patients eligible for leadless pacemaker implantation and therefore limit their use to a small portion of patients in class II a and b only as an alternative to transvenous pacing. After 2021, several studies continued to evaluate the efficacy and safety of leadless pacemakers, but the evidence has not yet completely "overturned" the 2021 ESC guidelines. However, there were some key findings that could influence future revisions of the guidelines. The aim is therefore to develop a document that provides medical guidance for all healthcare professionals involved in the indication and implantation of single or dual chamber pacemakers of the transcatheter pacing system. The aim is to standardize the indications and include all patients who could benefit from this technology, beyond the existing guidelines. For example, patients with obesity, diabetes, renal dysfunction, dialysis, immunosuppressive therapy, recurrent infections, or increased infection risk. The reduction of infections in the patient translates into a reduction of long hospital stays and consequently in cost savings. The score considers also young patients, who could benefit from this technology by avoiding TV leads when a long-life expectancy is expected, as transvenous leads may break or have insulation leaks over time, which requires rehospitalization for the patient, exposing them to a higher risk of infection. Furthermore, even if the young patient were to undergo multiple leadless replacements over time, there is no longer a problem of bulkiness as a dedicated catheter for device extraction is now available.

In conclusion, due to a lack of indication as per actual guidelines, a standardization of different kind of leadless pacemaker implantation has the be developed. This score, if clinically validated in future prospective studies, should help the clinicians in selection of the optimal candidate to each type of cardiac pacing device.

ARITMIE 824
ABLAZIONE TRANSCATETERE (ARITMIE)
SINCOPE (ARITMIE)
STUDI ELETTROFISIOLOGICI INVASIVI (ARITMIE)
MECCANISMI DELLE ARITMIE (ARITMIE)

CRYOBALLOON CARDIONEUROABLATION AND QUALITY OF LIFE IMPROVEMENT IN THREE YOUNG PATIENTS: A CASE SERIES

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Cardioneuroablation (CNA) is a promising and evolving strategy for managing bradycardia and recurrent vasovagal syncope, in symptomatic younger patients. CNA offers an alternative, potentially avoiding device implantation in selected cases. CNA procedures are currently performed using radiofrequency ablation; however, recent innovations have introduced the use of cryoballoon approach, although there is limited evidence and only a few clinical cases reported in the literature.

We present three cases of CNA using the cryoballoon, demonstrating significant improvement in patients' quality of life, to increase the evidences about this approach. We enrolled three young patients. Patient 1: a 35-year-old male with suspected epilepsy treated with valproic acid, paroxetine, and trazodone, with a 14-year history of frequent syncopal episodes significantly impacting his quality of life. An implanted loop recorder showed marked bradycardia with multiple sinus arrests, leading to a recommendation for DDD pacemaker implantation, which he declined. Patient 2: a 33-year-old male smoker with no previous cardiovascular history, presented to the emergency department with oppressive chest pain and presyncope. Patient 3: a 28-year-old male with a known persistent left superior vena cava draining into the coronary sinus, alongside sleep apnea and sleep-wake cycle disturbances. Under long-term cardiac follow-up due to his congenital anomalies, exhibited frequent pauses up to 5 seconds on periodic 24 hours and 7 days Holter ECG. Sleep disturbances were initially managed with long-release melatonin and attempts to change his habits, without success. After the demonstration of significant pauses on injectable cardiac monitor or on telemetry monitoring, we performed an electrophysiological study and, after a consultation with the patients, cardioneuroablation with crioballoon approach (Patient 1: Cryoablation was applied to all four pulmonary vein ostia; Patients 2 and 3: Cryoablation was applied to the left and the right superior vein). At follow-up, all patients showed no significant pauses or symptoms.

Cardioneuroablation using a cryoballoon approach shows promising results in young. The procedure's simplicity, safety profile, and potential for rapid improvement in quality of life warrant further studies to validate long-term outcome.

ARITMIE 745
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)
MECCANISMI DELLE ARITMIE (ARITMIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)

MITRAL VALVE PROLAPSE PROTOCOL (MIVAP): HISTOLOGICAL EVIDENCE OF INFLAMMATORY CLUSTERS IN PATIENTS UNDERGOING SURGICAL TREATMENT OF MITRAL VALVE

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Mitral valve prolapse (MVP) is a prevalent valvular disease affecting 0.6-3.1% of the general population and can lead to serious complications, such as malignant ventricular arrhythmias and sudden cardiac death, which may be the first clinical presentation. Identifying high-risk patients is crucial for tailored diagnostic and therapeutic management. Moreover, in patients with MVP the incidence of new onset atrial fibrillation (AF) was 24% during a 10-year follow-up after MV surgery. This study aimed to evaluate the presence of inflammatory cells in excised MV and the association beetween histopathological findings in surgical patients with MVP and major adverse cardiovascular events (MACE). Between October 2023 and April 2024, 38 patients at our institution underwent surgical correction of MVP. Clinical preoperative data and intraoperative samples were collected, including portions of the mitral leaflet and periannular tissue at the left atrioventricular junction, followed by histopathological examination. The primary endpoint of the study was the first occurrence of major adverse cardiovascular events (MACE) including sustained VA and AF, ventricular or atrial arrhythmic burden exceeding 20% as detected by 24-hour Holter ECG, in-hospital readmission or death from any cardiovascular cause. The aim of our study was to evaluate if the histopathological findings in surgical patients with MVP might be associated to increased risk of MACE at early postoperative follow-up. In the MIVAP study, 38 patients with MVP and surgical indication for mitral valve repair or replacement were enrolled. Based on the histopathological analysis, we divided the population into two groups: 17 patients (45%) with clear evidence of inflammatory infiltrate (Infl +) and 21 patients (55%) without inflammatory infiltrate (Infl -) at the level of the mitral valve. The inflammatory infiltrate was composed of macrophages, T lymphocytes, mast cells, and B lymphocytes. At the mean follow-up of 10 ± 4 months, the primary endpoint, after 2 months blanking period, occurred in 6 patients (16%) out of the overall population: 5 patients in Infl + group and 1 in Infl - group (p = 0.02). Based on the current literature, the MIVAP appears to be the first study in which histological analysis of the MVP has revealed the presence of clear inflammatory infiltrate in the spongiosa layer of the valve obtained from surgical specimens of patients undergoing either repair or valve replacement. In detail, we identified fibromyxoid and/or fibrocalcific degeneration across the entire population, accompanied by a lymphohistiocytic infiltrate in the mitral valve specimens of 45% of these surgical patients.

In patients undergoing cardiac surgery for MVP, the presence of local inflammatory infiltrate associated with LV fibrosis appears to act as a trigger for arrhythmias in the short-term following surgery. Our results need to be validated through future prospective studies that involve larger cohorts and extended follow-up periods. Currently, after evaluating risk factors as outlined by existing guidelines endomyocardial histological analysis of mitral valve specimens obtained during surgical intervention may aid in identifying MVP patients at high risk for developing sustained arrhythmias post-operatively. This approach could facilitate the development of novel therapeutic targets addressing inflammation and myocardial fibrosis in MVP, extending beyond patients with surgical indications.

ARITMIE 805
ARITMIE VENTRICOLARI (ARITMIE)
STUDI ELETTROFISIOLOGICI INVASIVI (ARITMIE)
DEFIBRILLATORE IMPIANTABILE (ARITMIE)
SINCOPE (ARITMIE)
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)

UN ENIGMA TRA SINCOPE E BRUGADA: IL RUOLO CHIARIFICATORE DELLO STUDIO ELETTROFISIOLOGICO

Filippo Maestrini (a), Luca Giunta (b), Italo Porto (a)
(a) UNIVERSITÀ DI GENOVA; (b) POLICLINICO SAN MARTINO

La stratificazione del rischio nei pazienti con Sindrome di Brugada è complessa e diversi studi hanno esplorato l'utilizzo dello studio elettrofisiologico invasivo (SEF) con stimolazione ventricolare programmata. Tuttavia, il valore predittivo del SEF è controverso: alcune evidenze suggeriscono un'associazione tra aritmie indotte e rischio futuro, mentre altre non lo confermano.

Questo caso clinico tratta di un uomo di 55 anni, senza precedenti patologici che si presenta in PS dopo un episodio serale di disorientamento associato a stridor e rilascio sfinterico. L'anamnesi familiare risulta negativa per morte cardiaca improvvisa. ECG con posizionamento alto delle derivazioni precordiali rivela pattern tipo 1 di Brugada (Figura 1).

Durante il ricovero vengono eseguiti accertamenti neurologici (EEG, RMN), per chiarire l'eziologia dell'episodio risultati nella norma, escludendo una possibile causa epilettogena.

Alla luce della dubbia eziologia cardiaca del sintomo, considerata la storia clinica e familiare del paziente, viene proposta la valutazione del rischio aritmico tramite SEF. In sala, dopo un singolo extrastimolo, si induce flutter ventricolare senza polso, interrotto con DC-shock (Figura 2).

L'evidenza di alta suscettibilità aritmica porta all'indicazione per impianto di defibrillatore sottocutaneo (s-ICD), eseguito senza complicanze. Il paziente viene dimesso in buone condizioni.

Nel contesto della stratificazione del rischio nei pazienti con Brugada tipo 1 spontaneo, le decisioni terapeutiche sono tradizionalmente guidate da fatto-

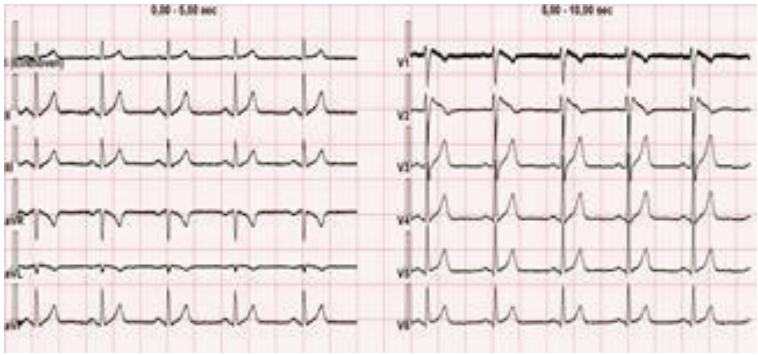


Figura 1

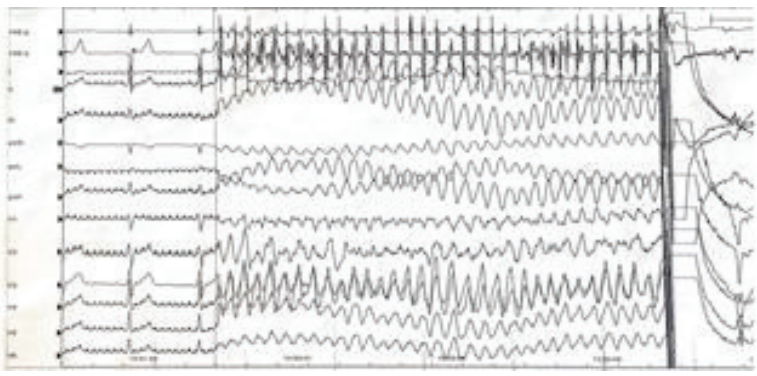


Figura 2

ri clinici consolidati, quali la storia familiare di morte improvvisa, la presenza di sincope documentata e il pattern elettrocardiografico spontaneo o indotto. Il SEF è generalmente considerato uno strumento di supporto, con un valore predittivo positivo relativamente basso e alcune limitazioni nella capacità di identificare in modo affidabile i pazienti a maggior rischio. Tuttavia, il caso presentato rappresenta un esempio emblematico in cui il SEF ha avuto un ruolo determinante nella decisione terapeutica. In questo paziente ha rivelato una vulnerabilità elettrica significativa che non era altrimenti evidente sulla base dei criteri clinici tradizionali.

Questo risultato ha consentito di modificare la valutazione complessiva del rischio e ha giustificato l'indicazione all'impianto di un defibrillatore. Il caso evidenzia come, nei pazienti a rischio intermedio o con presentazioni cliniche ambigue, il SEF possa rivelarsi non solo uno strumento di supporto, ma un elemento informativo determinante.

Al contempo, è necessario interpretare con cautela i risultati del SEF, in quanto l'induzione di aritmie resta un evento artificiale e non tutti i pazienti indotti svilupperanno aritmie spontanee. Pertanto, è sempre necessario integrare il risultato dello studio con la valutazione clinica complessiva, garantendo un approccio personalizzato e multidimensionale per ogni paziente con Sindrome di Brugada.

ARITMIE 373
ARITMIE SOPRAVENTRICOLARI (ESCLUSA FA) (ARITMIE)
ELETTROSTIMOLAZIONE (ARITMIE)
STUDI ELETTROFISIOLOGICI INVASIVI (ARITMIE)
CARDIOTOSSICITA' DA FARMACI
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
DIAGNOSI, PREVENZIONE E TRATTAMENTO DELLA CARDIOTOSSICITA'
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')

INFILTRAZIONE CARDIACA DA MALATTIA DI ERDHEIM-CHESTER: UN CASO DI FLUTTER ATRIALE TIPICO COMUNE E BLOCCO DI CONDUZIONE CHE NECESSITA DI ABLAZIONE E IMPIANTO DI PACEMAKER

Federica Malefora (a), Michela Casella (a), Federico Guerra (a), Antonio Dello Russo (a)
(a) AZIENDA OSPEDALIERA UNIVERSITÀ POLITECNICA DELLE MARCHE

La paziente è una donna di 52 anni, affetta da Istiocitosi mista BRAF V600E mutata (Langherans e non) anche definita malattia di Erdheim-Chester con interessamento cardiaco, osseo, periaortico e del SNC.
Era stata trattata nel 2016 con chemioterapia con Vinblastina + Prednisone (VBN + PDN). Da 01/2025 in terapia con Vemurafenib.

In anamnesi patologica remota cardiovascolare:
- Ipertensione arteriosa essenziale
- 2023 Impianto di Loop Recorder per evidenza all'Holter-ECG di fasi di ritmo giunzione con pause fino a 7 secondi.
- 07/2024 RM cuore: Tessuto solido con enhancement contrastografico a circondare a manicotto la VCS che appare compressa e senza un piano di clivaggio allo sbocco in atrio destro che a sua volta risulta circondato e infiltrato dallo stesso tessuto con associato marcato versamento pericardico circonferenziale dello spessore di 23 mm. LGE intramurale alla parete libera VS in sede basale (pattern non ischemico). Modesto edema miocardico alla parete anteriore basale VS.

La paziente accede in Pronto Soccorso a 04/2025 per cardiopalmo tachicardico incominciato 3 giorni prima:
- ECG: Flutter atriale tipico comune con conduzione 2:1, Fc 145 bpm
- Ecoscopia: rimodellamento concentrico (IVSd 11 mm) del VSn con normali dimensioni. FEVS 45 -50. Severa dilatazione bi-atriale. Lieve IM. Lieve IT, PAPs 27 (12+15) mmHg.

È stata sottoposta a cardioversione elettrica previa esecuzione di eco trans-esofageo. Successivamente è stata ricoverata in reparto dove è stato eseguito il seguente iter:
- SEF e ATC di Futter atriale tipico comune mediante confezionamento di lesione lineare istmica cavo-tricuspidale con radiofrequenza .
- Impianto di pacemaker bicamerale in quanto durante il SEF interrompendo la stimolazione atriale si osservava la presenza di ritmo giunzionale a FC 55 bpm.



Figura 1

Veniva dimessa con la seguente terapia: Apixaban 5 mg, Bisoprololo 2,5 mg, Olmesartan 20 mg. Si sospendeva Vemurafenib su indicazione dell'oncologo per possibile concausa dell'aritmia.

La paziente accedeva nuovamente in Pronto Soccorso a 06/2025 per recidiva di FLA ad elevata risposta ventricolare con conduzione 2:1, veniva sottoposta a cardioversione elettrica e successivo ricovero.
Si sottoponeva la paziente a nuova procedura di ablazione transcatetere di flutter atriale istmo-dipendente con catetere da mappaggio-ablazione (Sphere-9).
Veniva dimessa confermando la terapia d'ingresso e reintroducendo Vemurafenib.
Il presente case report descrive la complessa gestione clinica di una paziente affetta da malattia di Erdheim-Chester con un significativo interessamento cardiaco che ha portato a diverse manifestazioni aritmiche. Il caso è peculiare a causa dell'infiltrazione pericardica e atriale del tessuto istiocitico, responsabile sia del blocco di conduzione che ha richiesto l'impianto di un pacemaker bicamerale, sia degli episodi ricorrenti di flutter atriale.

La paziente ha necessitato di due procedure di ablazione transcatetere e di due cardioversioni elettriche per gestire la recidiva del FLA. La gestione clinica è stata ulteriormente complicata dalla necessità di riconsiderare la terapia farmacologica, con la sospensione iniziale e la successiva reintroduzione del Vemurafenib, dato il potenziale ruolo del farmaco nell'eziologia dell'aritmia.

Questo caso sottolinea l'importanza di un approccio multidisciplinare e di una stretta collaborazione tra specialisti, tra cui cardiologi e oncologi, nella gestione di pazienti con malattie rare che presentano coinvolgimenti multisistemici.

ARITMIE 866
ELETTROSTIMOLAZIONE (ARITMIE)
TERAPIA DI RESINCRONIZZAZIONE (ARITMIE)
GESTIONE DELLA COMPLICANZE PM / ICD (ARITMIE)

ASSESSING THE LEARNING CURVE IN CONDUCTION SYSTEM PACING IMPLANTATION

Amato Santoro (a), Niccolò Manetti (b), Claudia Baiocchi (a), Stefano Lunghetti (a), Daniele Menci (a), Laura Spaccaterra (b), Simone Taddeucci (c), Maurizio Collantoni (b), Francesco Morrone (b), Alessia Petrini (b), Sara Rosi (b), Anita Di Renzo (b), Vincenzo Pecoraro (b), Massimo Fineschi (a)
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Conduction system pacing (CSP) is a widely adopted technique in clinical practice. It is used both in cases of failure during biventricular lead placement and as an alternative to right ventricular pacing. The aim of our study was to retrospectively analyze the first 55 implants performed at our center by two electrophysiologists, focusing on the procedure duration. Additionally, we aimed to identify the learning curve by grouping our observations into sets of five implants for each operator. To assess the learning curve, we used the duration of each procedure as a surrogate parameter.

Methods: A retrospective analysis was conducted on the first 55 CSP implants performed by each electrophysiologist at our center. Lumenless (62) and stylet-driven (48) leads were used in the studied population; total studied population was composed by 120 CSP implant.

Results: The average procedure duration gradually decreased after approximately 40 implants (Figure 1). No differences were observed in terms of CSP type, lead characteristics, or cardiomyopathy type. The primary determinant of procedure duration was found to be the number of procedures performed. Procedure's time and number of CSP implant had a negative correlation (EP1: r:-0.45; p<0.05. EP2: r=-37; p<0.05).

Conclusions: Performing more than 40 CSP implants leads to a reduction and standardization of procedure duration. This improvement is likely attributed to the experience gained and the familiarity with all dedicated materials, such as leads and delivery systems.

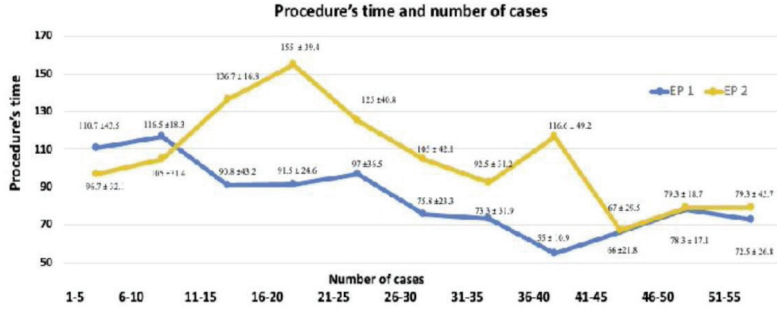


Figure 1: relationship between number of implants and procedural time

Figure 1

ARITMIE 327
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
FARMACI ANTIARITMICI (ARITMIE)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)

CLINICAL PHENOTYPES AND PATTERNS OF COMORBIDITIES IN PATIENTS WITH ATRIAL FIBRILLATION: IMPACT ON CLINICAL OUTCOMES IN A REAL-WORLD PROSPECTIVE OBSERVATIONAL STUDY

Marta Mantovani (a), Marco Vitolo (a), Bendetta Cherubini (a), Elisa Battigaglia (a), Francesco Tritto (a), Michele Cervini (a), Matteo Paolini (a), Giuseppe Colucci (a), Margherita Leoni (a), Kevin Serafini (a), Enrico Tartaglia (a), Niccolò Bonini (a), Davide Antonio Mei (a), Jacopo Francesco Imberti (a), Giuseppe Boriani (a)
(a) CARDIOLOGY DIVISION, UNIVERISTY OF MODENA AND REGGIO EMILIA, ITALY

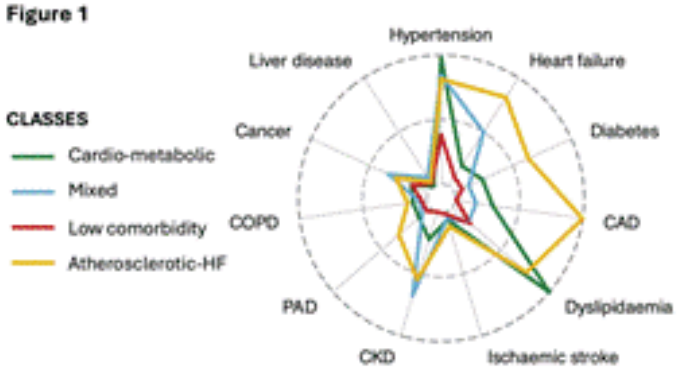
Background: Due to the ageing of the general population, atrial fibrillation (AF) is frequently associated with other concurrent chronic cardiovascular (CV) and non-CV conditions, leading to clinically complex phenotypes. Besides the number, there is increasing awareness that comorbidities tend to aggregate in different clusters, with various and peculiar combinations.

Aim: The aim of this analysis was to identify patterns of comorbidities in AF patients, their clinical course, and the impact of integrated management among clinical phenotypes.

Methods: A latent class analysis based on 11 conditions was performed. Comorbidities included were hypertension, heart failure (HF), diabetes, coronary artery disease, dyslipidaemia, ischaemic stroke, chronic kidney disease, peripheral artery disease, chronic obstructive pulmonary disease, cancer, and liver disease. Cox regression analysis adjusted for age, sex, use of oral anticoagulants (OAC), and type of AF was used to assess the association between classes of patients and outcomes. The primary outcome was a composite of all-cause death, thromboembolic events (TEs), and acute coronary syndrome (ACS). Secondary exploratory outcomes were the single components (all-cause death; TE and ACS).

Results: We included 1233 in- and outpatients with AF (median age 75 [66-82], females 37.5%). Four clinical phenotypes were identified (Figure 1): "Low comorbidity" (n=388, 31.5%; females 34.8%; 67 [58-76] years); "Cardio-metabolic" (n=418, 33.9%; females 40.2%; 75 [67-81] years); "Mixed" (n=282, 22.9%; females 40.5%; 80 [73-85] years); and "Atherosclerotic-HF" (n=145, 11.8%; females 22.1%; 78 [72-83] years). Overall, OACs were prescribed to 92.1% of the cohort, with higher odds of receiving them in the "cardio-metabolic" class (OR, 95% CI: 3.90, 1.85-9.03), compared to "low comorbidity" patients. During a median follow-up of 542 [240-1390] days, 274 patients (18.9%) had an event of the primary composite outcome. Compared to "low comorbidity" patients, the ones in the "cardio-metabolic" (aHR,

Figure 1



95% CI: 1.64, 1.13-2.39), "mixed" (1.62, 1.09-2.42) and "atherosclerotic-HF" (2.81, 1.83-4.34) classes were associated with a higher risk of events of the primary outcome, with some differences concerning the secondary ones (Figure 2). Moreover, interaction analysis showed that the effect of an integrated and holistic management approach was consistent across all phenotypes (Pint=0.157).

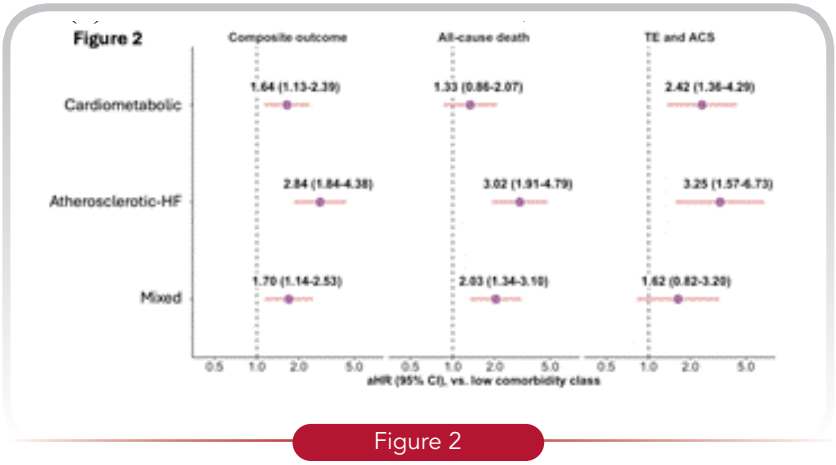


Figure 2

Conclusions: In a contemporary cohort of AF patients, distinct clinical phenotypes can be identified, characterized by specific patterns of comorbidities and varying risks of adverse events. Adherence to a holistic management approach was associated with improved outcomes, irrespective of clinical phenotype, and thus it should be pursued, given its pivotal role.

CardioSic

ARITMIE 328
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
TROMBOSI E COAGULAZIONE (ATEROTROMBOSI)
MECCANISMI DELLE ARITMIE (ARITMIE)

RESIDUAL THROMBOEMBOLIC RISK IN ATRIAL FIBRILLATION PATIENTS: COMPARATIVE ANALYSIS OF RISK SCORES IN A PROSPECTIVE COHORT

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(a) CARDIOLOGY DIVISION, UNIVERSITY OF MODENA AND REGGIO EMILIA, ITALY

Background: Several thromboembolic risk scores have been proposed for patients with atrial fibrillation (AF). The most recent guidelines recommend the CHA_2DS_2-VA score, which differs from CHA_2DS_2-VASc by excluding female sex as a risk factor.

Aim: To compare the predictive ability of the most commonly used thromboembolic risk scores for residual risk of thromboembolic (TE) events in a prospective cohort of patients with AF.

Methods: We included AF patients with CHA_2DS_2-VA ≥1, thus with indication to oral anticoagulation (OAC), enrolled in a prospective single-center cohort. Thromboembolic risk was assessed in both men and women. We calculated ROC curves, AUCs, and reclassification indices (at 1 and 2 years) for CHA_2DS_2-VASc, CHA_2DS_2-VA, $CHADS_2$, and $CHADS_{65}$. CHA_2DS_2-VA score was used as the reference. The primary endpoint was TE events; the secondary endpoint was a composite of death, acute coronary syndrome, and TE events.

Results: A total of 1,088 patients were included (median age 76 [69–81]; 38.8% females). Women were typically older, with higher prevalence of CKD but lower prevalence of CAD and HF. Over a median follow-up of 549 days [255–1612], 31 (3.4%) TE events occurred. No differences in residual TE risk were observed between women and men, also after adjustment for CHA_2DS_2-VA and AF type (aHR 1.43, 95% CI 0.70–2.89). Similarly, no differences were found for the composite outcome (aHR 0.98, 95% CI 0.74–1.30). In OAC-treated patients, all the scores showed similar performance for predicting TE and the composite outcome (DeLong tests >0.05).

Figure 2	IDI (95% CI)	P value	NRI (95% CI)	P value
TE 1-year FU CHA2DS2VASc	0.000 (-0.002/0.005)	0.693	0.013 (-0.272/0.336)	0.917
TE 2-year FU CHA2DSVASc	0.002 (-0.001/0.010)	0.118	0.197 (-0.034/0.428)	0.106
TE 1-year FU CHADS2	-0.001 (-0.008/0.003)	0.677	-0.005 (-0.356/0.331)	1.057
TE 2-year FU CHADS2	-0.002 (-0.010/0.004)	0.651	0.031 (-0.244/0.413)	0.655
TE 1-year FU CHADS65	-0.003 (-0.013/0.002)	0.278	-0.104 (-0.576/0.209)	0.338
TE 2-year FU CHADS65	-0.004 (-0.015/0.010)	0.264	-0.144 (-0.364/0.123)	0.266
Composite 1-year FU CHA2DSVASc	-0.004 (-0.010 0.000)	0.076	-0.083 (-0.241/0.041)	0.186
Composite 2-year FU CHA2DSVASc	-0.002 (-0.009/0.005)	0.559	0.039 (-0.161/0.143)	0.605
Composite 1-year FU CHADS2	-0.006 (-0.012/-0.001)	0.020	-0.197 (-0.324/-0.055)	0.010
Composite 2-year FU CHADS2	-0.010 (-0.022/0.000)	0.054	-0.192 (-0.295/-0.043)	0.020
Composite 1-year FU CHADS65	-0.013 (-0.026/-0.003)	0.010	-0.207 (-0.306/-0.019)	0.020
Composite 2-year FU CHADS65	-0.027 (-0.050/-0.009)	0.002	-0.199 (-0.348/-0.089)	0.004

Figure 1

ROC curves and AUCs for both endpoints are shown in Figure 1.
In reclassification analyses (Figure 2), compared with CHA_2DS_2-VA, no significant differences were observed with the other scores regarding IDI or NRI at 1 or 2 years for TE risk. For the composite outcome, CHA_2DS_2-VASc performed similarly to CHA_2DS_2-VA, while it outperformed both $CHADS_2$ and $CHADS_{65}$.

Conclusions: In OAC-treated AF patients, female sex was not associated with increased residual risk of TE or the composite outcome. Among risk scores, no differences were found in predicting residual TE risk. For the composite outcome, CHA_2DS_2-VA provided slightly better reclassification compared with $CHADS_2$ and $CHADS_{65}$.

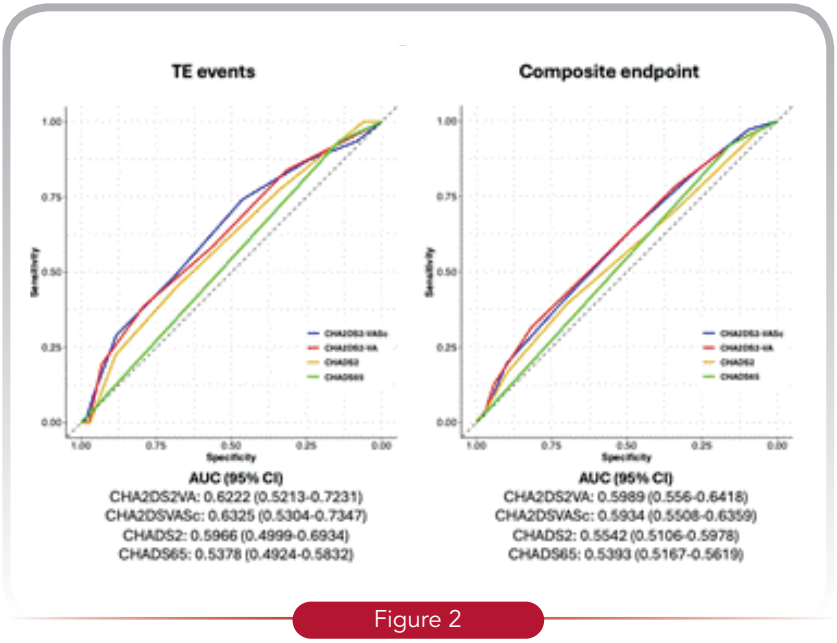


Figure 2

ARITMIE 637
ABLAZIONE TRANSCATETERE (ARITMIE)
STUDI ELETTROFISIOLOGICI INVASIVI (ARITMIE)
ARITMIE SOPRAVENTRICOLARI (ESCLUSA FA) (ARITMIE)

IMPATTO DELLA DOSE DI ELETTROPORAZIONE E DELLA FORZA DI CONTATTO SULLA TRANSMURALITA' E CONTIGUITA' DELLA LESIONE ATRIALE: ANALISI PROSPETTICA IN MODELLI ANIMALI

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Introduzione: L'elettroporazione o ablazione a campo pulsato (PFA) è una forma di energia non termica ora largamente utilizzata in elettrofisiologia interventistica. Sebbene l'elettroporazione sia estremamente selettiva per il tessuto miocardico, non è noto quali siano i parametri di ablazione che consentano di creare lesioni efficaci e durature durante PFA. L'obiettivo di questo studio è stato quello di indagare quali parametri di ablazione (incluso il contatto elettrodo-tessuto) impattano sulle caratteristiche della lesione in corrispondenza di diverse strutture anatomiche atriali sottoposte ad ablazione mediante PFA in modelli animali (suini).

Metodi: Sono stati considerati 12 maiali suddivisi in due gruppi in relazione alla dose di elettroporazione utilizzata (gruppo A: x6 applicazioni e gruppo B: x12 applicazioni). Ogni animale è stato sottoposto a ricostruzione 3D delle camere cardiache atriali (CARTO) ed ablazione transcatetere con catetere ablatore OMNYPULSE (dotato di sensore di forza di contatto) delle seguenti strutture atriali: vena polmonare (VP) inferiore destra e superiore destra, istmo cavo-tricuspidalico (ICT), parete posteriore dell'atrio destro tramite linea di lesione che unisce la vena cava superiore (VCS) alla vena cava inferiore (VCI), tetto dell'atrio sinistro (TAS) ed infine la regione dell'anello mitralico (AM). È stata valutata la sicurezza peri-procedurale (danno miocardico o ai tessuti circostanti) nonché l'efficacia della procedura (transmuralità e contiguità della lesione evidenziata su sezioni istologiche 30 giorni post ablazione) nei 12 animali e confrontate nei due gruppi in analisi. La profondità della lesione è stata definita come lo spessore della fibrosi post-ablazione rispetto a quello del tessuto analizzato con lesioni considerate transmurali per spessori >80%. La contiguità della lesione è stata definita per assenza di discontinuità della lesione per oltre il 75% della lunghezza della sezione istologica analizzata.

Risultati: La procedura è risultata efficace e sicura. Non si sono verificate complicanze periprocedurali nei due gruppi analizzati. Non sono state registrate differenze significative nei valori di forza di contatto

nei due gruppi (Gruppo A: 29 ±15 g vs. Gruppo B: 29 ±15g). Alla valutazione istologica 30 giorni post ablazione, sono state osservate lesioni transmurali e contigue in corrispondenza delle VP (100%) indipendentemente dalla dose utilizzata di elettroporazione. Al contrario, lesioni non transmurali sono state osservate in corrispondenza dell'AM (16.7-20%) e del TAS (0-20%) nonostante il riscontro di lesioni profonde in queste strutture anatomiche. Infine, la dose di PFA è risultata determinante per ottenere lesioni profonde, contigue e transmurali in corrispondenza degli altri siti indagati ovvero l'ICT (Gruppo A: 83% e gruppo B 100%) e la parete posteriore dell'atrio destro (Gruppo A: 83% e gruppo B 100%)

Conclusioni: In questo studio preclinico, l'ablazione mediante elettroporazione con il catetere OMNYPULSE è risultata efficace e sicura sebbene siano necessari specifici settaggi di ablazione per ottenere lesioni atriali transmurali e contigue. Ulteriori studi preclinici e clinici sono necessari per indagare quali siano i parametri migliori di elettroporazione per ottenere lesioni transmurali e durature durante l'ablazione transcatetere delle aritmie cardiache con PFA.

ARITMIE 967
ABLAZIONE TRANSCATETERE (ARITMIE)
ARITMIE SOPRAVENTRICOLARI (ESCLUSA FA) (ARITMIE)
STUDI ELETTROFISIOLOGICI INVASIVI (ARITMIE)

EFFICACIA A LUNGO TERMINE DELL'ABLAZIONE TRANSCATETERE DI BATTITI ECTOPICI VENTRICOLARI: ESPERIENZA DI UN SINGOLO CENTRO

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Introduzione: I battiti ectopici ventricolari (BEV) monomorfi ad alto burden possono determinare disfunzione ventricolare sinistra e sintomi rilevanti, potenzialmente reversibili con l'ablazione transcatetere (ATC). Benché l'ATC dei BEV sia una procedura eseguita regolarmente nei laboratori di elettrofisiologia, non sono disponibili dati in letteratura sull'efficacia a lungo termine. Scopo di questo studio è stato quello di valutare la sicurezza e l'efficacia dell'ATC dei BEV (nell'immediato ed al follow-up a lungo termine) nella popolazione considerata e stratificata per localizzazione anatomica dei BEV.

Metodi: Sono stati considerati 168 pazienti consecutivi (Età 58±78 anni, M 65%, FEVS 50±8%) sottoposti dal 2010 al 2025 a procedura di ablazione transcatetere per frequenti BEV monomorfi (in media 27.565 ± 111 nelle 24h) presso U.O. Elettrofisiologia ed Elettrostimolazione – Humanitas Mater Domini con sede a Castellanza (VA). Il mappaggio delle camere cardiache durante BEV (ventricolo destro (VD), ventricolo sinistro (VS), biventricolare (BIV), cuspidi aortiche/aorta (AO) e regione del "Left Ventricular Summit" o LVS) è stato eseguito mediante utilizzo di sistema di mappaggio elettroanatomico tridimensionale (CARTO) oppure con metodica convenzionale (prima del 2015).
Il target di ablazione in radiofrequenza (35-45W) era rappresentato dal segnale bipolare più precoce registrato sul catetere ablatore rispetto all'inizio del QRS all'ECG di superficie in corso di BEV con corrispondente segnale unipolare completamente negativo ed eventuale integrazione con tecnica di "pacemapping". La procedura è stata considerata efficace in caso di completa abolizione dei BEV o franca riduzione del burden post procedura (>80% rispetto all'iniziale). Sono state considerate le complicanze post-procedurali.
Durante il follow-up i pazienti hanno eseguito valutazioni cardiologiche ambulatoriale a 3 mesi e poi annuali con ECG Holter delle 24 h.

Risultati: La localizzazione più frequente dei BEV è stata in corrispondenza del VD (45%) seguita dal VS (20%), BIV (11%), AO (14%) e dal LVS (11%). Si sono verificate n.4/168 (2.4%) complicanze periprocedurali maggiori ovvero tamponamento cardiaco (n.1/168, 0.6%), insufficienza mitralica jatrogena acuta (n.1/168, 0.6%) e complicanze vascolari (n.2/168, 1.2%). Il successo acuto si è verificato in 133/168 (79.2%) dei pazienti con migliori risultati per localizzazioni in corrispondenza del VD (85%) ed AO (90%) seguito da LVS (65%), VS (55%) e BIV (55%) (p=0.0178). Durante il follow-up a lungo termine (5 ±4 anni con range 0-15 anni), il successo globale post-procedura è risultato di 82% (86% dopo procedure ripetute) senza differenze per localizzazione anatomiche ad eccezione della sede BIV

che, all'analisi delle curve di Kaplan-Meier, ha mostrato il tasso di successo minore a lungo termine anche considerando procedure ripetute di ATC (p LogRank=0.0005).

Conclusioni: L'ablazione transcatetere dei BEV monomorfi è una procedura sicura ed efficace, con alti tassi di successo acuto e a lungo termine. Tuttavia, la localizzazione anatomica, in particolare nei substrati profondi, può influenzare negativamente l'outcome procedurale, rendendo necessarie strategie avanzate di mappaggio e procedure multiple.

ARITMIE 955
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)

ARRHYTHMIC FINGERPRINT: PREDICTING COGNITIVE DECLINE BY HOLTER ECGS IN ATRIAL FIBRILLATION

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Introduction. Atrial fibrillation (AF) is the most common sustained arrhythmia in the general population, with prevalence rising markedly with advancing age. While historically regarded primarily as a risk factor for thromboembolic events, particularly ischemic stroke, AF is increasingly recognized as a potential independent contributor to cognitive decline. In addiction, AF even in the absence of clinically overt stroke, is associated with a more rapid trajectory of cognitive decline, particularly from the age of 75 onwards. In fact, AF patients have shown to reach the threshold for suspected dementia approximately two years earlier than controls. Cognitive impairment associated with AF often presents subclinically in the early stages, predominantly affecting executive function, working memory, and speed processing.
RR interval variability in AF has been shown to induce alterations in cerebral blood flow, leading to episodes of transient cerebral hypoperfusion and hypertension, which may contribute to cognitive deterioration. This observation supports the hypothesis that RR pattern analysis could potentially identify an "arrhythmic fingerprint" predictive of cognitive impairment.

Aims. A predictive model of cognitive decline in AF patients was developed by applying advanced statistical analysis to 24-hour Holter ECG arrhythmia patterns and multidimensional neuropsychological assessment.

Methods. We enrolled 26 patients with a 24-hour Holter ECG recording characterized by 100% AF burden. All patients underwent neuropsychological assessment, lasting approximately one hour, structured according to the guidelines proposed by the National Institute for Neurological Disorders and Stroke–Canadian Stroke Network. In particular the evaluation focused on global cognitive status, specific cognitive domains as language, memory, executive functions, and speed processing.

Results. Multivariate regression analyses integrating RR pattern at 24-hour Holter ECG (see example in the Figure above, left panel) and neuropsychological evaluation identified demographic variables (age, BMI, blood pressure) and RR variability as significant predictors of cognitive performance. Global cognition (MMSE, MoCA) reached coefficients of correlation up to $R^2 \approx 0.6$, with age and RR variability emerging as the main predictors. Executive functions, particularly Trail Making Test-B, showed the strongest predictive accuracy ($R^2 \approx 0.8$; Figure above, right panel showing R^2 values for different regression models across varying numbers of regressors).

Conclusion. The present pilot study highlights the potential that a simple arrhythmic fingerprint based on 24-hour ECG Holter, together with basic demographic variables, predicts the complex interplay between cardiac arrhytmia and cognitive decline. If confirmed on larger datasets, this observation may strengthen the importance of AF early detection and improve management of patients at risk.

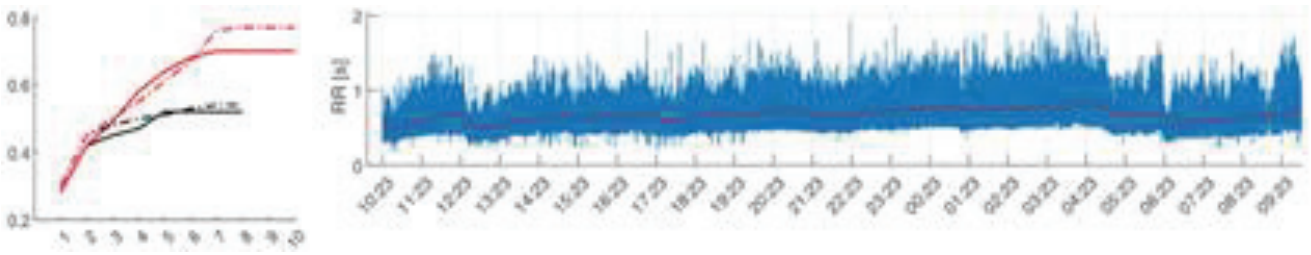


Figure 1

ARITMIE 546
ABLAZIONE TRANSCATETERE (ARITMIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
STUDI ELETTROFISIOLOGICI INVASIVI (ARITMIE)

ACUTE AND CHRONIC FINDINGS OF THE NEW NANOSECOND PFA DURING ATRIAL FIBRILLATION ABLATION

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Background: Pulsed field ablation (PFA) is increasingly adopted for atrial fibrillation (AF) ablation, with current systems using microsecond pulses. PFA waveform is defined by several parameters, including pulse duration, which critically influences lesion efficacy and selectivity. Nanosecond PFA delivers pulses nearly a thousand times shorter than conventional systems, potentially reducing collateral stimulation and the need for general anaesthesia.

Aim: We present preliminary results from a first-in-human feasibility study evaluating the safety and efficacy of a novel nsPFA technology.

Methods: This is a prospective, single-center, open-label, non-randomized, single-arm feasibility study. Patients with documented paroxysmal AF were enrolled. Exclusion criteria included prior AF ablation, persistent AF, LVEF <40%, BMI >35 kg/m², and contraindications to anticoagulation. All patients underwent PVI and PWI using nsPFA with the CellFX® system (Pulse Biosciences Inc.). Pre- and post-ablation mapping was performed in all cases with the CARTO mapping system. The primary endpoints were to feasibility, safety, and lesion durability at 3-month remapping. The secondary endpoints were procedural parameters, including total procedure time, fluoroscopy time, and left atrial dwell time.

Results: Thirty patients (mean age 58.9 years; 66.7% male) underwent first-time AF ablation using the novel ns-PFA system. The mean procedure duration was 38.9 ± 7.0 minutes, with a fluoroscopy time of 17.7 ± 0.8 minutes and a left atrial dwell time of 11.1 minutes. The average number of applications required to achieve acute isolation for each vein was as follow: 2.9 ± 1.1 for LSPV, 2.9 ± 1.7 for the LIPV, 3.0 ± 1.2 for the RSPV, and 3.4 ± 1.2 for RIPV.
The average number of applications required for posterior wall isolation was 5.3 ± 3.9. Acutely first pass isolation for PVI and PWI was achieved in all (100%). Invasive remapping at 3 months was performed in 6 (20%) and only 1 patient experienced reconnection in the left inferior pulmonary vein. Remapping of the remaining patients is scheduled within the next 2 months.

Conclusion: Early results from this series showed that nsPFA achieves safe and efficient PVI and PWI with encouraging 3-month lesion durability, suggesting a potential reduction in recurrences and repeat procedures.
These findings also demonstrate short procedural times and a favourable workflow, although larger studies are required for definitive validation.

ARITMIE 560
ELETTROCARDIOGRAFIA/ CARDIOVERSIONE/ DEFIBRILLAZIONE (ARITMIE)
MECCANISMI DELLE ARITMIE (ARITMIE)
ISCHEMIA, STUDI SPERIMENTALI (CARDIOPATIA ISCHEMICA)

PAINFUL LEFT BUNDLE BRANCH SYNDROME DUE TO CONCEALED WENCKEBACH PHENOMENON

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Background: Painful left bundle branch block (LBBB) represents a rare etiology of angina-like chest discomfort, defined by the consistent temporal association between the onset of chest pain and episodes of intermittent LBBB.

Case Summary: A 68-year-old male with hypertension, dyslipidemia, and chronic coronary syndrome previously treated with PCI to the mid-LAD presented with exertional interscapular pain. During treadmill testing, symptoms appeared early and coincided with the onset of intermittent left bundle branch block (LBBB) at 136 bpm. Both pain and LBBB resolved in recovery, with no ischemic changes on narrow QRS complexes and no wall motion abnormalities on echocardiography. coronary angiography showed preserved stent patency and excluded the presence of new hemodynamically significant coronary lesions. These findings supported the diagnosis of painful LBBB syndrome.
Chest pain in LBBB syndrome to be related to dyssynchrony in myocardial contraction caused by intermittent depolarisation disturbances. In this case, chest pain coincided with LBBB, which normalized intermittently without relation to R-R or PR intervals, excluding rate-dependent block and supernormal conduction. The mechanism was consistent with a concealed Wenckebach phenomenon in the left bundle branch, mainly with a 3:2 pattern. This rare conduction behavior may present either as manifest, characterized by progressive increase in intraventricular conduction time until complete BBB occurs, or as concealed, the phenomenon can only be deduced from the periodical, unexpected normalization of intraventricular conduction every two or more consecutive QRS displaying complete BBB, unrelated to changes in cycle length. The strict temporal relationship between chest pain and LBBB onset/offset, absence of ischemic changes on narrow QRS complexes, normal wall motion, and confirmed stent patency ruled out myocardial ischemia and new obstructive lesions.
Vasospasm was also excluded given the absence of symptoms or conduction changes during its occurrence. The abrupt onset and resolution of pain, differing from the gradual course of angina, strongly supported the diagnosis of painful LBBB syndrome.

Conclusion: The Wenckebach phenomenon is not confined to the atrioventricular node and when it involves the bundle branches, it may manifest as intermittent bundle branch block. painful left bundle branch block syndrome represents a rare but important cause of chest pain.
Its recognition requires a clear temporal association between symptoms and the onset of LBBB, along with the exclusion of obstructive coronary artery disease on coronary angiography.

ARITMIE 329
ABLAZIONE TRANSCATETERE (ARITMIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
MECCANISMI DELLE ARITMIE (ARITMIE)

WEARABLE DEFIBRILLATOR IN ATRIAL FIBRILLATION-INDUCED CARDIOMYOPATHY: A CUSTOMIZED CHOICE?

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(a) UNIVERSITÀ DEGLI STUDI DI PADOVA

Case summary: A 64-year-old man presented with a one-year history of heart failure (HF) symptoms. On admission, he was hemodynamically stable. Laboratory testing revealed elevated troponin-I (~50 ng/L) and NT-proBNP (4500 pg/mL), with otherwise normal values. ECG showed atrial fibrillation (AF) with rapid ventricular response. Transthoracic echocardiography demonstrated severely reduced left ventricular (LV) ejection fraction (LVEF 20%), global hypokinesia, moderate mitral regurgitation, normal atrial size, and no pericardial effusion. Coronary angiography excluded obstructive coronary artery disease. Transesophageal echocardiography ruled out intracardiac thrombi; however, electrical cardioversion following amiodarone loading was unsuccessful. Cardiac MRI confirmed late gadolinium enhancement (LGE) in the inferolateral basal wall without edema. There was no history of substance abuse, viral illness, or familial cardiomyopathy. The absence of left bundle branch block, frequent premature ventricular contractions, thyroid dysfunction, and alcohol abuse favored the diagnosis of tachycardia-induced cardiomyopathy (TIC). A rhythm control strategy was pursued, and the patient underwent radiofrequency catheter ablation.

Procedure: The ablation procedure was guided by a 3D electroanatomical mapping system. Following transseptal puncture under intracardiac echocardiographic guidance, high-density electroanatomical mapping was performed using a multipolar electrode catheter, which revealed low-voltage areas in the anterior and posterior left atrium (LA) walls. Pulmonary vein isolation (PVI) was achieved using an irrigated, contact force–sensing catheter, delivering radiofrequency energy at 40 W, with ablation index targets of 500 for the anterior LA and 400–450 for the posterior LA. All PVs were successfully isolated, with confirmed bidirectional conduction block.

Follow-up: The patient was discharged three days later with a wearable cardioverter-defibrillator (WCD), amiodarone and guideline-directed HF therapy. At three months, LVEF had normalized (57%) with NYHA class I symptoms. No arrhythmic events or WCD shocks occurred, and the device was discontinued. Amiodarone was withdrawn at six months. At one year, the patient remained arrhythmia-free. Genetic testing revealed a titin-truncating variant, suggesting a possible predisposition to dilated cardiomyopathy; nevertheless, the full recovery of LVEF after ablation strongly supports TIC as the primary etiology.

Conclusions: In patients with TIC—and more broadly in those with HF and AF—early restoration of sinus rhythm through PVI can prevent progression of atrial scarring and pathological atrial remodeling, facilitating rapid LVEF recovery and improving clinical outcomes. WCDs provide temporary protection against sudden cardiac death in patients with severe LV dysfunction while awaiting LVEF recovery under guideline-directed HF therapy, in whom permanent ICD implantation may be avoided. Genetic testing may uncover latent cardiomyopathies and refine diagnostic evaluation, but its role in suspected TIC warrants further investigation to enhance diagnostic accuracy. Finally, the long-term necessity of continuing HF therapy in patients with recovered LVEF remains to be determined.

ARITMIE 506
ARITMIE VENTRICOLARI (ARITMIE)
RIANIMAZIONE CARDIOPOLMONARE (ASSISTENZA CARDIACA IN ACUTO)
DIAGNOSTICA INVASIVA INTRAVASCOLARE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

ARRESTO CARDIOCIRCOLATORIO EXTRAOSPEDALIERO SU FIBRILLAZIONE VENTRICOLARE INDOTTA DA SPASMO CORONARICO

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(a) UNIVERSITA DEGLI STUDI DI GENOVA

Lo spasmo coronarico può causare stenosi critica determinante ischemia, la cui presentazione può variare dall'angina alla sindrome coronarica acuta.
Un uomo di 64 anni, fumatore e iperteso con accertamenti cardiologici negativi per ripetuti episodi di dolore toracico, veniva trovato in arresto cardiocircolatorio sul luogo di lavoro mezz'ora dopo aver lamentato toracoalgia. Avviate le manovre di rianimazione cardiopolmonare, si riscontrava fibrillazione ventricolare e successiva attività elettrica senza polso con ripristino della circolazione spontanea dopo 23 minuti, 5 fiale di adrenalina e 2 scariche elettriche controllate di defibrillatore. S'intubava il paziente e si trasportava in ospedale con emodinamica sostenuta da amine vasoattive. Si evidenziavano sopraslivellamento concavo del tratto ST nelle derivazioni V4-V6 all'ECG post arresto, poi normalizzatosi, e funzione sistolica globale conservata in assenza di franche regionalità all'ecocardiogramma. Per ulteriore episodio di fibrillazione ventricolare si eseguiva coronarografia in urgenza con riscontro di stenosi critica al tratto medio-distale dell'IVA (pannello A della figura), valutata stabile all'imaging intracoronarico e non meritevole di trattamento immediato. La risonanza magnetica cardiaca, una volta stabilizzato il paziente, documentava assenza di LGE patologico o edema. S'impiantava un defibrillatore cardiaco in prevenzione secondaria. Si ripeteva coronarografia elettiva con riscontro di circolo coronarico esente da stenosi angiograficamente significative (pannello B della figura). Tuttavia, a livello del tratto medio dell'IVA, sede di stenosi critica alla precedente coronarografia, si evidenziava la presenza di un bridge intramiocardico. Somministrando acetilcolina, a livello del bridge si elicitava uno spasmo determinante stenosi critica (pannello C della figura), risoltosi poi con iniezione di nitrati intracoronarici. Si reputava pertanto il vasospasmo la verosimile causa dell'arresto cardiocircolatorio e s'impostava terapia con calcio antagonista non diidropiridinico. Il caso dimostra come nonostante i pazienti affetti da spasmo coronarico solitamente abbiano una buona prognosi, episodi di ischemia causati da vasospasmo possono condurre ad aritmie ventricolari potenzialmente fatali per cui è importante eseguire il test di provocazione durante coronarografia nei casi di circolo coronarico indenne.

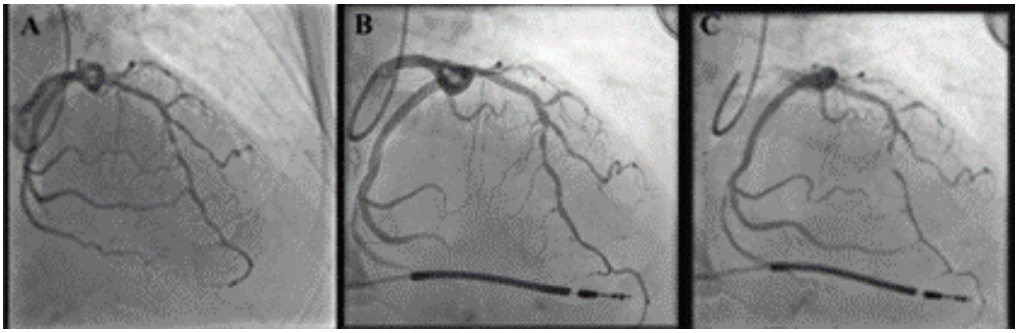


Figura 1

ARITMIE 8
SINCOPE (ARITMIE)
ARITMIE VENTRICOLARI (ARITMIE)
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)
ASPETTI GENETICI DELLE ARITMIE (ARITMIE)

SYNCOPE WITHOUT PRODROMES DURING FEVER IN TYPE 1-INDUCED IN PATIENT WITH BRUGADA SYNDROME: LOOKS CAN BE DECEIVING

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Background: The evaluation of syncope in patients with Brugada syndrome (BrS), especially in those with type 1-induced ECG pattern, represents a challenging issue since a differential diagnosis from neurally mediated and arrhythmic forms is mandatory to optimize clinical management.
The clinical presentation of syncope may not be sufficient to distinguish between neurally mediated and arrhythmic syncope. Indeed, specific triggers and typical prodromes may be present in both forms of syncope among patients with channelopathies and may often precede the nonarrhythmic syncope.

Case presentation: A 53-year-old man, with no significant past medical history or family history of sudden cardiac death (SCD), was admitted to the Emergency Department for transient of loss consciousness (TLOC) and facial trauma. The TLOC occurred at rest, in an upright position, without prodromes and/or specific triggers. At admission, the body temperature was 37.8°C. The ECG showed a coved type downward ST-segment elevation in V1 and V2 followed by a negative T wave, compatible with the type 1 Brugada pattern. The patient was referred to Cardiology Unit for arrhythmic risk stratification. After 2 days of hospitalization, with the fever disappearing and the normalization of inflammatory status, a transition from type 1 to type 2 Brugada ECG pattern occurred. No electrocardiographic risk markers for ventricular fibrillation (VF) were present.
The late potentials on the signal-averaged electrocardiogram (SAECG) were negative. No arrhythmic events were recorded at the in-hospital telemetric monitoring. The clinical interpretation of TLOC without prodromes in patients with the type 1 Brugada pattern was not univocal and its nature has been debated (arrhythmic or not), such as the patients' management (conservative or invasive). Head-up tilt test (HUTT) performed according to the Italian Protocol showed the induction of vasodepressive syncope without prodromes, characterized by a sudden fall in blood pressure with increased heart rate.
An endocardial three-dimensional (3D) map of the right ventricle was constructed using a high-resolution mapping system and the programmed ventricular stimulation (PVS) at two ventricular sites, right ventricular apex (RVA), and right ventricular outflow tract (RVOT), with up to three premature extrastimuli, before and after flecainide 2 mg/kg over 10 min, was performed. At unipolar (cutoff: 5.5–8.3 mV) and bipolar (cutoff: 0.2–1 mV; 0.5–1.5 mV) voltage mapping in sinus rhythm and at the propagation map, no abnormalities were shown. The PVS was negative for the induction of ventricular arrhythmias. Finally, some doubts remained about the etiology of syncope, and a long-sensing vector loop recorder (ILR) was implanted.
The patient was discharged with the diagnosis of vasodepressive syncope in need of physical counterpressure manoeuvres and tilt training. At 12 months follow-up, there were no arrhythmias at ILR monitoring or syncopal recurrence.
The next-generation sequencing-based gene panel

test for cardiovascular genomics, including the SCN5A gene, was negative for BrS pathogenic variants.

Conclusion: Syncope without prodromes represents a challenging clinical issue in patients with channelopathies.
The use of an ILR should be considered in patients with Brugada pattern and unexplained syncope; and in BrS patients with low/intermediate risk, it can help guide the management and ascertain the cause of unexplained syncope.
A careful comprehensive evaluation aiming to exclude the correlation between arrhythmic events and clinical symptoms should be considered in the patients' centered care of subjects with type 1-induced BrS pattern.

ARITMIE 125
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
ARITMIE VENTRICOLARI (ARITMIE)
FARMACI ANTIARITMICI (ARITMIE)
MECCANISMI DELLE ARITMIE (ARITMIE)

VENTRICULAR TACHYCARDIA IN CARDIAC SARCOIDOSIS: TO IMMUNOSUPPRESS OR NOT?

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Sarcoidosis is a multisystem inflammatory disease of unknown etiology, commonly affecting the lungs and lymphatic system. Clinically evident cardiac involvement occurs in about 5% of cases, presenting as bradyarrhythmias, VT and heart failure. However, many patients have subclinical disease, autopsies show cardiac sarcoidosis (CS) in 20–29% of systemic cases. True prevalence is underestimated and contributes significantly to morbidity and mortality.

A 56-year-old male with stage I pulmonary sarcoidosis, treated with immunosuppressants, and a family history (FH) of sudden cardiac arrest, presented with palpitations and near-syncope. He was hemodynamically stable but had VT at 215 bpm, with a QRS complex positive in V3–V6 and inferior leads, suggesting an RVOT origin.

After successful electrical cardioversion (ECV), a TTE revealed apical anterolateral and inferolateral hypokinesis with an EF of 45%. HS-TnI peaked at 432 ng/L post-ECV. Coronary angiography excluded significant stenosis. A cardiac MRI a week later showed hypertrophy of the IVS and normal global contractile function, with no edema on T2-weighted images.

LGE was noted in the basal IVS, nearly transmural. T1/T2 mapping values were elevated in the mid-basal IVS, with FDG-PET positivity limited to carinal lymph nodes, suggesting systemic involvement and posing a dilemma regarding the use of immunosuppression.

Based on the HRS 2014 consensus, the patient was diagnosed with probable CS due to histologically confirmed extracardiac sarcoidosis, symptomatic VT and typical LGE positivity. However, other cardiac causes, such as arrhythmogenic cardiomyopathy, could not be excluded due to limited FH information. Given the clinical presentation and FH, a dual-chamber ICD was implanted for secondary prevention, in

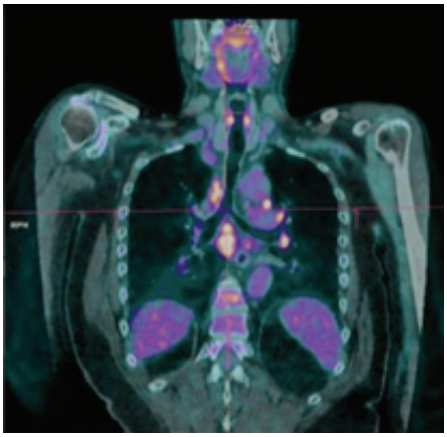


Figure 1

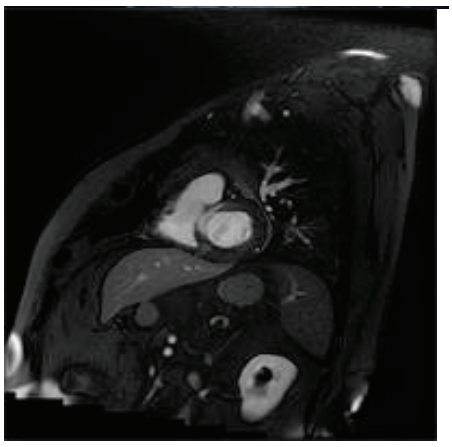


Figure 2

line with 2022 ESC guidelines. Absent edema on CMR and negative cardiac FDG-PET ruled out active inflammation, but a myocardial scar was identified, likely the arrhythmogenic focus. Thus, further immunosuppressive therapy was not initiated and we started amiodarone as antiarrhythmic therapy (AAT).

Two months later, endomyocardial biopsy was negative for granulomas, but with only 50% sensitivity even when guided by PET or CMR, CS could not be excluded. Interrogation of the ICD revealed an episode of asymptomatic sustained camonomorphic VT, detected and terminated by the device on the first anti-tachycardia pacing.

AAT was titrated and, if VT recurs with ICD discharges, catheter-based RFA should be considered to reduce mortality and prevent heart failure progression. Prednisone dosage was increased to assess its effect on arrhythmic patterns and to prevent further scarring.

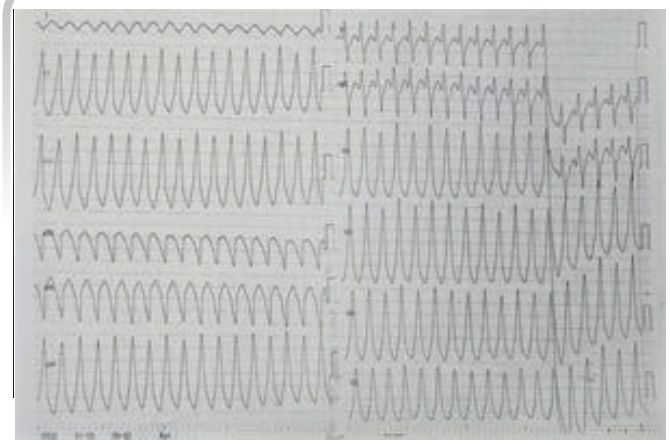


Figure 3

Immunosuppressants are effective for inflammation but not scar-related VT and should be used selectively

ARITMIE 1094
DEFIBRILLATORE IMPIANTABILE (ARITMIE)
ELETTROSTIMOLAZIONE (ARITMIE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
SINCOPE (ARITMIE)

AN ANOMALOUS AND INSIDIOUS WAVE

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A 72-year-old female patient was admitted for the evaluation of hypokinetic-dilated cardiomyopathy with severely reduced left ventricular function, discovered during a pre-operative cardiology consultation for carotid endarterectomy. Past medical history includes presyncopal episodes with prodromes, in the absence of palpitations, dyspnea, or angina, triggered by vagal stimuli, orthostatism, or exertion (last episode two weeks prior to admission). Additionally, she suffers from anorexia (BMI 16), major depressive disorder, Raynaud's phenomenon and rheumatoid arthritis. She is currently on cardioaspirin, statins, lorazepam, antidepressants and immunosuppressant.

On admission, echocardiography revealed a dilated left ventricle, an ejection fraction (EF) of 25% and Grade 2 diastolic dysfunction. No significant valvulopathies were identified. The right ventricle's size and motion were within normal limits. Pulmonary artery pressure (PAPs) was elevated at 47 mmHg, with a reduced pulmonary acceleration time (PAT) and a mid-systolic notch, indicating increased pulmonary circulation resistance. ECG showed sinus rhythm with newly developed left bundle branch block (LBBB) and negative T waves in V5-V6 and inferior leads. Coronary angiography revealed a myocardial bridge in the distal left anterior descending artery. Given the diagnosis of heart failure with reduced ejection fraction (HFrEF), medical therapy was initiated and optimized. Upon discharge, the patient's EF remained unchanged; however, PAPs and PAT had returned to normal limits.

During continuous ECG monitoring, asymptomatic episodes of second-degree atrioventricular (AV) block Mobitz Type II were recorded, with a wide QRS complex emerging after the pause. Pacing was indicated according to the 2021 ESC Guidelines. Additionally, due to EF< 35%, ambiguous syncopal episodes, and LBBB with a QRS>135 ms, cardiac resynchronization therapy-defibrillator (CRT-D) implantation for primary prevention of sudden cardiac death (SCD) was idicated, in line with the 2022 and 2023 ESC Guidelines. However, the patient's severe underweight posed significant challenges for CRT-D implantation, including an increased risk of erosion, pocket infection, pneumothorax, and cardiac perforation.

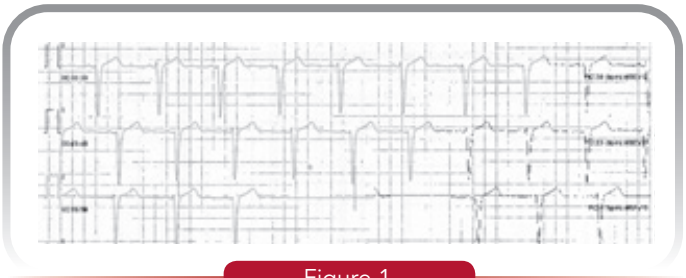


Figure 1

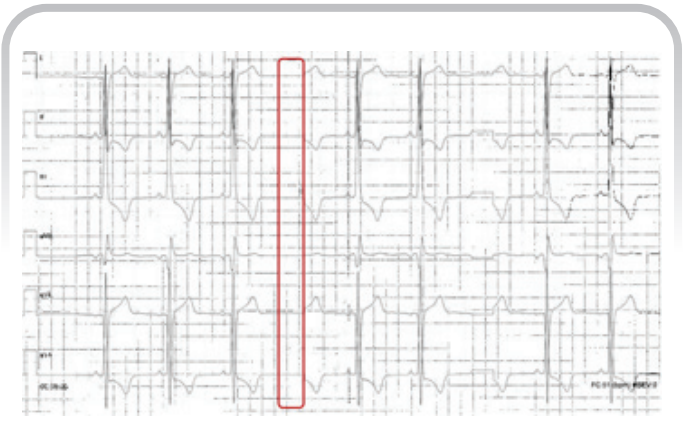


Figure 2

Further analysis of the wide QRS complex revealed an unnaturally flat pause line and QRS morphology identical in polarity and morphology to the descending T waves. Subsequent investigation identified an ECG artifact where only T waves were present without any corresponding QRS complexes. Therefore, the 2° AV block was determined to be due to telemetry malfunction. As a result, the indication for pacing was reconsidered. GMT will be continued for 2 months, after which CRT-D for HFrEF and primary SCD prevention will be reconsidered.

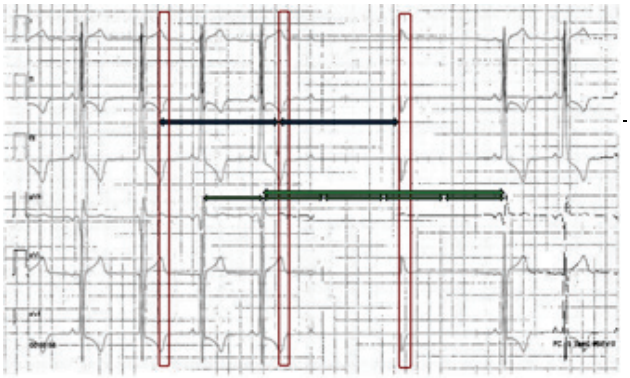


Figure 3

ARITMIE 22
ELETTROSTIMOLAZIONE (ARITMIE)
DEFIBRILLATORE IMPIANTABILE (ARITMIE)
TERAPIA DI RESINCRONIZZAZIONE (ARITMIE)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)

DOPPIA TRANSIZIONE DEL QRS DURANTE LEFT BUNDLE BRANCH AREA PACING

Angelo Melpignano (a), Ludovica Rita Vocale (a), Matteo Bertini (a)
(a) AZIENDA OSPEDALIERO-UNIVERSITARIA DI FERRARA

La cattura anodica, caratterizzata da una morfologia del QRS diversa rispetto alla stimolazione catodica, è un fenomeno noto nella terapia di resincronizzazione cardiaca (CRT). Il pacing dell'area della branca sinistra (LBBAP) è una tecnica di stimolazione fisiologica emergente, utilizzata anche come strategia bailout dopo fallimento dell'impianto di CRT convenzionale. In questo contesto, la transizione del QRS (cambiamento morfologico durante i test di soglia) è un criterio chiave per confermare il successo dell'LBBAP.

Presentiamo il caso di un uomo di 75 anni con disfunzione ventricolare sinistra severa (FEVS 25%) e blocco di branca sinistro (QRS 164 ms), portatore di pacemaker monocamerale per malattia del nodo del seno e candidato ad upgrade a CRT-D.

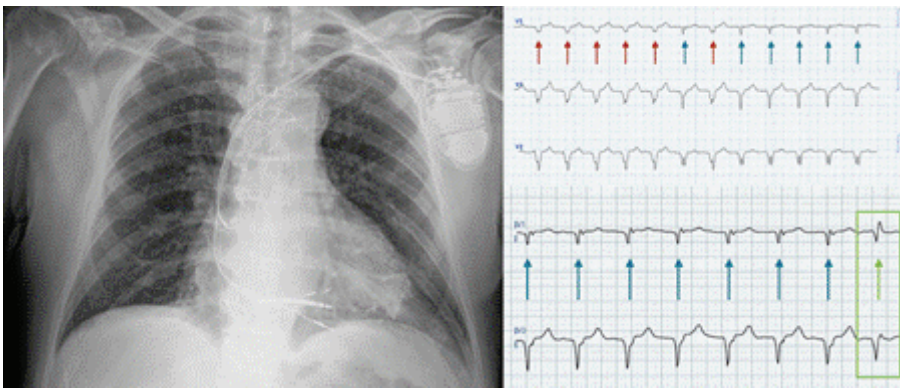
In seguito al fallimento del posizionamento dell'elettrodo nel seno coronarico, è stato impiantato un sistema con LBBAP associato ad un catetere di defibrillazione in ventricolo destro (RV), come strategia bailout.

Durante i test di soglia in configurazione bipolare (punta LBBAP → anello dell'elettrocatetere RV), sono state osservate due transizioni del QRS distinte:

- Ad alta energia (4.5V@0.4ms) con transizione da cattura anodica (morfologia da stimolazione apicale RV) a pacing non-selettivo della branca sinistra (ns-LBBP).
- A bassa energia (1.0V@0.4ms) con transizione da ns-LBBP a pacing selettivo della branca sinistra (s-LBBP).

Come per gli impianti tradizionali di CRT, la cattura anodica è associata al potenziale rischio di perdere i benefici della stimolazione fisiologica. Per evitare che questa avvenga la è possibile: (1) verificare che avvenga solo a voltaggi superiori all'output di stimolazione programmato o (2) selezionare un polo anodico diverso per la stimolazione bipolare, in particolare scegliendo un anodo a superficie più ampia (es. coil di defibrillazione) in modo da ridurre la densità di carica.

La cattura anodica è un problema critico da considerare, dunque, non solo nella CRT, ma anche nel contesto



Figure

dell'LBBAP, specialmente in dispositivi complessi in cui è presente un elettrocatetere RV di defibrillazione, in modo da evitare gli effetti dannosi di una stimolazione ventricolare destra accidentale.
In particolare, il caso presentato sottolinea la necessità di distinguere la cattura anodica, potenzialmente deleteria, dalla transizione ns-LBBAP → s-LBBAP, criterio utile per confermare la cattura della branca sinistra durante un impianto di LBBAP.

ARITMIE 777
ARITMIE VENTRICOLARI (ARITMIE)
DEFIBRILLATORE IMPIANTABILE (ARITMIE)
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)
TELEMEDICINA IN CARDIOLOGIA (TELECARDIOLOGIA ED E-HEALTH)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)

USE OF WEARABLE CARDIOVERTER DEFIBRILLATOR AS A BRIDGING THERAPY TO ICD IMPLANTATION IN HIGH-RISK CARDIAC PATIENTS: A SINGLE-CENTER EXPERIENCE

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BACKGROUND: A wearable cardioverter defibrillator (WCD) is a temporary external device designed to continuously monitor cardiac rhythm and deliver life-saving shocks for prevention of sudden cardiac death (SCD) in at-risk patients, when implantable cardioverter defibrillator (ICD) is not feasible or postponed. However, yet few data have been analyzed about remote monitoring (RM) in WCD recipients while waiting for re-evaluation to ICD indication/exclusion.

HYPOTHESIS: RM in WCD patients may provide incremental clinical insights beyond arrhythmic protection, facilitating heart failure (HF) management and guiding subsequent device strategy.

MATERIALS AND METHODS: From February 2024 to May 2025, 14 patients (11 males, mean age 57±18.5 years) were evaluated and selected for WCD indication while in charge at our Academic hospital. Main diagnoses were ischemic dilated cardiomyopathy (N=5), myocarditis (N=3), endocarditis (N=1), non-ischemic dilated cardiomyopathy (N=4), and ventricular fibrillation (N=1), and all agreed to participate in remote monitoring RM analysis. Mean left ventricular ejection fraction (LVEF) was 37±11.7%, representing 86% of HF clinical conditions.

RESULTS: No patient experienced atrial fibrillation episodes, although two patients showed left bundle branch block on baseline electrocardiogram. NT-proBNP levels were also measured, with a mean value of 6724.5± 3681,1 pg/mL.
Mean daily WCD wearing time was 21.59 ± 1,25 hours. The average heart rate was 61,5 ± 12,1 bpm, daily steps 4492 ± 3205, and flat time 39.4 ± 20.3 minutes/day. Patients demonstrated excellent tolerance and compliance, with no interruptions of use and no inappropriate shocks recorded.
RM provided useful to optimize HF medical therapy. No episodes of malignant arrhythmias were recorded during WCD monitoring. LVEF improved in 21% (3/14) of patients; ICD implantation was chosen in 8 cases, subcutaneous ICD in one, and cardiac resynchronization therapy with defibrillator in 2 patients. As compa-

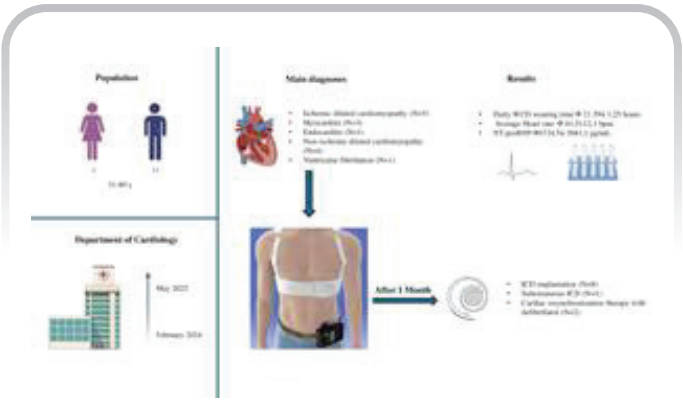


Figure 1

red to RM of WCD, to date, no patient experienced post-implant arrhythmias.

CONLUSIONS: This observation demonstrates that WCD use is a valid therapeutic option for patients awaiting cardiac device implantation. Moreover, in HF patients receiving primary prevention who are not yet on optimized medical therapy, careful monitoring combined with temporary protection via WCD may represent the most appropriate and economically sustainable therapeutic strategy. Further validation in larger prospective studies is warranted.

ARITMIE 839
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)
ARITMIE VENTRICOLARI (ARITMIE)
ASPETTI GENETICI DELLE ARITMIE (ARITMIE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

UN CASO COMPLESSO DI DONAZIONE DI CUORE DOPO MORTE CARDIOCIRCOLATORIA (DCD)

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INTRODUZIONE: Lo scompenso cardiaco avanzato rappresenta tuttora una delle principali cause di mortalità cardiovascolare ed il trapianto di cuore rimane l'unica terapia a lungo termine in grado di modificarne significativamente la prognosi.
Accanto alla classica selezione dei donatori da morte cerebrale, negli ultimi anni sta emergendo sempre di più la pratica di donazione dopo morte cardiocircolatoria (Donation after Circulatory Death, DCD). Si descrive un caso complesso.

CASO CLINICO: Il probando è un uomo di 61 anni giunto alla attenzione medica in seguito ad un episodio di arresto cardiocircolatorio (ACC) non testimoniato, con anamnesi familiare e personale silenti. Una mattina viene rinvenuto in ACC (occorso verosimilmente pochi minuti prima, orario stimato 08:50) dal figlio, che prontamente procede con BLS-D con DAE presente in sede (maneggio) con erogazione di 2 DC-shock. Giunti i soccorritori, il primo tracciato disponibile (09:12) mostra una TV monomorfa a 150 bpm, successivamente degenerata in polimorfa, alternata a lembi di ritmo idioventricolare a 55 bpm. Si somministra adrenalina (2 fiale) e posiziona LUCAS, con ripristino della circolazione spontanea (ROSC, tempo di ischemia stimato sui 30 minuti). Al primo ECG a 12 derivazioni post ROSC (09:20), aritmia atriale organizzata a 146 bpm, sotto ST diffuso. Giunto in elisoccorso presso il nostro centro si eseguono ematochimici, ecoscopia e coronarografia che escludono cause reversibili/trattabili di ACC. L' ecoscopia in acuto documenta lieve riduzione della frazione d'eiezione (FE 40-45%) con acinesia del setto inferiore basale, nel contesto di un ventricolo sinistro non dilatato ma lievemente ipertrofico (SIV/PP 13/12 mm). L'Holter ECG 12D delle 24 ore effettuato in settima giornata con Brugada leads conferma l'assenza di elementi di sospetto per malattia aritmogena primitiva.
A completamento, viene effettuato prelievo ematico per indagine genetica (NGS esoma clinico, pannello Twist per morte cardiaca improvvisa). Il quadro neurologico permane critico ed indicativo di grave encefalopatia post-anossica, per cui, in accordo con la famiglia, si avvia l'iter per espianto di organi, compreso il cuore, pianificando un successivo completamento della disamina diagnostica dell'ACC con impianto di ICD nel ricevente.
Il cuore viene trapiantato senza complicanze acute in un 61enne con cardiopatica ipocinetico-dilatativa ischemica, in lista attiva da 15 mesi. A 2 mesi dal trapianto si eseguono RMN cuore, negativa, e biopsia cardiaca con esame ultrastrutturale, che mostra franca irregolarità dei dischi intercalari.

L'indagine genetica segnala 4 varianti di incerto significato (VUS: FLNC, MYH6, TNNI3, SCL4A3). Stante il rischio aritmico futuro imprevedibile ma verosimilmente non trascurabile, in assenza di attuale indicazione a pacing, si programma impianto di defibrillatore sottocutaneo nel ricevente.

CONCLUSIONI: Il caso presentato mette in evidenza come la selezione di un cuore da DCD possa generare complessi dilemmi clinici ed etici. Nonostante gli accertamenti eseguiti in fase di selezione del donatore e follow-up del ricevente non siano dirimenti, permane il forte sospetto di eziologia cardiaca dell'arresto, supportato anche dai reperti genetici e di microscopia elettronica.
La discrepanza tra numero di pazienti in lista e disponibilità di organi impone la necessità di riflettere sui criteri di selezione dei donatori, trovando un equilibrio tra massimizzare il numero di trapianti e mantenere un livello accettabile di rischio per il ricevente.
L'indagine genetica e la microscopia elettronica sono strumenti promettenti ma ancora non standardizzati in questo setting.

ARITMIE 237
ARITMIE VENTRICOLARI (ARITMIE)
ASPETTI GENETICI DELLE ARITMIE (ARITMIE)
CARDIOLOGIA PEDIATRICA (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)

CONTINUOUS PERCUTANEOUS LEFT STELLATE GANGLION BLOCK AS A BRIDGE TO LEFT CARDIAC SYMPATHETIC DENERVATION IN AN INFANT WITH INTRAUTERINE-ONSET HIGH RISK LONG QT SYNDROME

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BACKGROUND: Congenital long QT syndrome (LQTS) is an inherited channelopathy associated with a high risk of ventricular arrhythmias (VAs). While nonselective beta-blockers are effective for most patients, high-risk groups (e.g. infants experiencing VAs under 1 year of life) require additional measures. In such cases, left cardiac sympathetic denervation (LCSD) may be considered prior to implantable cardioverter defibrillator (ICD) implantation to reduce the risk of sudden cardiac death (SCD). Although minimally invasive, video-assisted thoracoscopic (VATS) LCSD poses challenges in small infants weighing less than 10 kg. The use of percutaneous left stellate ganglion block (PLSGB) in this context remains largely unexplored, despite increasing reports of its feasibility and efficacy in adult patients.

CASE REPORT: We present the case of a newborn female without family history of SCD or cardiovascular diseases, diagnosed in utero with a 2:1 atrioventricular block (AVB), without signs of structural cardiopathy or heart failure. At 35+1 weeks, an emergent cesarean section was performed due to severe fetal bradycardia and growth restriction. An electrocardiogram (ECG) at birth revealed 2:1 functional AVB at 40–45 bpm, with rare episodes of 1:1 conduction at 85–90 bpm, alongside an extremely prolonged QT interval (QTc Bazett 620 ms) and short runs of torsades de pointes (TdP). Shortly after cardiogenic shock developed, necessitating inotropic support.
On day 1, an abdominal epicardial single-lead pacemaker was implanted and set at 130 ppm, allowing for weaning from amines and the progressive initiation and titration of propranolol up to 2.5 mg/kg/day. Mexiletine therapy was started (9 mg/kg/day) after a successful oral loading dose test. After one month without arrhythmic events, multiple TdP episodes occurred during a blood transfusion. PLSGB with a ropivacaine bolus (0.8 mg) followed by continuous infusion (0.025 mg/kg/h) for 3 days was performed, achieving complete suppression of VAs without complications. Genetic testing revealed a de novo pathogenic variant in the KCNH2 gene (c.1882G>A).
At 4 months (weight 4.5 kg), VATS-LCSD was deemed feasible. The procedure was performed in

the right lateral decubitus position with single-lung ventilation. The left sympathetic chain was identified and isolated, with complete transection of the lower half of the first (stellate) left ganglion and up to the fourth thoracic ganglion. Except for a mild left ptosis, the postoperative course was uncomplicated. The patient was discharged 10 days post-surgery with a QTc interval of 560 ms during ventricular pacing at 100 ppm. A stringent outpatient follow-up was scheduled; to date, after 7 months, no recurrences of VAs have been documented. The QTc interval at 6 months was 550 ms during sinus rhythm at 105 bpm.

CONCLUSION: PLSGB proved feasible, safe, and effective in temporarily preventing malignant VAs in a high-risk 1-month-old LQT2 infant as a bridge to LCSD. This is the first case reported of continuous PLSGB in an infant, and one of the few reported VATS-LCSD cases below 1 year of age. Sympathetic neuromodulation, both transient and permanent, should always be considered in the management of LQTS. Regarding PLSGB, the dose-response and toxicity profiles of ropivacaine need to be appropriately characterized.

ARITMIE 605
ARITMIE SOPRAVENTRICOLARI (ESCLUSA FA) (ARITMIE)
FARMACI ANTIARITMICI (ARITMIE)
CARDIOLOGIA PEDIATRICA
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)

PERCUTANEOUS LEFT STELLATE GANGLION BLOCK FOR DRUG-REFRACTORY ATRIAL ECTOPIC TACHYCARDIA IN A NEWBORN: A CASE REPORT

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Background: Drug-refractory atrial ectopic tachycardias (AET) are potentially life-threatening supraventricular arrhythmias in newborns. While percutaneous left stellate ganglion block (PLSGB) has shown efficacy in managing refractory ventricular arrhythmias in adults, this case report highlights its use in achieving temporary suppression of drug-resistant AET in a late-term newborn.

Case report: A male newborn with prenatal diagnosis of supraventricular tachycardia (atrial flutter/tachycardia; mean heart rate 220 bpm), unsuccessfully treated with sotalol and digoxin, was delivered via elective C-section at 35+3 weeks (weight at birth 2.9 kg). At birth, electrocardiogram (ECG) showed sinus rhythm (SR)with frequent premature supraventricular contractions (PSC) and short runs of AET with 2:1 atrio-ventricular (AV) conduction and mean heart rate (HR) of 150 bpm.
Echocardiogram and blood tests were within normal limits and there were no signs of heart failure nor haemodynamic instability. Intravenous amiodarone therapy was started (loading dose of 25 µg/kg/min for 4 hours, maintenance at 10 µg/kg/min), then switched per os (4 mg/kg/day). Two days after, due to ineffective rhythm control, per os therapy with flecainide (2.8 mg/kg/day) was started, later in association with propranolol (0.6 mg/kg/day), leading to a partial improvement in the arrhythmic burden. A transesophageal electrophysiology study (TE-EPS) was performed, excluding the presence of accessory pathways and atrio-ventricular nodal re-entrant tachycardia. Multiple drug combinations (esmolol, digoxin, sotalol, and ivabradine) failed to achieve a stable rhythm, with persistent paroxysmal AET exhibiting variable AV conduction and a mean heart rate of 140–200 bpm. At 1 month and 21 days of age, a ultrasound-guided PLSGB was performed with a ropivacaine bolus (6 mg), leading to an acute complete suppression of AET.
Except for a mild left eyelid ptosis, indicating a proper blockade of the superior half of the left stellate ganglion, no procedural complication occurred.
Due to the persistence of AET paroxysm in the following days, another PLSGB was performed with a ropivacaine bolus followed by continuous infusion (0.03 mg/kg/hour) via an epidural catheter that was left in place for six days. No complications occurred and the arrhythmic burden was reduced, albeit not completely suppressed.
The infant was discharged at 2 months and 17 days, clinically stable and on oral flecainide (4.8 mg/kg/day) and propranolol (1.8 mg/kg/day). Discharge long trace ECG showed prevalent sinus rhythm at 107 bpm alternating with short runs of AET at 150 bpm.
At 1 year follow-up, non-sustained AET paroxysms

persisted with good tolerance and normal baby thriving.

Conclusion: PLSGB proved effective in transitorily suppressing a multidrug-resistant atrial ectopic tachycardia in a late preterm newborn. To date, this is one of the very few cases reported in literature of continuous PLSGB usage in an infant, and to the best of our knowledge, the first regarding PLSGB use for supraventricular arrhythmia suppression in a newborn. It should be noted that the dose-response as well as the toxicity profiles of ropivacaine usage for this purpose still need to be appropriately characterized in the pediatric population.

ARITMIE 664
SINCOPE (ARITMIE)
STUDI ELETTROFISIOLOGICI INVASIVI (ARITMIE)
ABLAZIONE TRANSCATETERE (ARITMIE)

CARDIONEUROABLATION FOR NEURALLY MEDIATED CARDIOINHIBITORY SYNCOPE - READY, AIM AND FIRE: A SINGLE-CENTER EXPERIENCE

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Background: Cardioneuroablation (CNA) is an emergent therapeutic option for patients with recurrent and traumatic neurally mediated syncope with a documented cardioinhibitory mechanism. We hereby present a case series of four patients who underwent CNA at our centre, highlighting the importance of careful patient selection and the need for a personalized approach.

Methods: Four patients (mean age 29; range: 15–40 years; 2 females), all with a high syncopal burden (at least 3 syncopal episodes in the last year), underwent a total of 5 CNA procedures between May 2024 and February 2025. Three patients had documented spontaneous cardioinhibition (asystolic pauses ≥ 8 seconds), the last patient was instead a young girl under not modifiable psychoactive drugs showing a mixed mechanism (severe bradycardia combined with hypotension documented during multiple emergency room admissions). Resting ECG was normal in all cases (average heart rate, HR, 79 bpm).
The three patients older than 18 years underwent loop recorder implantation before the procedure. Two patients underwent head-up tilt test (fast Italian Protocol) before CNA, with confirmation of a cardioinhibitory response only in one case.
All the procedures were performed via femoral venous access and with electro-anatomical mapping. Parasympathetic ganglia were identified through a combined electrogram–based and anatomical approach. CNA was performed with radiofrequency (RF) and based on a right or biatrial approach, according to individual anatomical and clinical profiles. Baseline and post-procedural electrophysiological (EP) parameters, atropine response, peri-procedural complications, and clinical outcomes were recorded.

Results: At baseline, mean EP parameters were: HR 70 bpm, AH 84 ms, HV 36 ms, corrected sinus node recovery time (SNRTc) 318 ms (at pacing cycle length of 500 ms), anterograde Wenckebach point (WP) 175 bpm. In three cases ablation was limited to the right atrium, targeting the superior para-septal ganglionated plexus (SPSGP) and, in two cases, also the inferior para-septal ganglionated plexus (IPSGP). In all cases there was an HR increase during RF applications.
Mean post-CNA EP parameters were: HR 83 bpm, AH 87 ms, HV 36 ms, SNRTc 163 ms, anterograde WP 176 bpm. After i.v. atropin administration (2 mg), a blunted response was achieved in three patients. No major peri-procedural complications occurred. At early follow-up (range 3–15 months), two patients suffered syncope recurrences: one patient, initially treated by a biatrial approach, required a redo procedure in the right atrium to complete SPSGP ablation (thereafter, to date, successful). The second patient was the young girl with the underlying mixed mechanism and not modifiable prescription of psychotropic drugs.

To note, despite being syncope-free, a very active patient (running and playing beach volley) complained of a significantly reduced perceived exercise tolerance in the first 3 months after the procedure, followed by a progressive lessening of the symptom.

Conclusion: In our cohort, CNA proved to be a feasible and safe procedure. Our experience underlines the need to accurately select patients prior to the procedure and to tailor procedural approaches to each patient anatomy and clinical profile. Larger studies with longer follow-up are warranted to uniform procedural approaches and outcomes, establish long-term efficacy and properly explore short as well as long-term side effects.

ARITMIE 757
ARITMIE VENTRICOLARI (ARITMIE)
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

RUOLO DI PARAMETRI ECOCARDIOGRAFICI AVANZATI NELLA GESTIONE DI PAZIENTI CON CARDIOMIOPATIA SOTTOPOSTI A DENERVAZIONE SIMPATICA CARDIACA

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Introduzione ed obiettivi dello studio: La denervazione simpatica cardiaca (CSD) è una strategia emergente per il trattamento di tachicardie ventricolari (TV) recidivanti refrattarie a terapia medica e/o ablativa. Nei pazienti con cardiopatia strutturale, i dati disponibili suggeriscono una maggiore efficacia della procedura bilaterale (BCSD) rispetto a quella monolaterale sinistra (LCSD), ma le conoscenze circa l'impatto della BCSD sulla cardiomeccanica sono limitate. L'obiettivo primario dello studio è valutare l'impatto ecocardiografico della procedura di CSD, in acuto e nel medio-lungo periodo, in pazienti con cardiopatia strutturale avanzata. Gli obiettivi secondari includono l'outcome dei pazienti e l'efficacia antiaritmica della procedura.

Materiali e metodi: Si tratta di uno studio osservazionale, prospettico, bicentrico, che ha incluso pazienti con cardiopatia strutturale sottoposti a CSD per via toracoscopica mininvasiva a scopo antiaritmico, tra aprile 2016 e dicembre 2024. I pazienti sono stati sottoposti a studio ecocardiografico trans-toracico standard e, quando possibile, avanzato a intervalli definiti: 24-48 ore prima della procedura, 3-7 giorni dopo (massimo 15 se finestra scadente intraricovero), e a intervalli semestrali durante il follow-up. Tra i parametri avanzati, sono stati inclusi lo strain longitudinale globale (GLS) del ventricolo sinistro e destro, la finestra elettromeccanica (FEM) e la dispersione meccanica (DM).

Risultati: Sono stati inclusi 50 pazienti (56±16 anni, 86% maschi) sottoposti a CSD (90% BCSD, 10% LCSD). L'86% aveva cardiomiopatia non ischemica (63% dilatativa, 23% non dilatativa, 12% ipertrofica, 2% aritmogena). La frazione di eiezione del ventricolo sinistro (FEVS) in media era del 33±12%, il 52% aveva insufficienza mitralica almeno moderata (18% severa).

Il 98% era portatore di defibrillatore impiantabile, il 32% aveva una classe NYHA ≥ III e il 28% era in lista per trapianto cardiaco/LVAD. La durata mediana del follow-up è stata di 16 mesi (IQR 4-38 mesi); 13 pazienti (26%) sono deceduti, 6 (12%) sono stati trapiantati e 3 (6%) hanno ricevuto un LVAD.
L'ecocardiogramma post-procedurale (sia su tutta la popolazione che soltanto sul sottogruppo BCSD) ha escluso un impatto negativo sugli indici di contrattilità biventricolare, confermato nel follow-up a 6 mesi (n=25 BCSD) e a 12 mesi (n=18 BCSD). La FEVS è migliorata a 6 mesi (38 ÷ 11%, p=0.011), tornando al basale a 12 mesi. La DM si è lievemente ridotta dopo la procedura (98±52 msec pre-CSD e 95±55 msec post-CSD, p=0.03), ma non nel follow-up. La FEM, molto negativa al basale, è rimasta invariata. Non è stata evidenziata correlazione tra FEVS, FEM e DM.
Durante il follow-up, il 50% dei pazienti ha avuto recidive di shock, il 62% interventi del device, il 40% storm aritmico, con una riduzione significativa del burden aritmico. I predittori indipendenti di recidive aritmiche trattate sono risultati la classe NYHA ≥ III e la sola denervazione sinistra, mentre per le recidive di storm la classe NYHA ≥ III e TV pre-CSD < 200 bpm. Nei 37 pazienti con dati ecocardiografici avanzati, la DM <90 ms pre-CSD è risultata un predittore indipendente di recidive, insieme alla sola denervazione sinistra e a TV pre-CSD < 200 bpm.

Conclusioni: La CSD bilaterale è una procedura sicura ed efficace per ridurre il burden aritmico ventricolare, anche in pazienti con cardiopatie strutturali avanzate. L'integrazione dei parametri ecocardiografici convenzionali con DM e FEM potrebbe aiutare a identificare i pazienti a più alto rischio, migliorando la selezione dei candidati per la procedura.

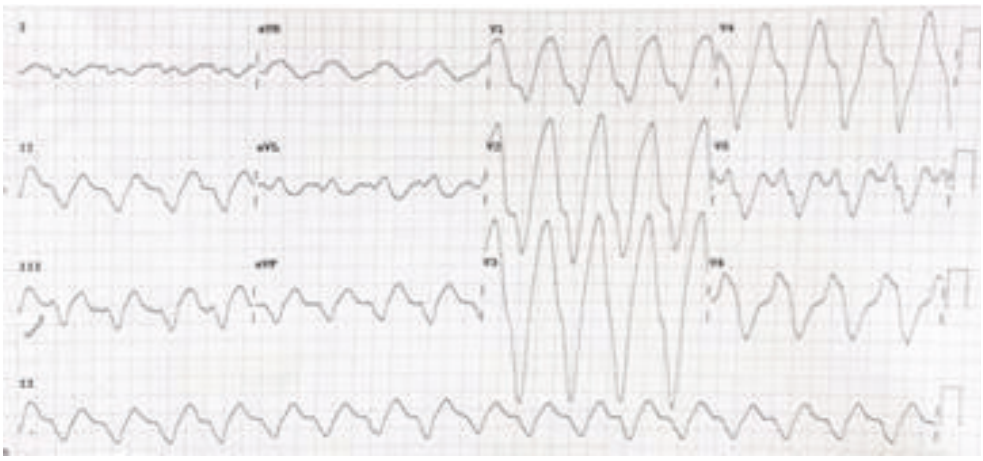
ARITMIE 147
ARITMIE VENTRICOLARI (ARITMIE)
ELETTROCARDIOGRAFIA/ CARDIOVERSIONE/ DEFIBRILLAZIONE (ARITMIE)
FARMACI ANTIARITMICI (ARITMIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)

ACCIDENTAL FLECAINIDE TOXICITY: THE IMPORTANCE OF PROMPT ECG RECOGNITION

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(a) UNIVERSITÀ DEGLI STUDI DI ROMA "SAPIENZA"-POL. UMBERTO I

Background: Flecainide is a class IC antiarrhythmic drug that is widely used to treat supraventricular arrhythmias, particularly atrial fibrillation. It works by powerfully blocking fast inward sodium channels during phase 0 of the cardiac action potential and inhibiting certain potassium currents, which contributes to its proarrhythmic effect.
Furthermore, as the drug has a narrow therapeutic index, toxic plasma concentrations may only be slightly above the therapeutic range.
Toxicity primarily manifests as conduction disturbances, ventricular arrhythmias and severe haemodynamic compromise. Despite the potential for life-threatening complications, there are currently no standardised treatment protocols for flecainide intoxication.

Case presentation: We present the case of a 95-year-old female patient with a history of atrial fibrillation who ingested 300 mg of flecainide following the onset of palpitations. She was found unresponsive and admitted to the emergency department with severe hypotension.
On arrival, vital signs showed a blood pressure of 55/40 mmHg and an oxygen saturation of 99% under mechanical ventilation with an FiO_2 of 60%. Laboratory results revealed a serum creatinine of 0.9 mg/dL, hyponatremia (Na^+ 121 mmol/L), and potassium 4.4 mmol/L. Electrocardiography showed a wide-complex tachyarrhythmia consistent with flecainide cardiotoxicity. Immediate intravenous sodium bicarbonate was administered, with continuous hemodynamic and cardiac monitoring.
Over the following hours, blood pressure gradually stabilized and QRS complexes narrowed, leading to clinical recovery.



Figure

Conclusion: Flecainide overdose can present with sudden and severe cardiovascular collapse, particularly in elderly patients. Prompt recognition of intoxication, guided by characteristic electrocardiographic abnormalities, is essential to initiate timely and effective treatment.

Currently, management remains largely empirical. The mainstay of treatment is supportive care and sodium bicarbonate administration, which increases extracellular sodium concentration and alkalinizes plasma. These effects mitigate sodium channel blockade and contribute to narrowing of the QRS complex. Additional strategies, such as intravenous lipid emulsion therapy and advanced circulatory support including extracorporeal membrane oxygenation (ECMO), have been reported in severe or refractory cases, though evidence is limited to case reports and small case series.

This highlights the urgent need not only for heightened clinical awareness but also for the development of standardized protocols to guide the management of flecainide intoxication.

ARITMIE 49
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)
SINCOPE (ARITMIE)
DEFIBRILLATORE IMPIANTABILE (ARITMIE)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)
STUDI ELETTROFISIOLOGICI INVASIVI (ARITMIE)

CANALOPATIA O CARDIOMIOPATIA? PREVENZIONE DELLA MORTE CARDIACA IMPROVVISA IN PAZIENTE AFFETTA DA SINDROME DI BRUGADA E MITRAL ANNULAR DISJUNCTION (MAD)

Leandro Fabrizio Milillo (a), Daniel Ignacio Conforme Torres (a), Marisa Varrenti (a), Fabrizio Guarracini (a), Raffaele Falco (a), Roberto Menè (a), Marco Carbonaro (a), Matteo Baroni (a), Giulia Colombo (a), Sara Vargiu (a), Alberto Preda (a), Antonio Frontera (a), Patrizio Mazzone (a)
(a) CARDIOLOGIA 3 - ELETTROFISIOLOGIA - ASST GRANDE OSPEDALE METROPOLITANO NIGUARDA

Una donna di 34 anni, nota per pattern ECG di Brugada tipo 1 spontaneo, accede in PS per episodio sincopale. In anamnesi riscontro di variante probabilmente patogenetica a carico del gene SCN5A (padre e figlio affetti) e familiarità per morte cardiaca improvvisa. La paziente viene ricoverata per stratificazione del rischio aritmico. L'ecocardiogramma transtoracico documenta solo una lieve insufficienza delle valvole atrioventricolari. In accordo con le linee guida ESC 2022 su aritmie ventricolari e prevenzione della morte cardiaca improvvisa, la paziente è sottoposta a studio elettrofisiologico. Con drive di 500 ms e doppio extrastimolo, ciascuno a 220 ms, si induce fibrillazione ventricolare, cardiovertita con singolo DC shock esterno a 200 J. Per tale motivo, viene candidata a impianto di defibrillatore, previa esecuzione di risonanza magnetica cardiaca (RMC) per la caratterizzazione morfo-tissutale. La RMC evidenzia lieve rigurgito mitralico su valvola con lembi ridondanti e prolassanti, associato a disgiunzione anulare mitralica (MAD) di 6 mm, curling sistolico dei segmenti basali infero-laterale e antero-laterale del ventricolo sinistro e late gadolinium enhancement (LGE) a livello del muscolo papillare postero-mediale.
Viene inoltre segnalata la presenza di disgiunzione anulare tricuspidalica (TAD) di 4 mm. Il quadro rende, pertanto, complessa l'attribuzione del substrato aritmico alla canalopatia o alla patologia mitralica.

La MAD, infatti, è stata riconosciuta come una condizione strutturale frequentemente associata al prolasso valvolare mitralico (MVP), con una prevalenza riportata fino al 40 % nei pazienti con MVP.
Una MAD ≥ 5 mm si associa ad aumentato rischio di aritmie ventricolari, in particolare quando coesiste fibrosi (LGE) a livello di muscoli papillari o parete

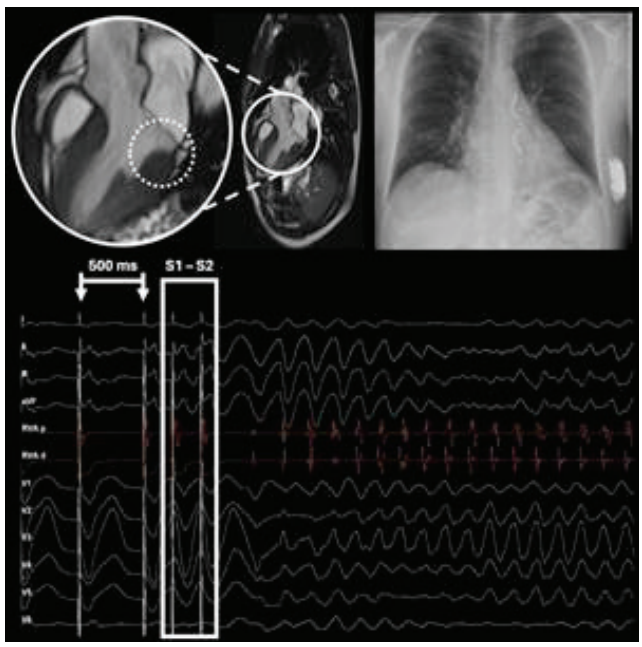


Figura 1

infero-laterale. In presenza di LGE e MAD, la combinazione di curling sistolico e substrato fibrotico delinea un fenotipo ad alto rischio aritmico, con implicazioni rilevanti per la stratificazione e la gestione terapeutica. Alla luce della giovane età della paziente e dell'assenza di indicazioni al pacing, è stato eseguito l'impianto di ExtraVascular ICD (EV-ICD), il quale consente l'erogazione di pacing post-shock e terapia antitachicardica (ATP), pur mantenendo l'assenza di componenti intravascolari e riducendo, conseguentemente, il rischio infettivo.

In conclusione, in tale contesto clinico, la stratificazione del rischio aritmico si configura come un enigma non ancora risolto: se il sospetto iniziale era rivolto alla Sindrome di Brugada, i nuovi elementi emersi dall'imaging (MAD, LGE papillare, TAD) delineano il possibile coesistere di substrati aritmogenici distinti ma potenzialmente sinergici. Il caso clinico presentato evidenzia la necessità di non fermarsi a una singola ipotesi diagnostica, ma di adottare un approccio sempre più multiparametrico nella stratificazione del rischio aritmico, attraverso l'impiego di metodiche cruciali quali la genetica e la risonanza magnetica cardiaca.

CardioSic

ARITMIE 188
TERAPIA DI RESINCRONIZZAZIONE (ARITMIE)
ELETTROSTIMOLAZIONE (ARITMIE)
DEFIBRILLATORE IMPIANTABILE (ARITMIE)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)

QRS INDEX AS A PREDICTOR OF RESPONSE TO CARDIAC RESYNCHRONIZATION THERAPY: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Background: Cardiac resynchronization therapy (CRT) improves outcomes in heart failure (HF) patients with reduced left ventricular ejection fraction (LVEF) and wide QRS complex. However, up to 30–50% of patients fail to respond. The QRS Index, which quantifies QRS shortening after CRT, has emerged as a potential predictor of response.

Purpose: We aimed to perform a systematic review and meta-analysis to evaluate the association between QRS Index and CRT response.

Methods: We searched PubMed, Scopus and Cochrane reporting QRS Index values in CRT responders and non-responders.
Studies defining response based on clinical, echocardiographic, or combined criteria were included. Heterogeneity was assessed using the I^2 statistic, and a random-effects model was applied.
A meta-regression analysis explored the relationship between baseline echocardiographic parameters and QRS Index.

Results: Nine studies with 1,274 patients met the inclusion criteria, with 760 (59%) classified as responders and 514 (41%) as non-responders. The weighted mean ± standard deviation was 16.14 ± 13.19 in responders and 7.22 ± 14.96 in non-responders. The QRS Index was significantly higher in the responder group compared to non-responders (mean difference: 8.76; 95% CI: 6.45–11.06; I^2= 45%; p<0.00001). Meta-regression revealed that lower left ventricular end-systolic volume (LVESV) values were associated with even higher QRS Index in responders compared to non-responders (β= -0.0483; 95% CI: -0.0938; -0.0029, p= 0.0372).

Conclusion: QRS Index is significantly higher in CRT responders, supporting its role as a predictor of response. Further studies are needed to standardize its clinical use and assess its prognostic impact.

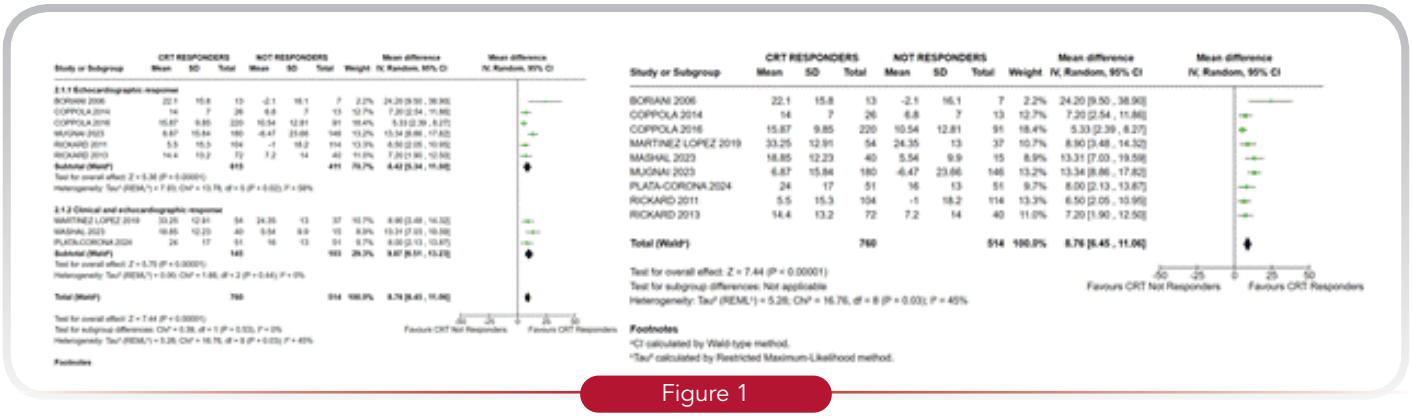


Figure 1

ARITMIE 522
ELETTROSTIMOLAZIONE (ARITMIE)
TERAPIA DI RESINCRONIZZAZIONE (ARITMIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)

ATRIOVENTRICULAR NODE ABLATION ASSOCIATED TO CONDUCTION SYSTEM PACING VS BIVENTRICULAR PACING: A SINGLE-CENTER EXPERIENCE

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(a) IRCCS OSPEDALE SAN RAFFAELE - MILANO; (b) IRCCS POLICLINICO SAN DONATO - MILANO

Introduction: Atrial fibrillation (AF) and heart failure (HF) often coexist, leading to increased morbidity and mortality. In patients with permanent AF and inadequate rate control, recurrent HF decompensations are frequent and may be unresponsive to pharmacological therapy. In this setting, the "ablate and pace" strategy—CRT implantation followed by atrioventricular (AV) node ablation—represents a well-established option.
Biventricular pacing (BiV) has traditionally been used for CRT, improving remodeling, symptoms, and hospitalizations, but its effectiveness is limited in some patients. Conduction system pacing (CSP), particularly left bundle branch area pacing (LBBAP), has emerged as a more physiological alternative, though its role within the "ablate and pace" strategy remains less defined. This study compared outcomes of CSP versus BiV pacing in patients undergoing an "ablate and pace" strategy at a single high-volume center.

Methods: This single-center, retrospective, observational study included all consecutive patients admitted to the Clinical Arrhythmology and Electrophysiology Department, IRCCS Policlinico San Donato (Milan), between 2017 and 2025 who underwent an "ablate and pace" strategy, defined as CRT device implantation followed by atrioventricular (AV) junction ablation. All patients had permanent atrial fibrillation (AF) and were hospitalized for a recurrent episode of acute heart failure (HF) decompensation with uncontrolled ventricular rate. CRT was delivered either by conduction system pacing (CSP, predominantly left bundle branch area pacing, LBBAP) or by biventricular pacing (BiV). AV node ablation was performed with radiofrequency energy in all cases. Patients were followed at 3, 6, and 12 months post-procedure, and annually thereafter (median follow-up: 11 months). A pre-specified 6-month landmark analysis was applied to account for variable follow-up durations. To reduce selection bias, 1:1 propensity score matching was performed using relevant clinical covariates (MatchIt package, R).

Results: A total of 140 patients were included (40 CSP, 100 BiV). After matching, 40 well-balanced pairs were analyzed (median age 74.5 years, 62% male).
At follow-up, CSP was associated with a significantly greater improvement in LVEF (+14% vs. +8%, p=0.032) and a larger NT-proBNP reduction (–1343 pg/mL vs. –578 pg/mL, p=0.027). Clinically, CSP patients showed greater NYHA class improvement (p=0.01), fewer HF hospitalizations (5% vs. 12.5%, p=0.014), fewer total hospitalizations (5% vs. 15%, p=0.011), and lower reintervention rates (2.5% vs. 10%, p=0.023). Differences in all-cause and cardiovascular mortality did not reach statistical significance. No major acute procedural complications occurred, and AV node ablation was successful in all patients.

Conclusions: In patients with permanent AF and recurrent HF decompensation undergoing an "ablate and pace" strategy, CSP is associated with superior improvements in cardiac function, biomarkers, symptoms, and hospitalization rates compared with BiV pacing. These findings support CSP as a more effective and physiological alternative to BiV in this setting.

ARITMIE 1002
ARITMIE VENTRICOLARI (ARITMIE)
ARITMIE SOPRAVENTRICOLARI (ESCLUSA FA) (ARITMIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
MECCANISMI DELLE ARITMIE (ARITMIE)

HEMODYNAMIC SAFETY OF PERCUTANEOUS STELLATE GANGLION BLOCK FOR REFRACTORY VENTRICULAR AND SUPRAVENTRICULAR ARRHYTHMIAS

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Background: Percutaneous stellate ganglion block (PSGB) is endorsed by recent guidelines for patients with drug-refractory electrical storm (ES). Nonetheless, despite its strong antiarrhythmic potential, its use is limited by concerns that sympathetic blockade may exert unfavorable inotropic, chronotropic, or dromotropic effects, especially in the critically ill patients.

Methods: We hereby describe our single center experience with PSGB from 2/2021 to 9/2025 used for ES, control of supraventricular arrhythmias (SVAs) with rapid ventricular response, and prophylaxis of ventricular arrhythmias (VAs) in high-risk settings. Heart rate (HR) and blood pressure (BP) were recorded immediately before PSGB and approximately five minutes afterward. Cardiac ultrasound (US) was performed within the first 12 hours (mean 6 hours) before and after PSGB.
The antiarrhythmic efficacy of the procedure was defined as complete suppression of sustained/treated VAs and, for SVAs, either cardioversion to sinus rhythm or a ≥30% reduction in ventricular penetrance at 12 hours.

Results: 112 patients (87% male, mean age 65 ± 12 years) received 186 PSGBs performed with the lateral, US guided technique. Except for three right-sided procedures in a single patient previously treated with left cardiac sympathetic denervation, all blocks were left-sided. Most consisted of a single bolus anesthetic injection (lidocaine+ropivacaine), 24% in an additional continuous infusion, mostly with ropivacaine. Most patients (59%) suffered ischemic cardiomyopathy (CMP), including 24 with acute coronary syndrome (ACS); the rest had non ischemic CMP (8 arrhythmogenic CMP, 3 Takotsubo syndrome, 2 acute myocarditis, and 1 hypertrophic CMP).
Most PSGB (78%) were performed in impending or manifest cardiogenic shock (SCAI classification B or more) requiring inotrops and vasopressors and in 19% of cases also mechanical circulatory support. Baseline cardiac US showed a severe biventricular dyfunction [mean left ventricle ejection fraction (LVEF) 24 ± 13%, mean LV outflow tract velocity time integral (LVOT-VTI) 13 ± 4 cm and mean fractional areal change 33± 7%] in most cases. Mean LVEDV was 219 ± 104 ml, 79% had ≥ moderate mitral regurgitation, 46% had ≥ moderate diastolic dysfunction.
Most of the procedures (n=123, 66%) were performed due to refractory ES, notably 110 ventricular tachycardia (VT) with cycle length of 387 ± 123 msec, 7 ventricular fibrillation and 5 torsade de pointes. Overall 12-hours efficacy was 70%. Thirty-nine PSGBs (21%) aimed to prevent VAs in high-risk patients, mostly after recent ES or to reduce non-sustained VT/ventricular ectopy. Twenty-four PSGBs (13%) targeted atrial arrhythmias despite intravenous therapy: 17 atrial fibrillation (AF), 4 atrial flutter with 2:1 conduction, 2 atrial tachycardia

(AT), and 1 case of ectopic supraventricular beats. Left-sided PSGB achieved cardioversion to sinus rhythm in 59% of AF cases and significantly reduced ventricular rate in the remaining AF and AT cases, but not in atrial flutter. Only one major complication occurred (a rare local anesthetic systemic toxicity) promptly reversed with lipid emulsion. Compared with pre-procedure values, post-PSGB assessments demonstrated mildly improved LVEF (24% to 25%), LVOT-VTI (13 to 14 cm), mitral regurgitation severity, and tricuspid annular plane systolic excursion (16 to 17 mm). HR decreased modestly (91 to 87 bpm), while BP remained unchanged.

Conclusions: Our data suggest that PSGB procedure is hemodynamically safe even in patients with advanced heart failure, allowing for an overall improvement in hemodynamic parameters likely mainly driven by arrhythmias control.

ARITMIE 537
ABLAZIONE TRANSCATETERE (ARITMIE)
ARITMIE SOPRAVENTRICOLARI (ESCLUSA FA) (ARITMIE)
MECCANISMI DELLE ARITMIE (ARITMIE)

DEFINIZIONE DELLE CARATTERISTICHE ELETTROFISIOLOGICHE E STRATEGIE ABLATIVE DELLE TACHICARDIE ATRIALI SINISTRE IN PAZIENTI &LDQUO;NAIVE&LDQUO: RISULTATI DI UNO STUDIO MULTICENTRICO

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Introduzione: Le tachicardie atriali (TA) si manifestano più frequentemente in pazienti con storia di interventi chirurgici cardiaci o ablazioni pregresse, dove esiti cicatriziali creano substrati perfetti per il rientro.
Nei pazienti naïve, i meccanismi di insorgenza delle TA sono poco compresi. Questo studio indaga caratteristiche elettrofisiologiche e target ablativo ottimale per TA naïve dall'atrio sinistro. Ipotizziamo tre tipi di istmo: elettrico (sito di maggior conduzione lenta); anatomico (linea breve a strutture vicine, es. vene polmonari, anulus mitralico, tetto atriale); critico (dove i due si sovrappongono).

Metodi: Abbiamo analizzato retrospettivamente 36 pazienti con Naïve TA (4 focali, 22 macro-rientranti e 10 localizzati) sottoposti ad ablazione transcatetere guidata da mappaggio elettroanatomico ad alta densità, con almeno 12 mesi di follow-up clinico. Sono state identificate aree di basso voltaggio (LVA) e cicatrici dense, valutando la frammentazione degli EGM, la velocità di conduzione, l'ampiezza e la durata dei segnali negli istmi. Nei casi macro-rientranti, sono stati esaminati i corridoi di rallentamento elettrico e la lunghezza del ciclo della TA (ATCL).

Risultati: In tutti i casi sono state identificate LVA, localizzate prevalentemente sulla parete anteriore e sul tetto dell'atrio sinistro, con cicatrice densa presente solo nella metà dei pazienti. L'esistenza di un circuito di rientro appare correlata più al tessuto elettricamente compromesso. La frammentazione degli EGM nei siti critici correla con il burden complessivo di LVA.
La presenza di corridoi aggiuntivi di rallentamento si associa ad un piu lungo ciclo della TA e maggior stabilità aritmica. L'istmo elettrico presenta EGM più frammentati, con maggiore durata, bassa velocità di conduzione e ampiezza ridotta rispetto all'istmo anatomico; l'istmo critico mostra caratteristiche intermedie.
Quest'ultimo è risultato il target ablativo con maggior successo acuto, minor tasso di recidive a breve e medio termine (follow-up medio: 28 mesi).

Conclusione: Questi risultati migliorano la comprensione dei meccanismi fisiopatologici nelle Naïve TA e supportano un approccio ablativo razionale e personalizzato. Studi prospettici su popolazioni più ampie sono necessari per validarli.

ARITMIE 388
ABLAZIONE TRANSCATETERE (ARITMIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

ATRIAL FIBRILLATION CATHETER ABLATION IN PATIENTS WITH HYPERTROPHIC CARDIOMYOPATHY: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Introduction: Atrial fibrillation (AF) frequently complicates hypertrophic cardiomyopathy (HCM) and is associated with significant morbidity and mortality. Catheter ablation (CA) has emerged as an effective treatment modality; however, its efficacy compared to medical therapy in HCM patients remains unclear. We conducted a systematic review and meta-analysis to assess the impact of CA compared with medical therapy on hard prognostic outcomes in patients with HCM and AF.

Methods: PubMed, Scopus, and Cochrane databases were systematically searched for randomized controlled trials and observational studies comparing CA with medical therapy alone in HCM patients with documented AF. We included studies that reported at least 1 clinical outcome of interest over a minimum 5-year follow-up period: all-cause mortality, cardiovascular death, heart failure hospitalizations and stroke. A random-effects model was applied, and heterogeneity was assessed by I^2 statistics.

Results: We analyzed 4 studies comprising a total of 570 patients, 316 (55%) of whom underwent CA. CA significantly reduced heart failure hospitalizations compared to medical therapy alone (RR 0.37; 95% CI 0.16 to 0.87; p = 0.02). However, CA showed no statistically significant effect on all-cause mortality (RR 0.68; 95% CI 0.41 to 1.11; p = 0.12), cardiovascular death (RR 0.66; 95% CI 0.35 to 1.25; p = 0.20), or stroke incidence (RR 0.29; 95% CI 0.03 to 2.61; p = 0.27).

Conclusion: In conclusion, in patients with HCM and AF, CA is associated with a significant reduction in heart failure hospitalizations compared to medical therapy alone, without a significant impact on all-cause mortality, cardiovascular death, or stroke.

ARITMIE 1089
ARITMIE SOPRAVENTRICOLARI (ESCLUSA FA) (ARITMIE)
ELETTROSTIMOLAZIONE (ARITMIE)
GESTIONE DELLA COMPLICANZE PM / ICD (ARITMIE)

ANOMALO IMPIANTO DI PACEMAKER IN PAZIENTE FRAGILE CON FLUTTER ATRIALE: UNA COMPLESSA SFIDA TERAPEUTICA

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INTRODUZIONE: Il collocamento errato di un elettrocatetere di pacemaker in ventricolo sinistro è un'evenienza che può manifestarsi in presenza di pervietà del forame ovale, difetto interatriale o interventricolare, perforazione del setto interventricolare. E' abbastanza rara, dato che ne sono descritti sparuti casi in letteratura, probabilmente anche a causa della sottostima dell'evento. Tra le complicanze principali sono descritte: insufficienza mitralica di grado severo ed attacchi ischemici transitori, quest'ultimi a causa dell'aumento del rischio tromboembolico.
La diagnosi del malposizionamento dell'elettrocatetere può essere eseguita tramite la radiografia del torace in due proiezioni, specie in proiezione latero-laterale; l'ecocardiografia può confermare la diagnosi, e la TC può svolgere un ruolo nel definire la presenza o l'assenza di perforazione La gestione della terapia anticoagulante in questi pazienti prevede l'uso degli antagonisti della vitamina K, quando non è possibile, per fragilità, rischio operatorio elevato o lunga permanenza dell'elettrocatetere pensare ad una procedura di estrazione percutanea od un intervento di rimozione chirurgica in open; non è descritto in letteratura l'uso dei nuovi anticoagulanti orali.

CASO CLINICO: Donna, 86 anni. In anamnesi sincope associata ad ECG diagnostico per blocco atrio-ventricolare di III°, per cui nel 2011 è stata sottoposta ad impianto di pacemaker. Accesso in Pronto Soccorso nel 2024 per disorientamento e lieve deterioramento cognitivo; per riscontro all'ecofast di versamento pericardico veniva eseguita valutazione cardiologica. All'ECG evidenza di flutter atriale e ritmo ventricolare elettro-indotto con QRS a morfologia blocco di branca destra ed emiblocco anteriore sinistro. L'ecocardiogramma mostrava: versamento pericardico circonferenziale, LVEF ridotta (35%), IM moderata ed un decorso anomalo dell'elettrocatetere ventricolare, che attraverso il SIA si adagiava sul segmento basale della parete infero-posteriore del ventricolo sx. Il controllo tecnico del device mostrava batteria prossima all'esaurimento (8%); assenza di ritmo spontaneo e soglia di cattura 0,9V@1 msec in unipolare.
Data la presenza di versamento pericardico è stata eseguita TC torace con mdc, che escludeva la presenza di perforazione di parete. Dopo discussione collegiale, in considerazione dell'età avanzata, della fragilità, dell'elevato rischio operatorio di un eventuale riposizionamento del catetere, della stabilità del versamento pericardico e dell'assenza di eventi trombo-embolici negli anni, si optava per una terapia conservativa con possibilità di monitoraggio remoto alla sostituzione del device e di controlli cardiologici periodici. La gestione della terapia anticoagulante nei pazienti con anomalo collocamento di elettrocatetere in ventricolo sx e fibrillazione/flutter atriale non è ben codificata in letteratura; la terapia con DOAC tuttavia negli anni è risultata efficace nel prevenire eventi ischemici maggiori, per cui si optato per mantenere la terapia con apixaban bid. L'Home-Monitoring ha inoltre permesso di monitorare gli autotest del device, consentendo di visionare la stabilità dei parametri elettrici nel tempo.

CONCLUSIONE: L'impianto anomalo di elettrocatetere in ventricolo sinistro è un'evenienza rara ma possibile; l'esclusione delle principali complicanze legate all'anomalia di impianto guidano la scelta tra strategia di follow-up e procedura di estrazione o riposizionamento del catetere; l'uso di Apixaban, non codificato in letteratura, ha efficacemente prevenuto la comparsa di eventi ischemici cerebrali maggiori nella paziente, aprendo ad un possibile scenario di utilizzo dei NOAC in questo specifico quadro clinico, seppur ulteriori studi clinici più ampi e randomizzati sono necessari per consolidare questo dato e permettere un uso più consolidato nella pratica clinica.

ARITMIE 987
SINCOPE (ARITMIE)
ELETTROSTIMOLAZIONE (ARITMIE)
ARITMIE VENTRICOLARI (ARITMIE)

SUSPECTED CARDIAC INVOLVEMENT IN A YOUNG WOMAN WITH MICROSCOPIC POLYANGIITIS

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Clinical case: A 27 years old woman with a history of Microscopic Polyangiitis with pauci-immune glomerulonephritis anti MPO positive presented to our Emergency Department for a syncopal episode without prodromes. Blood tests revealed negative troponin and D-dimer, with electrolytes within normal limits. Electocardiogram showed Third-degree atrioventricular block with a ventricular escape rhythm showing a left bundle branch block morphology at 30 bpm, interrupted by two beats in sinus rhythm at 100 bpm with first-degree atrioventricular block and right bundle branch block (Figure 1).

The echocardiogram showed left ventricle with normal endocavitary dimensions and wall thickness. Global systolic function preserved (EF 60%) with no segmental wall motion abnormalities. Mild mitral regurgitation. Right heart chambers within normal limits in terms of size and longitudinal motion. Mild tricuspid regurgitation with PAPs within normal limits. No pericardial effusion.
Cardiac MRI showed an area of mid-wall (mesocardial) late gadolinium enhancement with elongated morphology involving the basal inferolateral segment, and an additional subtle area of enhancement at the basal inferior junction (Figure 2).
Based on the clinical, laboratory, and instrumental data, an indication was therefore made for the implantation of a leadless pacemaker.

Conclusions: Microscopic polyangiitis (MPA) is a necrotizing, non-granulomatous vasculitis with sparse immunoglobulin deposits (pauci-immune) that affects small-caliber vessels.
In our case of microscopic polyangiitis (MPA), we suspect that the patient's complete atrioventricular block may be a clinical manifestation of the underlying disease

Electrocardiogram showing a complete atrioventricular block

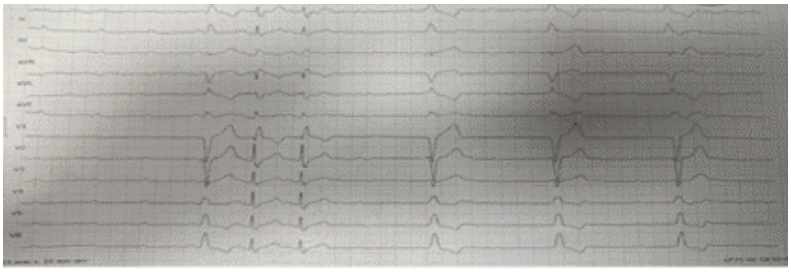


Figura 1

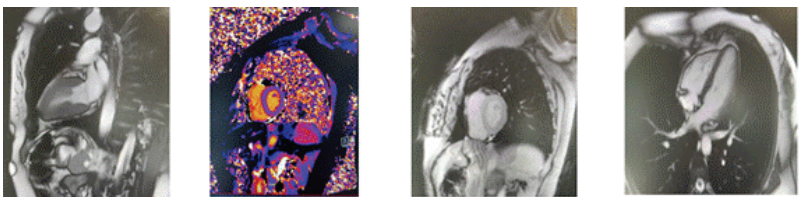


Figura 2

ARITMIE 940
ARITMIE VENTRICOLARI (ARITMIE)
MECCANISMI DELLE ARITMIE (ARITMIE)
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)

ELECTRICAL STORM IN PATIENT WITH NEWLY DIAGNOSED BRUGADA SYNDROME WITHOUT FAMILY HISTORY: A CLINICAL CASE

Leonardo Pendenza (a), Silvio Romano (a), Luigi Sciarra (a), Franco De Remigis (a)
(a) SOCIETA' ITALIANA DI CARDIOLOGIA

INTRODUCTION

Arrhythmic storm is a life-threatening condition, often refractory to standard therapies, with limited documented cases in Brugada syndrome, an inherited channelopathy leading to a higher risk of ventricular arrhythmias and sudden cardiac death

CLINICAL CASE

A 37-year-old male patient with no significant medical history, no family history of cardiovascular diseases, and not on any chronic medication, woke up in the middle of the night in an agitated state, followed by a tonic-clonic seizure and sphincter release. Upon arrival, the emergency medical services team detected an ECG showing ventricular fibrillation, which was electrically cardioverted.

In the emergency department, the patient appeared agitated but alert, without motor deficits, and had no memory of the event (CT brain scan negative for acute abnormalities).

He was asymptomatic for angina and its equivalents, was breathing normally in ambient air, and the physical examination revealed no pathological signs, with stable blood pressure values. The patient had two additional episodes of ventricular fibrillation in the emergency department, both successfully terminated with DC-shocks.

The ECG showed a non-specific right bundle branch block, prompting further investigation. An ECG with leads V1-V2 shifted to the 2nd-3rd intercostal spaces revealed a Type 1 Brugada pattern, leading to hospitalization in the Intensive Cardiac Care Unit (ICCU).

In the ICCU, the patient experienced another episode of ventricular fibrillation, which was treated with DC-shock. Sedation with intravenous Midazolam and Dexdor was initiated, along with stellate ganglion blockade and therapy with hydroxychloroquine (150 mg three times a day) and infusions of magnesium sulfate and isoprenaline.

Subsequently, a subcutaneous implantable cardioverter-defibrillator (ICD) was placed as secondary prevention, and the patient was transferred to another center for epicardial ablation of the right ventricular outflow tract.

CONCLUSIONS

Despite the low incidence of arrhythmic storm in Brugada syndrome, rapid diagnosis and timely therapeutic intervention are crucial to managing this potentially fatal condition

ARITMIE 303
STUDI ELETTROFISIOLOGICI INVASIVI (ARITMIE)
SINCOPE (ARITMIE)
ARITMIE SOPRAVENTRICOLARI (ESCLUSA FA) (ARITMIE)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)

MUCH ADO ABOUT NOTHING: A CASE OF SYNCOPE AND VENTRICULAR PRE-EXCITATION

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Background. Syncope often represents a diagnostic challenge, as its underlying cause can be difficult to determine, particularly when the event is unwitnessed or described with limited detail.
Therefore, initial assessment in the Emergency Department (ED) has to rely primarily on objectives findings, which, however, can be inconclusive or misleading.

Case report. We report the case of a 38-year-old woman with family history of sudden cardiac death (SCD) and no relevant medical history nor cardiovascular risk factors.
The patient presented to our ED due to syncope preceded by general malaise and dizziness with uncertain loss of consciousness and subsequent prompt recovery. The ECG showed sinus tachycardia, short P-R interval, incomplete right bundle branch block, and widespread repolarization abnormalities, including negative T waves in right precordial leads. Chest x-ray, point-of-care echocardiography and routine blood tests showed no pathological findings, including two serial measurements of high-sensitivity troponin I.
Given that D-dimer levels were found at the upper limit of the normal range, angio-computed tomography was performed to rule out pulmonary embolism. Based on the abnormal ECG findings, the patient was admitted to the Cardiology department for further evaluation, even though the circumstances under which the syncope had occurred were unclear.
As a minor degree of ventricular pre-excitation was suspected, adenosine challenge (12 mg) was conducted, uncovering the presence of a left postero-medial accessory pathway (AP). Continuous ECG monitoring did not demonstrate any arrhythmic event and repeat echocardiography confirmed the absence of major abnormalities, although anomalous origin of the right coronary artery (RCA) could not be excluded.
Therefore, cardiac magnetic resonance and invasive electrophysiological study (EPS) were planned.
The first showed a small focal area of late gadolinium enhancement in the sub-epicardial mid-lateral wall of the left ventricle of uncertain origin, while the abnormal origin of the RCA was ruled out. At EPS during incremental atrial pacing, anterograde conduction over the AP was present up to 270 ms cycle-length, while retrograde ventriculo-atrial conduction occurred only over the normal AV pathway; the AP anterograde refractory period was 250 ms. Concomitantly, very fast AV nodal conduction was observed with Wenckebach point at 240 ms cycle-length, thus exceeding the anterograde conduction properties of the AP.
During isoprenaline infusion, conduction over the AP remained substantially unchanged. Both at baseline and during isoprenaline infusion, no arrhythmias were induced by right atrial, coronary sinus, and ventricular aggressive stimulation protocols.
Therefore, catheter ablation was deemed not necessary. The ECG abnormalities were explained by ventricular pre-excitation, despite being of minimal degree as partially masked by fast AV nodal conduction.
Loop recorder implantation was proposed but refused by the patient, who was discharged asymptomatic; subsequent follow-up was uneventful.

Discussion. Syncope associated with ventricular pre-excitation can be malignant, thus warranting thorough diagnostic assessment. In this peculiar case of syncope of uncertain origin - eventually interpreted as hypotensive or vaso-vagal - further evaluation was prompted primarily by the abnormal ECG findings, ultimately explained by the presence of an AP. The latter was found unable to sustain any arrhythmias, suggesting it was an incidental finding unrelated to the syncope.
Much ado about nothing.

ARITMIE 756
GESTIONE DELLA COMPLICANZE PM / ICD (ARITMIE)
SINCOPE (ARITMIE)
ELETTROSTIMOLAZIONE (ARITMIE)
DEFIBRILLATORE IMPIANTABILE (ARITMIE)

LEADLESS PACEMAKER COMBINED WITH EXTRAVASCULAR ICD AFTER DEVICE INFECTION: A CASE REPORT

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OSPEDALE SANTA MARIA DELLA MISERICORDIA, PERUGIA, ITALIA

Background. Patients receiving cardiovascular implantable electronic devices (CIEDs) experience complications in approximately 7%–12% of cases. Among these, device-related infections represent a major concern, with a prevalence of 0.77% following a first implant and 2.08% after revisions or replacements. CIED infections are associated with markedly increased morbidity, mortality, and health care costs. Technological advances have led to the introduction of leadless pacemakers into clinical practice.
The absence of upper-extremity venous access and a high risk of infection represent the most common indications for adopting this strategy. Similarly, extravascular implantable cardioverter-defibrillators (EV-ICDs) provide defibrillation at thresholds comparable to transvenous systems and deliver effective anti-tachycardia pacing, while avoiding the vasculature and its associated complication.

Case report. We report a case of a 64-year-old male patient with a history of ischemic heart disease treated with percutaneous coronary intervention in 2017, with residual mild left ventricular dysfunction. In September 2024, the patient was hospitalized abroad for syncope, with ECG showing third degree atrio-ventricular block (AVB). As the patient was on beta-blocker therapy, the medication was discontinued, resulting in regression of the conduction disturbance, and the patient was discharged.
Two months later, the patient presented to our Emergency Department with chest pain and was subsequently admitted to the Cardiology Unit. ECG showed no evidence of acute ischemia, and echocardiography revealed infero-posterior wall akinesia with a left ventricular ejection fraction of 45%. Coronary angiography showed no significant coronary arteries stenosis and anti-ischemic medical therapy was titrated. Given the history of paroxysmal AVB, an invasive electrophysiological study was performed, which documented a critical infra-Hisian conduction disorder as well as inducible, reproducible, hemodynamically unstable, sustained ventricular tachycardia.
Consequently, given the history of syncope, a dual-chamber transvenous ICD was implanted. In July 2025, the patient was readmitted to our department due to painful, erythematous, subcutaneous pocket swelling, consistent with infection.
Following infectious disease evaluation (IDE), antibiotic therapy was started, and ultrasound of the device-pocket was performed showing a fluid collection with increased vascular signal on color-Doppler, suggestive of an inflammatory process.
Transoesophageal echocardiography was also performed, showing a vegetation on the atrial lead, thus device extraction was performed, and a temporary pacemaker was positioned. Afterwards, the patient underwent a total-body PET scan, showing tracer uptake at the device-pocket, with no uptake in the right heart chambers. Following IDE and collegial discussion, given the high infective risk, the patient underwent implantation of a leadless pacemaker (Medtronic Micra AV®).

After 10 days of observation, during which antibiotic therapy was continued, the patient underwent implantation of EV ICD (Medtronic Aurora®). The remaining hospital stay was uneventful and after 3 days the patient was discharged home asymptomatic.

Discussion. In patients with a history of device-related endocarditis, especially those at high risk for recurrent infection, a tailored approach combining leadless pacing and extravascular defibrillator device appears to be a feasibile and safe option.
Our experience supports the role of combining these two technologies as a promising solution for complex device management in selected patients

ARITMIE 117
ASPETTI GENETICI DELLE ARITMIE (ARITMIE)
DEFIBRILLATORE IMPIANTABILE (ARITMIE)
ELETTROSTIMOLAZIONE (ARITMIE)
GESTIONE DELLA COMPLICANZE PM / ICD (ARITMIE)
TERAPIA DI RESINCRONIZZAZIONE (ARITMIE)

TANDEM APPROACH FOR TRANSVENOUS LEAD EXTRACTION: EFFICACY, SAFETY, AND OPERATIONAL LEARNING CURVE

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Background and Aims: The need for transvenous lead extraction (TLE) is rising due to increased cardiovascular device implantation and an aging population. While the superior access is standard, complex cases may benefit from the tandem approach, combining femoral and superior access to improve efficacy and safety. This study evaluates outcomes and predictors associated with the tandem approach as a primary strategy.

Methods: A retrospective analysis was conducted on 148 patients who underwent tandem TLE at a high-volume UK centre between September 2020 and December 2024. Data on procedural success, complete lead removal, complications, and outcome predictors were collected. The Needle's Eye Snare (NES) learning curve was assessed via fluoroscopy time.

Results: Median patient age was 72.4 years, with 42.6% considered high-risk (EROS 3). 319 leads were targeted, with 81.2% extracted via the tandem approach.

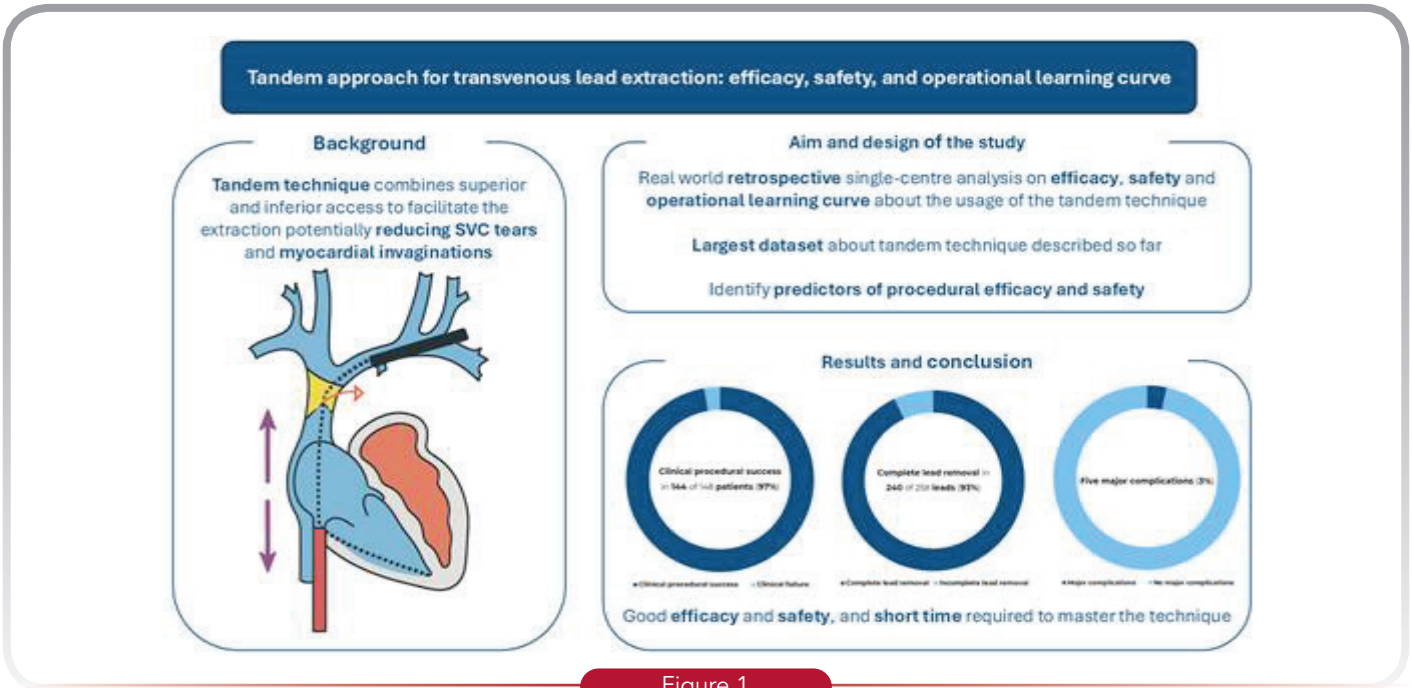


Figure 1

Clinical procedural success was 97.3%, and complete lead removal 93%. Use of Medtronic leads was the sole independent predictor of complete lead removal. Major complications occurred in 3.4% of cases, with no procedural mortality. BMI < 25 kg/m² and extraction of ≥ 3 leads were predictors of complications and 30-day mortality. NES proficiency improved significantly after 40 leads ($p < 0.001$), confirming a learning curve.

Conclusion: The tandem approach is a safe and effective primary strategy for complex TLE, particularly in cases involving passive fixation, shock, and long dwell times leads.
However, widespread use may be limited by resource intensity, increased fluoroscopy exposure, and the need for experienced operators.

ARITMIE 1036
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
FARMACI ANTIARITMICI (ARITMIE)
FARMACI CARDIOVASCOLARI (FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
FARMACI ANTI-DIABETICI (DIABETE E MALATTIE DEL METABOLISMO)

PREVENTION OF ATRIAL FIBRILLATION WITH SGLT2 INHIBITORS ACCROSS THE SPECTRUM OF CARDIOVASCULAR DISORDERS: A META-ANALYSIS OF RANDOMIZED CONTROLLED TRIALS

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Background: The ability of sodium-glucose cotransporter-2 (SGLT2) inhibitors to prevent atrial fibrillation (AF) has been evaluated in various studies with conflicting results. Recent meta-analyses, including also recent randomised controlled trials (RCTs) focusing on patients with heart failure with preserved ejection fraction (HFpEF), found no preventive effect of SGLT2 inhibitors on AF.

Aims: This study aimed to determine whether SGLT2 inhibitors have a protective effect against AF, specifically depending on the baseline clinical condition in which the RCTs were performed.

Methods: A trial-level meta-analysis was performed RCTs comparing SGLT2 inhibitors with placebo and reporting the number of patients who developed AF in each arm. Risk ratios (RRs) for AF development with 95% confidence intervals (95% CIs) were pooled using a random-effects model. Subgroup analyses were performed by classifying RCTs according to the inclusion criteria of each trial [diabetes, chronic kidney disease, heart failure with reduced ejection fraction (HFrEF), mildly reduced EF (HFmrEF), and preserved EF (HFpEF)]. Meta-regressions were performed considering baseline characteristics of RCTs participants.

Results: 52 RCTs were included (112 031 patients). Overall, SGLT2 inhibitors prevented the occurrence of AF (RR = 0.86, 95% CI 0.77-0.96). In the subgroup analysis, the AF-preventive ability of SGLT2 inhibitors was influenced by HF, being preserved in RCTs recruiting 9141 patients with HFrEF, but not in those recruiting 12 877 subjects with HFmrEF/HFpEF (P-value for group difference = 0.01). Meta-regression showed a reduced efficacy of SGLT2 inhibitors in preventing AF when more patients with hypertension or higher EF were enrolled (P < 0.01 for both).

Conclusion: Sodium–glucose co-transporter 2 inhibitors prevent AF. Their protective effect was confirmed in the HFrEF subgroup, but not in RCTs recruiting patients with HFmrEF/HFpEF, possibly indicating a different pathophysiology leading to AF among these conditions. However, given the limitations of a trial-level analysis, these findings are exploratory, pending confirmation from patient-level data.

ARITMIE 260
ELETTROSTIMOLAZIONE (ARITMIE)
SINCOPE (ARITMIE)
SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO)

CARDIAC IMPLANTABLE ELECTRONIC DEVICES FOLLOWING ORTHOTOPIC HEART TRANSPLANTATION: INSIGHTS ON INDICATIONS, PREDICTORS AND OUTCOMES

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Background: Despite a general improvement in the survival of patients undergoing orthotopic heart transplantation (OHT), the incidence of arrhythmic complications is still significant, requiring permanent pacemaker implantation (PPM) in 3-24% of cases. The most frequent indication is sinus node dysfunction, but high-grade atrioventricular blocks are not uncommon. Multiple patient and procedural related factors have been associated with PPM but uncertainties persist regarding their predictive role.

Purpose: The aims of this study were to investigate the frequency, indications and the predictors of CIED implantation (especially PPM) following biatrial anastomosis OHT.

Methods: A retrospective, single-center, observational study was conducted, including all patients who underwent biatrial anastomosis OHT at our institution between May 1990 and November 2024. The primary endpoint of the study was PPM or implantable cardioverter defibrillator (ICD) implantation while all-cause mortality or de novo OHTwas a secondary endpoint. Uni- and multivariable logistic regression analyses were performed to identify factors associated with PPM implantation.

Results: A total of 579 patients were included, followed-up for a median of 7.9 (IQR 1.2-15.5) years. During this

Variable	Odds Ratio	95% CI	p-value
Age (per 10 years)	0.961	0.917 - 1.007	0.104
Sex (female)	0.451	0.176 - 1.157	0.098
eGFR (per 10 ml/kg/min)	0.976	0.959 - 0.994	0.012
CAV	3.435	1.146 - 10.296	0.029
CPR	0.493	0.126 - 1.932	0.31
sPAP	1.108	1.027 - 1.195	0.008
CI	0.315	0.15 - 0.661	0.002
Severe Organ Rejection	4.116	0.179 - 94.463	0.376

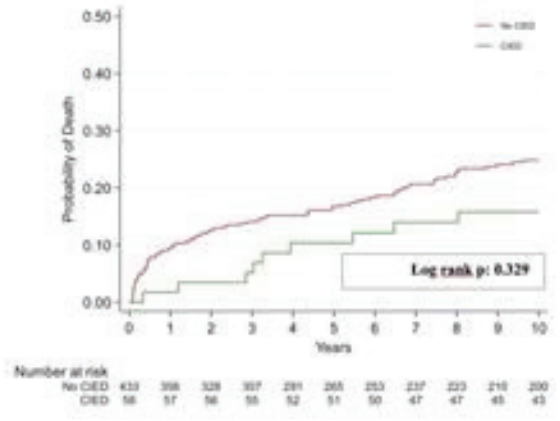


Figure 1

period, 92 patients (15.9%) required CIED implantation. Among them 91 patients (15.7%) received a PPM, while only one patient (0.2%) underwent ICD implantation. The median time to PPM implantation was 84 days (IQR 22–1999) post-OHT. The primary indication for PPM was sinus node dysfunction (63 patients, 68.5%), followed by atrioventricular block (28 patients, 30.4%). During follow-up, 283 deaths (48.9%) occurred, but no significant difference in long-term prognosis was observed between patients who required CIED implantation and those who did not (46.4% vs. 49.3%, p=0.665).

Multivariable analysis identified the recipient's impaired renal function (low eGFR), concomitant cardiac allograft vasculopathy (CAV), increased sPAP and reduced CI during follow-up as factors significantly associated with PPM implantation (see table).

Conclusions: Among OHT recipients, PPM implantation is not uncommon, but does not seem to negatively impact prognosis. Sinus node dysfunction represents the most frequent bradyarrhythmia requiring PPM implantation. Several factors, especially poor renal function, the onset of cardiac allograft vasculopathy and altered hemodynamic parameters can help identifying patients at higher risk of PPM during follow-up.

Keywords: heart transplant, bradyarrhythmias, permanent pacemaker.

ARITMIE 1028
DEFIBRILLATORE IMPIANTABILE (ARITMIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
ELETTROSTIMOLAZIONE (ARITMIE)
GESTIONE DELLA COMPLICANZE PM / ICD (ARITMIE)

LEADLESS ATRIAL PACEMAKER WITH S-ICD IN AN HOCM PATIENT: A CASE REPORT

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BACKGROUND: Managing patients who require both atrial pacing and sudden cardiac death (SCD) prevention is challenging, especially in young individuals who may face repeated device implantations.
Combining a leadless atrial pacemaker with a subcutaneous defibrillator (S-ICD) can provide effective atrial pacing with preserved arrhythmic protection, minimizing infective and procedural risks inherent to transvenous systems.

CLINICAL CASE: We present a 59-year-old man with hypertrophic obstructive cardiomyopathy (HOCM) and mitral valve disease. A single-chamber transvenous defibrillator (TV-ICD) was implanted in 2012 for primary prevention. In 2014, he underwent Morrow septal myectomy with mitral valve repair for severe regurgitation. Subsequently, he developed ischemic strokes in the setting of new-onset atrial fibrillation (AF).
In 2023 transthoracic echocardiographic showed left ventricular hypertrophy with obstruction (gradient 80/39 mmHg), preserved function, systolic anterior motion with moderate MV regurgitation.
In May 2025, device interrogation revealed ventricular pacing at 40 bpm (VVI 40 bpm) with underlying sinus rhythm at 38 bpm, first-degree atrioventricular block, and paroxysmal AF with ventricular rate up to 140 bpm, consistent with tachy-brady syndrome. Ventricular pacing burden was 12%. Defibrillation coil impedance was 120-130 Ohm. No ventricular arrhythmic episodes were registered on chronic amiodarone and beta-blocker therapy.
Patient remained asymptomatic and clinically stable. After multidisciplinary discussion, a leadless atrial pacemaker was implanted in the right atrial appendage, followed one week later by an S-ICD, to provide atrial pacing and SCD prevention while avoiding the risks of repeated TV-ICD implantation. An implantable loop recorder was also implanted for continuous arrhythmic monitoring.

CONCLUSION: This case highlights the feasibility and effectiveness of combining a leadless atrial pacemaker with an S-ICD in a complex HOCM patient with tachy-brady syndrome and high arrhythmic risk.
This approach provides reliable atrial pacing and sudden cardiac death protection while minimizing infection and extraction risks associated with transvenous systems.

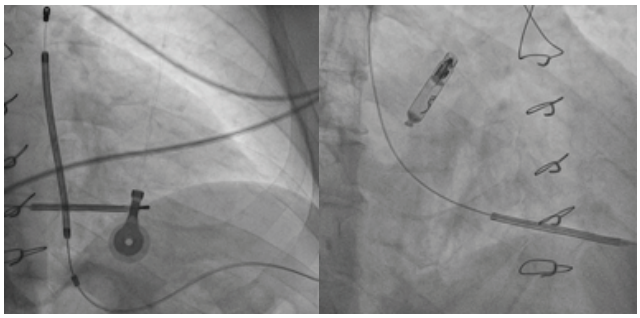


Figure 1

ARITMIE 917
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)
ASPETTI GENETICI DELLE ARITMIE (ARITMIE)
DEFIBRILLATORE IMPIANTABILE (ARITMIE)
FARMACI ANTIARITMICI (ARITMIE)
ABLAZIONE TRANSCATETERE (ARITMIE)

THE DILEMMA OF THE ASYMPTOMATIC PATIENT WITH BRUGADA SYNDROME: TO TREAT OR NOT TO TREAT? THE EXPERIENCE OF THE PIEDMONT BRUGADA REGISTRY

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BACKGROUND: Brugada syndrome (BrS) is an hereditary channelopathy associated with an increased risk of malignant ventricular arrhythmias and sudden death in the absence of structural heart disease. Although the prognosis is clear in patients presenting with resuscitated cardiac arrest or arrhythmic syncope, the clinical management of asymptomatic patients with spontaneous type-1 BrECG pattern remains a subject of debate.

METHODS: From 2001 to 2024, 608 consecutive patients with spontaneous or drug-induced type-1 BrECG pattern were prospectively included in the Piedmont Brugada Registry and followed up prospectively for a minimum of 12 months. Patients were classified in three groups according to the symptoms reported at the time of initial clinical presentation: aborted sudden death (17 [2.7%]), unexplained syncope (102 [16.8%]) and asymptomatic patients with spontaneous type-1 BrECG pattern (489 [80.5%]). In the last two groups, an electrophysiological study (EPS) with a standardized protocol was offered as a stratification tool for ICD implantation. Three therapeutic strategies were analyzed: implantation of a defibrillator (ICD), therapy with hydroquinidine and/or ablation (HQ/ABL) and follow up only. Arrhythmic events were defined as sudden death or documented ventricular fibrillation or tachycardia.

RESULTS: All the 17 patients of the aSD group were treated: 15 with an ICD and 9 with HQ and/or ablation. During follow up, 10 non fatal arrhythmic events were recorded, all in the ICD group, and no fatal events. In the 102 patients of the syncope group, 46 were implanted with an ICD and 19 were treated with HQ and/or ablation. No therapy was given to 44 patients. During follow-up 9 arrhythmic events occurred in total, 8 of which were non-fatal and happened in the ICD group, and one fatal in the untreated group. Out of the 489 asymptomatic patients with a spontaneous type-1 pattern, 358 patients (73%) underwent an EPS, which was positive in 116 patients (32.4%) and negative in 242 patients (67.6%). An ICD was implanted in 80 patients and 79 patients were treated with HQ and/or ablation, while 341 patients had only a regular follow up, without any therapy. A total of 13 arrhythmic events were recorded, of which 5 were fatal and all in the untreated group.
Patients treated with HQ/ABL maintained a 100% event-free survival throughout the entire follow-up.

CONCLUSIONS: Asymptomatic patients with a spontaneous type-1 BrECG pattern are at non-negligible risk of arrhythmic events. While ICD can prevent fatal events in high risk patients, it doesn't prevent ventricular arrhythmias nor does it reduce the risk of recurrencies.
Therapy with HQ and/or TC ablation was highly successful in maintaining event-free survival in this group of patients.

ARITMIE 654
ABLAZIONE TRANSCATETERE (ARITMIE)
STUDI ELETTROFISIOLOGICI INVASIVI (ARITMIE)
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)
IDONEITA' SPORTIVA (ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)

APPEARANCES CAN BE DECEIVING: HIDDEN VENTRICULAR PRE-EXCITATION IN A COMPETITIVE SPORTS ATHLETE

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(a) UNIVERSITÀ DEGLI STUDI DELL'INSUBRIA; (b) OSPEDALE DI CIRCOLO E FONDAZIONE MACCHI - VARESE

Ventricular pre-excitation is seldom associated with sudden cardiac death, with a prevalence of 0.1% to 2%, depending on the population. Therefore, it is of utmost importance to identify the cases at higher risk, especially among young patients participating in competitive sports.

We describe the case of a 19-year-old athlete (soccer) referred for effort-related self-terminating palpitations, never documented on ECG. Both at baseline (Figure 1) and during the effort stress test, ECG showed sinus rhythm with incomplete right bundle branch block and a QRS duration of 85 ms. The echocardiogram was unremarkable. Therefore, he had always qualified for competitive sports. Based on symptoms, an invasive electrophysiologic evaluation was performed. At baseline, fast atrioventricular (AV) node conduction was evident (A-H= 39 ms) with H-V interval within normal range (35 ms) and no signs of ventricular pre-excitation. Upon incremental atrial pacing, ventricular pre-excitation over a left-sided accessory pathway (AP) became evident. Complete electrophysiologic assessment showed fast conduction over the AP: at incremental pacing, antegrade and retrograde 1:1 conduction occurred up to a cycle length of 220 and <240 ms, respectively. Antegrade effective refractory period of the AP was <230 ms. Additionally, programmed electrical stimulation induced atrial fibrillation with the shortest pre-excited R-R interval of 190 ms and orthodromic AV re-entrant tachycardia at 280 ms cycle length, recognized as the spontaneously occurring symptom.

Concomitantly, fast antegrade and retrograde AV-node conduction was confirmed by stimulation protocols. Therefore, AP ablation was indicated and the left heart was accessed by transseptal puncture. Accurate mapping of the mitral annulus, both during coronary sinus and ventricular pacing, identified the presence of two multi-component APs located in the anterior and postero-lateral regions. Radiofrequency energy ablation interrupted the conduction over both APs. The procedure was terminated with no complications and the follow-up was uneventful.

In conclusion, fast antegrade conduction over the AV-node is capable of masking ventricular pre-excitation over a left-sided AP both at baseline ECG and effort stress test. In the reported case, this prevented the identification of ventricular pre-excitation potentially associated with malignant arrhythmias in a competitive sport athlete, so symptoms were crucial to guide the diagnostic process and the treatment.

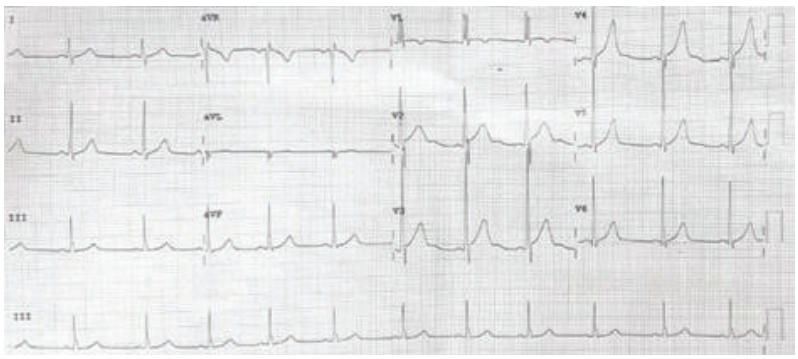


Figure 1

ARITMIE 431
ABLAZIONE TRANSCATETERE (ARITMIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
FARMACI ANTI-DIABETICI (DIABETE E MALATTIE DEL METABOLISMO)
FARMACI CARDIOVASCOLARI (FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
MALATTIE DEL METABOLISMO (DIABETE E MALATTIE DEL METABOLISMO)

TIRZEPATIDE REDUCES ATRIAL FIBRILLATION RECURRENCE AFTER CATHETER ABLATION IN OBESE PATIENTS: A MATCHED-CONTROL ANALYSIS

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Background: Obesity is a major modifiable risk factor for atrial fibrillation (AF) and contributes to arrhythmia recurrence after catheter ablation. Therapies targeting metabolic pathways and weight reduction are therefore promising adjuncts to rhythm control strategies. Tirzepatide, a dual glucose-dependent insulinotropic polypeptide (GIP) and glucagon-like peptide-1 receptor agonist (GLP-1 RA), induces profound weight loss and may favorably influence atrial remodeling and inflammation, potentially reducing AF recurrence.

Objectives: To evaluate whether tirzepatide therapy reduces AF recurrence after catheter ablation in obese patients with paroxysmal AF.

Methods: We performed a single-center, retrospective analysis of obese patients (BMI ≥30 kg/m²) undergoing first-time AF ablation between January 2021 and May 2025. All consecutive patients treated with tirzepatide during this period were included (n=27) and matched to 27 controls without exposure to GLP-1 RA. The primary endpoint was recurrence of atrial tachyarrhythmias beyond a 3-month blanking period. Secondary endpoints included changes in body weight and BMI.

Results: At median follow-up of 8 months, freedom from arrhythmia recurrence was 96.3% (26/27) with tirzepatide and 70.4% (19/27) in controls ($p = 0.024$). Tirzepatide yielded greater weight loss (−12.1 ± 3.6 vs −1.9 ± 1.6 kg; $p < 0.0001$) and BMI reduction (−4.0 ± 1.2 vs −0.6 ± 0.5 kg/m²; $p < 0.0001$). A ≥10% weight loss was observed in 21/27 (77.8%) tirzepatide patients versus 2/27 (7.4%) controls. One patient (3.7%) in the tirzepatide group discontinued therapy due to gastrointestinal intolerance; no severe adverse events were observed.

Conclusions: In obese patients undergoing AF ablation, tirzepatide therapy was associated with fewer arrhythmia recurrences and marked weight reduction compared with matched controls.
These findings suggest tirzepatide as a promising adjunctive therapy to improve rhythm control in this high-risk population.

ARITMIE 507
ABLAZIONE TRANSCATETERE (ARITMIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

RENAL SAFETY OF PULSED FIELD ABLATION FOR ATRIAL FIBRILLATION: INSIGHTS FROM A PROSPECTIVE COHORT OF 505 PATIENTS

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Background: Pulsed field ablation (PFA) has recently emerged as a promising energy source for atrial fibrillation (AF) ablation, offering tissue specificity and enhanced extracardiac safety compared with thermal techniques. However, red blood cells are highly susceptible to electroporation, and intravascular hemolysis with possible acute kidney injury (AKI) has been increasingly reported. Evidence from large, prospective cohorts with systematic renal assessment remains limited.

Objectives: To evaluate the incidence and clinical impact of hemolysis and renal complications following PFA in a large real-world cohort of patients undergoing AF ablation.

Methods: We conducted a prospective, single-center observational study including all consecutive patients who underwent pulsed field ablation for atrial fibrillation between March 2024 and July 2025. Pulmonary vein isolation was performed using either a pentaspline multielectrode catheter or a variable-loop circular multielectrode catheter, at operator discretion. Blood samples were obtained at baseline, 2–4 hours, 24 hours, and 48 hours after the procedure, with additional testing when clinically indicated. The primary outcome was the occurrence of acute kidney injury defined according to KDIGO criteria. Secondary outcomes included the occurrence of clinically significant hemolysis, long-term renal safety, procedural complications, and 30-day all-cause rehospitalization.

Results: Among the 505 patients, the mean age was 62.6 ± 10.4 years, and 346 (68.5%) were male.
A total of 274 (54.3%) had persistent atrial fibrillation. Pulmonary vein isolation was the procedural endpoint and was successfully achieved in all patients (100.0%). Posterior wall isolation was performed in 265 patients (52.5%), anterior line ablation in 183 (36.2%), and additional lesions in 15 patients (3.0%). Clinically significant hemolysis occurred in 25 patients (5.0%). One patient (0.2%) developed acute kidney injury, which resolved completely within 24 hours with diuretic therapy.
At 30-day follow-up, all-cause rehospitalization was low and no cases were related to renal complications. Renal function remained stable during longitudinal follow-up, with mean serum creatinine values of 0.98 ± 0.22 mg/dL at baseline and 0.99 ± 0.24 mg/dL at the last available assessment (p = 0.421). Non-renal procedural complications were infrequent and consistent with prior PFA experience.

Conclusions: Pulsed field ablation was associated with limited periprocedural hemolysis and only exceptionally rare episodes of acute kidney injury, with no evidence of sustained renal dysfunction during follow-up.
These findings indicate a reassuring renal safety profile and reinforce pulsed field ablation as a safe and effective strategy for atrial fibrillation ablation in routine clinical practice.

ARITMIE 586
ABLAZIONE TRANSCATETERE (ARITMIE)
ARITMIE VENTRICOLARI (ARITMIE)
FARMACI ANTIARITMICI (ARITMIE)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

LONG-TERM OUTCOMES AND SAFETY OF CATHETER ABLATION FOR PREMATURE VENTRICULAR COMPLEXES: A LARGE SINGLE-CENTRE COHORT

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Background: Catheter ablation is an established treatment for premature ventricular complexes (PVCs), offering high acute efficacy and favorable long-term outcomes. While several studies have reported on procedural success and short-term results, evidence on very long-term outcomes of PVC ablation, particularly regarding differences across arrhythmic sites and the potential impact of concomitant antiarrhythmic therapy, remains limited. Large real-world series are therefore needed to provide robust data on safety and sustained efficacy over extended follow-up.

Objectives: To evaluate the safety and long-term efficacy of PVC ablation in a large cohort of consecutive patients.

Methods: We conducted a retrospective, single-center study of consecutive patients who underwent PVC ablation between January 2017 and December 2024. Acute procedural success was defined as elimination of the clinical PVC and noninducibility at the end of the procedure. Long-term success at follow-up was defined as a ≥80% reduction in PVC burden from baseline on ambulatory monitoring or the absence of the targeted PVCs with symptom improvement; outcomes were evaluated at 12 months and at the last available follow-up. Ambulatory rhythm assessment included 12-lead ECG and 24-hour Holter monitoring, with extended monitoring when clinically indicated.

Results: Among the 939 ablations performed, the mean age of the population was 45.2 ± 12.4 years, and 489 patients (52.1%) were male. Acute procedural success was achieved in 901 cases (95.9%). At 12-month follow-up, 822 patients (87.5%) remained free from clinically significant PVC recurrence, while over a mean follow-up of 4.2 ± 2.1 years sustained success was observed in 788 patients (83.9%), a rate not significantly different from the 12-month outcome (p = 0.180). Freedom from recurrence did not differ significantly between patients discharged on antiarrhythmic therapy (82.1%) and those without (84.9%, p = 0.270), whereas ablations targeting outflow tract PVCs were associated with higher long-term success compared with non–outflow tract locations (86.7% vs 80.2%, p = 0.041). Complications occurred in 14 patients (1.5%), mainly vascular access issues and pericardial effusion, and no deaths or strokes were observed.

Conclusions: Catheter ablation of premature ventricular complexes proved to be a safe procedure with durable efficacy over both short- and long-term follow-up. Outcomes remained consistent irrespective of antiarrhythmic drug use, while ablations of outflow tract origin were associated with superior results. These findings support PVC ablation as a reliable therapeutic option in contemporary clinical practice.

ARITMIE 468
ABLAZIONE TRANSCATETERE (ARITMIE)
ARITMIE SOPRAVENTRICOLARI (ESCLUSA FA) (ARITMIE)
STUDI ELETTROFISIOLOGICI INVASIVI (ARITMIE)
CARDIOPATIE CONGENITE NELL´ADULTO (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)

FLUOROLESS CATHETER ABLATION OF INTRA-ATRIAL REENTRY TACHYCARDIA IN A PATIENT WITH SENNING OPERATION

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(a) AZIENDA OSPEDALIERA UNIVERSITARIA INTEGRATA VERONA; (b) AZIENDA OSPEDALIERO-UNIVERSITARIA SENESE; (c) AZIENDA SANITARIA DELL'ALTO ADIGE

Background: Dextro-Transposition of the great arteries (D-TGA) accounts for about 5% of congenital heart diseases and, before the advent of the arterial switch operation in the 1980s, was commonly treated with atrial switch procedures such as the Senning and Mustard techniques. While these operations enabled long-term survival, they also created a substrate for late complications, including atrial arrhythmias, systemic right ventricular dysfunction, and sudden cardiac death. Cavotricuspid isthmus–dependent atrial flutter is the most frequent arrhythmia, often refractory to pharmacological therapy and requiring catheter ablation.

Case: We describe a 45-year-old woman with D-TGA who underwent a Senning procedure at 4 months of age. She later developed recurrent, drug-resistant atrial tachyarrhythmias, poorly controlled with sotalol and amiodarone, and experienced a decline in systemic ventricular function. Pre-procedural imaging revealed a dilated systemic right atrium and an 8 mm baffle leak to the inferior vena cava (Figure 1). During electrophysiological study, macro-reentrant atrial tachycardia with isthmus dependency was reproducibly induced. Thanks to the baffle leak, access to the pulmonary venous atrium was achieved without the need for a trans-baffle puncture.
Using high-density electroanatomical mapping, a fluoroless ablation across the cavotricuspid isthmus was performed, resulting in complete bidirectional block

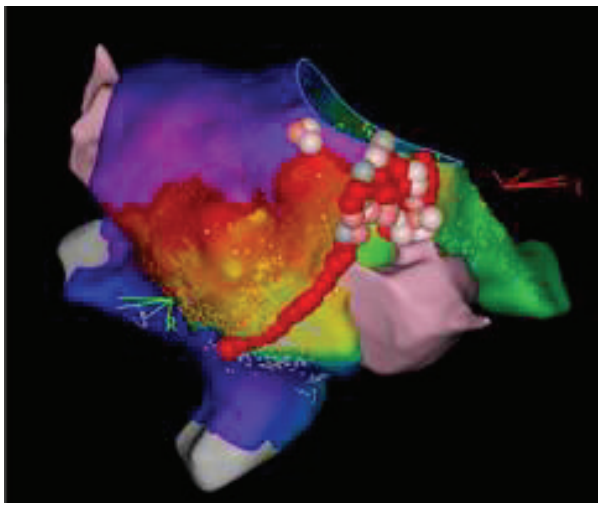


Figure 1: Atria reconstruction and evidence of the leak

Figure 1

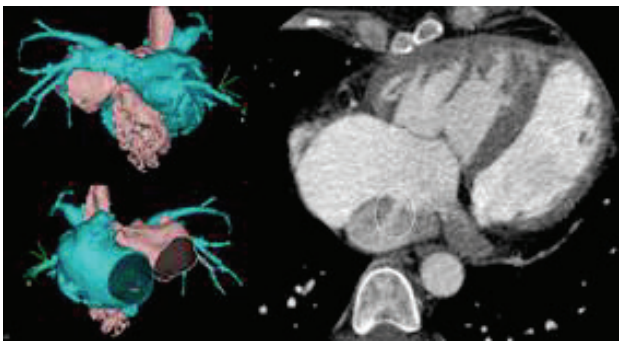


Figure 2: Ablation across the cavotricuspid isthmus

Figure 2

and non-inducibility of arrhythmia (Figure 2). At one-month follow-up, the patient remained arrhythmia-free.

Conclusions: This case illustrates the complexity of managing atrial arrhythmias in adult survivors of Senning repair. Catheter ablation represents not only symptomatic relief but also a prognostic intervention, given the association between supraventricular arrhythmias and adverse outcomes in this population. The presence of a baffle leak, usually considered a complication, facilitated the procedure by avoiding a trans-baffle puncture.
To our knowledge, this is the first reported case of fluoroless atrial flutter ablation after a Senning procedure, emphasizing the importance of individualized strategies and advanced mapping technologies in patients with complex congenital heart disease.

ARITMIE 751
MECCANISMI DELLE ARITMIE (ARITMIE)
ASPETTI GENETICI DELLE ARITMIE (ARITMIE)
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)

PREVALENCE OF BRUGADA ECG PATTERN IN PATIENTS WITH MOOD DISORDERS: A LONGITUDINAL PROSPECTIVE COHORT OF 215 PATIENTS

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Background: Brugada syndrome (BrS) is an inherited disorder with autosomal dominant transmission, which occurs predominantly in males in the third to fourth decade of life with resting syncope, nocturnal agonic breathing, major ventricular arrhythmias and sudden death.

Aim of the study: to evaluate the prevalence of Brugada ECG pattern in psychiatric patients with mood disorders.

Methods: from January 2023 to Decembre 2023, 215 consecutive patients with mood disorders who were admitted to the psychiatric department of the university hospital of our city were enrolled. For each patient, electrocardiographic and anamnestic data including psychiatric diagnosis, current drug therapy and family history were collected.

Results: Ten out of two-hundred and fifteen patients (4.6%) presented with a Brugada ECG pattern. Mean age was 37±10 years and eight out of ten patients (80%) were male.
One patient exhibited a spontaneous type 1 Brugada ECG pattern meanwhile nine patients had a Brugada type 2 or 3 ECG pattern. When compared to the general mood disorder population, those with Brugada ECG had longer P wave duration (112±6 vs 103±13 msec p<0.01).
Evaluating mood disorders in BrS, there was a higher prevalence of unipolar vs bipolar disorders (90 vs 10%). There were no differences in term of sodium channel blocker drug prescription among mood disorders patients with or without BrS (5.7% vs 4.1%, p=0.65).

Conclusions: Brugada ECG pattern has a prevalence of 4.6% in a large cohort of psychiatric patients with mood disorders. Uni-polar disorder was the most common diagnosis in this cohort. Large prospective registries are needed to evaluate the clinical feature and potential clinical implication of this findings.

ARITMIE 764
FARMACI ANTIARITMICI (ARITMIE)
ELETTROSTIMOLAZIONE (ARITMIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)

IMPACT OF ORAL FLECAINIDE THERAPY AND MYOCARDIAL PACING: PRELIMINARY DATA FROM A MULTICENTER PROSPECTIVE REGISTRY

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Background: Antiarrhythmic drugs, class I are widely used for prevention of atrial fibrillation recurrence. Literature reports that these drugs could affect pacing thresholds among pacemaker recipients suggesting uncertainty regarding its use

Aim of the study: evaluate acute and chronic effect on pacing threshold, sensing and catheter impedence after six month of therapy with flecainide

Methods: 80 consecutive pacemaker recipients were prospectively enrolled in a multicenter registry. These patients had preserved left ventricular ejection fraction, a dual chamber pacemaker with symptomatic sustained high-rate atrial fibrillation episodes recorded, no previous treatment with antiarrhythmics drugs class I and III and stable output atrial and ventricular thresholds. Therapy with oral flecainide 200 mg daily was started and patients were followed with ambulatory and remote monitoring

Results: mean age was 74±1 years, 48% pts were male and AF duration was 14±12 months. Pacemaker implantation was performed 3.9±0.3 year before study enrollment. At 30 days follow-up both atrial and ventricular capture thresholds show a slight increase (A: 0.77±0.61V at 0.4ms vs 0.80±0.42V at 0.4ms; V: 0.80±0.53V at 0.4ms vs 0.83±0.33V at 0.4ms), while there was a slight decrease in atrial e ventricular sensing (A: 3.6 ± 2.2 vs 3.4 ± 2.1mV ; V: 12.5±6.6 vs 11.8±6.3 mV) no significant differences in both atrial and ventricular catheter impedance (561±132 vs 573±118 Ώ; 600±160 vs 584±118Ώ). At 180 days follow-up, no significant changes in both atrial and ventricular capture threshold (0.7±0.1V@0.4ms vs 0.6±0.2V@0.4ms; 0.8±0.2V @0.4ms vs 0.7±0.1V @0.4ms), sensing (3.8±0.1 vs 3.8±0.3mV; 11±1.8 vs 9.3±0.4 mV) and impedance (582±55 vs 553±55 Ώ p=0.71; 552±96 vs 525±82Ώ) was observed. Side effects were reported in 6 patients, including dyspnea, palpitations, diplopia, asthenia and chest pain, although increased capture threshold occurred in a single patient with hyperkalemia in the course of acute kidney failure wich required pacemaker reprogramming.

Conclusions: oral flecainide therapy among pacemaker recipients at 180 days follow-up seems to be safe, and do not affect device function. Carefulness should be used in patient with poor renal function with eGFR less than 50ml/min/mm3. Further studies with additional follow-up data are warranted

ARITMIE 677
ARITMIE VENTRICOLARI (ARITMIE)
DEFIBRILLATORE IMPIANTABILE (ARITMIE)
MECCANISMI DELLE ARITMIE (ARITMIE)
TELEMEDICINA IN CARDIOLOGIA (TELECARDIOLOGIA ED E-HEALTH)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)

EMERGING TRIGGERS OF SUSTAINED VENTRICULAR ARRHYTHMIAS IN REMOTE-MONITORED PATIENTS: RESULTS FROM THE ETERE STUDY

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Background: Air pollution has been associated to numerous adverse cardiovascular events, primarily due to mechanisms involving oxidative stress, systemic inflammation, and cardiac autonomic imbalance. These biological effects are recognized as proarrhythmic factors. This study aimed to evaluate the relationship between chronic exposure to air pollutants and the incidence of ventricular and atrial tachyarrhythmias in patients with cardiac implantable electronic device (CIED) monitored remotely.

Methods: In this prospective multicenter observational longitudinal study, we analyzed the exposure of 253 remotely monitored patients—who were equipped with loop recorders (LR), pacemakers (PMK), or implantable cardioverter-defibrillators (ICD)—to seven air pollutants from 2017 to 2022. Residential addresses were obtained from medical records and verified during follow-up visits. Pollutant levels were determined by correlating each participant's residential address with data from the nearest pollutant monitoring station, as provided by the European Environmental Agency. The primary endpoint was the occurrence of sustained ventricular arrhythmias (VAs), appropriate shocks, or anti-tachycardia pacing (ATP) therapy. The secondary endpoint included hospitalizations for cardiovascular causes, sustained atrial fibrillation (AF) and/or inappropriate shocks due to AF.

Results: A total of 253 patients were enrolled in the ETERE study. By the end of the enrollment period (December 2022), home monitoring data were available for all patients. In our population, 157 (62%) patients have been implanted ICD, 18 (7%) and 78 patients (31%) received PMK and ILR, respectively. Regarding the primary endpoint, 37 patients (14.6%) presented with sustained VAs at a median follow-up of 20 months (IQR 4-40). Recorded sustained ventricular events in VAs group were not associated with acute coronary syndrome. Hourly exposure to nitrogen dioxide (NO2) at concentrations exceeding 200 ug/

m3 over the 5 years-period was identified as an independent predictors of sustained VAs (hazard ratio [HR] 2.47, 95%confidence interval [CI] 1.68 – 3.62, p<0.001). For the secondary endpoint (hospitalization for cardiovascular causes and sustained AF), the New York Heart Association (NYHA) functional class was the only independent predictor (HR: 1.48; 95% CI: 1.12 - 1.94; p < 0.005).

Conclusion: ETERE study is the first study to assess chronic exposure to air pollutants in patients with different home-monitored CIED as specific triggers for VAs. Importantly, our study found no evidence linking ventricular arrhythmic burden to ischemic heart disease, suggesting that the mechanisms underlying VAs are not solely a consequence of acute coronary syndrome.

ARITMIE 980
ARITMIE VENTRICOLARI (ARITMIE)
DEFIBRILLATORE IMPIANTABILE (ARITMIE)
GESTIONE DELLA COMPLICANZE PM / ICD (ARITMIE)
ELETTROSTIMOLAZIONE (ARITMIE)

SINDROME DELLA VENA CAVA SUPERIORE POST-ICD: APPROCCIO COMBINATO CON ESTRAZIONE TRANSVENOSA, ANGIOPLASTICA VENOSA E DEFIBRILLATORE EXTRAVASCOLARE

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Introduzione: La sindrome della vena cava superiore rappresenta una complicanza rara ma clinicamente significativa dei dispositivi cardiaci transvenosi. L'estrazione transvenosa degli elettrocateteri può rappresentare un approccio risolutivo, ma pone il problema della scelta del sistema di reimpianto. In questo contesto, i sistemi di defibrillazione extravascolare (EV-ICD) costituiscono un'alternativa terapeutica innovativa, senza necessità di accesso venoso, riducendo il rischio di ulteriori complicanze vascolari e infettive, e ampliando le opzioni terapeutiche per pazienti con complessità anatomica e clinica elevata.

Caso clinico: Un uomo di 72 anni con cardiopatia ischemica postinfartuale (LVEF 35%) ad evoluzione aneurismatica veniva sottoposto a impianto di ICD bicamerale nel 2015 in prevenzione secondaria per tachicardia ventricolare sostenuta. Nel 2024 veniva eseguita revisione dell'apparato per malfunzionamento dell'elettrocatetere ventricolare destro, con abbandono dello stesso e reimpianto di nuovo catetere ventricolare tramite accesso succlavio destro per evidenza di occlusione della vena succlavia sinistra. Nel 2025, per sviluppo di un quadro clinico compatibile con sindrome della vena cava superiore, il paziente eseguiva angio-TC con riscontro di occlusione bilaterale degli assi venosi succlavio-anonimo-cavali. Veniva posta indicazione a estrazione del sistema e reimpianto di nuovo device.

Nel settembre 2025 il paziente è stato sottoposto a estrazione transvenosa bilaterale del sistema precedentemente impiantato, con contestuale angioplastica (POBA) dell'asse succlavio-anonimo-cavale sinistro. Per controindicazione ad impianto di nuovi elettrocateteri transvenosi, si optava per nuovo impianto di dispositivo extravascolare.
Lo screening per S-ICD risultava non idoneo a causa di bassa ampiezza del QRS. Si procedeva ad impianto di EV-ICD in sede ascellare sinistra. Il decorso post-operatorio è stato regolare, senza complicanze, con ripresa della terapia anticoagulante.
Il paziente veniva dimesso in quinta giornata post-procedura.

Conclusioni: L'approccio integrato che combina estrazione transvenosa completa, angioplastica venosa e impianto di defibrillatore extravascolare rappresenta una strategia efficace e sicura per la gestione di pazienti con indicazione a defibrillatore, sindrome della vena cava superiore e non eleggibilità allo S-ICD. L'EV-ICD consente la somministrazione di terapia antitachicardica (ATP e shock) efficace operando completamente al di fuori del sistema vascolare.
Il caso presentato illustra come questa combinazione terapeutica possa essere implementata con successo nella pratica clinica, offrendo protezione antitachicardica in pazienti ad elevata complessità anatomica e clinica.

ARITMIE 521
ARITMIE VENTRICOLARI (ARITMIE)
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

GENOTYPE DETERMINES CLINICAL MANIFESTATIONS AND OUTCOMES IN DESMOSOMAL CARDIOMYOPATHIES

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(a) UNIVERSITÀ DEGLI STUDI DI PAVIA; (b) IRCCS ICS MAUGERI PAVIA;
(c) UNIVERSITÀ DEGLI STUDI FEDERICO II DI NAPOLI

Background: Arrhythmogenic cardiomyopathy (ACM) has traditionally been considered a right ventricular (RV)-dominant disease, most frequently caused by PKP2 variants. In recent years, DSP-related cardiomyopathy has emerged as a distinct entity, more commonly associated with left ventricular (LV) involvement and episodes mimicking myocarditis. These differences suggest that ACM may encompass genotype-specific disease forms, not only in terms of structural phenotype but also with potential implications for arrhythmic risk and clinical presentation. A clearer understanding of these distinctions is essential, as the recognition of less typical, LV-dominant forms remains challenging and may influence both diagnostic accuracy and patient management.

Objectives: To investigate genotype-specific differences in phenotypic expression and arrhythmic profile between PKP2 and DSP variant carriers.

Methods: This longitudinal cohort study included consecutive probands carrying PKP2/DSP variants and their genotype-positive relatives. We considered i) pathogenic/likely pathogenic (P/LP) variants; ii) rare variants of uncertain significance (VUS, allele frequency <0.01%). Genotype–phenotype correlations were assessed in probands and relatives. ARVC was defined according to 2010 Task Force Criteria and further classified as "lone RV" or "biventricular." Patients with LV involvement not fulfilling Task Force Criteria were classified as "LV-dominant phenotype," while those without LV involvement were considered "phenotype negative." The arrhythmic endpoint was the first life-threatening arrhythmic event (LAE: sudden cardiac death, aborted cardiac arrest, or hemodynamically non-tolerated ventricular tachycardia).

Results: A total of 372 patients were included (227 males, median age 39 [IQR 21–55] years): 212 with PKP2 and 160 with DSP variants. PKP2 carriers predominantly exhibited an RV-dominant phenotype (125/212, 71%), whereas DSP carriers more frequently showed LV-dominant cardiomyopathy (58/160, 41%; p<0.001).
Overall, 55/372 (16%) patients experienced a first LAE at a median age of 39 years (IQR 29–52). Cox regression analysis showed that male sex (HR 1.9, 95% CI 1.1–3.3; p=0.037) and DSP genotype (HR 1.7, 95% CI 1.0–2.7; p=0.044) were independently associated with LAE. Genotype-specific differences in arrhythmic presentation were also observed: PKP2 carriers more often developed sustained monomorphic ventricular tachycardia prior to LAE (6/26, 23%), whereas DSP carriers were more likely to experience an LAE as their first major arrhythmic manifestation (26/29, 90%; p=0.035).

Conclusions: PKP2 and DSP variants confer distinct ACM phenotypes and arrhythmic profiles. PKP2 carriers typically present with RV-dominant disease and progressive ventricular arrhythmias, while DSP carriers show more often LV-dominant forms and are at higher risk of presenting directly with a life-threatening arrhythmic event.

ARITMIE 607
ARITMIE VENTRICOLARI (ARITMIE)
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)
DEFIBRILLATORE IMPIANTABILE (ARITMIE)

WHEN CATHETER ABLATION IS NOT AN OPTION: MANAGING ELECTRICAL STORMS WITH CARDIAC SYMPATHETIC DENERVATION

Sara Trivigno (a), Domenico Laviola (a), Carlo Lavalle (a)
(a) POLICLINICO UMBERTO I

Patient presentation: Electrical storm (ES), especially in patients with pre-existing cardiomyopathy, presents significant challenges in intensive care management. This case involves a 63-year-old male patient admitted to the emergency department with ventricular arrhythmia, diagnosed with an arrhythmic storm unresponsive to medical therapy and complicated by septic shock, requiring extensive multidisciplinary care. The patient presented to the ED with complaints of palpitations, dizziness, and chest pain. The patient s medical history included a previous diagnosis of ES treated with medical therapy. During the same hospitalization, he underwent coronary angiography, which showed no significant coronary stenosis.
The patient also underwent a cardiac MRI, revealing areas of late gadolinium enhancement (LGE) with a mesocardial pattern in the posterior-lateral wall of the left ventricle. He was discharged with a diagnosis of non-ischemic dilated cardiomyopathy with a markedly reduced left ventricular ejection fraction (LVEF: 25%). He later received an implantable cardioverter-defibrillator (ICD) - St. Jude medical (SJM) for secondary prevention of ventricular arrhythmias. Home Therapy: Cordarone 200 mg, bisoprolol 2.5 mg, aspirin 100 mg, Entresto 24/26 mg twice daily, spironolactone 25 mg, atorvastatin 20 mg, esomeprazole 20 mg.

Initial work up: The initial ECG showed ventricular tachycardia (VT) with a heart rate of 160 bpm. Blood tests revealed high sensitivity troponin at 0.051 mcg/L, hemoglobin (Hb) at 14.5 g/dL, creatinine at 1.6 mg/dL, sodium (Na) at 141 mmol/L, potassium (K) at 4.1 mmol/L, magnesium (Mg) at 3.4 mmol/L, and C-reactive protein (CRP) at 0.06 mg/dL.
Blood pressure was recorded as 80/60 mmHg, indicating hemodynamic instability. A synchronized cardioversion was performed, restoring sinus rhythm.
A transthoracic echocardiogram confirmed severe left ventricular dysfunction with global hypokinesia, a significantly reduced ejection fraction (LVEF 25%), dilation of the left ventricle, severe diastolic dysfunction, and no significant valvular abnormalities. A chest X-ray showed no consolidations or effusions.

Diagnosis and management: The SJM ICD check identified prior arrhythmic events: VT1 at 125 bpm treated with 2 ATP bursts, VT2 at 171 bpm requiring 3 ATP bursts and a shock, and VT3 at 222 bpm managed with 1 ATP and shocks. An electrical storm (ES) diagnosis was made, prompting a VT2 detection window adjustment to 155 bpm. Later, a sustained VT episode was resistant to 150 mg IV Cordarone and required 100 Joules of synchronized cardioversion under Propofol to restore sinus rhythm. Post-shock ECG showed sinus rhythm at 60 bpm with ST-segment depression and T-wave inversion in inferior leads and V4-V6. Urgent coronary angiography ruled out ACS, showing no stenosis. A lidocaine infusion (8 ml/h) was started; another VT episode needed cardioversion, so the lidocaine rate was increased to 20 ml/h, and IV Cordarone and metoprolol were added. Persistent arrhythmias led to intubation and transfer to the intensive care unit (ICU), where partial arrhythmia relief was achieved, aided by a left stellate ganglion block. With stabilized condition, the patient was extubated and transferred to the cardiac ICU. Endo-epicardial catheter ablation (class I recommendation) was offered but declined.
Monitoring showed no further VT, allowing oral therapy

initiation. Complicating the ICU stay, a septic shock from Enterobacter aerogenes was treated with antibiotics, yet triggered new VT episodes, managed by ICD reprogramming and IV therapy with Cordarone, metoprolol, and lidocaine. A second ganglion block gave partial relief. After resolving the infection, and due to ongoing VT, cardiac sympathetic denervation (CSD) via video-assisted thoracoscopy with chest drainage was performed, chosen as the patient declined high-risk transcatheter ablation with ECMO, had a high PAINSED score, and responded well to ganglion block.

Follow-up: After CSD, the patient continued his stay in the cardiac ICU, showing clinical improvement, including resolution of arrhythmic episodes and stabilization of hemodynamic parameters. He was transitioned back to oral antiarrhythmic therapy. Before discharge, his heart failure therapy was optimized, and he was referred for evaluation for advanced therapies, including left ventricular assist device (LVAD) implantation or cardiac transplantation.

Conclusions: This case highlights the complexity of managing recurrent VT in a patient with severe left ventricular dysfunction and associated sepsis. The stellate ganglion blockade provided temporary relief from arrhythmic episodes, while persistent ventricular arrhythmias necessitated aggressive rhythm control strategies. The patient s condition was further complicated by a nosocomial infection with a multidrug-resistant organism, underscoring the importance of infection control in patients with ES. This case demonstrates the significance of early rhythm control, the role of ganglion blockade and cardiac sympathetic denervation (CSD) in cases where catheter ablation is not feasible or is declined, and the need for advanced therapies such as LVAD or heart transplantation in refractory cases.

References

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ARITMIE 440
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
ASPETTI GENETICI DELLE ARITMIE (ARITMIE)
MECCANISMI DELLE ARITMIE (ARITMIE)

FIBRILLAZIONE ATRIALE GIOVANILE E INTERVALLO QT: ALLA RICERCA DEL SUBSTRATO NASCOSTO

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INTRODUZIONE: La fibrillazione atriale (FA) isolata ad esordio giovanile ha substrato genetico complesso, che include varianti genetiche rare, con penetranza incompleta ed espressività variabile, correlate a canalopatie e cardiomiopatie, di cui l'aritmia atriale potrebbe essere la prima manifestazione, comprese alcune assiciate a sindrome del QT lungo; si descrive una famiglia.

CASO CLINICO: Il probando è un giovane sportivo giunto all'attenzione nel 2012 (10 anni) per FA asintomatica a 110 bpm, riscontrata durante idoneità agonistica, confermata da Holter ECG (QTc nei limiti) e trattata con cardioversione elettrica (CVE), previ warfarin e flecainide 65 mg bid. All'ECG in ritmo sinusale (RS) a 59 bpm, Qtc 400 ms. Dopo 6 mesi sospesa flecanide, e concessa idoneità agonistica. Nel 2016 nuova recidiva di FA asintomatica, trattata con CVE. RMN cuore e 2 Holter ECG a 12 derivazioni, uno con derivazioni Brugada, negativi, per cui si impiantava loop recorder.
Negli anni successivi altre 3 recidive asintomatiche, per cui a luglio 2022 si procedeva ad isolamento delle vene polmonari con radiofrequenza e si effettuava prelievo ematico per indagine genetica per FA giovanile. Alla mappa di voltaggio in FA a 70 bpm, non aree di basso voltaggio, ciclo atriale molto rapido (90-100 ms). Dimesso in flecainide 100 mg bid, poi sospesa dopo 6 mesi. All'Holter ECG in fleicanide, QTc nei limiti per Fc stabile, con incostanti fasi notturne di ridotto adeguamento e notching dell'onda T per rapidi incrementi cronotropi.
Alla prova da sforzo al cicloergometro di marzo 2023, in assenza di terapia, FC max 181 bpm (90% predetto), QTc basale 397 msec, con buon adeguamento. Indagine genetica positiva per variante patogenetica di KCNQ1 (c.692G>A, p.Arg231His), per cui si avviava nadololo 20 mg/die. A novembre 2024 ripetuta prova da sforzo (Bruce): FC max 94% predetto, subottimale adeguamento del QT nelle prime fasi, buono in seguito, e scarso adeguamento dopo standing. Veniva incrementato nadololo a 40 mg/die. Il padre, 57 anni, portatore della medesima variante, ha presentato un primo episodio di FA a 16 anni, cardiovertito con idrossichinidina, e successiva recidiva asintomatica a 42 anni sottoposta a CVE, con valori di QTc nei limiti in basale ma marcatamente prolungati in idrossichinidina. Al test ergometrico di febbraio 2023 (in RS) QTc basale 426 ms con buon adeguamento: avviato nadololo 20 mg/die.
A giugno 2025 recidiva asintomatica di FA: QTc medio basale 400 ms con subottimale adeguamento ai rapidi incrementi di frequenza. Avviata flecainide RP 100 mg e titolato nadololo a 40 mg die.
Ad agosto 2025 sottoposto ad isolamento delle vene polmonari mediante crioenergia e successiva CVE, in seguito ad episodio di scompenso cardiaco da tachicardiomiopatia (FE 30%, NtproBNP 9826 pg/ml),

con QTc ai limiti superiori (448 ms in FA a 130 bpm, 447 ms post ablazione in RS). Il nonno, 80enne, che rifiuta valutazioni cardiologiche e genetiche, viene riferito con primo episodio di FA a 35 anni, in warfarin.

CONCLUSIONI: il nostro caso sottolinea l'importanza di estensive e ripetute valutazioni strumentali prima di classificare un quadro di FA come isolato.
La specifica variante identificata, molto rara, è riportata in letteratura come correlata a riduzione della refrattarità atriale con minimo prolungamento di quella ventricolare, giustificando il blando fenotipo LQTS; anche l'espressività atriale potrebbe essere modulata dall'età. L'indicazione ad indagine genetica va valutata per tutte le forme isolate giovanili, per le importanti implicazioni terapeutiche, prognostiche e familiari.

ARITMIE 482
ABLAZIONE TRANSCATETERE (ARITMIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
MECCANISMI DELLE ARITMIE (ARITMIE)
STUDI ELETTROFISIOLOGICI INVASIVI (ARITMIE)

PULSED-FIELD ABLATION FOR ATRIAL FIBRILLATION TREATMENT IN PATIENTS WITH HYPERTROPHIC CARDIOMYOPATHY: PROCEDURAL DATA AND LONG-TERM OUTCOMES

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(a) CCB IN AGAPLESION MARKUSKRANKENHAUS - FRANKFURT AM MAIN

Background: Pulsed-field ablation (PFA) is an emerging non-thermal ablation technique for the treatment of atrial fibrillation (AF). 25% of patients with hypertrophic cardiomyopathy (HCM) have an history of AF. In patients with HCM, conventional catheter ablation using thermal energy sources, such as radiofrequency (RF) or cryothermal ablation, have shown reduced efficacy in achieving freedom from recurrent atrial arrhythmias. This study aims to assess the outcomes of PFA in comparison to traditional thermal ablation methods in patients with HCM.

Methods: A retrospective analysis was conducted on patients with HCM and symptomatic AF who underwent pulmonary vein isolation (PVI) between 2019 and 2024. A total of 42 consecutive patients were included, 20 treated using a pentaspline PFA-catheter and 22 with thermal ablation catheters, including radiofrequency, cryo and laser balloon. Follow-up data were successfully obtained for 38 patients. The primary endpoint was freedom from any atrial tachyarrhythmias recurrence.

Results: The median age of the cohort was 62 years, persistent AF was present in 45% of patients. No significant baseline difference was found between the two groups. PFA-guided PVI was successfully achieved in all patients, with a mean procedural time of 32 minutes for the PFA group, compared to 71 minutes in the thermal ablation group (P < 0.0001). Fluoroscopy time was comparable between groups (8.5 minutes for PFA vs. 8.3 minutes for thermal ablation, P=0.852). No serious acute adverse events occurred. Freedom from atrial tachyarrhythmias at one year was observed in 88% of patients treated with PFA, versus 57% in the thermal ablation group (log-rank P=0.086).

Conclusions: In patients with HCM undergoing PVI for AF, PFA demonstrated a favorable trend toward a lower recurrence rate of atrial tachyarrhythmias at one-year follow-up compared to thermal ablation strategies. These findings suggest that PFA may offer a promising alternative to thermal energy sources in this patient population.

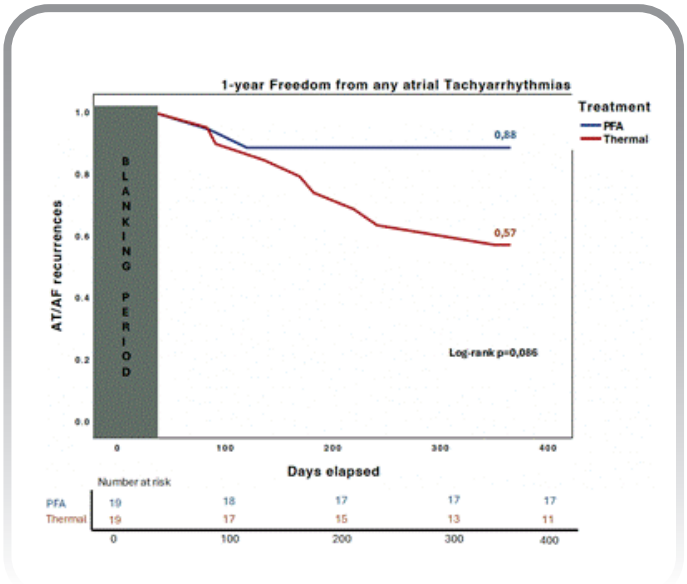


Figure 1

CardioSic

ARITMIE 493
ABLAZIONE TRANSCATETERE (ARITMIE)
ARITMIE SOPRAVENTRICOLARI (ESCLUSA FA) (ARITMIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
STUDI ELETTROFISIOLOGICI INVASIVI (ARITMIE)
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

PULSED FIELD ABLATION OF TYPICAL ATRIAL FLUTTER AFTER TRANSCATHETER TRICUSPID VALVE REPAIR: A MINI CASE SERIES USING A PENTASPLINE CATHETER

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(a) CCB IN AGAPLESION MARKUSKRANKENHAUS - FRANKFURT AM MAIN

Background: Transcatheter tricuspid valve repair (TTVR) is an emerging treatment for patients with severe tricuspid regurgitation who are not suitable candidates for surgery. However, atrial arrhythmias such as typical atrial flutter are not uncommon after TTVR and may require ablation. Pulsed field ablation (PFA) using a pentaspline catheter, originally developed for pulmonary vein isolation, is being explored for off-label use in other arrhythmic substrates.

Case Summary: We report two cases of patients who developed persistent typical atrial flutter following TTVR—one after tricuspid PASCAL ACE clip implantation, the other after transcatheter valve replacement with a Perimount 31 mm prosthesis. In the first case, CTI ablation was performed under fluoroscopic guidance only. In the second case, high-resolution 3D electroanatomical mapping confirmed a CTI-dependent reentrant circuit. In both patients, CTI ablation was carried out using a pentaspline PFA catheter, with overlapping applications delivered across the isthmus. Acute bidirectional block was achieved in both cases, with no periprocedural complications. At 3-months follow-up, both patients remained in stable sinus rhythm without recurrence.

Discussion: These cases demonstrate the feasibility of using a pentaspline PFA catheter for CTI ablation in the context of post-TTVR anatomy. Despite the anatomical challenges posed by the presence of clip

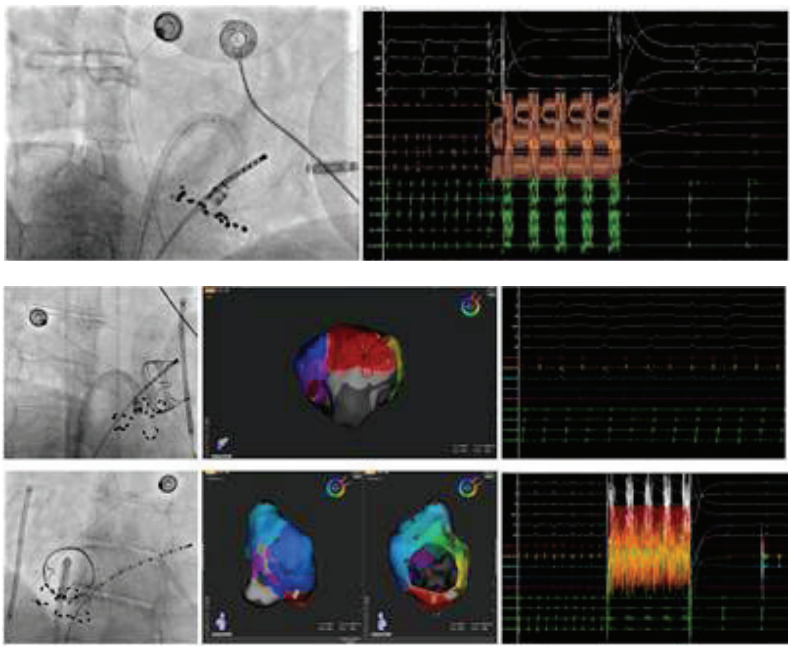


Figure 1

or valve prosthesis, effective and safe ablation was achieved using PFA, even in the absence of advanced mapping in one of the cases. The tissue-selective, non-thermal properties of PFA may offer advantages in such anatomically complex settings.

Conclusion: PFA with a pentaspline catheter is a promising tool for typical atrial flutter ablation following TTVR. It may be effective even without 3D mapping and could represent a safe alternative in patients with altered tricuspid valve anatomy. Further studies are warranted to explore its broader application.

ARITMIE 504
ABLAZIONE TRANSCATETERE (ARITMIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
STUDI ELETTROFISIOLOGICI INVASIVI (ARITMIE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)

PULSED FIELD ABLATION VS CRYOBALLOON PULMONARY VEIN ISOLATION IN PATIENTS WITH HEART FAILURE WITH REDUCED EJECTION FRACTION

Andrea Urbani (a), Joseph Antoine Kheir (a), Lukas Urbanek (a), David Schaack (a), Matteo Rocchetti (a), Alexandra Steyer (a), Soroosh Najafi (a), Alexandra Marx (a), Julia Lurz (a), Melanie Gunawardene (a), Boris Schmidt (a), Julian Chun (a)
(a) CCB IN AGAPLESION MARKUSKRANKENHAUS - FRANKFURT AM MAIN

Background: Catheter ablation is a cornerstone in the management of atrial fibrillation (AF) in patients with heart failure with reduced ejection fraction (HFrEF). While thermal energy-based techniques such as cryoballoon ablation have been extensively studied, Pulsed Field Ablation (PFA) has recently emerged as a promising non-thermal alternative. Its performance in HFrEF patients, however, remains to be defined.

Objective: To compare clinical and procedural outcomes of PFA and cryoballoon ablation in HFrEF patients undergoing first-time pulmonary vein isolation (PVI).

Methods: We analyzed 93 consecutive HFrEF patients who underwent PFA-based PVI between 2022 and 2025 and compared them with a historical cohort of HFrEF patients treated with cryoballoon PVI between 2012 and 2017 (Cryo1000 registry). The primary endpoint was recurrence of any atrial arrhythmia >30 seconds after a blanking period (BP) of 3 months. If a repeat procedure was performed during BP this was rated as an endpoint. Procedural metrics were also compared.
Results: A total of 25 PFA patients and 68 cryoballoon patients were included. Baseline characteristics were generally balanced, although the PFA group had a higher prevalence of male sex (79% vs 52%, p<0.05), persistent AF (70% vs 36%, p<0.01), and lower LVEF (31% vs 35%, p<0.05).
Procedural time was significantly shorter in the PFA group (34 vs 65 min, p<0.001), as was fluoroscopy time (7.3 vs 9.7 min, p<0.01). There were no major complications in both group and only one complication at access site occured in the PFA group. The PFA group showed a lower recurrence of atrial arrhythmias at 1 year (47% vs 63%, p= 0,194).

Conclusion: Both technologies showed a good safety profile. PFA demonstrated shorter procedural and fluoroscopy times and furthermore a trend toward lower arrhythmia recurrence rates at 1 year. These findings support rhythm control with PVI as first line strategy in this vulnerable patient cohort and a potential clinical benefit of PFA, which has to be confirmed in larger trials.

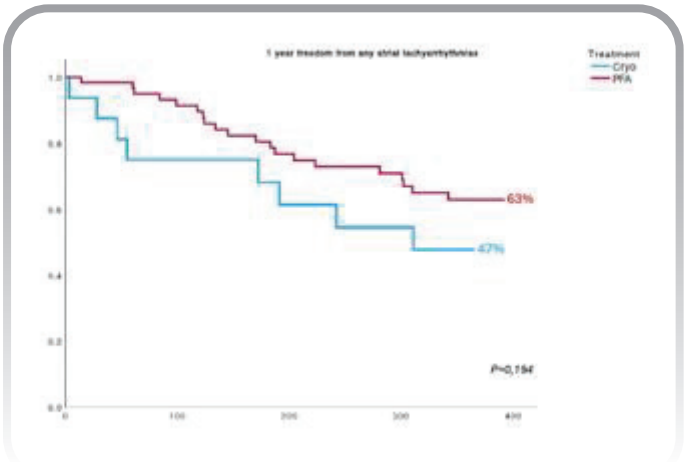


Figure 1

ARITMIE 511
ABLAZIONE TRANSCATETERE (ARITMIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
STUDI ELETTROFISIOLOGICI INVASIVI (ARITMIE)
MECCANISMI DELLE ARITMIE (ARITMIE)
ARITMIE SOPRAVENTRICOLARI (ESCLUSA FA) (ARITMIE)

LONG-TERM OUTCOMES AFTER PULMONARY VEIN ISOLATION AND SUBSTRATE BASED-LINEAR ABLATION USING A LATTICE-TIP PULSED FIELD/RADIOFREQUENCY CATHETER

Andrea Urbani (a), David Schaack (a), Joseph Antoine Kheir (a), Lukas Urbanek (a), Matteo Rocchetti (a), Alexandra Steyer (a), Soroosh Najafi (a), Alexandra Marx (a), Julia Lurz (a), Melanie Gunawardene (a), Boris Schmidt (a), Julian Chun (a)
(a) CCB IN AGAPLESION MARKUSKRANKENHAUS - FRANKFURT AM MAIN

Background: Pulsed field ablation (PFA) is increasingly used as an energy source for cardiac ablation in patients with atrial fibrillation (AF). The lattice-tip catheter (Affera, Medtronic), capable of toggling between PFA and radiofrequency ablation (RFA), allows for focal ablation beyond pulmonary vein isolation (PVI). This study assessed long-term arrhythmia outcomes in patients undergoing their first ablation for atrial fibrillation using a substrate-guided linear ablation strategy with the lattice-tip catheter and retrospectively compared them to a PVI-only strategy using a pentaspline PFA catheter (Farapulse, Boston Scientific).

Methods: Between 07/2023 and 01/2024, 28 patients underwent first-time AF ablation using the lattice-tip catheter. Patients were selected for this procedure based on suspected left atrial substrate due to persistent AF, enlarged left atrium or high age. In addition to PVI, linear ablation (anterior line and/or roof line) was performed based on left atrial substrate.
During the same period, 214 patients underwent PVI only with the pentaspline PFA catheter. From these, a matched control group (n=28) was selected via propensity score matching (age, BMI, AF subtype). Patients were followed at 6 and 12 months with ECG and Holter monitoring.

Results: After propensity score matching, important patient baseline criteria did not differ significantly between the two groups (Lattice-tip vs Pentaspline: mean age 69.93 (7.98) vs 70.00 (10.43) years; mean BMI 28.49 (5.30) vs 28.65 (3.47); Male 71.4% vs 67.9%; Persistent AF 82.1% vs 82.1%; Arterial Hypertension 75.0% vs 74.1%; Diabetes mellitus 14.3% vs 14.3%).
Procedure time was longer with the lattice-tip catheter (98.8 vs. 31.6 minutes, $p < 0.001$). Linear ablation was performed in 75% of lattice-tip cases. At one year, 86.4% of lattice-tip patients were arrhythmia-free vs. 66.4% in the control group (log-rank $p = 0.073$, Figure 1). Median follow-up time was 462 days in the lattice-tip group and 378 days in the control group. Recurrences in the lattice-tip group included AF (50%) and atrial tachycardia (50%), whereas all recurrences in the control group were AF.

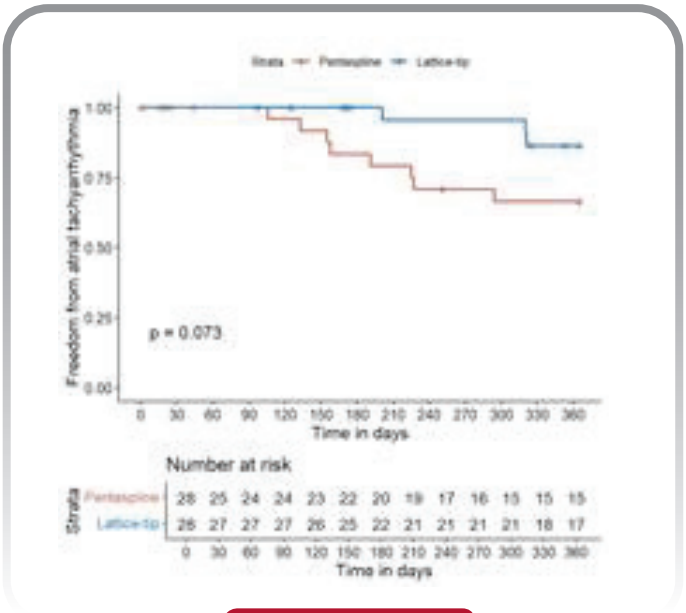


Figure 1

Conclusion: A substrate-guided approach using the lattice-tip PFA/RFA catheter showed a trend towards improved arrhythmia-free survival at one year in patients with persistent AF. While results are promising, the threshold for statistically significant improvement was not met and the small sample size and retrospective design without randomization are important limitations. These findings are hypothesis-generating and warrant further investigation in larger randomized studies.

ARITMIE 514
ABLAZIONE TRANSCATETERE (ARITMIE)
ARITMIE SOPRAVENTRICOLARI (ESCLUSA FA) (ARITMIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
MECCANISMI DELLE ARITMIE (ARITMIE)
STUDI ELETTROFISIOLOGICI INVASIVI (ARITMIE)

DURABILITY OF LINEAR LESIONS FOLLOWING LATTICE-TIP FOCAL ABLATION: INSIGHTS FROM REPEAT PROCEDURES

Andrea Urbani (a), Lukas Urbanek (a), Matteo Rocchetti (a), Joseph Antoine Kheir (a), David Schaack (a), Alexandra Steyer (a), Soroosh Najafi (a), Alexandra Marx (a), Julia Lurz (a), Melanie Gunawardene (a), Boris Schmidt (a), Julian Chun (a)
(a) CCB IN AGAPLESION MARKUSKRANKENHAUS - FRANKFURT AM MAIN

Background: The 9-mm nitinol lattice-tip catheter allows for focal radio frequency (RF) and pulsed field ablation within a single catheter. While initial procedural success rates are high, data on the durability of linear lesions, particularly in re-do ablation procedures, remain limited.

Objective: To evaluate the durability of linear lesion block in patients undergoing repeat ablation procedures after initial treatment with a lattice-tip ablation catheter.

Methods: Patients undergoing re-do ablation after an index procedure with the lattice-tip catheter were retrospectively analyzed. At the time of the initial procedure, acute conduction block was successfully achieved across all linear lesions without difficulty. During repeat procedures, all previously created linear lesions—such as anterior lines, mitral isthmus or roof lines—were systematically evaluated for bidirectional block.
Furthermore, in patients who underwent left atrial appendage (LAA) isolation with the lattice-tip catheter and subsequently received left atrial appendage closure (LAAC) after 6 weeks, the persistence of LAA isolation was assessed using a Lasso catheter. Sustained conduction block across the linear lesions was assumed in cases of persistent LAA isolation.

Results: A total of 15 patients (median age 72 years [IQR 62–76]; 53% female) were included in the analysis. Of these, 6 underwent repeat procedures due to arrhythmia recurrence and 9 were scheduled for LAAC. In total, 36 linear lesions were created. At the time of the scheduled LAAC procedure, durable isolation of the LAA was confirmed in 6 of 9 patients (66.7%).
In the re-do group, 6 out of 12 (50%) linear lesions showed durable conduction block. While all roof lines (4/4) remained persistently blocked, both mitral isthmus lines were reconnected. Anterior lines showed durable conduction block in 2 of 6 cases (33.3%).

Conclusion: Linear lesions created with the lattice-tip catheter demonstrated a moderate rate of durable conduction block in repeat procedures. Roof lines exhibited the highest durability, whereas mitral isthmus and anterior lines showed substantially lower rates of persistent block. These findings support the general feasibility of lesion formation with a dual-energy ablation catheter, while also highlighting the need for optimized energy source selection and delivery strategies depending on the lesion location.

ARITMIE 627
ARITMIE VENTRICOLARI (ARITMIE)
INFARTO STEMI (CARDIOPATIA ISCHEMICA)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)

A CASE OF RANOLAZINE-INDUCED TYPE 1 BRUGADA PATTERN AFTER ST-ELEVATION MYOCARDIAL INFARCTION (STEMI)

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(a) CARDIOVASCULAR DISEASES SECTION, INTERDISCIPLINARY DEPARTMENT OF MEDICINE (D.I.M.), UNIVERSITY OF BARI ALDO MORO, BARI, ITALY

A 48-year-old man with class II obesity and a history of smoking was admitted to the intensive care unit (ICU) with ST-elevation myocardial infarction (STEMI) and underwent primary percutaneous coronary intervention on a large first diagonal branch. At six months, a stress/rest myocardial single-photon emission computed tomography (SPECT) revealed a reversible perfusion defect of the mid-anterior and mid-anterolateral walls. A new coronary angiography confirmed the good result of the previous intervention and ruled out new coronary stenoses. On the assumption of a microvascular dysfunction, treatment with ranolazine was initiated (fig A).

At the one-month follow-up visit, the ECG showed a type 1 Brugada pattern (fig B). The patient denied chest pain, dyspnea, palpitations, or syncope, but after targeted questioning recalled a family history of sudden death (maternal uncle). A 24-hour 12-lead ECG confirmed the persistence of the Brugada pattern without life-threatening arrhythmias. Ranolazine was discontinued and the ST-segment abnormalities in leads V1–V2 completely resolved within one week (fig C). Three weeks later, however, the patient experienced a sudden syncopal episode, preceded by nausea and vomiting over two days. The ECG at presentation was unremarkable; an ajmaline challenge unmasked a type 1 Brugada pattern and a programmed electrical stimulation (PES) induced sustained ventricular tachycardia (fig D). Following a comprehensive risk stratification, a subcutaneous implantable cardioverter-defibrillator (S-ICD) was implanted.

Brugada syndrome (BrS) is commonly diagnosed using sodium channel blockers, which unmask the type 1 ECG pattern in ambiguous cases. Ranolazine is a piperazine derivative with antianginal effects mediated by inhibition of the late sodium current (INaL) and has shown potential in the management of arrhythmias typically responsive to sodium channel blockers (e.g., atrial fibrillation, Long QT Syndrome type 3). With this rationale, our case is the second report in the literature suggesting a possible clinically relevant role for ranolazine in unmasking the type 1 Brugada pattern.

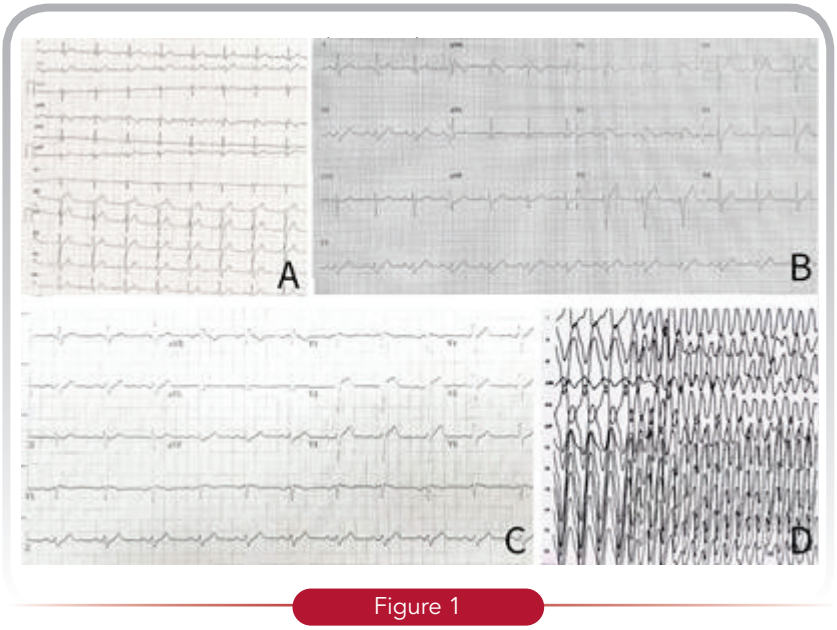


Figure 1

ARITMIE 738
ELETTROSTIMOLAZIONE (ARITMIE)
ELETTROCARDIOGRAFIA/ CARDIOVERSIONE/ DEFIBRILLAZIONE (ARITMIE)
GESTIONE DELLA COMPLICANZE PM / ICD (ARITMIE)

ALTERNATIVE NON CONVENZIONALI DELLA STIMOLAZIONE ATRIALE LEADLESS: CASE SERIES

Daniele Valente (a), Danilo Ricciardi (a), Filippo Crisci (a), Vito Calabrese (a), Francesco Picarelli (a), Flavio Angelo Gioia (a), Francesco Grigioni (a)
(a) FONDAZIONE POLICLINICO CAMPUS BIOMEDICO

Introduzione: I dispositivi pacemaker leadless sono stati sviluppati al fine di ridurre il rischio di complicanze relative alla presenza di elettrocateteri nel torrente vascolare. La recente disponibilità di un dispositivo leadless per il pacing atriale, introdotto a completamento dell'attuale dispositivo leadless ventricolare Abbott, consente una stimolazione biventricolare leadless preservando una fisiologica sincronia atrio-ventricolare.

Metodi: Presentiamo due casi clinici che mostrano l'utilizzo efficace ed alternativo di stimolazione leadless atriale in setting differenti.

Casi clinici:

- Un paziente di 62 anni con multipli fattori di rischio cardiovascolare, scompenso cardiaco a frazione d'eiezione ridotta, pregresso impianto di CRTd, successivamente espiantato per infezione di tasca e, per comprovata necessità di pacing permanente, sottoposto ad impianto di pacemaker ventricolare leadless Medtronic (Micra AV). A distanza di circa un anno il paziente tornava in PS per marcata astenia ed impotenza funzionale, lieve peggioramento della dipnea con riscontro di bradicardia sinusale marcata in corso di stimolazione ventricolare atrio-guidata. Si è ritenuto opportuno upgrading con dispositivo leadless atriale Abbott (AVEIR AR) per garantire un migliore cronotropismo preservando la sincronia AV (AAIR 60 / VDD 50).
- Un paziente di 85 anni con riscontro all'HolterECG delle 24 ore di bradicardia marcata anche diurna con pause sistoliche maggiori di 3 sec alternati a brevi fasi di fibrillazione atriale ad alta risposta ventricolare media, sintomatico per episodi lipotimici e fatigue, affetto da insufficienza renale cronica in dialisi, diabete mellito, artrite reumatoide e pemfigoide bolloso. In considerazione dell'alto rischio infettivo e della ridotta capacità di guarigione delle ferite si impiantava pacemaker monocamerale leadless atriale, con ottimo risultato post-procedurale e sensibile miglioramento dei sintomi.

Conclusioni: I nostri casi mostrano affascinanti alternative, valide e sicure, di stimolazione atriale leadless in metodiche non covenzionali, in pazienti selezionati, con l'obiettivo di una stimolazione più fisiologica possibile.

Parole chiave: Pacemaker leadless, sincronia, ottimizzazione, MICRA, AVEIR RA.

ARITMIE 931
ABLAZIONE TRANSCATETERE (ARITMIE)
ARITMIE VENTRICOLARI (ARITMIE)
MECCANISMI DELLE ARITMIE (ARITMIE)
STUDI ELETTROFISIOLOGICI INVASIVI (ARITMIE)
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)

IL RUOLO DELL'ABOLIZIONE DEGLI ELETTROGRAMMI AD ALTA FREQUENZA COME OBIETTIVO GUIDA PER IL REMAP DURANTE ABLAZIONE DI TACHICARDIA VENTRICOLARE: LO STUDIO HF-REMAP

Daniele Valente (a), Filippo Maria Cauti (b), Danilo Ricciardi (a), Francesco Fioravanti (b), Nikita Tanese (b), Federico Calore (b), Lorenzo Rampa (b), Alberto Barengo (b), Giovanni Peretto (b), Paolo Della Bella (b)
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Introduzione: Le tachicardie ventricolari monomorfe sostenute (TV) sono la principale causa di morte cardiaca improvvisa e sono tipicamente caratterizzate da un meccanismo di rientro che coinvolge una scar miocardica. L'ablazione di queste aritmie è in grado di ridurre le recidive e migliorare prognosi e qualità di vita. Nuove strategie e tecniche si stanno affacciando sul panorama mondiale al fine di garantire risultati più efficaci e duraturi.

Obiettivo: Lo studio si occupa di descrivere l'utilizzo dell'analisi del picco di frequenza degli EGM endocavitari come strumento efficace nel quantificare l'abolizione dei segnali e guidare in maniera mirata il remap post-ablazione.

Metodi: Si tratta di uno studio di coorte retrospettivo monocentrico in cui sono stati analizzati pazienti sottoposti ad ablazione di TV con sistema di mappaggio Abbott Ensite X (Abbott, Saint Paul, MN), nell'arco di due anni. Le mappe sono state singolarmente analizzate ed è stato applicato un protocollo di analisi del picco di frequenza nell'area del circuito della TV prima e dopo erogazione ed è stato valutato il livello di abbattimento del segnale. I pazienti sono stati separati in base alla percentuale residua di segnale (>50% o <50%) e sono stati valutati i tassi di recidiva nel corso del follow up.

Risultati: 43 pazienti sono stati arruolati nello studio, con buona eterogeneità di eziologia. Nel follow-up medio di circa 390 giorni, 11 hanno sperimentato recidiva di aritmia. Il tasso di recidiva è stato significativamente più basso in chi aveva una percentuale residua <50% (log-rank p = 0.002), con un tasso di sopravvivenza libero da malattia a sei mesi di circa 91% vs 65%. La presenza di una percentuale >50% è stata significativamente associata ad un aumentato rischio di recidiva nel follow-up (HR: 7.35; 95% CI: 1.58 – 32.73; p = 0.01).

Conclusioni: L'abolizione di >50% del picco delle frequenze è correlata in maniera significativa ad outcome migliori. Lo studio introduce dunque un valido elemento in grado di validare l'efficacia delle lesioni create nel contesto dell'ablazione delle TV. L'elemento aggiuntivo che fornisce l'analisi delle frequenze può meglio guidare il remap post-erogazioni ed identificare eventuali aree di consolidamento della lesione.

ARITMIE 1056
ARITMIE VENTRICOLARI (ARITMIE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
FARMACI ANTIARITMICI (ARITMIE)

EFFECTIVE PERCUTANEOUS STELLATE GANGLION BLOCK IN THE MENAGEMENT OF ELECTRICAL STORM IN END STAGE HYPERTROPHIC CARDIOMIOPATHY: A CASE REPORT

Claudia Vecchio (c), Raimondo Pittorru (c), Manuel De Lazzari (c), Martina Perazzolo Marra (c), Gino Gerosa (b), Demetrio Pittarello (a), Domenico Corrado (c), Federico Migliore (c)
(a) ANESTESIA E RIANIMAZIONE, AZIENDA OSPEDALE UNIVERSITA' DI PADOVA; (b) CARDIOCHIRURGIA, AZIENDA OSPEDALE UNIVERSITA' DI PADOVA; (c) MALATTIE DELL'APPARATO CARDIOVASCOLARE, AZIENDA OSPEDALE UNIVERSITA' DI PADOVA

Effective Percutaneous Stellate Ganglion Block in the Management of Electrical Storm in End-Stage Hypertrophic Cardiomyopathy: A Case Report

Electrical storm (ES) is a life-threatening condition defined as three or more episodes of sustained ventricular arrhythmias within 24 hours, often requiring repeated defibrillator interventions. ES carries high morbidity and mortality, particularly in patients with advanced structural heart disease. Management typically involves antiarrhythmic drugs, sedation, device reprogramming, and, when feasible, catheter ablation. However, some patients remain refractory to conventional therapy, necessitating adjunctive interventions. Percutaneous stellate ganglion block (PSGB) as part of neuromodulation therapy, has emerged as an effective rescue therapy in these cases, reducing sympathetic drive and stabilizing hemodynamics.

Case Presentation

A 44-year-old man with familial non-obstructive hypertrophic cardiomyopathy was admitted for recurrent ventricular arrhythmias. At the age of 30, he underwent implantable cardioverter-defibrillator (ICD) implantation for primary prevention, based on cardiac MRI findings of disomogeneus septal late gadolinium enhancement with extensive co-localized scarring. The first documented episode of monomorphic ventricular tachycardia (VT) occurred in 2023 in the context of concomitant pneumonia. Coronary angiography showed no stenosis. Echocardiography documented left ventricular Ejection fraction of 35%. He was discharged with heart failure therapy and amiodarone. Ablation was not indicated due to the probable need for an endo-epicardial approach, given the presence of a deep intramural substrate. However Amiodarone was later discontinued due to intolerance (bradycardia, fatigue), and beta-blockers provided only partial control of ventricular arrhythmias, reducing their frequency but not completely suppressing them. In 2024, he was hospitalized again for monomorphic VT at 160 bpm, which was successfully terminated with external synchronized cardioversion. During that admission, right heart catheterization revealed reduced cardiac index, and pulmonary vascular resistance at the upper limit of normal. Echocardiography at that time confirmed progression to end-stage hypertrophic cardiomyopathy with a markedly dilated and dysfunctional left ventricle (EDV 100 mL/m², LVEF 30%) with eccentric hypertrophy, no significant valvular disease, and preserved right ventricular function. No other remarkable comorbidities. In November 2024 (index hospitalization), he experienced his first documented episode of electrical storm, consisting of monomorphic ventricular tachycardia with right bundle branch block morphology (BBDX), which was triggered by a concomitant Staphylococcus hominis infection. He presented with recurrent ventricular tachyarrhythmias that led to multiple ICD interventions over a short period. On arrival to the intensive cardiac care unit, he was hypotensive and desaturating, requiring sedation with midazolam and intra-aortic

balloon pump (IABP) placement. Initial management included intravenous amiodarone and lidocaine, as well as repeated external synchronized cardioversion. Despite these measures, sustained VT persisted. Given the refractory arrhythmias and ongoing hemodynamic compromise, a percutaneous stellate ganglion block (200 mg lidocaine + 50 mg bupivacaine) was performed, resulting in immediate termination of VT episodes (cycle length 310 ms), stabilization of blood pressure, and cessation of further ICD shocks. IABP support was successfully weaned within 24 hours without recurrence of arrhythmias. Due to the end-stage nature of his cardiomyopathy and repeated electrical storms despite maximal antiarrhytmic therapy, he was urgently listed for heart transplantation. During the waiting period, he underwent all preoperative assessments and evaluations required for transplantation. Additionally he experienced a slower ventricular tachycardia episode, successfully managed with percutaneous stellate ganglion block, leading to a rapid hemodynamic stabilization. He subsequently underwent orthotopic heart transplantation on January 18, 2025.

The postoperative course was uneventful, with early extubation, stable hemodynamics, and progressive mobilization. Transthoracic echocardiography at discharge demonstrated normal biventricular size and function. Histopathology of the explanted heart revealed extensive fibrosis in the posteroseptal, posterior, and right ventricular walls, as well as patchy involvement of the anteroseptal region including the posteromedial papillary muscle. The patient was discharged on standard immunosuppressive therapy with no recurrent arrhythmic events during hospitalization.

Discussion

This case illustrates the role of percutaneous stellate ganglion block (PSGB) as an effective rescue therapy in the acute management of refractory electrical storm (ES) in end-stage hypertrophic cardiomyopathy. Although PSGB has been described in ischemic cardiomyopathy and structural heart disease, reports in the setting of hypertrophic cardiomyopathy progressing to a dilated phenotype remain scarce. Our case adds to this limited evidence, demonstrating that sympathetic blockade can rapidly terminate sustained ventricular tachycardia, stabilize blood pressure, improve hemodynamics, and prevent recurrent ICD shocks where conventional therapies—including antiarrhythmic drugs, repeated cardioversion, and mechanical support—had failed. Notably, hemodynamic improvement was documented with stabilization of blood pressure and reduction of elevated lactate levels, reflecting recovery from the critically compromised state.Compared with pharmacological strategies, PSGB acts within minutes and does not carry the proarrhythmic or systemic side effects of amiodarone or lidocaine. Its efficacy, although often temporary, provides a critical time window that can be lifesaving in patients awaiting definitive treatment. In our patient, PSGB not only halted the storm but also enabled safe withdrawal of intra-aortic balloon support and bridged him to urgent transplantation without further arrhythmic deterioration.Published literature supports the use of PSGB in refractory ES, with response rates ranging from 60–80%, yet most series involve ischemic substrates. Our observation underscores its utility even in end-stage hypertrophic cardiomyopathy, a less frequently reported context, highlighting that sympathetic modulation should be considered earlier in patients with electrical instability and intolerance to antiarrhythmic therapy.Finally, the case emphasizes the necessity of a multidisciplinary strategy involving cardiology, anesthesiology, and surgical teams to integrate PSGB into the broader therapeutic pathway, ensuring safe transition to definitive treatment such as heart transplantation.

The documented hemodynamic recovery further supports the potential of PSGB not only to suppress arrhythmias but also to stabilize critically ill patients in acute electrical storm.

Conclusion

Percutaneous stellate ganglion blockade represents a valuable rescue strategy in refractory electrical storm, providing immediate arrhythmia suppression and hemodynamic stabilization. In patients with end-stage hypertrophic cardiomyopathy, it can serve as a life-saving bridge to transplantation or other definitive therapies. This case contributes to the growing evidence supporting PSGB as a key option in the management of complex arrhythmic patients.

ARITMIE 430
ASPETTI GENETICI DELLE ARITMIE (ARITMIE)
ARITMIE VENTRICOLARI (ARITMIE)
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)
DEFIBRILLATORE IMPIANTABILE (ARITMIE)
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)

LA STRATEGIA DEL RE-TEST GENETICO GUIDATO DAL FENOTIPO: UN APPROCCIO NECESSARIO PER LA DIAGNOSI DI CANALOPATIE ARITMOGENE ATIPICHE

Ludovica Rita Vocale (a), Cristina Balla (a), Matteo Bertini (a)
(a) AZIENDA OSPEDALIERO-UNIVERSITARIA DI FERRARA

La Catecholaminergic Polymorphic Ventricular Tachycardia (CPVT) rappresenta una canalopatia aritmogena ereditaria, caratterizzata dall'insorgenza di aritmie ventricolari maligne in corso di attivazione adrenergica, frequentemente associata a mutazioni nei geni RYR2 o CASQ2. Viene qui presentato il caso di una paziente di 38 anni, con storia pregressa di Linfoma non-Hodgkin chemiotrattato in età adolescenziale, che ha manifestato ricorrenti episodi di arresto cardiaco resuscitato e sincope in corso di sforzo fisico. L'iter diagnostico di primo livello, comprendente elettrocardiogramma, ecocardiografia, risonanza magnetica cardiaca e coronarografia, non ha evidenziato alterazioni strutturali significative.
In considerazione del quadro clinico, è stato quindi impiantato un defibrillatore cardiaco impiantabile (ICD) in prevenzione secondaria, che ha in seguito efficacemente trattato diversi episodi di tachicardia ventricolare. Inoltre, veniva introdotta terapia con beta-bloccante (Nadololo) alla massima dose tollerata.
Un test da sforzo successivo si è rivelato dirimente, documentando l'insorgenza di una tachicardia ventricolare polimorfa con sincope, tipica del fenotipo catecolaminergico. Il sospetto clinico di CPVT ha pertanto guidato l'esecuzione di un'analisi genetica di primo livello, che è tuttavia risultata negativa per le varianti canoniche. Nonostante questo risultato, il persistente e forte sospetto clinico, supportato dal fenotipo inequivocabile, ha giustificato la decisione di ripetere l'indagine genetica a distanza di anni. Grazie ai progressi nelle tecniche di analisi, il re-test ha permesso di identificare una variante patogenetica nel gene RBM20.
Questo gene, non classicamente associato a CPVT, è noto per essere implicato in cardiomiopatie ad alto rischio aritmico, come la cardiomiopatia dilatativa, e spiega pienamente il fenotipo clinico aggressivo



Figure 1

della paziente, caratterizzato da instabilità elettrica in assenza di disfunzione ventricolare severa.
Il caso sottolinea come varianti in geni non canonici, come RBM20, possano mimare un fenotipo clinico indistinguibile dalla CPVT classica. Ribadisce, inoltre, il valore imprescindibile del sospetto clinico, ma soprattutto la necessità di considerare il re-test genetico a distanza di tempo in casi selezionati, alla luce della continua evoluzione delle conoscenze e delle tecnologie di laboratorio; una pratica cruciale per ottenere una diagnosi definitiva, permettere una corretta stratificazione del rischio e avviare un appropriato screening familiare.

ARITMIE 598
ELETTROSTIMOLAZIONE (ARITMIE)
TERAPIA DI RESINCRONIZZAZIONE (ARITMIE)
INTERVENTISTICA STRUTTURALE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
APPS IN CARDIOLOGIA (TELECARDIOLOGIA ED E-HEALTH)

LEFT BUNDLE BRANCH AREA PACING VERSUS RIGHT VENTRICULAR PACING IN A BRADYARRHYTHMIA COHORT: A PROPENSITY-SCORE–MATCHED ANALYSIS

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Background: Left bundle branch area pacing (LBBAP) spans a physiological spectrum, from proximal left bundle trunk to fascicular and septal myocardial capture. The relevance of different capture subtypes in an unselected brady-type cohort is uncertain.

Objectives: To delineate procedural volumes by pacing category (RVP, LBBAP, CRT) and to describe the distribution of capture types and their associated outcomes within the LBBAP cohort.

Methods: We retrospectively analyzed consecutive de novo pacemaker/CRT implantations at a single high-volume center (January 2019–December 2024). Exclusions for comparative analyses included persistent AF at implantation and subsequent device upgrades; CRT recipients were retained for descriptive analyses only. LBBAP subtype was classified using a 12-lead ECG analysis tool and confirmed by a senior electrophysiologist. All endpoints were analyzed over a prespecified 20-month follow-up within a 1:1 propensity-matched cohort with ventricular pacing burden >80%.

Results: Of 4,204 implantations, 3,073 were analyzable: RVP 2,050 (66.7%), CRT 723 (23.5%), LBBAP 300 (9.8%). Within LBBAP, conduction system capture occurred in 276 (92%); myocardial in 24 (8%). In the matched cohort (n=260 pairs), paced QRS at follow-up was shorter with LBBAP vs RVP (126±18 vs 147±20 ms; p<0.001). LVEF was 57±10% in both groups at baseline and 58±10% with LBBAP vs 53±11% with RVP at follow-up (p<0.001). Heart failure hospitalization (HFH) was lower with LBBAP (HR 0.53; 95% CI 0.30–0.94), and NYHA improved more often with LBBAP (20% vs 10%). Within the LBBAP cohort, trunk capture showed the most favorable electrical profile (p<0.001). LVEF at follow-up differed across subtypes (overall p=0.02); HFH showed a graded pattern (2.4% trunk, 3.6% fascicular, 8.3% myocardial; global p=0.04).

Conclusions: In a predominantly brady-type cohort, LBBAP was associated with preserved systolic function, lower HFH, and more frequent NYHA improvement versus RVP. Findings support proximal conduction system engagement, particularly left bundle trunk capture.

ARITMIE 359
TERAPIA DI RESINCRONIZZAZIONE (ARITMIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)
ELETTROSTIMOLAZIONE (ARITMIE)

LEFT BUNDLE BRANCH AREA PACING FOR CRT UPGRADE AFTER AV NODE ABLATION IN PERMANENT ATRIAL FIBRILLATION AND ISCHEMIC CARDIOMYOPATHY

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Background: Management of permanent atrial fibrillation (AF) in patients with dilated cardiomyopathy and severe left ventricular (LV) dysfunction remains a clinical challenge, especially in the presence of persistently high ventricular rates despite maximal medical therapy. In such scenarios, atrioventricular node ablation (AVNA) combined with physiological pacing represents an effective therapeutic option. Compared to conventional CRT, conduction system (CSP) using His bundle or left bundle branch area pacing can achieve a narrower QRS and improve left ventricle desynchrony, providing additional electrical and mechanical resynchronization.

Case Presentation: We report the case of a 69-year-old male with a history of permanent AF, previous acute myocardial infarction treated with PCI (2014), valve-in-valve TAVI on a dysfunctional bioprosthetic aortic valve (2022), chronic kidney disease on haemodialysis, and severe LV systolic dysfunction (LVEF 15%). Despite optimal medical therapy with ACE-inhibitor, beta-blocker (Bisoprolol 10 mg/die) and MRA, the patient experienced frequent episodes of acute heart failure requiring hospitalization. He came to our attention with a baseline ECG showing AF with elevated ventricular rate (135 bpm) and left bundle branch block. Echocardiography documented severe LV dilation with severe reduction of the ejection fraction (15%), moderate mitral regurgitation, right ventricular dysfunction, and an estimated pulmonary artery systolic pressure of 33 mmHg. In January 2024 AVNA was performed with subsequent upgrade of the existing defibrillator to left bundle branch area pacing (LBBAP) using a CRT-D system. The device was programmed in VVIR mode at a lower rate of 60 beats per minute. The procedure was uneventful, and the patient was discharged in stable hemodynamic condition. At the follow-up visit in August 2025, the device interrogation confirmed successful CRT pacing (100%), while echocardiography documented improvement of the ejection fraction to normal values (56%). The patient reported a marked increase in exercise tolerance, and no further hospitalizations had occurred.

Discussion: In patients with permanent AF and advanced LV dysfunction, the "ablate and pace" strategy can improve ventricular rate control, restore synchrony, and optimize cardiac output. In comparison with conventional CRT with biventricular pacing, LBBAP offers a physiological alternative with possible better outcomes in selected cases, particularly in anatomically complex settings or in the presence of prior valve interventions. Our case supports the feasibility and safety of LBBAP after AVNA in this challenging population.

Conclusion: AVNA combined with LBBAP is a valuable alternative to conventional CRT in patients with permanent AF, severe LV dysfunction, and challenging anatomical or procedural contexts. This strategy may improve symptoms and reduce hospitalizations in cases where conventional CRT is not ideal.

CardioSic

86° CONGRESSO NAZIONALE SIC
Roma, 4-7 dicembre 2025

ASSISTENZA CARDIACA IN ACUTO

ASSISTENZA CARDIACA IN ACUTO 384
ASSISTENZA CARDIACA IN ACUTO NEL DIPARTIMENTO DI EMERGENZA (ASSISTENZA CARDIACA IN ACUTO)
ASSISTENZA INTENSIVA CARDIOVASCOLARE IN ACUTO (ASSISTENZA CARDIACA IN ACUTO)
SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO)
PROGNOSI (SCOMPENSO CARDIACO)

CLINICAL WORSENING IN PATIENTS PRESENTING WITH CARDIOGENIC SHOCK: PREVALENCE, PREDICTORS AND CLINICAL OUTCOMES

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Abstract

Background. A significant proportion of patients presenting with cardiogenic shock (CS) achieving apparent stabilization subsequently experience clinical worsening (CW). We sought to characterize the prevalence, characteristics, in-hospital course, and prognostic impact of CW in a contemporary CS cohort, leveraging on a standardized and objective definition.

Methods. CW was defined as new/worsening signs and/or symptoms of congestion or hypoperfusion following a period of clinical stabilization, requiring intensification of CS treatments, leveraging on a comprehensive set of clinical and operative objective criteria. A composite of in-hospital mortality, left ventricular assist device implantation, or heart transplant was the primary outcome.

Results. Among 373 consecutive patients admitted at two cardiac intensive care units with ≥SCAI B CS, 32 never reached clinical stabilization and were excluded, leading to a final cohort of 341 patients (acute myocardial infarction-related CS 32%, SCAI ≥C 51.3%). CW occurred in 106 patients (31.1%) after 48 (IQR 24-109) hours from initial clinical stabilization. Most common CW triggers were therapy de-escalation (18.3%), infection (13.5%), and invasive therapeutic procedure (6.7%), with no clear trigger identified in 24.0%. Chronic heart failure (HF) stage (p=0.001), SCAI CS stage (p=0.049) and mean arterial pressure (p=0.031) at presentation, oliguria (p=0.027) and max. vasoactive-inotropic score (p=0.046) in the first 6 hours emerged as independent CW predictors. CW patients experienced higher primary outcome (60.4% vs 11.9%; p<0.001), and CW emerged as an independent predictor (adj-HR 9.95, 95%CI 5.20-19.01, p<0.001). In CW non-survivors, in-hospital death occurred after 9 (IQR 5-18) days from the CW event.

Conclusions. CW complicating CS, objectively defined leveraging on longitudinal changes in clinical features of hypoperfusion and congestion, occurs in one third of CS patients, is predicted by markers of chronic and acute HF severity and portends worse in-hospital outcome. Whether prompt CS recognition and management may modify disease natural history remains to be studied.

ASSISTENZA CARDIACA IN ACUTO 56
ASSISTENZA CARDIACA IN ACUTO NEL DIPARTIMENTO DI EMERGENZA (ASSISTENZA CARDIACA IN ACUTO)
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE) (IMAGING CARDIOVASCOLARE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)

CAUGHT IN THE FLOW: SURGICAL RESCUE OF LARGE LA THROMBUS

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Large, mobile left atrial (LA) thrombi causing mechanical mitral valve obstruction represent a rare but life-threatening complication of atrial fibrillation (AF), particularly in the presence of mitral stenosis and severe atrial dilation. Prompt diagnosis and surgical intervention are critical to prevent cardiogenic shock or systemic embolization.

We describe a 71-year-old woman with hypertension and diabetes, presenting with progressive dyspnea and hypotension. ECG revealed new-onset AF with rapid ventricular response. Transthoracic echocardiography (TTE) demonstrated marked biatrial enlargement, mild mitral stenosis, and a large (3.1 × 2.7 cm) mobile LA mass intermittently obstructing the mitral valve (Fig. 1). Transesophageal echocardiography (TEE) confirmed a 3.3 × 2.8 cm thrombus prolapsing through the mitral orifice (Fig. 2), with two smaller septal masses and spontaneous echo contrast; a small consolidated mass was also seen in the left atrial appendage (LAA). The morphology, mobility, and absence of fever or vegetations favored thrombus over tumor or infective endocarditis.

Given the high embolic risk, anticoagulation and thrombolysis were contraindicated. The patient

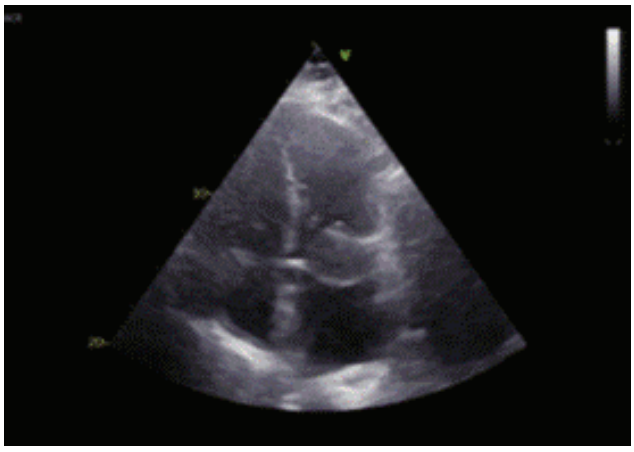


Figure 1

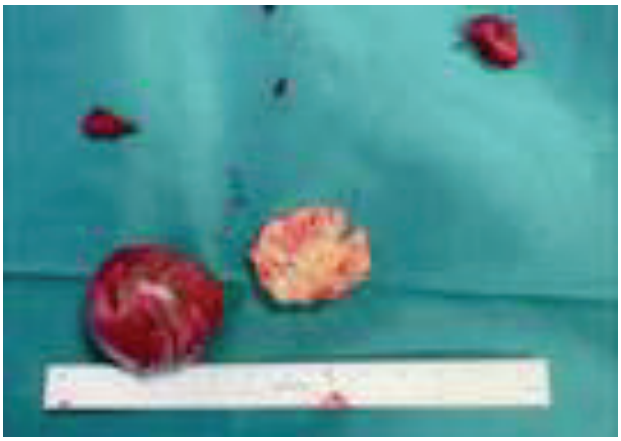


Figure 2

underwent emergency surgical thrombectomy, bioprosthetic mitral valve replacement, LAA exclusion, and removal of all additional masses (Fig. 3).

Intraoperative findings revealed rheumatic mitral stenosis with leaflet calcification. Histology confirmed thrombus composition. The postoperative course was uneventful, with no recurrence at 3-month TEE follow-up.

This case underscores the importance of rapid echocardiographic evaluation, particularly TEE, in unstable AF patients, and the need for a multidisciplinary heart team approach. Large, mobile LA thrombi in this context require urgent surgical removal, as medical therapy alone carries prohibitive embolic risk.



Figure

ASSISTENZA CARDIACA IN ACUTO 646
ASSISTENZA INTENSIVA CARDIOVASCOLARE IN ACUTO (ASSISTENZA CARDIACA IN ACUTO)
SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO)
INFARTO STEMI (CARDIOPATIA ISCHEMICA)
ASSISTENZA CARDIACA IN ACUTO NEL DIPARTIMENTO DI EMERGENZA (ASSISTENZA CARDIACA IN ACUTO)
INFARTO NSTEMI (CARDIOPATIA ISCHEMICA)

DISTAL RADIAL ARTERY APPROACH FOR INVASIVE BLOOD PRESSURE MONITORING IN INTENSIVE CARDIAC CARE UNIT

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Background. Direct intra-arterial pressure measurement is a mandatory step in hemodynamic assessment of patients admitted in intensive cardiac care unit (ICCU). The forearm radial artery (fRA) is considered the gold standard for this purpose. The distal radial artery (dRA) is a novel access site in interventional cardiology.
Purpose. We evaluated the use of dRA (Figure 1) as an alternative approach to standard fRA for invasive blood pressure monitoring in ICCU.

Methods. This is a single-center, randomized, non-inferiority trial. Patients admitted in ICCU needing invasive blood pressure monitoring were randomly allocated to dRA or fRA access site (1:1 ratio). Primary endpoint was non-inferiority of dRA in catheterization success rate, using either anatomical approach (one attempt) or ultrasound-guided puncture (one attempt), with 15% as non-inferiority margin. Secondary endpoints were: first attempt success rate; arterial catheterization time; catheterization-related quality of pain; incidence of complications.
Results. A total of 250 patients were enrolled. The final catheterization success rate was 95.2% in the dRA arm vs 96.8% in the conventional fRA arm, with a mean difference of -1.6% favoring the latter approach (95%CI -6.5 to 3.3). The dRA approach for the primary endpoint of final catheterization success rate was non-inferior to the fRA approach (p-value for non-inferiority <0.001 – Figure 2). First attempt success rates were 59.2% with dRA and 70.4% with fRA (p=0.12). There



Figure 1

was no difference in arterial catheterization time and catheterization-related quality of pain between the two arms. Entry-site complications were reduced with dRA (6.7% vs 17.4% in the fRA group; p=0.013); this was mainly driven by a decreased incidence of hematoma (0.8% vs 6.6%; p=0.020). A numerically lower occurrence of arterial occlusion was observed with dRA (0.8% vs 5%; p=0.06).

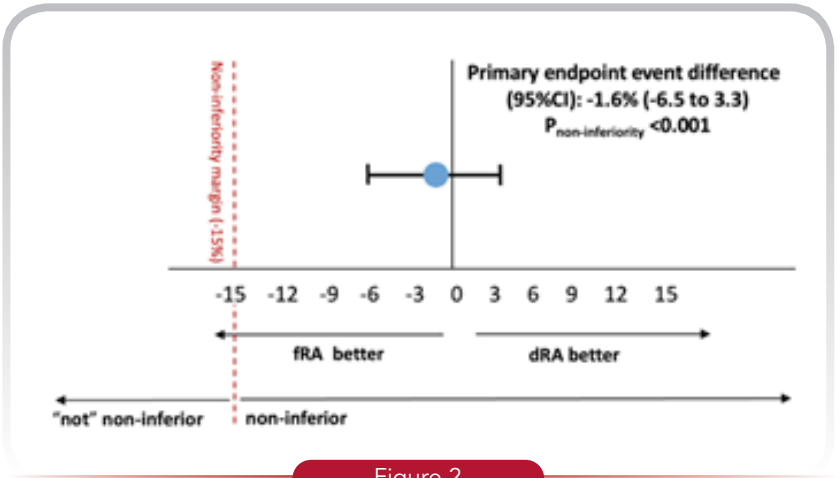


Figure 2

Conclusions. This randomized study first indicates that the use of the dRA in ICCU patients is as effective as the conventional fRA for invasive blood pressure monitoring and may have greater safety. These results may support the implementation of the dRA approach also in the setting of ICCU patients.

ASSISTENZA CARDIACA IN ACUTO 974
ASSISTENZA INTENSIVA CARDIOVASCOLARE IN ACUTO (ASSISTENZA CARDIACA IN ACUTO)
SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO)
ARITMIE VENTRICOLARI (ARITMIE)

ADMISSION REASONS, PROCEDURES AND MORTALITY OF ELDERLY PATIENTS IN CICU: THE SAGE-CICU STUDY (STUDY ON ACUTE GAPS IN THE ELDERLY - CARDIAC INTENSIVE CARE UNIT)

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Background: The growing proportion of elderly patients admitted to cardiac intensive care units (CICUs) presents specific challenges, including complex comorbidity profiles, divergent diagnostic patterns, and reduced access to invasive therapies. Current guidelines, derived predominantly from younger cohorts, offer limited guidance for managing these high-risk patients. A better understanding of their acute cardiovascular care needs is crucial to support tailored clinical decision-making and effective resource allocation.

Methods: We conducted a retrospective, single-center observational study including all CICU admissions at Fondazione Policlinico Universitario A. Gemelli IRCCS (Rome, Italy) from November 2020 to April 2024. Patients were stratified by age (< 75 and ≥ 75 years). Primary outcomes included admission diagnoses, in-hospital interventions, and CICU mortality. Secondary outcomes were length of stay (LOS) and survival at follow-up.

Results: Among 2,541 patients (mean age 69.3 ± 14.7 years), 41.4% were aged ≥ 75 years. Compared to younger patients, elderly individuals were more frequently admitted for atrioventricular block, valvular disease, atrial fibrillation and Takotsubo syndrome (TTS), and less often for STEMI, myocarditis and pulmonary embolism. The procedural approach also differed between groups: elderly patients underwent fewer coronary angiographies, percutaneous coronary interventions, Impella CP use, and transcatheter arrhythmia ablations, while receiving more frequent pacemaker implantations, transcatheter aortic valve replacement (TAVR), and aortic valvuloplasty. Length of stay was similar between the two groups, while it was significantly reduced in patients aged > 85 and > 90 years. CICU mortality was higher in patients over 75 years (9.7% vs. 4.1%, $p < 0.001$), particularly in the context of acute heart failure (13% vs. 5.6%, $p < 0.001$), STEMI (14.9% vs. 2.4%, $p < 0.001$)), NSTEMI (10.2% vs. 2.6%, $p < 0.001$), and cardiogenic shock (53.8% vs. 32.6%, $p < 0.001$). Survival times at follow-up were significantly reduced in older patients across most diagnoses, with the most adverse outcomes observed in patients with cardiogenic shock.

Conclusions: Elderly patients admitted to CICU display distinct clinical characteristics, procedural patterns, and outcomes compared to younger individuals. These findings enhance our understanding of the acute cardiovascular care needs in older adults and provide a data-driven foundation to inform resource allocation, priority setting, and the development of age-specific management strategies in CICU practice.
Keywords: CICU; Cardiovascular outcomes; Elderly; Invasive cardiac procedures; Mortality and survival analysis.

ASSISTENZA CARDIACA IN ACUTO 380
ASSISTENZA INTENSIVA CARDIOVASCOLARE IN ACUTO (ASSISTENZA CARDIACA IN ACUTO)
SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)

RELEVANCE OF RIGHT VENTRICULAR FUNCTION IN PATIENTS RECEIVING MCS FOR ACUTE HEART FAILURE

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Introduction: Acute heart failure (AHF) is the most common emergency admission in patients above 65 years old, causing 5% of all emergency admissions with an inpatient mortality of 11%. Pulmonary hypertension (PH) is a very common finding in critical patients in ICU and mainly in AHF patients.
Due to the increase of the afterload, the right ventricle (RV) increases contractility to maintain its coupling with the pulmonary artery (PA). While this hemodynamic adaptation is well described in chronic PH condition, it is not sufficiently investigated in PH acute setting and there are no studies on RV-PA coupling during mechanical circulatory support (MCS) in AHF. Aim of the present study is to evaluate in AHF receiving a MCS: 1) the prognostic role of echo-derived RV function determined by TAPSE/PASP assessment; 2) the impact of TAPSE/PASP assessment on MCS performance (in terms of improving patient's hemodynamic status); 3) changes over time of TAPSE/PASP during MCS; 4) the predictors of in-hospital mortality.

Materials and methods: We enrolled 116 consecutive patients with AHF in ICU from January 2023 to June 2025.
Inclusion criteria are acute heart failure diagnosed by the Framingham criteria plus the NT-proBNP ≥400 pg/mL or BNP ≥100 pg/mL on admission. Exclusion criteria were age <18 years, severe aortic/mitral valvular disease, or acute coronary syndrome imputing a RV failure on admission, life expectancy <12 months due to noncardiac diseases or severe pneumonia/sepsis.

Results: 116 consecutive patients (77 males [66.4%] and 39 females [33.6%]; age 70 ± 14 years) hospitalized for AHF in two cardiological ICU centers were recruited. Among these patients, 12 received MCS (5 IABP, 6 IMPELLA CP and 1 ECMO A-V). Compared to patients who did not receive MCS, these 12 patients had significantly lower SBP, pH, pO2, P/F ratio, SV and a significantly higher HR, Lac, ICU length of stay and use of inotropes. The Wilcoxon signed-rank test showed that TAPSE/PASP significantly improved in patients receiving MCS (Admission: 0.45 [0.50–0.37]; Discharge: 0.77 [0.81–0.73]; p=0.007). The Spearman's correlation analysis showed a direct correlation between TAPSE/PASP and EF (r_s=0.287, p=0.009), SV (r_s=0.395, p<0.0001), pH ($_s$=0.223, p=0.047), pO2 (r_s=0.253, p=0.024) and P/F ratio (r_s=0.308, p=0.005); furthermore, there was an indirect correlation between TAPSE/PASP and creatinine (r_s=-0.461, p<0.0001), Lac (r_s=-0.309, p=0.005), number of inotropes required (r_s=-0.342, p=0.002) and CV death (r_s=-0.411, p<0.0001). Regarding MCS, the same type of correlation analysis showed a direct correlation between MCS use and number of inotropes required (r_s=0.365, p<0.0001) and length of stay in ICU (r_s=0.288, p=0.004); furthermore, there was an indirect correlation between MCS and SV (r_s=-0.303, p=0.002). Finally, the Mann-Whitney U test

showed that TAPSE/PASP was statistically significant lower in patients who died after receiving a MCS (N=2; 0.19 [0.19–0.19]) compared with patients who survived (N=10; 0.45 [0.54–0.44]) (p=0.036).

Conclusion: Patients needing MCS, whose severity is well expressed by the inverse correlation with SV and direct correlation with the need for inotropes and length of stay in the ICU, showed an improvement in RV-PA coupling. The improvement in TAPSE/PASP corresponds to an improvement in BGA parameters, left heart systolic parameters and systemic perfusion, as shown by Spearman's correlation. Consequently, the higher the TAPSE/PASP, the lower the risk of CV death during MCS using.

ASSISTENZA CARDIACA IN ACUTO 1060
SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO)
ASSISTENZA INTENSIVA CARDIOVASCOLARE IN ACUTO (ASSISTENZA CARDIACA IN ACUTO)
ASSISTENZA CARDIACA IN ACUTO NEL DIPARTIMENTO DI EMERGENZA (ASSISTENZA CARDIACA IN ACUTO)

CLINICAL OUTCOMES OF IMPELLA MECHANICAL CIRCULATORY SUPPORT IN CARDIOGENIC SHOCK: INSIGHTS FROM A MULTICENTER REGIONAL EXPERIENCE

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Introduction. Cardiogenic shock (CS) remains the most life-threatening complication of acute myocardial infarction (AMI) and other forms of acute ventricular dysfunction, with in-hospital mortality still exceeding 40–50% despite therapeutic advances. Temporary mechanical circulatory support (tMCS) has become pivotal in the management of CS, ensuring adequate end-organ perfusion and creating a therapeutic window for myocardial recovery or bridging to advanced heart replacement therapies (LVAD, transplantation). Among available devices, the Impella® microaxial pump provides direct hemodynamic support combined with effective left ventricular unloading.
In recent years, randomized trials and registry data have yielded conflicting results, with uncertainties regarding prognostic impact and device-related risks, including vascular, hemorrhagic, and infectious complications. In Sardinia, Impella® was introduced early, with applications expanding from high-risk percutaneous coronary interventions (HR-PCI) to CS, including combined use with veno-arterial extracorporeal membrane oxygenation (ECPELLA). This study retrospectively describes the experience of the Cagliari metropolitan area, analyzing indications, management, complications, and short-term outcomes of patients treated with Impella® between 2019 and 2024.

Materials and Methods. We included all consecutive patients undergoing Impella® implantation from January 2019 to September 2024 at two tertiary cardiology centers with 24/7 interventional and intensive cardiac care facilities (ARNAS "G. Brotzu" and University Hospital of Cagliari). A total of 49 patients were analyzed: 39 treated with percutaneous Impella® CP and 10 with surgically implanted Impella® 5.0/5.5. Indications comprised HR-PCI (n=9) and CS (n=31 Impella® CP; n=10 Impella® 5.0/5.5). Demographic, clinical, laboratory, echocardiographic, and hemodynamic data were collected, along with device-related complications, support duration, escalation strategies, and clinical outcomes.
The primary endpoint was in-hospital and 30-day mortality; secondary endpoints included ventricular recovery, complications, and length of stay.

Results. In 31 patients with CS supported by Impella® CP, etiologies included AMI-related CS (n=19), acute decompensated heart failure (ADHF, n=8), and fulminant myocarditis (n=3). All presented with severe CS (SCAI stage C 77.4%, D 22.6%), profound hypotension (mean MAP 60 mmHg), and severely reduced LVEF (23.8% in CS-AMI, 19.6% in CS-ADHF, 13.3% in myocarditis). In-hospital cardiac arrest occurred in 35.5%.

Overall in-hospital mortality was 50%, consistent with published series, with no significant subgroup differences (45% CS-AMI, 37.5% CS-ADHF, 66.7% myocarditis; p=0.860). Ventricular recovery was observed in 38.7% of cases, with LVEF improving from 29% to 38% in survivors. Escalation occurred in 3 patients (10.3%) to Impella® 5.0/5.5 and in 5 (17.2%) to VA-ECMO, maintaining Impella® for unloading (ECPELLA strategy). Four patients (12.9%) were bridged to advanced therapies (LVAD or transplantation): one with CS-AMI and three with CS-ADHF. Device-related complications were common (65.5%), including sepsis (44.4%), major bleeding (42.9%), ischemic or hemorrhagic stroke (27.6%), and hemolysis (35.3%). Among patients treated with Impella® 5.0/5.5 (n=10), outcomes were poorer, with 70% in-hospital mortality. No recovery occurred; however, all 3 survivors were successfully bridged to LVAD or transplantation. Complications affected all patients, notably sepsis (60%), bleeding (50%), and stroke (20%). In one case, escalation to VA-ECMO (ECPELLA) was required.

Conclusions. Impella® provides effective ventricular support in CS patients, particularly when instituted early (SCAI stage C) as a bridge to recovery. In advanced CS, Impella® 5.0/5.5 serves as a vital bridge-to-therapy strategy, albeit with high mortality reflecting the critical illness profile of these patients. Device-related complications, though frequent, were manageable within an intensive care setting. These findings highlight the urgent need for dedicated shock networks and multidisciplinary "shock teams" to optimize patient selection, streamline escalation strategies, and improve outcomes in this high-risk population.

ASSISTENZA CARDIACA IN ACUTO 5
ARITMIE VENTRICOLARI (ARITMIE)
ASSISTENZA CARDIACA IN ACUTO NEL DIPARTIMENTO DI EMERGENZA (ASSISTENZA CARDIACA IN ACUTO)
ASSISTENZA INTENSIVA CARDIOVASCOLARE IN ACUTO (ASSISTENZA CARDIACA IN ACUTO)
SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO)

TOLERATED SUSTAINED VENTRICULAR FIBRILLATION IN LVAD RECIPIENT: THE WALKING DEAD

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A 73-year-old man with a history of dilated cardiomyopathy due to a pathogenic MYH7 gene mutation presented to the cardiac surgery clinic experiencing an arrhythmic storm. Despite optimal medical therapy and a left bundle branch block, his severely reduced systolic function led to a CRT-D implant.

Over time, his condition worsened with multiple heart failure exacerbations, leading to advanced heart failure (EF 20%), classified as INTERMACS III ("dependent stability"). Six months later, he was admitted with hypoperfusion refractory to inotropic support and significant congestion. Due to his age, frailty, and irreversible renal dysfunction, he was deemed ineligible for heart transplantation. Consequently, he was listed for a HeartMate 3 LVAD implant as destination therapy.

Upon admission, the patient, despite being in ventricular fibrillation, maintained relative hemodynamic stability with a blood pressure of 90/75 mmHg and an SpO2 of 82%. Due to this, external asynchronous defibrillation (200 J) was performed under anesthesia, restoring a paced rhythm. The LVAD monitoring system indicated alerts, including a reduced Pump Flow and decreased Pulse Index phases. The CRT-D event log confirmed an arrhythmic storm with multiple appropriate, but ineffective, shocks. After eight shocks, device therapies were suspended. Notably, despite persistent ventricular fibrillation, the patient's perfusion remained preserved. Medical therapy was adjusted with the addition of mexiletine, and the CRT-D was reprogrammed.

This case highlights that an LVAD can maintain adequate cardiac output during arrhythmias that would otherwise cause hemodynamic collapse. This allows for the possibility of patients presenting to the clinic in a state that would typically be considered "cardiac arrest" but with preserved perfusion due to the LVAD's support.

ASSISTENZA CARDIACA IN ACUTO 217
ECMO (ASSISTENZA CARDIACA IN ACUTO)
SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO)
CARDIOTOSSICITA' DA FARMACI (CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
DIAGNOSI, PREVENZIONE E TRATTAMENTO DELLA CARDIOTOSSICITA' (CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
MIOCARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

FULMINANT MYOCARDITIS PRESENTING WITH REFRACTORY VENTRICULAR FIBRILLATION DURING BRAF/MEK INHIBITOR THERAPY

Giulia Bassetto (g), Andrea Lalario (g), Filippo Maria Rubbo (g), Davide Stolfo (f), Rossana Bussani (a, d), Enzo Mazzaro (e, g), Maurizio Pinamonti (a, d), Gianfranco Sinagra (g)
(a) UNIVERSITA' DI TRIESTE; (b) DIPARTIMENTO CARDIO-TORACOVASCOLARE-ASUGI; (c) ERN-GUARD HEART; (d) ISTITUTO DI ANATOMIA PATOLOGICA- ASUGI- UNIVERSITA DI TRIESTE; (e) SC CARDIOCHIRURGIA-DIPARTIMENTO CARDIOTORACOVASCOLARE ASUGI; (f) DIVISION OF CARDIOLOGY- DEPARTMENT OF MEDICINE- KAROLINSKA INSTITUT; (g) CARDIOTHORACOVASCULAR DEPARTMENT, AZIENDA SANITARIA UNIVERSITARIA GIULIANO ISONTINA, UNIVERSITY OF TRIESTE, ITALY. MEMBER OF ERN GUARD-HEART

A 35-year-old woman was admitted to the catheterization laboratory of Cattinara Hospital, Trieste, Italy in June 2024, for witnessed OHCA. Immediate CPR was initiated; the initial cardiac rhythm was VF, non responsive to DC shocks. Considering that no-flow interval was <1 minute and etCO2 was 22 mm Hg during CPR in refractory VF, the extracorporeal life support protocol was activated, and the patient was emergently centralized to the catheterization laboratory. Reviewing her medical history, the patient had MODY diabetes under oral therapy, dyslipemia, virus-negative chronic active hepatitis with diffuse steatosis, and polycystic ovary syndrome treated with hormonal contraception. There was no documented family history of cardiovascular disease or sudden cardiac death.

In October 2023, the patient was diagnosed with left gluteal melanoma stage IIIB with BRAF V600E mutation, treated with resection and excision of the lymph node sentinel in December 2023. Adjuvant therapy with dabrafenib 300 mg/d and trametinib 2 mg/d was initiated in March 2024. ECG and echocardiogram at baseline and 1 month into therapy were normal, LVEF was 73% before treatment initiation and 65% after 1 month.

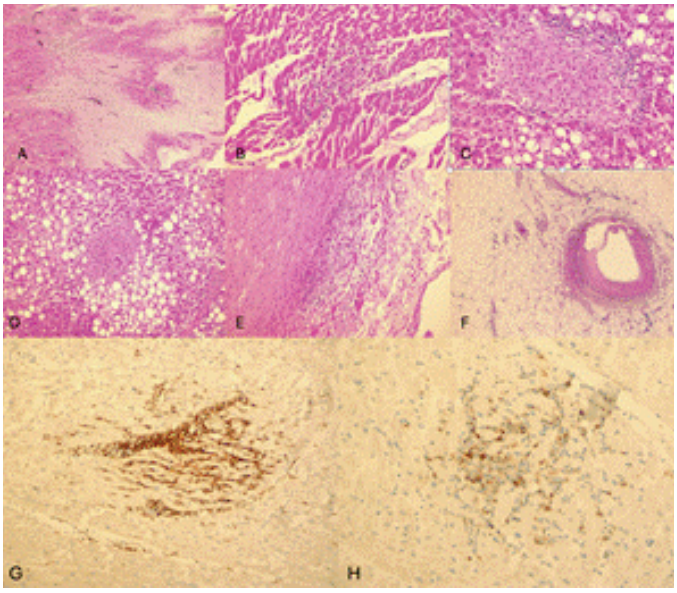


Figure 1

Cardiac biomarkers and CPK were not assessed. Trametinib/dabrafenib was discontinued on May 16 because of hyperpyrexia, nausea and vomiting, hypotension with loss of consciousness,
and transaminase elevation (up to 3 times normal value) and was restarted after 2 weeks (May 30) at a reduced dosage (dabrafenib 100 mg twice a day, trametinib 1.5 mg/d). The patient was reported to have discontinued treatment on June 2 because of recurrence of symptoms, but treatment was resumed 4 days latera ta reduced dosage.
The echocardiogram performed during CPR revealed absent contractility and previously unreported left ventricular hypertrophy, the remaining cardiac structures were within normal limits. The emergency coronary angiography showed multivessel coronary disease, but a specific culprit lesion for the patient's clinical p resentation was not identified. Troponin I raised up to 11,970 ng/L (normal: <16 ng/L), whereas blood count and ions were normal. A whole-body CT scan ruled-out intracranial bleeding and aortic dissection. Femoro-femoral VA-ECMO was implanted (total low-flow time: 75 minutes) along with an Impella 2.5 device (Abiomed) for left ventricular unloading, obtaining ROSC. Owing to the suspicion of cancer therapy–related acute myocarditis, bolusesof methylprednisolone were administered.
After 8 hours of VA-ECMO assistance, persistent TGI bleeding and refractory systemic hyptension with bilateral mydriasis were observed: mechanical support was withdrawn and the patients was declared dead. Autopsy revealed the presence of massive biventricular and septal lymphohistiocytic myocarditis as defined by Dallas criteria (primarly CD4+ and histiocytes), accompanied by extensive regions of active scarring. No signs of cardiomyocyte injury from myocardial ischemia were identified.

CONCLUSIONS

Cardiotoxicity has been described as a possible side effect of trametinib/dabrafenib therapy, and ulminant myocarditis should be acknowledged as a rare adverse effect of this treatment. Systematic cardiac work up, comprehensive of ECG, echocardiogram and cardiac markers, is essential to prevent cancer therapy–related cardiotoxicity, even when initial findings are normal, and in case of signs and symptoms of possible cardiac origin.

ASSISTENZA CARDIACA IN ACUTO 304
MIOCARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
PERICARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)
ASSISTENZA INTENSIVA CARDIOVASCOLARE IN ACUTO
(ASSISTENZA CARDIACA IN ACUTO)

SUDDEN HAEMODINAMIC COLLAPSE DUE TO MITRAL INCOMPETANCE FOR PAPILLARY DISFUNCTION: EARLY CENTRALISATION AND BIOPSY-GUIDED HIGH-DOSE STEROIDS IN ADOLESCENT STEMI-LIKE PERIMYOCARDITIS

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A 15-year-old swimmer presented with pleuritic, positional chest pain and low-grade fever after his sister's Parvovirus infection. On admission, he was haemodynamically stable, heart rate (HR) 80 bpm, blood pressure (BP) 100/60 mmHg. Electrocardiogram (ECG) showed inferior-posterior-lateral ST-elevation with reciprocal depression in V1–V2.

Laboratory markers: CRP 29.5 mg/L, WBC 22.690/μL and hs-cTnI 19.104 to 31.791 ng/L.Transthoracic echocardiogram (TTE) showed left ventricle end diastolic volume index (LVEDVi) 89 ml/m², left ventricle ejection fraction (LVEF) 40%, posterolateral wall thickening (16 mm) with regional akinesia, mild mitral regurgitation (MR), circumferential pericardial effusion (11 mm) and dilated inferior vena cava (collapsibility index 0.2). Cardiac index reached a nadir of 1.8 L/min/m² (HR 90 bpm). NT-proBNP was markedly elevated (5,802 pg/mL). These red flags prompted urgent transfer to a tertiary centre.

The patient developed sudden acute pulmonary oedema with systolic BP 75 mmHg and severe MR due to papillary muscle posterior leaflet involvement.

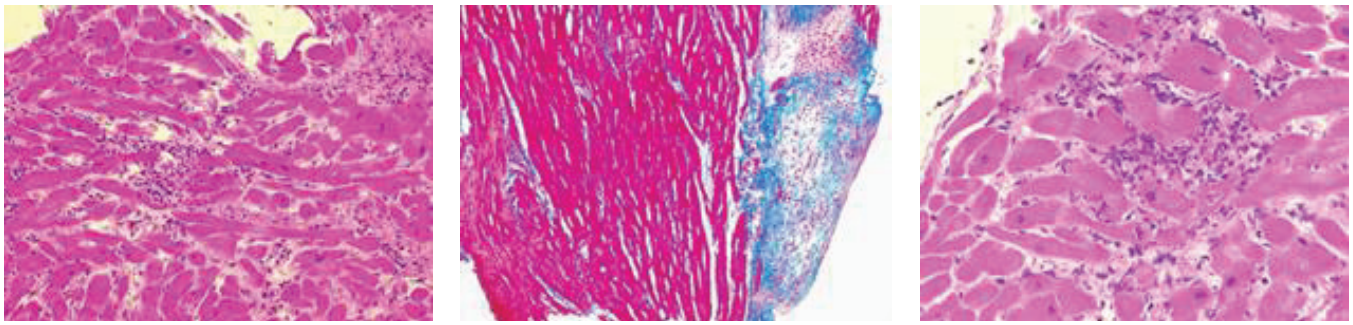
LVEF declined to 35%. Coronary angiography excluded coronary disease. Right-heart catheterization showed RAP 4 mmHg, PAP 36/22/28 mmHg, PCWP 23 mmHg, CO 4.7 L/min. He was stabilised with non-invasive ventilation, intra-aortic balloon pump (1:1), i.v. diuretics, and nitroprusside. Endomyocardial biopsy confirmed active lympho-histiocytic myocarditis with eosinophils and myocardial polymerase chain reaction Parvovirus B19.

High dose i.v. methylprednisolone (500 mg) was initiated, followed by oral prednisone (taper in six months); NSAIDs were discontinued. 4-beat non sustained ventricular tachycardia was recorded on telemetry. Follow-up TTEs documented gradual improvement: LVEDVi from 99 to 76 ml/m², LVEF from 40% to 56%, residual lateral hypokinesia and segmental GLS impairment (lateral -8%, global -20%); E/e' from 21 to 7, MR from severe to moderate (vena contracta from 8 to 6 mm) and pericardial effusion resolved. Biomarkers improved: hs-cTnI from 19,104 to 19 ng/L; NT-proBNP from 5,802 to 3,657 pg/mL; CRP from 368 to 2 mg/L. ECG evolved to infero-lateral T-wave inversion at discharge.

A 6 months sports' restriction was advised. Cardiac magnetic resonance showed extensive oedema with lateral epicardial late gadolinium enhancement,

followed by oedema resolution with limited residual scar on follow-up.

This case highlights high-risk signals in STEMI-like perimyocarditis: rised troponine (hs-cTnI) and NT-proBNP, early myocardial oedema, elevated E/e' and LVEDVi, severe dynamic MR. In case of sudden haemodynamic collapse, early centralization, readiness for mechanical circulatory support and biopsy-guided therapy can enable full recovery in selected fulminant perimyocarditis.



Figure

ASSISTENZA CARDIACA IN ACUTO 823
ASSISTENZA CARDIACA IN ACUTO NEL DIPARTIMENTO DI EMERGENZA (ASSISTENZA CARDIACA IN ACUTO)
ASSISTENZA INTENSIVA CARDIOVASCOLARE IN ACUTO (ASSISTENZA CARDIACA IN ACUTO)
SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO)

REAL WORLD OUTCOMES OF CARDIOGENIC SHOCK PATIENTS TREATED WITH IMPELLA: INSIGHTS FROM THE INTERNATIONAL IMMERGE DATABASE

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Background: Microaxial flow pump (mAFP, Impella®) is a mechanical circulatory support (MCS) increasingly used to unload ventricle preserving adequate cardiac output in cardiogenic shock (CS) settings. Despite its increasing use in CS patients, little evidence outside of randomized controlled trials exists on contemporary devices and large cohorts of patients.

Objectives: To assess the impact of different contemporary mAFP (Impella CP, 5.0 and 5.5) on short and long-term outcomes, mortality and safety, stratified for SCAI class and etiology subtype of cardiogenic shock in a real world setting of CS patients.

Methods: The IMMERGE registry is an international multicentric dataset collecting 1019 patients requiring Impella positioning (946 Impella CP, 44 Impella 5.0, 29 Impella 5.5) for CS (449 patients) and CHIP (570 patients). Among CS group, 266 patients suffered acute myocardial infarction (AMI CS), whereas 180 had a non-ischemic etiology. STEMI was the most frequent cause of CS (197 patients, 44%). The primary endpoint was all-cause death; secondary outcomes were a composite of all-cause death or escalation therapy to LVAD or heart transplant and in-hospital complications. Short term outcomes also included lactates clearance after Impella implantation.

Results: Among CS patients, median age was 59 (IQR 51-68) and 6% were women. Patients were overweight (median BMI 27), about half hypertensive (215), dyslipidemic (198) and smoker (216), a third diabetic (127). CKD was present in 115 (26%) patients and previous MI in 102 (23%). 348 (84%) patients were in Killip class 3-4 at presentation. Median EF was 20%, with slight left ventricle dilatation (medium LVEDD 57 mm and LVEDV 150 ml). Few patients had severe aortic regurgitation (6) or stenosis (12), whereas 69 (20%) had severe MR. Almost half patients had RV disfunction. At Impella implantation 148 patients (34%) were in SCAI C, 160 (36%) in SCAI D and 134 (30%) in SCAI E (p 0.27); 196 (45%) had another previously implanted MCS, particularly 93 patients (48%) had IABP, 72 (37%) ECMO and 30 (15%) both. Patients were typically hypotensive (mean blood pressure 66 mmHg, IQR 58-75) and tachycardic (mean heart rate 101 bpm);

medium lactates were 4.3 mmol/L (IQR 2-8). After Impella positioning, serum lactates levels significantly and steadily reduced after 6, 12 and 24 hours (2.9, 2.3 and 1.8 mmol/L, p<0.0001). During hospitalization, bleedings (also requiring blood transfusion) occurred in 247 (59%) patients, 53 patients (13%) had major vascular complications needing interventions, 237 (57%) AKI, 152 (36%) sepsis, 30 (7%) stroke, 23 (5%) device thrombosis, 63 (16%) major hemolysis and 81 (19%) need for repositioning. In the overall population, all-cause death was 50% at 180 days and 66% at long term follow-up, mostly due to short term mortality. When stratifying for SCAI class at implantation, SCAI C patients had a significantly reduced incidence of death compared to both D and E at 180 days and 5 years of follow-up, and SCAI D patients had a reduced incidence of death compared to SCAI E (p for trend <0.001). The benefit stratified for SCAI class is also kept regarding secondary composite outcome (p 0.004 and 0.02 for medium and long FU).

Conclusions: The data from our registry suggest that in a real world contemporary international cohort of patients with CS treated, Impella provides a rapid lactates clearance within the first hours. Complication rates are high, but similar to those observed in RCTs. SCAI stage at implantation was strongly associated with outcomes, suggesting the need for Impella placement in early stage of CS and its reduced utility in SCAI D and E patients.

ASSISTENZA CARDIACA IN ACUTO 791
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)
ASSISTENZA CARDIACA PRE-OSPEDALIERA
(ASSISTENZA CARDIACA IN ACUTO)
ARITMIE VENTRICOLARI (ARITMIE)
RIANIMAZIONE CARDIOPOLMONARE (ASSISTENZA CARDIACA IN ACUTO)

FEASIBILITY AND EFFICACY OF PERCUTANEOUS LEFT STELLATE GANGLION BLOCK IN THE PRE-HOSPITAL PHASE FOR SHOCK-REFRACTORY VENTRICULAR FIBRILLATION IN OUT-OF-HOSPITAL CARDIAC ARREST

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Introduction: Refractory ventricular fibrillation (VF) in the context of out-of-hospital cardiac arrests (OHCAs) is a major challenge often with a poor outcome.
Percutaneous left stellate ganglion block (PLSGB) proved effective in electrical storms, but its use in pre-hospital setting has never been explored.
We aimed to assess feasibility and efficacy of PLSGB in the pre-hospital phase in patients with OHCAs and refractory-VF.

Methods: We enrolled all OHCA occurred in Pavia Province from 06/2019 to 05/2025 (NCT04168970). Physicians were specifically trained on PLSGB. The inclusion criteria were shockable presenting rhythm, refractory VF with at least 4 DC-shocks delivered, advanced life support initiated. Non-medical OHCAs and patients with unsuitable neck/situation were excluded.
After rescue, emergency medical services physicians graded the ease and feasibility of PLSGB compared to other commonly performed procedures in the pre-hospital setting in a scale from 1 (worst) to 10 (best).

Results: A cohort of 32 OHCA patients with refractory VF (90.6% males; mean age 62±12 years) received a total of 34 PLSGB (88.2% with anatomical landmarks and 11.8% with ultrasound-guided approach). In 24 (75%) patients OHCA occurred at home and 87.5% of the cases was witnessed by bystanders. PLSGB was performed in 35.3% of the cases during a pause in chest compression, 11.8% during manual compressions and 52.9% during mechanical chest compressions.
A mean of 6±1.7 shocks were delivered before PLSGB. The ease of PLSGB execution was scored 7.4±1.7 and the feasibility 7.7±2.4 in a scale from 0 to 10. No complications occurred. VF was no longer present in 65.6% of patients 5 minutes after the last procedure and in 78.1% of patients 10 minutes after the last PLSGB.
Specifically, after 5 minutes from PLSGB 37.5% of cases was in pulseless electrical activity (PEA), 6.2% in asystole and 21.9% experienced a return of spontaneous circulation (ROSC), while after 10 minutes from PLSGB 46.9% of patients were in PEA, 3.1% in asystole and 28.1% had ROSC.

Conclusions: PLSGB appeared to be feasible and easy to perform also in the pre-hospital setting in patients

with refractory VF, with no associated complications. VF was no longer present in more than three-quarters of patients after PLSGB execution and ROSC was achieved in about one-third. Despite further studies are needed to confirm our results, this technique looks promising to treat this population.

ASSISTENZA CARDIACA IN ACUTO 111
SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO)
ASSISTENZA INTENSIVA CARDIOVASCOLARE IN ACUTO (ASSISTENZA CARDIACA IN ACUTO)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)

CARATTERIZZAZIONE DELLA RISPOSTA ECODINAMICA ACUTA AL TRATTAMENTO CON NITROPRUSSIATO DI SODIO NELLO SHOCK CARDIOGENO

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Background: Lo shock cardiogeno rappresenta la forma più grave di insufficienza cardiaca acuta, caratterizzato da elevata mortalità e da un'estrema eterogeneità fenotipica. Un elemento fisiopatologico chiave è il disaccoppiamento ventricolo-arterioso (VAC), espressione della ridotta contrattilità miocardica in presenza di postcarico elevato. Il nitroprussiato di sodio (SNP), potente vasodilatatore artero-venoso, consente un miglioramento acuto dell'accoppiamento ventricolo-arterioso, con potenziale impatto prognostico.

Obiettivi: Scopo dello studio è stato caratterizzare la risposta ecodinamica al trattamento con SNP nei pazienti con shock cardiogeno, valutando il ruolo prognostico dei parametri di VAC e delle resistenze vascolari sistemiche (SVR).

Metodi: Studio prospettico multicentrico che ha arruolato 166 pazienti ricoverati in unità di terapia intensiva cardiologica di tre centri europei tra gennaio 2020 e Dicembre 2024. Tutti i pazienti presentavano criteri diagnostici di shock cardiogeno e sono stati trattati con SNP. La valutazione ecodinamica non invasiva è stata eseguita al baseline e a 48 ore. Outcome primario: mortalità intra-ospedaliera.

Risultati: Il rapporto VAC (espresso come Ea/Ees e EaMAP/Ees) ha mostrato una buona capacità predittiva della mortalità, con un'area sotto la curva (AUC) fino a 0,681 a 48 ore.
All'analisi multivariata, VAC e la malattia renale cronica sono risultati predittori indipendenti di mortalità intra-ospedaliera.
Alla stessa maniera la riduzione delle SVR, sia assoluta che percentuale, si è associata a prognosi favorevole. La stratificazione in quattro gruppi (persistently coupled, improved, worsened, persistently uncoupled) in base alla risposta della VAC a seguito di terapia con SNP, ha evidenziato mortalità signifi-

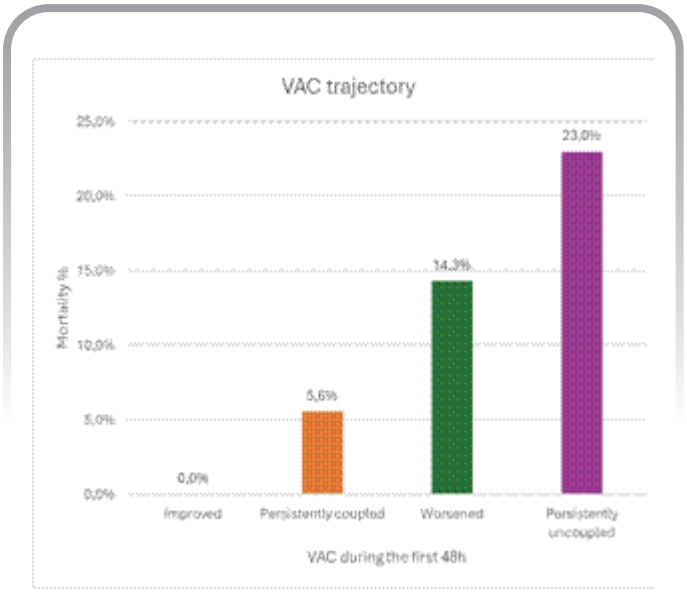


Figura 1

cativamente più elevata nei gruppi *worsened e persistently uncoupled*.

Conclusioni: Il nitroprussiato di sodio si conferma un farmaco efficace nel ripristinare un adeguato coupling ventricolo-arterioso nei pazienti con shock cardiogeno. La valutazione ecocardiografica dinamica di VAC e SVR rappresenta un potente strumento prognostico e potrebbe guidare l'ottimizzazione terapeutica precoce.

ASSISTENZA CARDIACA IN ACUTO 798
ASSISTENZA INTENSIVA CARDIOVASCOLARE IN ACUTO (ASSISTENZA CARDIACA IN ACUTO)
SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO)
PROGNOSI (SCOMPENSO CARDIACO)

OUTCOMES OF MICROAXIAL FLOW PUMP SUPPORT IN ACUTE MYOCARDIAL INFARCTION RELATED VS NON-AMI RELATED CARDIOGENIC SHOCK: INSIGHTS FROM THE IMMERGE REGISTRY

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Background: percutaneous microaxial flow pump support (mAFP – Impella®) is increasingly used in cardiogenic shock (CS) for its ability to actively unload the ventricles, reduce end-diastolic pressure, minimize cardiac work and augment cardiac output. However, pathophysiological differences exist between acute myocardial infarction-related CS (AMI-CS) and non-AMI-CS. AMI-CS typically involves smaller left ventricles with abrupt cardiac output decline, requiring active forward-flow support. In contrast, non-AMI-CS, most often due to acute decompensated heart failure (ADHF-CS), is characterized by chronically remodeled and dilated ventricles and long-standing low output. These distinct mechanisms may affect the impact of mAFP.

Purpose: To assess differences in baseline features, in-hospital complications, and outcomes after Impella implantation according to CS etiology in a real-world contemporary cohort of patients with CS treated with mAFP.

Methods: We analyzed 449 CS patients treated with Impella from the internatonal multicenter IMMERGE registry, including 266 AMI-CS and 180 non-AMI-CS. The primary outcome was all-cause mortality at 180 days and at long term follow-up. Additional outcomes included a composite of all-cause death, durable LVAD implantation, or heart transplantation. Baseline characteristics, in-hospital complications and follow up outcomes were compared between the two groups, with further analyses stratified by SCAI shock stage.

Results: At baseline, AMI-CS patients were older (64 versus 52 years) and had a higher prevalence of cardiovascular risk factors (hypertension 62% vs 27%, hypercholesterolemia 57% vs 26%, diabetes 40% vs 22%). Nearly half of those presented with STEMI

while 15% had NSTE-ACS. Non-AMI-CS cohort was predominantly due to dilated (48%) or ischemic (27%) ADHF in cardiomyopathy, myocarditis (20%) or postcardiotomy shock (5%). Compared with AMI-CS, non-AMI-CS patients had larger LV dimensions (LVEDD 64 mm vs 51 mm; LVEDV 200 ml vs 131 ml, both p<0.0001) more frequent had right ventricular dysfunction (70% vs 31%), longer support duration (7 vs 3 days, p<0.0001) and greater need for Impella 5.0 and 5.5 (27% vs 7%). Intrahospital complications were similar, except from higher incidence of hemolysis and device thrombosis in non-AMI CS. At 180 days, mortality was higher in AMI-CS (65.7% vs 51.7%, p=0.001), a difference persisting at long-term (p=0.01). Non-AMI-CS patients had lower mortality but higher rates of LVAD (20% vs 6%, p<0.0001) and heart transplantation (19% vs 4%, p<0.0001). According to SCAI stratification, 180-day mortality in AMI-CS cohort rose progressively with advancing SCAI stage (50% in C, 69% in D, and 78% in E), showing a clear stage-dependent gradient of risk. Conversely, in non-AMI CS cohort, mortality was 34% in C, 56% in D, and 64% in E, with overlapping D/E curves, likely reflecting early death or timely transition to transplantation beyond stage D, thereby limiting additional benefit from Impella at these stages.

Conclusions: AMI-CS and non-AMI CS treated with mAFP in real world practice have different baseline characteristics and different outcomes. In AMI-CS, Impella may facilitate myocardial recovery, but outcomes are poor if implantation is delayed to advanced shock stages. In non-AMI-CS, Impella provides a safe bridge to LVAD or transplantation. Early implantation (SCAI C) should be pursued in both settings before progression to refractory shock.

ASSISTENZA CARDIACA IN ACUTO 383
SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO)
ASSISTENZA CARDIACA IN ACUTO NEL DIPARTIMENTO DI EMERGENZA (ASSISTENZA CARDIACA IN ACUTO)
ASSISTENZA INTENSIVA CARDIOVASCOLARE IN ACUTO (ASSISTENZA CARDIACA IN ACUTO)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)

VALUTAZIONE ECOCARDIOGRAFICA DELLA CONGESTIONE VENOSA NELLO SHOCK CARDIOGENO: ANALISI COMPARATIVA DEL VALORE PROGNOSTICO DEL FLUSSO PORTALE E DELLA VENA CAVA INFERIORE

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BACKGROUND La congestione venosa sistemica è un determinante prognostico dello shock cardiogeno (SC) e la sua caratterizzazione e gestione sono aspetti clinici fondamentali. La valutazione ecocardiografica della vena cava inferiore (IVC), come surrogato della pressione in atrio destro (eRAP), è il parametro tradizionalmente utilizzato, nonostante abbia una specificità limitata. Il flusso portale (FP) è stato recentemente proposto come potenziale marcatore più accurato di congestione sistemica; tuttavia, il suo ruolo nei pazienti con SC non è mai stato valutato. Il nostro studio presenta la prima analisi comparativa del valore prognostico del FP e della IVC come marcatori di congestione nello SC.

METODI Il nostro è uno studio prospettico osservazionale multicentrico, condotto dal 2020 al 2024 nelle Unità di Terapia Intensiva Cardiologica di tre ospedali universitari europei, nel quale sono stati arruolati pazienti con o a rischio di SC secondo la classificazione SCAI (stadi A-E). Nel contesto di una valutazione ecodinamica completa, condotta in ogni paziente alla presentazione clinica e dopo 48 ore di trattamenti intensivi, il FP è stato valutato con Doppler pulsato della vena porta.
La coorte è stata stratificata in tre gruppi in base al grado di pulsatilità del FP in relazione al ciclo cardiaco, identificando tre pattern corrispondenti a congestione incrementale: FP continuo (fisiologico), ondulatorio>50% e interrotto. L'eRAP è stata stimata mediante l'analisi ecografica della IVC, effettuata secondo raccomandazioni basate su diametro basale e collassabilità inspiratoria, suddividendo i pazienti in tre gruppi: eRAP 3 mmHg (IVC< 2.1 cm e collassabilità> 50%), eRAP 15 mmHg (IVC ≥ 2.1 cm e collassabilità< 50%), eRAP 8 mmHg (uno dei due criteri soddisfatto). L'outcome primario era la mortalità intraospedaliera e l'associazione con il FP è stata esplorata utilizzando modelli univariati e multivariati. Infine, è stato svolto un confronto diretto con eRAP-IVC.

RISULTATI Dei 310 pazienti arruolati (età media 67, genere femminile 26.1%, CS conclamato 26.2%), il 14.5% ha sviluppato l'outcome primario. Pattern di FP corrispondenti a livelli crescenti di congestione sono risultati associati a caratteristiche cliniche ed ecodinamiche di

maggiore severità, a danno renale (cronico ed acuto), ed a decorso intra-ospedaliero più intensivo e di maggior durata. I pattern di FP erano associati all'outcome primario, sia alla presentazione clinica (11%, 14.3%, 31.1%, p=0.001 AUC 0.629), sia – con un'accuratezza superiore - dopo 48 ore (11%, 22.7%, 54.5%, p <0.001, AUC 0.622). Il FP a 48 ore è risultato un forte predittore indipendente da covariate cliniche ed ecodinamiche dell'outcome primario (FP interrotto: adj-OR 5.98, 95%CI 1.21-29.55 p=0.028).
Rispetto ad eRAP-IVC ≥15 mmHg, il FP interrotto, è risultato più specifico nell'individuare pazienti più a rischio dell'outcome primario, fornendo un'informazione complementare ed indipendente in un modello bivariato (FP interrotto: adj-OR 4.1, 95%CI 1.06-15.8, p=0.041; eRAP-IVC ≥15 mmHg: adj-OR 2.5, 95%CI 1.1-5.4, p=0.022).

CONCLUSIONE Il FP è un marcatore semplice e riproducibile di congestione, associato a prognosi avversa nei pazienti con o a rischio di SC. La sua traiettoria dopo i trattamenti intensivi fornisce informazioni prognostiche superiori rispetto alla sola valutazione alla presentazione clinica, e più specifiche rispetto alla valutazione della IVC.
L'integrazione del Doppler portale nella pratica clinica potrebbe migliorare la valutazione della congestione sistemica, favorendo una più precisa identificazione dei pazienti ad alto rischio e decisioni terapeutiche più accurate.

ASSISTENZA CARDIACA IN ACUTO 985
MINOCA (MYOCARDIAL INFARCTION WITH NORMAL CORONARY ARTERIES) (CARDIOPATIA ISCHEMICA)
ASSISTENZA INTENSIVA CARDIOVASCOLARE IN ACUTO (ASSISTENZA CARDIACA IN ACUTO)
PERICARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

BEYOND BROKEN HEART SYNDROME: AN UNUSUAL CASE OF TAKO-TSUBO SYNDROME WITH LEFT VENTRICULAR OUTFLOW TRACT OBSTRUCTION AND CARDIAC TAMPONADE

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Introduction: Tako-tsubo syndrome (TTS) is characterized by transient left ventricular (LV) systolic dysfunction, typically involving the apical segments, in the absence of significant coronary artery obstruction. It predominantly affects postmenopausal women, and it is often triggered by emotional or physical stress. While typically benign, it may be complicated by arrhythmias, heart failure, pericardial involvement or LV rupture. Moreover, in 10 to 25% of patients, TTS can be worsened by hemodynamic deterioration due to left ventricular outflow tract obstruction (LVOTO), which can be associated with systolic anterior motion (SAM) of the mitral leaflets. In less than 1% of cases, TTS can be complicated by cardiac tamponade requiring pericardiocentesis.

Case Presentation: An 80-year-old female patient with multiple cardiovascular risk factors presented to the emergency department after experiencing chest pain on exertion, asthenia and, approximately 24 hours later, syncope. No prior cardiovascular history was reported. Presenting ECG showed sinus rhythm with Q-waves, ST-segment elevation, and T-wave inversion in the inferior and anterolateral leads; the Q-Tc interval was 408 ms. Troponin I was 3858 ng/L and BNP 981 ng/L. Echocardiography revealed a non-dilated, hypertrophic LV, with severely reduced ejection fraction (25-30%) due to apical and anterior wall akinesia; SAM of the anterior mitral leaflet was also observed with LVOTO (peak gradient at rest/after Valsalva maneuver 30/50 mmHg), and moderate mitral regurgitation. On suspicion of a late-presenting myocardial infarction, dual antiplatelet therapy was administered. Coronary angiography showed no critical stenosis, whereas ventriculography revealed apical ballooning, confirming TTS. Three days after admission to the ICU, the clinical course was complicated by chest pain, diffuse ST-segment elevation, and mild pericardial effusion consistent with pericarditis, treated with non-steroidal anti-inflammatory drugs and colchicine. One day after, the patient developed hypotension requiring fluid supply. Echocardiogram revealed a large, partially organized pericardial effusion compressing right heart chambers requiring pericardiocentesis; 500 mL of hemorrhagic fluid were drained. Urgent CT angiography demonstrated the absence of contrast medium effusion into the pericardium, ruling out LV rupture. ECG monitoring showed nonsustained episodes of ventricular and atrial tachycardia with a progressive prolongation of the Q-Tc interval up to 530 ms. Therefore, beta-blocker therapy was optimized with metoprolol, resulting in clinical and echocardiographic improvement, including resolution of the LVOT gradient. A cardiac MRI confirmed findings consistent with TTS in the context of hypertrophic LV

with mild systolic dysfunction. At discharge, the patient was hemodynamically stable, asymptomatic, with improved EF (50%) and no pericardial effusion. She was referred for cardiac rehabilitation.

Conclusions: This case illustrates a rare and complex manifestation of Tako-Tsubo syndrome (TTS). Although LVOTO is a well-documented complication of TTS, cardiac tamponade has been reported in fewer than 1% of cases in the literature. In our patient, the tamponade was most likely attributable to the progression of pericarditis, whereas the hemorrhagic aspect of the pericardial effusion may have resulted from the dual antiplatelet therapy administered during the early phase of hospitalization. This case emphasizes the importance of comprehensive multidisciplinary care, including timely multimodal imaging, hemodynamic support, and close rhythm monitoring.

ASSISTENZA CARDIACA IN ACUTO 655
SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO)
ASSISTENZA INTENSIVA CARDIOVASCOLARE IN ACUTO (ASSISTENZA CARDIACA IN ACUTO)
ASSISTENZA CARDIACA IN ACUTO NEL DIPARTIMENTO DI EMERGENZA (ASSISTENZA CARDIACA IN ACUTO)

INTRA-AORTIC BALLOON PUMP IN CARDIOGENIC SHOCK: A SINGLE-CENTER EXPERIENCE FROM SOUTHERN SARDINIA

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Introduction: Cardiogenic shock (CS) is the most severe form of acute heart failure, defined by persistent hypotension (SBP <90 mmHg for at least 30 minutes or the need for vasopressor support to maintain SBP >90 mmHg) and systemic hypoperfusion, and remains associated with an in-hospital mortality rate of 30–50% despite advances in treatment.
The intra-aortic balloon pump (IABP) has historically been the most widely employed mechanical circulatory support (MCS) device in CS, although recent randomized controlled trials have raised uncertainty about its survival benefit. In Italy, and particularly in Sardinia, IABP continues to represent a common therapeutic strategy, particularly in emergency settings or in the presence of mechanical complications of acute myocardial infarction (AMI).

Materials and Methods: We conducted a retrospective analysis of all patients admitted to the Cardiovascular Intensive Care Unit of the University Hospital of Cagliari between January 2019 and December 2024 with a diagnosis of pre-shock or CS who underwent IABP implantation. Clinical, laboratory, echocardiographic, and management data were extracted from institutional registries.
The primary endpoints were in-hospital and 30-day all-cause mortality; secondary endpoints included ventricular recovery, duration of hospitalization, device-related complications, and the need for escalation to advanced support.

Results: A total of 48 patients were included (mean age 71±12 years; 62.5% male), of whom 45 (93%) had CS secondary to AMI and 3 (6%) to acute decompensated heart failure (ADHF). Mechanical complications of AMI accounted for 20.8% of indications (acute severe mitral regurgitation, ventricular septal rupture). At presentation, patients exhibited profound hypotension (mean SBP 74.4±20.7 mmHg in CS-AMI and 82.5±3.5 mmHg in CS-ADHF) and elevated lactate levels (>2 mmol/L), consistent with systemic hypoperfusion. Left ventricular ejection fraction (LVEF) was significantly more impaired in CS-ADHF compared with CS-AMI (20.6% vs 35.2%, p=0.012). Overall in-hospital mortality was 54.2% (55.6% in CS-AMI vs 33.3% in CS-ADHF, p=0.23), with refractory shock and septic-hemorrhagic complications as the leading causes. No deaths occurred within 30 days among patients discharged alive.
Ventricular recovery was achieved in 45.8% of cases (44.4% CS-AMI vs 66.7% CS-ADHF, p=0.45), with partial improvement in systolic function (mean LVEF at discharge 36.4% in CS-AMI vs 31.5% in CS-ADHF, p=0.69). Device-related complications included sepsis (33.3%), major bleeding (8.8%), and vascular events requiring intervention (6.6%).
Median hospital stay was 3.5 days in CS-AMI and 7 days in CS-ADHF (p=0.96). Weaning failure was primarily associated with persistent refractory shock (38.4%), while escalation to advanced MCS was relatively uncommon (Impella® CP 6.7%; VA-ECMO with left

ventricular unloading 4.4%). Approximately half of the patients (44.4% CS-AMI, 66.7% CS-ADHF) required transfer to the regional Hub center for cardiac surgery or further advanced management.

Conclusions: In summary, this single-center experience highlights that, despite conflicting evidence from recent randomized trials, IABP remains widely used in clinical practice, particularly in AMI-related CS and in mechanical complications. Mortality rates were comparable to those reported in contemporary international registries, and outcomes suggest that appropriate patient selection is crucial. These findings underscore the need for structured regional networks and dedicated shock teams to optimize management and improve prognosis in this high-risk population.

ASSISTENZA CARDIACA IN ACUTO 244
ASSISTENZA INTENSIVA CARDIOVASCOLARE IN ACUTO (ASSISTENZA CARDIACA IN ACUTO)
SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)

RIGHT VENTRICLE TO PULMONARY ARTERIAL COUPLING IN ACUTE HEART FAILURE PATIENTS AND ITS IMPLICATIONS IN INTESIVE CARDIAC CARE UNIT

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Introduction: Heart failure is the inability of the heart to provide sufficient cardiac output to meet the metabolic needs of the body under normal ventricular filling pressures, needing hospitalization. It is a major cause of hospitalization in individuals over 65 and it is associated with high rates of in-hospital and post-discharge mortality and readmission. The prognostic significance of right ventricular (RV) dysfunction, alongside left ventricular dysfunction, age, and mean systolic pressure, remains unclear. Evaluating the coupling between the right ventricle and the pulmonary artery (RV-PA coupling) using the echocardiographic TAPSE/PAPS ratio may be prognostically important in these patients, although it is not fully engaged in acute heart failure and in cardiological intensive care.

Study Objectives: This study aims at evaluating the prognostic role of right ventricular function assessed by means of the TAPSE/PAPS ratio in acute heart failure patients, investigating its correlation with in-hospital mortality, six-month follow-up mortality, the need for inotropic support or mechanical circulatory support (MCS) during hospitalization, and readmission due to heart failure exacerbation within six months post-discharge.

Materials and Methods: This prospective study evaluated 100 consecutive acute heart failure patients admitted to the cardiological intensive care unit. Patients were assessed at admission, discharge, and after six months, including clinical, laboratory, and echocardiographic evaluations. Echocardiographic parameters (LVEF, RVEDD, SV, S', TAPSE, TAPSE/PAPS) were analyzed to investigate correlations with mortality and the use of inotropic drugs or MCS.

Results: The study population included 62 men and 38 women, with an average age of 71 ± 12.5 years.
Patients generally had a slight overweight condition (BMI 25 ± 3.2), with 56% being smokers and presenting various comorbidities such as hypertension (66%), hyperlipidemia (66%), diabetes (37%), COPD (23%), and chronic kidney disease (21%). Analyzing in-hospital mortality, significant correlations were found with mean arterial pressure (p = 0.03), stroke volume (p = 0.038), S' (p = 0.016), and TAPSE/PAPS (p < 0.001), but not with LVEF (p = 0.091). There was a significant association between the TAPSE/PAPS ratio and mortality in patients treated with inotropes and MCS (p = 0.018 and p = 0.013, respectively). TAPSE/PAPS was also a significant prognostic marker for post-discharge mortality (p = 0.033).

Conclusions: The study suggests that RV-PA coupling, assessed by TAPSE/PAPS at admission, is a significant prognostic factor for in-hospital mortality and is

associated with the need for inotropic support during hospitalization. A reduced TAPSE/PAPS ratio at discharge is a negative prognostic indicator for post-discharge mortality. Thus, RV-PA coupling could be used as an additional prognostic tool in cardiological intensive care for heart failure patients. These findings should be validated by a larger multicentric cohort and longer follow-up.

ASSISTENZA CARDIACA IN ACUTO 1092
RIANIMAZIONE CARDIOPOLMONARE (ASSISTENZA CARDIACA IN ACUTO)
SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO)
ECMO (ASSISTENZA CARDIACA IN ACUTO)
PIASTRINE E TERAPIA ANTIAGGREGANTE (ATEROTROMBOSI)
TROMBOSI E COAGULAZIONE (ATEROTROMBOSI)

EFFICACY AND SAFETY OF CANGRELOR ON TOP OF ANTICOAGULATION IN PATIENTS WITH MYOCARDIAL INFARCTION RELATED CARDIOGENIC SHOCK/CARDIAC ARREST RECEIVING VA-ECMO AND/OR IMPELLA SUPPORT - A PHASE 2, SINGLE ARM, SINGLE CENTER TRIAL

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In Out-of-Hospital Cardiac Arrest (OHCA) complicated by Acute Myocardial Infarction–Cardiogenic Shock (AMI-CS) requiring primary Percutanous Coronary Intervention (pPCI) and Veno-Arterial ExtraCorporeal Membrane Oxygenation (VA-ECMO), antithrombotic therapy is challenging due to competing thrombotic/bleeding risks and post-OHCA coagulopathy with associated platelet dysfunction. Early clinical data suggest that combination of a individually tailored Cangrelor dosing regimen based on Multiplate test results, combined with background bivalirudin anticoagulation, may be equally effective but safer in terms of bleeding risk than triple therapy (acetylsalicylic acid, P2Y12 inhibitor and anticoagulation) in this setting.

Objective: We designed the SURVIVE phase-2, single-arm prospective clinical trial to assess the efficacy and safety of a reduced, adjustable-dose Cangrelor regimen plus Bivalirudin in patients with OHCA and AMI-CS requiring support with VA-ECMO. Efficacy and safety endpoints were defined as thrombotic and bleeding (BARC ≥3b) adverse events occurring during Cangrelor infusion.

Methods: We report data from the first 5 consecutive OHCA-AMI-CS patients requiring VA-ECMO and who underwent pPCI treated with reduced, tailored Cangrelor dose (starting dose: 0.125 µg/kg/min without initial bolus) targeting an ADP test value < 46 U in combination with bivalirudin (without bolus) with an aPTT target of 55-70 seconds. Aspirin was not administered to any patient. Platelet function was monitored using the Multiplate test at predefined timepoint (baseline, 30 min, 12 hours, every 24 hours and after any Cangrelor dose adjustment) and routine laboratory testing, including coagulation profile was performed at least every 6 hours. According to the protocol, Cangrelor dose adjustments were allowed in increments of ±0.125 µg/kg/min.

Results: Across platelet function measurements (mean number of Multiplate tests per patient: 7) at different predefined timepoints, 100% of ADP-test values were already within the therapeutic target range (<46 U) and no adjustments in Cangrelor infusion rate (dose: 0.125 µg/kg/min) were required. In these first 5 patients, coronary angiography showed multivessel disease, and pPCI was performed only on the culprit lesion. Interestigly, the median ADP test value at baseline (T0, prior to any anti-thrombotic therapy) was 17 U, suggesting a suppressed platelet function at admission. No major bleeding (BARC ≥3b) events occurred and no MACE (in-stent thrombosis, new myocardial infarction) were documented. One ischemic stroke occurred in the context of a vascular complication requiring surgery during ECLS instituted as part of initial resuscitation.
In this preliminary series, a dual regimen comprising of low-dose cangrelor and bivalirudin achieved consistent platelet inhibition in OHCA-AMI-CS patients undergoing pPCI during VA-ECMO support. The presence of platelet dysfunction at admission supports the rationale for a lighter antithrombotic therapy, as triple therapy may expose these critically-ill patients to an excess bleeding risk.

CardioSic

86° CONGRESSO NAZIONALE SIC
Roma, 4-7 dicembre 2025

ASSISTENZA INFERMIERISTICA E TECNICA IN CARDIOLOGIA

ASSISTENZA INFERMIERISTICA E TECNICA IN CARDIOLOGIA 124 INTELLIGENZA ARTIFICIALE (TELECARDIOLOGIA ED E-HEALTH) COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE) TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)

NURSING CARE IN THE PREVENTION OF DELIRIUM IN CRITICALLY ILL PATIENTS: EVIDENCE AND PERSPECTIVES

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(a) CORSO DI LAUREA IN INFERMIERISTICA SEDE TO4 IVREA; (b) ASL TO4; (c) POLO FORMATIVO UNIVERSITARIO OFFICINA H; (d) DIPARTIMENTO DI SCIENZE DELLA SANITÁ PUBBLICA E PEDIATRICHE

Introduction: Delirium is considered an alteration of awareness and attention and has a multifactorial etiology. It is particularly prevalent among hospitalized elderly people. It is a serious complication for patients, family members, healthcare teams and hospital facilities as it increases hospitalization times and consequently increases healthcare costs. In the intensive care unit (ICU), nurses play a pivotal role in the prevention and management of delirium, aiming to reduce the risk of complications.

Objective: To describe the effectiveness of non-pharmacological interventions in reducing episodes of delirium among people admitted to the ICU.

Materials and Methods: A literature review was carried out by searching the main biomedical databases, PubMed and CINAHL, using the PICO Framework as the methodological approach. Inclusion and exclusion criteria for study selection were identified.

Results: A total of eight studies were included. Non-pharmacological interventions, such as early mobilization, family involvement, and the use of earplugs or eye masks, were investigated as preventive strategies for delirium in the ICU. Their applicability to clinical practice was analyzed, with attention to potential implications for future implementation.

Discussion and conclusion: The management of delirium in intensive care requires an integrated approach combining both pharmacological interventions and non- pharmacological strategies. Evidence suggests that the application of non-pharmacological measures is effective in reducing the incidence of delirium. The nurse plays a crucial and central role in the implementation of such interventions and contributes significantly to the prevention and control of the condition. However, although current findings are promising and encouraging, further studies are needed to strengthen and confirm the evidence currently available.

ASSISTENZA INFERMIERISTICA E TECNICA IN CARDIOLOGIA 135
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)
CARDIOPATIE CONGENITE NELL´ADULTO
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
MIOCARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

NURSING MANAGEMENT IN ADVANCED MECHANICAL SUPPORT: ECPELLA VERSUS AESON CARMAT TOTAL ARTIFICIAL HEART

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Background: Advanced mechanical circulatory support, provided either through combined assistance with veno-arterial extracorporeal membrane oxygenation and Impella (ECPELLA) or through implantation of the Aeson CARMAT® total artificial heart, represents a frontier therapy for patients with refractory cardiogenic shock or end-stage heart failure. While some nursing principles are shared, management strategies differ according to device type and the spectrum of expected complications.

Objectives: To compare nursing management strategies in patients treated with ECPELLA and with the Aeson CARMAT® total artificial heart, identifying common domains and operational differences in order to propose an integrated framework.

Methods: This was a single-center observational analysis conducted between January 2024 and July 2025, including four patients: two supported with ECPELLA for cardiogenic shock and two treated with the Aeson CARMAT® total artificial heart as a bridge to transplantation. Areas of comparison included hemodynamic and device-specific monitoring, anticoagulation management, infection prevention, skin integrity surveillance, and early mobilization. Outcomes assessed were preventable complications, time to correction of device alarms, and adherence to nursing interventions.

Results: Continuous monitoring and infection prevention were identified as shared domains. Key differences emerged: (a) ECPELLA required surveillance of peripheral cannulas and prevention of limb ischemia; (b) the Aeson CARMAT® total artificial heart required console-specific monitoring and driveline management; (c) anticoagulation intensity was lower with the Aeson CARMAT® device due to its biocompatible materials; (d) early mobilization was more feasible with the total artificial heart compared to ECPELLA. Adherence to nursing protocols exceeded 90% in both groups, with a reduction in preventable adverse events (no major infections and one major bleeding episode, which was managed surgically).

Conclusions: The comparison highlights a core set of shared nursing competencies particularly monitoring and infection prevention together with device-specific requirements that necessitate dedicated training. Developing comparative frameworks may support the standardization of nursing practice and facilitate the dissemination of best practices across advanced mechanical circulatory support centers.

ASSISTENZA INFERMIERISTICA E TECNICA IN CARDIOLOGIA 143
CARDIOPATIE CONGENITE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
ASSISTENZA INTENSIVA CARDIOVASCOLARE IN ACUTO
(ASSISTENZA CARDIACA IN ACUTO)
RIABILITAZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI
(PREVENZIONE E RIABILITAZIONE)

ADVANCED NURSING ROLE IN THE MANAGEMENT OF LONG-TERM VENTRICULAR ASSIST DEVICE PATIENTS: EXPERIENCE FROM A TRANSPLANT CENTER

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(a) ANESTESIA E RIANIMAZIONE CARDIOTORACOVASCOLARE, AZIENDA OSPEDALIERA SAN CAMILLO FORLANINI, ROMA; (b) DIPARTIMENTO DI MEDICINA TRASLAZIONALE, NOVARA; (c) PEDIATRIC INTENSIVE CARE UNIT, PESCARA; (d) CEMAD, FONDAZIONE POLICLINICO GEMELLI, ROMA

Background: The implantation of a Ventricular Assist Device (VAD) is a consolidated therapeutic option for advanced heart failure, either as a bridge to transplant or as destination therapy. Long-term management of these patients requires advanced nursing skills to ensure continuous monitoring, complication prevention, and effective care transitions.

Objectives: To describe the nursing experience of a transplant reference centre in the management of long-term VAD patients, highlighting organizational challenges and strategies to promote safe and high-quality care.

Methods: A descriptive analysis was conducted on the clinical and organizational experience of the Cardiac Intensive Care Unit at San Camillo Forlanini Hospital (Rome, Italy). Data from all VAD implantations performed since 2010 were reviewed, with a specific focus on the last 5 years. Nursing interventions were assessed in relation to monitoring, complication management, caregiver education, and post-discharge continuity of care.

Results: Since 2010, a total of 114 VADs have been implanted. In the last 5 years, 26 patients received mechanical circulatory support, 9 of whom subsequently underwent heart transplantation. Currently, 24 patients remain in active follow-up, with 12 supported as destination therapy.
Nursing care was found to be central throughout the care continuum, ranging from clinical stabilization to home management, with a positive impact on complication reduction and psychosocial support for patients and caregivers. The development of a dedicated VAD team contributed to the standardization of care pathways and improved coordination between hospital and community services.

Conclusions: The management of long-term VAD patients requires advanced nursing expertise, integrating clinical, educational, and organizational skills. Structured care pathways and the establishment of specialized VAD nursing teams are essential strategies to enhance patient outcomes and quality of life in this complex population.

ASSISTENZA INFERMIERISTICA E TECNICA IN CARDIOLOGIA 46
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
BIG DATA (TELECARDIOLOGIA ED E-HEALTH)
APPS IN CARDIOLOGIA (TELECARDIOLOGIA ED E-HEALTH)

PERCEZIONE DELLO STRESS E DELLA CULTURA DELLA SICUREZZA: ANALISI DEI FATTORI CRITICI IN AMBITO SANITARIO

Beatrice Anzaldi (a), Mariangela Alberti (c), Roberto Accardi (e), Francesca Pavan (d), Claudio Bassi (b)
(a) INFERMIERA DI RICERCA - CENTRO CARDIOLOGICO MONZINO IRCCS; (b) CENTRO CARDIOLOGICO MONZINO IRCCS ; (c) RESPONSABILE DAPS RICERCA - CENTRO CARDIOLOGICO MONZINO IRCCS; (d) RISK MANAGER - CENTRO CARDIOLOGICO MONZINO IRCCS / ISTITUTO EUROPEO DI ONCOLOGIA IRCCS; (e) DIRETTORE DIDATTICO CORSO DI LAUREA IN INFERMIERISTICA - UNIVERSITÀ DEGLI STUDI DI MILANO

SCOPO

Negli ultimi anni l'attenzione verso il benessere psicologico dei professionisti sanitari è cresciuta esponenzialmente, riconoscendolo come una componente essenziale per il mantenimento di standard elevati nella qualità e nella sicurezza delle cure.
Essi quotidianamente sono esposti ad elevati livelli di stress lavoro correlato (SLC) e questo si traduce in una qualità e sicurezza del lavoro negativa aumentando il rischio di errore ed eventi avversi. A questo si correla quindi il concetto di cultura della sicurezza come elemento fondamentale per promozione di ambienti di cura più sicuri che, in un'ottica positiva può rappresentare dunque, un fattore protettivo, mitigando i livelli di stress e promuovendo un'assistenza più sicura.
Dunque questo studio si propone di analizzare se i livelli di gestione del rischio percepiti dai professionisti sanitari risultino predittivi dei livelli di stress percepito nel medesimo contesto clinico e successivamente anche di identificare i principali fattori critici che caratterizzano il contesto sanitario, con riferimento, in questo caso, al nostro istituto.

METODI

Lo studio, di tipo monocentrico, adotta un disegno osservazionale trasversale, basato sulla somministrazione anonima di due questionari validati: la Perceived Stress Scale (PSS-10) per rilevare i livelli di stress percepito e l'Hospital Survey on Patient Safety Culture 2.0 (SOPS 2.0, AHRQ) per valutare la percezione della cultura della sicurezza del paziente.
La raccolta dati è stata eseguita su un campione di 143 professionisti sanitari interni al nostro istituto (infermieri, fisioterapisti, tecnici di radiologia, tecnici di laboratorio e tecnici perfusionisti) appartenenti alle diverse unità operative ospedaliere suddivisi in aree (degenza, intensiva, interventistica, diagnostica/servizi trasversali). Dopo la firma del consenso informato i questionari sono stati inviati e compilati tramite apposito link. I dati verranno raccolti tramite specifico database online e verranno analizzati con statistica inferenziale strutturata secondo criteri metodologici rigorosi come suggerito da Coen (2019) nella sistematizzazione delle fasi di progettazione statistica in ambito psicologico e psicosociale, entro novembre 2025. Per quanto concerne l'endpoint primario, verrà indagato attraverso un modello di regressione lineare semplice, in cui il punteggio totale del questionario sulla gestione del rischio clinico fungerà da predittore (X), mentre il punteggio complessivo della scala dello stress percepito fungerà da variabile dipendente (Y).
Per quanto riguarda gli endpoint secondari, si procederà ad analizzare separatamente il contributo predittivo di ciascun dominio del questionario sulla gestione del rischio clinico nei confronti del punteggio della scala dello stress percepito e a valutare l'influenza di una serie di variabili sociodemografiche (età, genere, contesto lavorativo, fasce anagrafiche e ulteriori variabili rilevate) considerate come variabili di controllo o covariate, al fine di determinare il loro possibile ruolo di fattori confondenti nella relazione primaria.

ASSISTENZA INFERMIERISTICA E TECNICA IN CARDIOLOGIA 19
ASSISTENZA CARDIACA IN ACUTO NEL DIPARTIMENTO DI EMERGENZA (ASSISTENZA CARDIACA IN ACUTO)
ASSISTENZA CARDIACA PRE-OSPEDALIERA (ASSISTENZA CARDIACA IN ACUTO)
ASSISTENZA INTENSIVA CARDIOVASCOLARE IN ACUTO (ASSISTENZA CARDIACA IN ACUTO)

LE COMPETENZE DELL'INFERMIERE IN AMBITO CARDIOVASCOLARE

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INTRODUZIONE: Le patologie cardiovascolari (CV) sono un bisogno di salute globale essendo sia una tra le principali cause di mortalità e morbosità, sia una motivazione emergente di invalidità con un significativo impatto socioeconomico. Le competenze infermieristiche in ambito CV sono state descritte come l'integrazione di abilità, conoscenze e atteggiamenti che il professionista è in grado di attivare in contesti reali e appropriati.

SCOPO: Questo studio si propone lo scopo di individuare quali siano le competenze infermieristiche riferibili all'Infermiere di area cardiovascolare nella letteratura scientifica.

MATERIALI E METODI: E' stata svolta una revisione narrativa della letteratura tramite l'impiego di diverse strategie di ricerca: i) consultazione di banche dati biomediche: Cinahl, Embase, Medline (i.e. PubMed), ILISI, Joanna Briggs Istitute, Scopus; ii) esame di siti di associazioni in ambito CV (e.g. American Heart Association, European Society of Cardiology, Società Italiana di Cardiologia, Società Italiana di Cardiologia Interventistica, Gruppo Italiano Infermieri in area cardiovascolare); iii) vaglio dei riferimenti bibliografici degli articoli consultati in full text.

RISULTATI: Dall'analisi dei 7 studi selezionati sono state evidenziate le diverse competenze infermieristiche che deve possedere un Infermiere che opera in ambito cardiovascolare: saper interpretare e riconoscere alterazioni significative all'elettrocardiogramma, utilizzare apparecchiature cardiologiche specialistiche e sistemi di monitoraggio, conoscere i farmaci cardiologici, gli interventi cardiaci, le patologie e soprattutto la sintomatologia di esse. Dalla revisione della letteratura è emersa inoltre l'esiguità della formazione post-laurea specifica per l'area CV.

CONCLUSIONI: Le competenze infermieristiche in area CV tendono al monitoraggio delle condizioni di salute degli assistiti. Maggiori risorse formative post-base dedicate ai professionisti potrebbero incentivare la qualità delle cure erogate ed anche promuovere futuri studi in tale scenario.

ASSISTENZA INFERMIERISTICA E TECNICA IN CARDIOLOGIA 457
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)

SYMPTOM RECOGNITION CONCORDANCE WITHIN DYADIC ARCHETYPES OF OLDER ADULTS WITH HEART FAILURE AND OTHER CHRONIC CONDITIONS

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Background: Heart failure (HF), often coexisting with other chronic conditions, involves complex symptom patterns. Timely recognition is critical to prevent deterioration and support self-care, yet patients often struggle with accurate appraisal, especially in the context of multiple chronic conditions. Informal caregivers play an essential role, but patient-caregiver dyads may differ in illness management. These patterns can be classified into dyadic archetypes: congruent, when patients and caregivers report similar illness management, and incongruent, when their reports diverge. Symptom recognition speed offers an additional lens to assess dyadic functioning, but its relationship with dyadic archetypes in HF and multimorbidity has not been fully explored.

Aims: This study aimed to (1) describe the prevalence of congruent and incongruent dyads in older adults with HF and other chronic conditions; (2) describe patterns of symptom recognition speed across dyadic archetypes; and (3) examine the association between dyadic archetypes and recognition speed concordance.

Methods: We conducted a cross-sectional analysis of 351 patient-caregiver dyads, in which patients were aged ≥65 years, diagnosed with HF and at least one additional chronic condition; caregivers had to be actively involved in managing the older person's conditions and be over 18 years old. Dyadic archetypes, congruent or incongruent, was assessed using Dyadic Symptoms Management Type (DSMT) Scale, while symptom recognition speed was assessed using the specific item of the Self-Care of Chronic Illness Inventory (SC-CII) and its caregiver version (CC-SC-CII). Responses (range 0-5) were dichotomized into "slow recognition" (0-2) and "fast recognition" (3-5). Dyads were classified as concordant when patient and caregiver gave the same response, and discordant otherwise. Associations between archetype and recognition concordance were tested with chi-square.

Results: Overall, 267 dyads (88%) were classified as congruent and 37 (12%) as incongruent archetypes. Among congruent dyads, 198 (74%) showed concordance in symptom recognition speed, while 69 (26%) were discordant. Among incongruent dyads, discordance was predominant: 27 dyads (73%) reported opposing recognition speeds, whereas 10 dyads (27%) were nevertheless concordant. Chi-square analyses confirmed a significant association between dyadic archetypes and concordance in symptom recognition speed (χ^2=17.8, p<.001).

Conclusions: In older adults with HF and other chronic conditions, dyadic congruence was reflected in concordant and faster symptom recognition. Incongruent dyads more often showed discordant perceptions, potentially delaying self-care and treatment. These findings link dyadic archetypes to recognition processes and highlight the importance of assessing dyadic functioning. Interventions that strengthen congruence and shared understanding may support timely decision-making, improve self-care, and enhance outcomes.

ASSISTENZA INFERMIERISTICA E TECNICA IN CARDIOLOGIA 16
INFARTO STEMI (CARDIOPATIA ISCHEMICA)
INFARTO NSTEMI (CARDIOPATIA ISCHEMICA)
ASSISTENZA CARDIACA IN ACUTO NEL DIPARTIMENTO DI EMERGENZA (ASSISTENZA CARDIACA IN ACUTO)
MINOCA (MYOCARDIAL INFARCTION WITH NORMAL CORONARY ARTERIES) (CARDIOPATIA ISCHEMICA)
ISCHEMIA, STUDI SPERIMENTALI (CARDIOPATIA ISCHEMICA)

THE INFLUENCE OF SEX/GENDER-SPECIFIC MEDICINE IN THE ASSESSMENT OF ACUTE MYOCARDIAL INFARCTION IN TRIAGE

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Introduction. Acute Myocardial Infarction (AMI) remains the leading cause of morbidity and mortality worldwide. Cardiovascular diseases (CVDs) account for 49% of all deaths in Europe, with AMI alone responsible for 20%. However, women show a higher mortality rate than men, a disparity partly attributed to biological differences. The growing interest in these differences has led to the emergence of modern Sex/Gender-specific Medicine.

Objective. This review aims to explore how biological differences affect the clinical presentation of AMI in adults and to analyse the role of triage nurses in the early identification of AMI from a Sex/Gender-specific Medicine perspective.

Materials and Methods. A literature review was conducted using the main biomedical databases: PubMed and CINAHL. The research question was formulated using the P.E.O. framework, and inclusion/exclusion criteria were clearly defined prior to study selection.

Results. Thirteen studies met the inclusion criteria. Three key themes emerged: clinical onset of AMI, diagnostic accuracy during triage, and awareness and perception of cardiovascular risk in women.

Discussion and Conclusions. Biological differences do influence the clinical presentation of AMI, although the overall symptomatology in men and women is largely similar. Importantly, prodromal symptoms in women may be the only early warning signs, making timely recognition critical. Triage nurses often have difficulty promptly identifying acute myocardial infarction in patients who present with symptoms not traditionally considered indicative of this condition, and current triage assessment tools do not adequately account for sex/gender-specific variations.
Moreover, women tend to underestimate their cardiovascular risk, which can delay the demand for health support, thus worsening clinical outcomes.

ASSISTENZA INFERMIERISTICA E TECNICA IN CARDIOLOGIA 332
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)

A HOLISTIC PATHWAY TOWARDS HEART FAILURE CHRONIC DISEASE: THE VULNERABLE CONNECTION BETWEEN QUALITY OF LIFE AND PALLIATIVE CARE

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Background: The prevalence of people living with chronic non-communicable diseases is increasing dramatically. Every ill person can experience distressing symptoms compromising quality of life. The lifetime risk of heart failure, one of the most important chronic diseases, is constantly increasing. Palliative care has a positive impact on refractory symptoms with direct consequences on quality of life. Nurses, as professionals with a holistic vision of care, play a crucial role in palliative care introduction and implementation. The purpose of our project is to explore nursing attitudes and perceptions towards heart failure palliative care and make reliable instruments available in order to overcome barriers and assess stakeholders' quality of life.

Methods: A systematic mixed method review following the Joanna Briggs Institute methodology was undertaken. A converged integrated approach allowed to combine qualitative and quantitative data. Synthesis of results was guided by the Theoretical Domain Framework. Multiphase cross-sectional studies with two different populations of interest will be elaborated. Exploratory structural equation modeling will be performed to discover psychometric validity.

Results: Of the 1048 records identified, 26 met the inclusion criteria. Data highlighted that numerous behaviour and elements influenced heart failure palliative care implementations. The theoretical domain framework analysis showed a strict correlation among each element. Acting on a factor may have a positive impact on the correlated ones. Therefore, health care professionals should dispose of specific instruments to estimate a patient's quality of life. The Chronic Heart Failure Health-related Quality Of life questionnaire and the Family Caregiver Quality of Life Scale are two of the available tools described in literature characterized by good psychometric properties in the original language. Both were elaborated specifically for heart failure disease.

Preliminary conclusions and perspectives: Interpretation of results guided by the Theoretical Domain Framework highlights palliative care benefits from implementation, when the latter is possible. Obstacles may be for instance: communication, pathways knowledge, definition of responsibilities and patient disease awareness etc. Interdisciplinary collaboration with nurse involvement could be decisive. Validated instruments could be an opportunity to improve health care assistance and the appropriateness of patients' pathways, thus overcoming the barriers of interprofessional collaboration. Patient reported outcome measures focused on a specific disease may lead to a better understanding of patients' needs. Quality of life assessment may in turn help to identify the right time to implement palliative care.

ASSISTENZA INFERMIERISTICA E TECNICA IN CARDIOLOGIA 9 ELETTROSTIMOLAZIONE (ARITMIE) DEFIBRILLATORE IMPIANTABILE (ARITMIE) GESTIONE DELLA COMPLICANZE PM / ICD (ARITMIE)

NURSING MANAGEMENT AND EDUCATION OF THE PATIENT WITH CARDIAC PACEMAKER: PREVENTION, EARLY RECOGNITION OF COMPLICATION AND CONTINUITY OF CARE

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(a) PO SANTA MARIA DELLE GRAZIE - ASL NAPOLI 2 NORD

Abstract
Il progresso tecnologico in ambito cardiologico ha reso l'impianto di pacemaker una procedura sempre più frequente e sicura. Tuttavia, il successo a lungo termine dipende non solo dalla tecnica chirurgica, ma anche dalla corretta gestione post-operatoria e dalla capacità del paziente di riconoscere precocemente segni di malfunzionamento oppure di infezione.
In questo contesto, l'infermiere riveste un ruolo centrale nella presa in carico precoce, nella formazione del paziente e caregiver, e nel monitoraggio delle complicanze. Il focus intende illustrare i percorsi educativi strutturati, gli strumenti utilizzati (schede informative, check-list, follow-up telefonici) e proporre un modello replicabile per la gestione infermieristica del paziente portatore di pacemaker.
L'intervento educativo e di monitoraggio da parte dell'infermiere rappresenta un fattore determinante nella prevenzione delle complicanze post-impianto di pacemaker. L'approccio educativo personalizzato favorisce l'autonomia del paziente, riduce i rientri ospedalieri e migliora gli esiti clinici.

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ASSISTENZA CARDIACA IN ACUTO NEL DIPARTIMENTO DI EMERGENZA (ASSISTENZA CARDIACA IN ACUTO)
ASSISTENZA CARDIACA PRE-OSPEDALIERA (ASSISTENZA CARDIACA IN ACUTO)
ARITMIE VENTRICOLARI (ARITMIE)

PROGETTO FORMATIVO AZIENDALE PER L'IMPLEMENTAZIONE DELLE COMPETENZE TECNICHE E DELLE CONOSCENZE SCIENTIFICHE SULL'ELETTROCARDIOGRAMMA

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(d) DIRETTORE SOSTITUTO S.C. D.A.P.P.S. - DIREZIONE AZIENDALE DELLE PROFESSIONI SANITARIE E SOCIOSANITARIE, ASST SETTE LAGHI, VARESE

Introduzione: La malattia coronarica è una delle principali cause di mortalità e morbilità a livello globale. L'invecchiamento demografico e l'aumento delle patologie croniche prevedono una crescente complessità dei percorsi assistenziali richiedendo una revisione del ruolo infermieristico, con un ampliamento delle responsabilità e delle competenze avanzate.
In tale contesto, la formazione continua del personale sanitario è fondamentale per garantire un'assistenza efficace e sicura. In ambito cardiologico, l'acquisizione di competenze nell'esecuzione e nell'interpretazione dell'elettrocardiogramma (ECG) è cruciale per la gestione tempestiva delle patologie cardiovascolari.
Studi recenti dimostrano che équipe assistenziali dotate di competenze avanzate nella lettura dell'ECG sono associate a una riduzione significativa della mortalità, grazie a una tempestiva identificazione delle alterazioni. Tuttavia, la sola conoscenza teorica dell'ECG non è sufficiente, è necessario un apprendimento integrato che includa abilità teorico, pratiche e capacità decisionali con aggiornamenti periodici per mantenere livelli adeguati di performance clinica.

Metodo: È stato pianificato un progetto formativo aziendale con l'obiettivo di migliorare le competenze nell'esecuzione e nell'interpretazione critica dell'ECG. Il progetto coinvolge studenti di Infermieristica, operatori socio-sanitari (OSS) e infermieri. Per ogni gruppo di partecipanti è prevista una lezione di 120 minuti, suddivisa in 60 minuti di spiegazione frontale con la presentazione di un'istruzione operativa appositamente aggiornata, e 60 minuti di peer-learning per discutere casi clinici. Contenuti e strumenti del corso sono adattati al livello di competenza di ciascun gruppo. L'efficacia del programma verrà valutata tramite questionari pre/post corso, personalizzati per ciascun gruppo, e audit clinici per osservare le competenze pratiche acquisite.

Risultati: Poiché il progetto è in fase di avvio non sono ancora disponibili risultati preliminari. Si prevede di valutare l'efficacia dell'intervento attraverso un'analisi dei punteggi ottenuti nei questionari e dai risultati degli audit clinici, con particolare attenzione al miglioramento delle competenze pratiche e decisionali relative all'esecuzione e interpretazione dell'ECG.

Discussione: Per l'interpretazione dei risultati è fondamentale considerare possibili bias, come l'effetto Hawthorne, che potrebbe influire sul comportamento osservato durante gli audit. Inoltre, la letteratura evidenzia che le competenze nell'interpretazione dell'ECG tendono a declinare nel tempo senza una pratica regolare, rendendo fondamentali programmi di formazione continua e aggiornamenti periodici. Sono pertanto

necessari ulteriori studi con follow-up a lungo termine per valutare la sostenibilità e l'efficacia di tali interventi nel tempo. Inoltre, sarebbe opportuno valutare l'integrazione di simulazioni pratiche e tecnologie avanzate, incluso l'uso dell'intelligenza artificiale, che potrebbero supportare il personale sanitario nel mantenimento e nello sviluppo delle competenze cliniche avanzate.

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ASSISTENZA CARDIACA IN ACUTO NEL DIPARTIMENTO DI EMERGENZA (ASSISTENZA CARDIACA IN ACUTO)
ASSISTENZA CARDIACA PRE-OSPEDALIERA (ASSISTENZA CARDIACA IN ACUTO)
ASSISTENZA INTENSIVA CARDIOVASCOLARE IN ACUTO (ASSISTENZA CARDIACA IN ACUTO)
SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO)

HEMODYNAMIC OPTIMIZATION IN SEVERE BURN PATIENTS WITH CARDIAC DYSFUNCTION IN THE INTENSIVE CARE UNIT: THE ROLE OF FLUID THERAPY AND NURSING SURVEILLANCE

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ABSTRACT

Introduction: Severe burns trigger increased capillary permeability, hypovolemia, and cardiac dysfunction, often culminating in shock. Fluid therapy is essential to restore perfusion but carries the risk of " fluid creep " and overload-related complications. Continuous hemodynamic monitoring by intensive care nurses is crucial for individualized management.

Objective: To assess the impact of hemodynamic-guided, nurse-driven fluid therapy on cardiac compliance and overload complications during the first 72 hours after burn injury.

Methods: A narrative systematic review of guidelines, reviews, and clinical studies published in PubMed and PMC over the last 10 years was conducted.

Results: The Parkland formula with crystalloid infusion remains the standard approach, but excessive fluid administration predisposes to pulmonary edema, compartment syndrome, and impaired cardiac function. Evidence suggests that tailored fluid therapy combined with rigorous nursing monitoring may mitigate these risks.

Conclusions: Nurse-led, individualized fluid management in the ICU may improve cardiac compliance and reduce hemodynamic complications in severely burned patients. Continuous surveillance of urine output, mean arterial pressure, fluid balance, and hemodynamic response is essential to support timely therapeutic adjustments and favorable outcomes.
Keywords: Burn injury; fluid resuscitation; cardiac compliance; hemodynamic monitoring; critical care nursing.

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RIANIMAZIONE CARDIOPOLMONARE (ASSISTENZA CARDIACA IN ACUTO)
ASSISTENZA CARDIACA PRE-OSPEDALIERA
(ASSISTENZA CARDIACA IN ACUTO)
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)

TRAUMATIC CARDIAC ARREST IN BATTLEFIELD SETTINGS: CLINICAL EVIDENCE, TACTICAL CONSTRAINTS, AND ETHICAL DILEMMAS

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Introduction: Traumatic cardiac arrest (TCA) is associated with extremely poor survival rates, generally below 10%, despite continuous efforts to improve the quality and outcomes of resuscitative interventions. Since 1996, the Tactical Combat Casualty Care (TCCC) guidelines have remained unchanged in their statement: "Resuscitation on the battlefield for victims of blast or penetrating trauma who have no pulse, no ventilations, and no other signs of life will not be successful and should not be attempted." The aim of this study is to explore the reasons why this recommendation continues to be accepted.

Materials and Methods: A scoping review was conducted across PubMed, CINAHL, Cochrane, and Embase databases. Of the 1,176 records retrieved, 23 were identified as directly relevant. No time restrictions or study design limitations were applied.

Results: Evidence from the review indicates that cardiopulmonary resuscitation in tactical environments is highly resource-intensive, both in human and material terms. Although the ethical instinct favors resuscitative attempts for one's comrades, tactical circumstances often necessitate early termination of interventions, particularly in cases of TCA due to blast injuries, penetrating trauma, or uncontrolled massive hemorrhage. Despite technological advances and improved responder training, current recommendations still restrict the use of CPR, prioritizing Damage Control Resuscitation strategies for hemorrhage control and volume replacement. Survival remains limited to specific contexts, including the presence of pulseless electrical activity (PEA), immediate access to blood products at the point of injury, rapid evacuation to surgical-capable facilities, and the presence of vital signs upon arrival. In the absence of these conditions, survival is virtually nonexistent. These realities compel healthcare providers to make ethically and emotionally demanding decisions, including the premature cessation of treatment and the preservation of resources for those most likely to return to combat.

Conclusions: Cardiopulmonary resuscitation on the battlefield is constrained by tactical feasibility. Tactical medicine extends beyond conventional clinical paradigms, where fire superiority and tactical dominance are considered as critical as best medical practice. Excessive resource utilization in austere environments may jeopardize the safety of the remaining unit members. Further research is needed to refine resuscitation protocols and to support ethically sound decision-making in tactical environments.

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ASSISTENZA CARDIACA IN ACUTO NEL DIPARTIMENTO DI EMERGENZA (ASSISTENZA CARDIACA IN ACUTO)
ASSISTENZA INTENSIVA CARDIOVASCOLARE IN ACUTO (ASSISTENZA CARDIACA IN ACUTO)
INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
GESTIONE DELLA COMPLICANZE PM / ICD (ARITMIE)

JOB ROTATION TRA UTIC, EMODINAMICA ED ELETTROFISIOLOGIA: IL MODELLO DELL'INFERMIERE TRASVERSALE PER COMPETENZE AVANZATE

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Background: La job rotation infermieristica è riconosciuta a livello internazionale come strategia efficace per sostenere l'apprendimento continuo, favorire l'integrazione delle competenze e aumentare la flessibilità organizzativa (Alfuqaha et al., 2021).

In questo contesto, il modello dell'infermiere trasversale, fondato su una job rotation continua tra UTIC, Emodinamica ed Elettrofisiologia, rappresenta un'esperienza innovativa che unisce formazione sul campo, trasversalità operativa e sviluppo di profili infermieristici avanzati, con potenziali benefici per i professionisti, i pazienti e le organizzazioni.

Obiettivi:
- Verificare che gli infermieri coinvolti nella job rotation trasversale acquisiscano e mantengano competenze avanzate sovrapponibili a quelle dei colleghi stabili nei singoli setting;
- Valorizzare la formazione continua sul campo come leva per la crescita professionale e lo sviluppo di profili infermieristici trasversali;
- Evidenziare i benefici organizzativi e assistenziali derivanti dall'adozione di un modello di job rotation strutturata in ambito cardiologico.

Struttura del modello e formazione: Nella nostra realtà è stato costituito un pool di infermieri dedicato alla job rotation continua tra UTIC, Emodinamica ed Elettrofisiologia. L'inserimento avviene con affiancamento progressivo, così da consentire l'acquisizione delle specificità cliniche di ciascun setting e il consolidamento delle competenze trasversali.
Il modello è supportato da momenti di formazione periodica sul campo, orientati al perfezionamento delle clinical competence e al mantenimento di standard assistenziali omogenei. La valutazione annuale delle performance consente di monitorare i livelli raggiunti nei diversi setting e di garantire l'efficacia del percorso nel tempo.

Risultati: Il pool di infermieri trasversali ha conseguito valutazioni annuali delle performance equivalenti a quelle dei colleghi stabili nei singoli setting, dimostrando il mantenimento di competenze avanzate in UTIC, Emodinamica ed Elettrofisiologia. Oltre all'elevato livello tecnico, sono emerse una visione globale del paziente cardiologico, una spiccata flessibilità operativa e una maggiore capacità di integrazione nel lavoro multiprofessionale. Il modello ha inoltre ridotto le criticità legate alla turnazione del

personale, migliorando la continuità assistenziale e la resilienza organizzativa.

Conclusioni: La nostra esperienza dimostra come una job rotation strutturata e continua possa contribuire allo sviluppo di competenze avanzate infermieristiche e al rafforzamento dell'integrazione multiprofessionale in cardiologia.
Il modello dell'infermiere trasversale si configura come replicabile in altri contesti specialistici, con ricadute positive sia per i professionisti che per le organizzazioni sanitarie.

CardioSic

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FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)

IL RUOLO DELL'INFERMIERE NELL'ASSISTENZA AL PAZIENTE CON LEFT VENTRICULAR ASSIST DEVICE

Noemi Craparotta (a, b), Lorenzo Furcieri (b, c), Stefania Tinti (b, c), Elisabetta Zanini (b, c), Annalisa Alberti (b, c), Alessia Martina Trenta (d)

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Introduzione: L'insufficienza cardiaca (IC) è una condizione cronica e progressiva che colpisce milioni di persone in tutto il mondo. Il Left Ventricular Assist Device (LVAD) è un dispositivo utilizzato nei pazienti con IC avanzata, per migliorare la funzione del cuore, quando i trattamenti farmacologici falliscono. Il ruolo dell'infermiere nell'assistenza ai pazienti con LVAD è fondamentale per garantire un adeguato supporto clinico e psicologico, prevenire le complicanze e migliorare la qualità di vita.

Scopo: L'obiettivo dello studio è quello di compendiare la letteratura scientifica al fine di esaminare il ruolo dell'infermiere nell'assistenza ai pazienti portatori di LVAD, approfondendo le responsabilità assistenziali e le competenze necessarie per affrontare le sfide che l'impianto di questo dispositivo comporta.

Metodi: È stata condotta una revisione narrativa della letteratura consultando le principali banche dati biomediche (CINAHL, Medline, Embase) e utilizzando il metodo PIO (Patient, Intervention, Outcome). Sono stati inclusi gli studi scritti in lingua inglese o italiana, pubblicati negli ultimi dieci anni, riguardanti l'assistenza infermieristica e la qualità di vita dei pazienti con LVAD.

Risultati: Dall'analisi dei 12 records inclusi, è emerso come il professionista infermiere svolga un ruolo determinante nell'assistenza dei pazienti con LVAD. Gli infermieri sono responsabili non solo del monitoraggio clinico e della prevenzione delle complicanze, ma anche di fornire un'educazione continua al paziente e ai loro caregiver, contribuendo a migliorare la qualità di vita degli assistiti e a ridurre il rischio di riospedalizzazione.

Conclusioni: Il ruolo dell'infermiere nell'assistenza al paziente con LVAD è multidimensionale e richiede competenze specialistiche. L'assistenza infermieristica non si limita alla gestione tecnica del dispositivo, ma guarda al paziente in modo olistico, includendo un supporto di tipo emotivo - relazionale ed un'educazione continua per gli assistiti e i loro caregiver, contribuendo così a migliorare gli outcome clinici e la qualità di vita complessiva.

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DIAGNOSTICA INVASIVA INTRAVASCOLARE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
ASSISTENZA INTENSIVA CARDIOVASCOLARE IN ACUTO (ASSISTENZA CARDIACA IN ACUTO)

L'ESPERIENZA DI TIROCIONIO PER LO STUDENTE DI INFERMIERISTICA PRESSO LA SALA DI CARDIOLOGIA INTERVENTISTICA

Iris Cuberi (a), Carola Condo´ (a)
(a) ASLTO4

Introduzione: il percorso di studi di infermieristica prevede lo svolgimento di un totale di 1800 ore di tirocinio nel corso dei 3 anni del percorso universitario. Tirocini vengono divisi in maniera tale che lo studente abbia la possibilità di svolgere le ore presso le diverse aree che sono presenti nell'ambito assistenziale come l'aria medica, chirurgica, critico e territoriale. Lo studio prende principalmente in considerazione gli studenti che hanno potuto applicarsi in ambiti come la sala di cardiologia interventistica o il blocco operatorio.

Obiettivo: viene svolto questo studio per capire se l'esperienza svolta in un ambito come la sala operatoria o un ambiente molto specialistico come la sala di emodinamica permetta allo studente di avere possibilità positive per quanto riguarda il proprio percorso professionale o se abbia più un impatto negativo sulla propria scelta di continuare il percorso universitario

Materiale e metodi: lo studio è stato svolto principalmente svolgendo quella che è una ricerca della bibliografia e l'utilizzo di audit ottenuti da colloqui con studenti del corso di laurea di Ivrea che hanno effettivamente svolto almeno un giorno presso la sala operatoria o addirittura tutta la durata del proprio tirocinio presso la sala di emodinamica di Ciriè.

Criteri di inclusione: si è tenuto conto degli articoli che fossero datati dal 2020 in poi e che si concentrassero sulle esperienze di tirocinio degli studenti di infermieristica;
Criteri di esclusione: non si sono dunque tenuti conto di articoli che fossero datati ad anni precedenti al 2020 e che non trattassero di studenti di infermieristica o che non stessero svolgendo un periodo di tirocinio.

Conclusione: nonostante la carenza di studi presenti nella letteratura che trattassero effettivamente dell'argomento ricercato dagli autori si è potuto constatare il fatto che la sala operatoria e la sala di emodinamica pur essendo luoghi molto specialistici per studenti con poca esperienza nel campo, sono considerati ambiti che permettono un'ottima crescita in quello che il professionalismo nei confronti della persona assistita e l'equipe di lavoro, un miglioramento di quelle che sono le conoscenze cliniche pratiche dell'attività svolta dall'infermiere e particolari attenzioni in quella che è la prevenzione delle infezioni. Questo viene permesso quando gli studenti sono seguiti da tutor che riescono a trasmettere i valori e le conoscenze che riguardano e servono per lavorare in una ambiente come la sala in maniera chiara permettendo allo studente di svolgere un ruolo attivo durante il periodo di tirocinio.

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(ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
ATTIVITÀ FISICA E PREVENZIONE CARDIOVASCOLARE
(ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
RIABILITAZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI
(PREVENZIONE E RIABILITAZIONE)
TRATTAMENTO POST-INFARTO (CARDIOPATIA ISCHEMICA)

NORDIC WALKING AS A TOOL TO IMPROVE THE QUALITY OF LIFE IN PEOPLE WITH CORONARY ARTERY DISEASE: A LITERATURE REVIEW

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Introduction: Cardiovascular diseases, particularly coronary artery disease, are the leading cause of death worldwide, especially in economically and socio-health developed countries. Therapeutic education plays a fundamental role in improving the quality of life and preventing recurrences. In this context, Nordic Walking, a group activity that is accessible and easy to practice, could represent an opportunity to promote a healthy lifestyle.

Objective: To evaluate whether Nordic Walking in adults with coronary artery disease is effective in improving the quality of life, and to analyse the role of the nurse in this activity.

Material and methods: A literature review was conducted on PubMed, Cinhal, and Web of Science (from July 2024 to January 2025) using the PICO framework to formulate the research question. Studies involving adults with coronary artery disease engaged in Nordic Walking programs were selected, while other cardiac conditions or different sports activities were excluded. The analysis included randomized controlled trials and systematic reviews.

Results: Six studies were included in the literature review. Nordic Walking, when integrated into cardiac rehabilitation programs, led to significant improvements in terms of physical performances (6MWT test, METs, UGT) and, in several cases, in quality of life (SF-36, WHOQOL-BREF). The activity proved to be safe, well-tolerated, and effective on both physical and psychological factors.

Discussion and conclusion: Nordic Walking is considered an effective intervention to improve the quality of life in patients affected by coronary artery disease, thanks to the complete activation of muscle groups, improved circulation and positive effects on psychological and social well-being. The nurse plays a crucial role in clinical monitoring during the activity, in educating patients on self-assessment of vital parameters, and in promoting this discipline as a tool for secondary prevention. Evidence suggests a positive impact, especially when Nordic Walking is integrated into standard cardiological rehabilitation programs. However, further studies are needed to establish standardised protocols and to fully assess the preventive and therapeutic potential of this discipline.

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ASSISTENZA CARDIACA IN ACUTO NEL DIPARTIMENTO DI EMERGENZA (ASSISTENZA CARDIACA IN ACUTO)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)
ASSISTENZA INTENSIVA CARDIOVASCOLARE IN ACUTO (ASSISTENZA CARDIACA IN ACUTO)

ESITI SENSIBILI ALLE CURE INFERMIERISTICHE IN PAZIENTI SOTTOPOSTI A CARDIOCHIRURGIA: UNA REVISIONE DELLA LETTERATURA

Anella Di Costanzo (a), Vincenza Giordano (b), Filomena Pane (c), Angela Fioretti (c), Melania De Filippo (d)
(a) PINETA GRANDE HOSPITAL; (b) UNIVERSITA' FEDERICO II; (c) AZIENDA DEI COLLI;
(d) ISTITUTO NAZIONALE TUMORI FONDAZIONE G.PASCALE

Background: Gli esiti sensibili alle cure infermieristiche sono indicatori clinici influenzati dalla qualità dell'assistenza. In ambito cardiochirurgico, includono delirium, dolore, infezioni del sito chirurgico e mortalità.

Obiettivo: Identificare interventi infermieristici per prevenire e gestire esiti post-operatori sensibili all'assistenza nei pazienti adulti sottoposti a cardiochirurgia.

Materiali e Metodi: È stata condotta una revisione della letteratura su PubMed, CINAHL, Web of Science, Embase e Scopus. La selezione, tramite Rayyan, è avvenuta con valutazione in cieco da quattro revisori indipendenti. Su 672 articoli iniziali, ne sono stati inclusi 20, sottoposti a valutazione metodologica.

Risultati: Interventi non farmacologici (musicoterapia, massaggio, digitopressione, respirazione ritmica, crioterapia, realtà virtuale) hanno ridotto il dolore e l'uso di analgesici (digitopressione: da 4,46±1,19 a 2,60±0,85; $P < 0,001$; realtà virtuale: −1,5 subito e −3,7 a 15 minuti; $P < 0,001$). Protocolli e strumenti di screening (modello Gordon, SDACS, mobilizzazione precoce, intervento familiare) hanno diminuito incidenza e durata del delirium (dal 29,9% al 13,5%; $P = 0,001$). Pratiche di prevenzione (doccia precoce, igiene ferite) hanno ridotto le infezioni del sito chirurgico (32% vs 7,7%; $P = 0,038$), migliorando comfort e soddisfazione. La mortalità non mostra differenze significative ($P = 0,16$), ma cure strutturate riducono durata della ventilazione meccanica ($P = 0,001$) e della degenza in terapia intensiva ($P = 0,007$).

Conclusioni: Gli esiti sensibili in cardiochirurgia confermano il ruolo cruciale dell'assistenza infermieristica nella prevenzione e gestione delle complicanze post-operatorie.

Parole chiave: Esiti sensibili alle cure infermieristiche, Cardiochirurgia, Delirium, Dolore, Mortalità, Infezioni del sito chirurgico.

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SELF-CARE LEVELS IN HEART FAILURE PATIENTS MONITORED VIA DIGITAL AUTOMATED SYSTEM: A FIVE-YEAR OBSERVATIONAL STUDY

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(a) FONDAZIONE TOSCANA GABRIELE MONASTERIO, PISA AND MASSA, ITALY;
(b) SCUOLA SUPERIORE SANT'ANNA, PISA, ITALY

Introduction: The levels of self-care of patients with heart failure (HF) should be adequate to ensure a good quality of life during the trajectory of the disease. In the last decades, several research studies have been conducted to assess self-care levels and develop reliable instruments, providing valuable insight to test and inform the self-care middle range theory of Riegel and colleagues. However, systematic and automated implementation in electronic healthcare records remains underreported when conducted in real-life scenarios. Thus, the levels of self-care in the real-life HF population remain estimated mainly in experimental settings.

Research Question: The aim was to measure, through our electronic patient reported outcome measurement (PROM) platform, the levels of self-care in patients with HF in a real-life scenario.

Methods: In October 2020 in a cardiovascular hospital in Italy, we implemented version 6.2 of the Self-care Heart Failure Index (SCHFI) in an ad hoc systematic and automated platform developed for this purpose and connected with the electronic healthcare records. The patients received a short multimedia message (SMS) at discharge, 30 days, 7 months, and 12 months after hospitalization, with a link to access the form. In addition, they were asked to declare if they had any other comorbidity. Sociodemographic information was captured from the electronic healthcare record.

Results: We enrolled 2450 HF patients discharged from October 2020 and January 2025, detected with the ICD-9 code 428. However, the adherence rate per year fluctuated from a minimum of 13.13% (in 2021) to a maximum of 19.70 % (in 2022), achieving 924 completed evaluations completed throughout the year of observation. Considering the cut-off point (≥70%) determining a good level of self-care for each subscale of SHFI v 6.2, all dimensions were suboptimal. The mean levels of the subscale were 62.18 (±15.34) for self-care maintenance, 51.40 (± 23.68) for self-care management (filled only if symptoms were detected) and 63.94 (±22.67) for self-care confidence. No significant variation was found for sociodemographic characteristics or declared comorbidities, except self-care management, which was better in those with 2 or more comorbidities such as diabetes, hypertension, and arthritis (p = 0.004 Fisher's exact test).

Conclusions: The results were comparable with previous research studies conducted in Italy on self-care levels in HF but lower when compared to international measurements. On the interaction between comorbidities and self-care management, more research is needed due to the low number of observations, however, we can assume that managing different chronic conditions makes patients more aware of symptom recognition and proactive in providing a response.

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ASSISTENZA CARDIACA IN ACUTO NEL DIPARTIMENTO DI EMERGENZA (ASSISTENZA CARDIACA IN ACUTO)
SINCOPE (ARITMIE)
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)

MOBILIZZAZIONE SICURA E FATTIBILE DEL PAZIENTE SUPPORTATO DA ECMO: UNA REVISIONE SISTEMICA DELLA LETTERATURA

Federica Russo (a), Marika Erbetta (b), Carla Vigliano (c)
(a) AOU AL S.C. PNEUMOLOGIA; (b) AOU AL S.C. EMERGENZA SANITARIA TERRITORIALE 118 ALESSANDRIA - AZIENDA SANITARIA ZERO; (c) AOU AL SS SEMINTENSIVA/OBI

Background: l'Extracorporeal membrane oxygenation è un dispositivo meccanico, progettato negli anni'50 da John Gibbon, in grado di supportare temporaneamente, per giorni o mesi, la funzione cardiaca e/o polmonare, portando al recupero o alla sostituzione dell'organo danneggiato. Esistono due tipi di configurazioni: l'ECMO veno-arterioso, in grado di ripristinare la funzionalità cardiaca e/o polmonare e l'ECMO veno-venoso, utilizzata in pazienti con grave insufficienza respiratoria quando il ventilatore polmonare non è più in grado di mantenere un adeguato scambio gassoso.

Obiettivo: descrivere manovre di mobilizzazione rivolte al paziente supportato da ECMO in termini di sicurezza e fattibilità.

Materiali e metodi: la revisione è stata condotta utilizzando i tre elementi costituenti il PIO.
La ricerca è stata effettuata consultando le banche dati biomediche Pubmed e Cinhal con l'utilizzo dell'indicatore booleano AND. Sono stati inclusi nella revisione studi pubblicati negli ultimi dieci anni ed è stata esclusa la popolazione pediatrica.

Risultati: in questa revisione sono stati presi in esame sei articoli di cui quattro studi osservazionali retrospettivi, uno studio osservazionale e uno studio di coorte retrospettivo. La popolazione è composta da pazienti adulti, con un'età media compresa tra i 17 e i 68 anni, supportati da configurazione ECMO veno-venosa, veno-arteriosa e con cannulazione femorale.

Discussioni e conclusioni: Gli studi analizzati hanno come obiettivo la fattibilità e la sicurezza della mobilizzazione del paziente supportato da ECMO e forniscono all'équipe multidisciplinare tecniche di mobilizzazione, dispositivi e protocolli atti a garantire l'incolumità dell'assistito. Tutti i pazienti supportati da ECMO V-A e V-V, che hanno partecipato alla mobilizzazione precoce, sono stati valutati prima da un team multidisciplinare utilizzando dei criteri di candidabilità, per l'idoneità alla terapia attiva. Da questa revisione è emerso l'importanza della valutazione clinica del paziente, prima di effettuare qualsiasi manovra di mobilizzazione; la presenza di un'équipe multidisciplinare e l'utilizzo di dispositivi di mobilizzazione idonei al tipo di configurazione ECMO. La mobilizzazione del paziente supportato da ECMO risulta sicura e fattibile nel rispetto dei criteri di candidabilità utilizzati dai professionisti sanitari prima di attuare manovre di mobilizzazione.

Parole chiavi: ossigenazione extracorporea a membrana, mobilizzazione precoce, deambulazione precoce, sicurezza, fattibilità.

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TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
RIABILITAZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)

DYADIC CONCORDANCE IN SYMPTOM RECOGNITION SPEED AMONG OLDER ADULTS WITH HEART FAILURE AND COEXISTING CHRONIC CONDITIONS AND THEIR INFORMAL CAREGIVERS

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(a) UNIVERSITÀ DEGLI STUDI DI MILANO-BICOCCA; (b) UNIVERSITÀ DEGLI STUDI DI ROMA "TOR VERGATA"; (c) UNIVERSITÀ CAMPUS BIO-MEDICO DI ROMA; (d) LINK CAMPUS UNIVERSITY

Background: Older adults with heart failure (HF) are often affected by other chronic conditions. This coexistence contributes to complex symptom patterns that make symptom recognition and management challenging. Accurate and prompt identification of symptoms is nevertheless essential to ensure subsequent effective management and improve outcomes. Informal caregivers, such as family members and friends, play a significant role in supporting patients with HF, but discrepancies between patients and caregivers in the timeliness of symptom recognition may occur and adversely affect decision-making and health outcomes. Although dyadic concordance (i.e., agreement with each other within the patient–caregiver dyad) in symptom recognition has been examined in HF, little is known about dyadic concordance in the speed of recognition, how this evolves over time, and which factors may influence it.

Aim: The aim of this study was to investigate dyadic concordance in the speed of symptom recognition among older adults with HF affected by other chronic conditions and their informal caregivers. Specifically, we examined (1) the level of concordance in the speed of symptom recognition; (2) changes in such concordance over 12 months; and (3) its predictors.

Methods: A longitudinal multicenter observational study was conducted enrolling patients aged ≥65 years with HF and at least one additional chronic condition, and their informal caregivers. Data were collected at baseline (T0), after six months (T1), and 12 (T2) months. Speed in symptom recognition was assessed using the specific item of the Self-Care of Chronic Illness Inventory (SC-CII) and its caregiver version (CC-SC-CII). Responses were dichotomized into "slow recognition" (scores 0-2) and "fast recognition" (scores 3-5). For each timepoint, a dyad was considered concordant if both members gave responses within the same recognition category (either both slow or both fast), while all other combinations were considered discordant. Generalized linear mixed models were used to analyze concordance over time and predictors of dyadic patterns.

Results: The sample included 351 patient-caregiver dyads (median patient age=80 years, 52% female; median caregiver age=52 years, 79% female). At T0, 74% (n=224) of dyads were concordant in symptom recognition speed. Concordance in recognition speed did not show differences over time (OR T1 vs T0=0.85, 95% CI: 0.43; 1.68; OR T2 vs T0=0.67, 95% CI: 0.33; 1.36). Predictors of dyadic concordance included increasing number of patient chronic conditions (OR of incongruence=0.49, 95% CI: 0.25; 0.93), higher patient self-care self-efficacy (OR=0.91, 95% CI: 0.87; 0.95), and stronger patient mutuality (OR=0.11, 95% CI: 0.02; 0.68). Predictors of dyadic discordance included higher caregiver education (OR [education over secondary

school]=8.27, 95% CI: 1.22; 56) and stronger caregiver mutuality (OR=5.82, 95% CI: 1.16; 29.2).

Conclusions: Among patient-caregiver dyads managing HF with additional chronic conditions, concordance in symptom recognition speed was generally high, stable, and influenced by both patient and caregiver factors. These findings underscore the importance of interventions that enhance dyadic communication, strengthen self-efficacy, and support relational dynamics to maintain timely symptom recognition. Targeted strategies for both patients and caregivers may improve decision-making and clinical outcomes, offering practical guidance and directions for future research in managing complex chronic conditions.

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PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
BIG DATA (TELECARDIOLOGIA ED E-HEALTH)
RIABILITAZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)

SHAPING THE FUTURE OF CARDIOVASCULAR CARE THROUGH MULTIDISCIPLINARY EDUCATION: STUDY TOGETHER TO CARE TOGETHER

Angelo Fattorusso (b), Paola Quadrelli (c), Maria Leone (c), Bianca Reitano (e), Dylan Tempone (d), Eleonora Borghini (b), Sara Bertilorenzi (c), Daniele Calevro (c), Michela Maffei (f), Angela Durante (a, b), Michele Emdin (a, b)
(a) CENTRO INTERDISCIPLINARE HEALTH SCIENCE, SCUOLA SUPERIORE SANT'ANNA, PISA; (b) FONDAZIONE TOSCANA GABRIELE MONASTERIO, PISA ; (c) FONDAZIONE TOSCANA GABRIELE MONASTERIO, MASSA; (d) AZIENDA OSPEDALIERO-UNIVERSITARIA SANT'ANNA, FERRARA; (e) AZIENDA OSPEDALIERO-UNIVERSITARIA SANTA MARIA DELLA MISERICORDIA, PERUGIA; (f) CASA DI CURA SANTA ZITA, LUCCA

Introduction: Cardiovascular diseases (CVD) remain the leading cause of death worldwide. In 2022 alone, they accounted for approximately 19.8 million deaths, representing 32% of all global mortality. The growing incidence and unfavorable epidemiological projections underscore the urgent need for effective strategies and training programs designed to foster specialized, cross-disciplinary skills. In Italy, however, training programs in the cardiovascular field that are truly person-centered remain limited.

Objectives: (1) To map training programs in cardiology for nurses and non-medical healthcare professionals involved in the care of people with CVD; (2) To compare the content of these programs with the European Society of Cardiology (ESC) Core Curriculum, using Entrustable Professional Activities (EPAs) to assess the expected level of competence.

Materials and Methods: Given the absence of a dedicated European database, a manual search was conducted to identify and catalog cardiovascular training programs across Europe. For the Italian context, data were extracted from the AlmaLaurea Interuniversity Consortium platform.

Results: Nineteen master's degree programs in the cardiovascular field were identified in Italy, distributed across Northern (n=9) and Central (n=10) regions. All programs were classified at EPA level 7 and have been tracked since 2017. Currently, only seven remain active, though it is unclear whether they have consistently reached the minimum enrollment threshold. Among these, three are restricted to healthcare professionals from the L/SNT1* class; one admits L/SNT1 and L/SNT3* classes; another is open to L/SNT1, L/SNT2*, and L/SNT3 classes; one is limited to L/SNT3; and only one program is open to all healthcare professional classes. At the European level, nine active programs were identified: five in the United Kingdom, four in Spain, and eight in France. In Italy, the only master's degree accessible to all non-medical healthcare professionals demonstrated 82% alignment with the ESC Core Curriculum for Cardiovascular Nurses and Allied Professionals, based on the modules completed to date (two of five- ongoing master).

Conclusions: Despite this mapping could result incomplete due to the limitations of the methods but it surely underlines that specific education programmes are needed, and that implementing multidisciplinary training pathways is essential to addressing systemic challenges, reducing disparities in access to care, minimizing inefficiencies, and ultimately improving public health. This requires innovative approaches that integrate knowledge across professional profiles,

prioritize person-centered care and research, and ensure the development of robust, up-to-date competencies. Multidisciplinary training represents a crucial step toward flexible care models that reflect today's complexities and inspire future generations of healthcare professionals.

**Legend of Degree Classes (Italy - Health Professions, Classi di Laurea Sanitarie):*

- *L/SNT1 = Nursing and Midwifery (includes nurses, midwives)*
- *L/SNT2 = Rehabilitation Professions (includes physiotherapists, speech therapists, orthoptists, etc.)*
- *L/SNT3 = Technical Professions in Healthcare (includes biomedical laboratory technicians, radiographers, neurophysiopathology technicians, etc.)*
- *L/SNT4 = Health Professions of Prevention (includes environmental and workplace prevention technicians, health assistants, etc.)*

ASSISTENZA INFERMIERISTICA E TECNICA IN CARDIOLOGIA 302
ASSISTENZA CARDIACA IN ACUTO NEL DIPARTIMENTO DI EMERGENZA (ASSISTENZA CARDIACA IN ACUTO)
ASSISTENZA INTENSIVA CARDIOVASCOLARE IN ACUTO (ASSISTENZA CARDIACA IN ACUTO)
SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO)

SONNO E DELIRIUM SUBCLINICO IN TERAPIA INTENSIVA POST CHIRURGICA CARDIACA: ANALISI OSSERVAZIONALE

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Introduzione: Il delirium in terapia intensiva è una condizione clinica acuta che colpisce frequentemente i pazienti sottoposti a chirurgia cardiaca, con conseguenze rilevanti sulla qualità della vita e sul recupero post-operatorio. Tra i fattori predisponenti, la qualità del sonno emerge come elemento critico, spesso compromesso durante la degenza in terapia intensiva. Comprendere questa relazione può facilitare interventi preventivi e migliorare gli esiti a lungo termine. Diversi studi si concentrano sulla presenza del delirium in terapia intensiva nei diversi setting di cura ma non è ancora chiaro come si manifesta il delirium subclinico nei pazienti sottoposti a chirurgia cardiaca.

Obiettivo: L'obiettivo dello studio è quello di descrivere il delirium subclinico nei pazienti sottoposti a chirurgia cardiaca e la qualità del sonno.

Metodi: Uno studio osservazionale su 69 pazienti reclutati consecutivamente, alla quale è stato valutato il delirium subclinico con la scala ICDSC. Il sonno è stato valutato attraverso i seguenti criteri: (1) il periodo di sonno inferiore a 4 ore o risvegli frequenti durante la notte (da non considerare la veglia provocata dal personale o dal rumore ambientale), (2) Dormire per la maggior parte del giorno. Per qualsiasi di queste voci è stato assegnato 1 punto.

Risultati: Dei 69 pazienti includi il 76,8(n=53) è di sesso femminile, mentre, il 23,2(n=16) di sesso maschile. L'età media era 53,2 con DS=4,2. Dall'analisi statistica emerge una relazione tra i risvegli frequenti e un periodo di sonno inferiore alle 4 ore per notte è il delirium subclinico (B=1.05, ES=0.34, P=0,01). Inoltre, il delirium subclinico risulta essere associato ad un aumento alla sopravvivenza in terapia intensiva (P<0.001). Discussione Lo studio evidenzia una significativa associazione tra scarsa qualità del sonno e delirium subclinico nei pazienti sottoposti a chirurgia cardiaca. I risvegli frequenti e il sonno frammentato appaiono fattori predittivi. Il delirium subclinico incide sulla durata della degenza.

Conclusione: Migliorare la qualità del sonno in terapia intensiva potrebbe ridurre l'incidenza del delirium subclinico. Studi futuri dovranno valutare interventi specifici per ottimizzare il riposo notturno.

ASSISTENZA INFERMIERISTICA E TECNICA IN CARDIOLOGIA 62
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
ASSISTENZA CARDIACA PRE-OSPEDALIERA
(ASSISTENZA CARDIACA IN ACUTO)
ASSISTENZA INTENSIVA CARDIOVASCOLARE IN ACUTO
(ASSISTENZA CARDIACA IN ACUTO)

PSYCHOMETRIC VALIDATION OF THE CAREGIVER PREPAREDNESS SCALE FOR INFORMAL CAREGIVERS OF PATIENTS WITH CORONARY HEART DISEASE

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Background: Informal caregivers play a crucial role in supporting adherence to self-care among patients with coronary heart disease (CHD). One of the key factors influencing caregiver effectiveness is the perceived level of preparedness to provide care. Although the Caregiver Preparedness Scale (CPS) has been validated in various clinical populations, no previous study has assessed its psychometric properties specifically in caregivers of patients with CHD. This study aimed to evaluate the psychometric properties of the CPS among Italian informal caregivers of patients with CHD.

Methods: A secondary analysis was conducted using baseline data from the HEARTS-IN-DYADS study, involving 155 informal caregivers (mean age = 54 years, SD = 14; 80% female; 60% partners of the patients; average of 5 hours of caregiving per day declared). Participants completed the CPS, the Generalized Anxiety Disorder Scale (GAD-7), the Mutuality Scale, and the Caregiver Self-Efficacy in Contributing to Self-Care Scale. Psychometric evaluation was performed using both Classical Test Theory (CTT) and Item Response Theory (IRT) approaches. Internal consistency was assessed using the Omega coefficient, and the factor structure was examined through confirmatory factor analysis (CFA). The Graded Response Model was employed to estimate item discrimination and threshold parameters. Construct validity was evaluated via Pearson correlations with external measures.

Results: The mean CPS total score was 19 (SD = 6.92), indicating a moderate level of perceived preparedness among caregivers. The scale demonstrated excellent internal consistency (Omega = 0.94) and a unidimensional factor structure with strong model fit (CFI = 0.97, TLI = 0.96, RMSEA = 0.077). IRT analysis indicated high item discrimination (range: 2.05–4.12) and appropriately distributed threshold parameters. One item—focused on emergency preparedness—showed lower discrimination and information but remained within acceptable limits. Minor local dependence was observed between two item pairs (Q1–Q6 and Q3–Q8), but this did not compromise the scale's overall validity. Construct validity was supported by moderate-to-strong positive correlations with mutuality (r = 0.50) and self-efficacy (r = 0.54), and a weak but significant negative correlation with anxiety (r = –0.17).

Conclusion: The CPS is a valid and reliable instrument for assessing caregiver preparedness in CHD, with promising applications in both clinical assessment and targeted intervention planning.

ASSISTENZA INFERMIERISTICA E TECNICA IN CARDIOLOGIA 614 INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE) TRATTAMENTO POST-INFARTO (CARDIOPATIA ISCHEMICA) TELEMEDICINA IN CARDIOLOGIA (TELECARDIOLOGIA ED E-HEALTH) APPS IN CARDIOLOGIA (TELECARDIOLOGIA ED E-HEALTH)

RETHINKING RECOVERY: IL VALORE DELLA RIABILITAZIONE CARDIOLOGICA NELLA CONTINUITÀ ASSISTENZIALE

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Introduzione: La riabilitazione cardiologica rappresenta una fase cruciale dopo intervento coronarico percutaneo (PCI), ma l'accesso ai programmi tradizionali è spesso limitato da barriere logistiche e organizzative. La teleriabilitazione cardiaca domiciliare (HBCTR), supportata da piattaforme digitali e telenursing, emerge come intervento multidisciplinare efficace per migliorare recupero funzionale, psicologico e sociale, garantendo continuità assistenziale, aderenza terapeutica ed equità di accesso.

Metodi: È stata condotta una revisione sistematica secondo linee guida PRISMA. Sono stati inclusi studi randomizzati controllati e osservazionali che valutavano programmi HBCTR in pazienti adulti post-PCI. La ricerca è stata effettuata su PubMed, CINAHL, Scopus, Cochrane Library e Web of Science. Gli esiti primari si sono concentrati sulla qualità della vita correlata alla salute (HRQoL) e sull'aderenza, mentre gli esiti secondari includevano la capacità funzionale, il controllo dei fattori di rischio cardiovascolare e il benessere psicologico.

Risultati: Sono stati identificati 17 articoli in cui L'HBCTR è stato associato a miglioramenti significativi nella capacità di esercizio, con aumenti del volume massimo di ossigeno consumato per minuto (VO2max) compresi tra +1,6 e +3,5 mL/kg/min e della distanza percorsa in 6 minuti di cammino (6MWT) da +34,7 a +116,6 m. I punteggi della HRQoL sono migliorati significativamente, con punteggi delle componenti fisica e mentale aumentati rispettivamente da +6,75 a +14,18 e da +4,27 a +11,39 punti. L'aderenza ai programmi di HBCTR è stata costantemente elevata, spesso superiore all'80%, e alcuni studi hanno riportato riduzioni dei ricoveri ospedalieri fino al 40%. Dispositivi indossabili e applicazioni per smartphone hanno facilitato l'automonitoraggio, migliorando l'aderenza e riducendo i ricoveri. Diversi studi hanno anche evidenziato miglioramenti nei punteggi di ansia e depressione compresi tra il 10% e il 35%.

Conclusioni: La HBCTR , oltre a produrre benefici clinici e psicologici, favorisce una maggiore aderenza e supera barriere strutturali che ostacolano l'accesso ai programmi tradizionali. Il coinvolgimento attivo degli infermieri nella gestione e nel supporto educativo dei pazienti rappresenta un elemento chiave per consolidare l'autogestione e garantire continuità di cura. La HBCTR si configura come un modello sostenibile e innovativo per la pratica clinica post-PCI.

ASSISTENZA INFERMIERISTICA E TECNICA IN CARDIOLOGIA 937 INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE) INTERVENTISTICA STRUTTURALE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE) IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)

IL WORKFLOW IN SALA IBRIDA: UNA NUOVA SFIDA INFERMIERISTICA

Emanuele Marchione (a)
(a) POLICLINICO UMBERTO I

Ad oggi la frontiera della cardiologia interventistica è in continua espansione, e l'affermazione sala ibrida cardiovascolare rappresenta un obiettivo assoluto.
La sala ibrida è una sala operatoria all'avanguardia che integra strumentazioni di diagnostica radiologica con le attrezzature chirurgiche tradizionali, creando un ambiente multidisciplinare e altamente tecnologico per interventi complessi di cardiologia, chirurgia vascolare e cardiologia interventistica.

Questo ambiente avanzato permette di eseguire procedure ibride, combinando tecniche chirurgiche a cielo aperto con tecniche percutanee (mininvasive), offrendo maggiore precisione, sicurezza, e migliorando i tempi di recupero per il paziente.
Per garantire un workflow ottimale in sala ibrida è opportuno organizzare un planning infermieristico modulare ed intercambiabile; la figura infermieristica, in continuo aggiornamento, è centrale nella fluidità ed affidabilità del processo professionale interdisciplinare che ha nel suo outcome la migliore esperienza possibile per il paziente, attore protagonista del nostro lavoro.
In queste slides si individuano processi fondamentali per la gestione della sala ibrida, sia dal punto di vista del personale che dal punto di vista dei materiali.

CardioSic

ASSISTENZA INFERMIERISTICA E TECNICA IN CARDIOLOGIA 939
ECMO (ASSISTENZA CARDIACA IN ACUTO)
SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO)
ASSISTENZA INTENSIVA CARDIOVASCOLARE IN ACUTO (ASSISTENZA CARDIACA IN ACUTO)
INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

DISPOSITIVI DI ASSISTENZA VENTRICOLARE: IL RUOLO DELL'INFERMIERE

Emanuele Marchione (a)
(a) POLICLINICO UMBERTO I

Ad oggi sul mercato esistono vari sistemi di assistenza ventricolare, tutti con caratteristiche specifiche, criteri di utilizzo e gestione e relativi benefici.
In sala ibrida è molto comune dover ricorrere all'utilizzo di questi devices, i quali possono venire utilizzati e gestiti dalla figura nfermieristica.
In queste slides si espone una carrellata dei vari devices disponibili ed utilizzabili, il criterio di scelta, il funzionamento ed il ruolo dell'infermiere nella loro gestione ed utilizzo.

ASSISTENZA INFERMIERISTICA E TECNICA IN CARDIOLOGIA 941
ARITMIE VENTRICOLARI (ARITMIE)
ARITMIE SOPRAVENTRICOLARI (ESCLUSA FA) (ARITMIE)
ASSISTENZA INTENSIVA CARDIOVASCOLARE IN ACUTO (ASSISTENZA CARDIACA IN ACUTO)

ARITMIE CARDIACHE IN SALA IBRIDA: IL RUOLO DELL'INFERMIERE

Emanuele Marchione (a)
(a) POLICLINICO UMBERTO I

Il ruolo dell'infermiere nel trattamento dell''aritmia cardiaca è poliedrico; include l'esecuzione di ECG, il riconoscimento di tracciati anomali per allertare il medico, la monitoraggio continuo dei parametri vitali, la gestione dei dispositivi terapeutici (come defibrillatori), l'educazione del paziente riguardo la patologia e lo stile di vita, e il supporto nel follow-up per prevenire complicanze e migliorare la qualità della vita del paziente. In sala ibrida è comune trovarsi di fronte ad un'aritmia cardiaca: in queste slides viene spiegato come riconoscerle, come interventire e come gestire il paziente.

ASSISTENZA INFERMIERISTICA E TECNICA IN CARDIOLOGIA 595 INTERVENTISTICA STRUTTURALE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE) COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE) PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)

STRUCTURAL HEART TEAM: UN PROGETTO MULTIDISCIPLINARE PER LA GESTIONE OTTIMALE E INTEGRATA DELLE PROCEDURE STRUTTURALI

Antonio Mellino (a)
(a) IRCCS CENTRO CARDIOLOGICO MONZINO

Introduzione

Le procedure di cardiologia interventistica strutturale richiedono un'elevata integrazione tra competenze cliniche, organizzative e tecnico-assistenziali. In questo contesto, il progetto presentato rappresenta un'evoluzione dell'implementazione del Clinical Valve Coordinator, avviata nel novembre 2024, e si configura come un continuum strategico volto a rafforzare la governance multidisciplinare dei percorsi strutturali. Il progetto nasce all'interno di un centro ad alta specializzazione, in cui si eseguono circa 400 procedure strutturali l'anno, ponendo l'accento sull'esigenza di un'organizzazione infermieristica e tecnica strutturata e altamente qualificata.

Materiali e Metodi

Il progetto, attualmente in fase di definizione, prevede la costituzione di uno Structural Heart Team infermieristico e tecnico, stabile e multidisciplinare, con competenze trasversali dedicate al supporto delle procedure valvolari e strutturali avanzate. Il team sarà composto da professionisti provenienti da emodinamica, blocco operatorio, degenza post-procedura e radiologia.

Ogni membro parteciperà a un percorso formativo strutturato e progressivo, finalizzato a sviluppare una conoscenza approfondita e trasversale dell'intero processo di presa in carico del paziente, incluse tutte le specificità cliniche, organizzative e tecnico-assistenziali necessarie a garantirne una gestione sicura, efficace e personalizzata.

In particolare, il progetto si propone di raggiungere i seguenti obiettivi operativi:

- Standardizzare la presa in carico del paziente strutturale, attraverso l'applicazione coerente di protocolli condivisi e tracciabili, per assicurare continuità assistenziale e riduzione della variabilità clinico-organizzativa.
- Ottimizzare l'efficienza e la sicurezza procedurale, mediante una gestione strutturata dei dispositivi, dei ruoli operativi e dei flussi di lavoro in sala, riducendo i tempi tecnici e il rischio di complicanze.
- Favorire il coinvolgimento attivo e continuo del team, attraverso la partecipazione a momenti formativi, briefing multidisciplinari e attività di aggiornamento legate alla gestione dei materiali, delle tecnologie e delle procedure.

Risultati Attesi

Attraverso l'integrazione di questi elementi, ci si attende un miglioramento della qualità assistenziale, della sicurezza procedurale e dell'efficienza organizzativa. Il team diventerà un punto di riferimento stabile per le procedure strutturali, riducendo la variabilità, migliorando la comunicazione intra-operatoria e promuovendo una cultura condivisa.

Conclusioni

Lo Structural Heart Team rappresenta un'evoluzione naturale e strategica del percorso iniziato con l'introduzione del Clinical Valve Coordinator. La valorizzazione del ruolo infermieristico e tecnico, l'integrazione interprofessionale e il focus sulla formazione continua costituiscono i pilastri per affrontare la crescente complessità delle cardiologie interventistiche avanzate, garantendo un approccio centrato sul paziente e orientato all'eccellenza clinico-organizzativa.

ASSISTENZA INFERMIERISTICA E TECNICA IN CARDIOLOGIA 225 APPS IN CARDIOLOGIA (TELECARDIOLOGIA ED E-HEALTH) ATTIVITÀ FISICA E PREVENZIONE CARDIOVASCOLARE (ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT) RIABILITAZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)

USING IMMERSIVE REALITY IN CARDIAC REHABILITATION: A QUALITATIVE STUDY

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Background: Heart failure (HF) affects over 64 million people worldwide and remains associated with high morbidity, mortality, and healthcare costs despite therapeutic advances. Cardiac rehabilitation improves functional capacity and quality of life while reducing hospitalizations, but adherence is often suboptimal due to clinical, psychological, social, and organizational barriers. Immersive virtual reality is a promising strategy to enhance adherence and optimize patient outcomes. This study aimed to explore HF patients' experiences with immersive virtual reality during cardiac rehabilitation.

Methods: A qualitative study was embedded within an ongoing randomized controlled trial designed to assess the effects of immersive virtual reality on HF patients undergoing cardiac rehabilitation. The protocol consists of eight supervised 30-minute sessions over four weeks at moderate intensity. Participants in the intervention group perform aerobic exercises on a stationary bicycle and calisthenic exercises while being immersed in natural environments using a PICO 4® headset and XR® software. The control group performs the same exercise protocol without the use of this technology. Semi-structured, face-to-face interviews were conducted with participants in the intervention group after their final session. Interviews (mean 20 minutes) were audio-recorded, transcribed, and analysed using content analysis. Data were collected at a public hospital in Italy between September 2024 and January 2025. Inclusion criteria were age >18 years, clinically stable chronic HF, and left ventricular ejection fraction <40%. Exclusion criteria included contraindications to exercise, sensory deficits preventing immersive virtual reality use, severe cognitive impairment, end-stage renal disease, advanced pulmonary disease, active malignancy, or rheumatic conditions. Ethical approval was obtained (approval n. XXXXX); the parent study was registered on ClinicalTrial.gov (XXXXXX).

Results: All participants were Italian, with a mean age of 68 years, 81% of whom were men. All patients had HF with reduced ejection fraction, ranging from 23 to 39%, and the majority were functionally classified as NYHA (New York Heart Association) class II (59%). Data saturation was reached with 22 interviews. Content analysis identified four main categories and nine subcategories: (1) cognitive and emotional benefits (acceptability and enrichment of rehabilitation, positive emotions, cognitive engagement); (2) impact on rehabilitation (physical engagement, perceived effort); (3) customizable intervention (variety of scenarios, quality and beauty of videos); and (4) negative aspects (equipment discomfort, difficulties in using the devices).

Conclusions: Immersive virtual reality is a promising digital health intervention that may improve patient adherence to CR. Moreover, immersive virtual reality may support the humanization of care by offering cognitive, emotional, and physical benefits, with a personalized approach. Our study demonstrated that immersive virtual reality enhances motivation, enjoyment, time perception, and anxiety management while reducing perceived effort. The negative aspects identified in our study may be mitigated through patient familiarization, dedicated training, and the adoption of more advanced devices.

ASSISTENZA INFERMIERISTICA E TECNICA IN CARDIOLOGIA 571 CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO) TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO) TELEMEDICINA IN CARDIOLOGIA (TELECARDIOLOGIA ED E-HEALTH)

PROGETTO DI NURSING AVANZATO IN PAZIENTI CON AMILOIDOSI CARDIACA: L'ESPERIENZA DI TRENTO

Michele Moretti (a), Cristina Terragnolo (a), Monica Furlan (a), Manuela Iseppi (a), Fabiola Morat (a), Eleonora Bonvicini (a), Giuseppina Gasperi (a), Federica Bonfante (a), Roberto Bonmassari (a)
(a) U.O. CARDIOLOGIA, OSPEDALE S. CHIARA, TRENTO

Background: L'amiloidosi cardiaca (AC) è una malattia rara secondaria in oltre il 90% dei casi ad un accumulo di fibrille amiloidi derivate da catene leggere (AL) o da transtiretina (ATTR). La sua prevalenza è in costante aumento, in particolare per le forme ATTR soprattutto grazie al miglioramento delle tecniche diagnostiche. L'età media dei pazienti con AC è avanzata e supera i 78-80 anni per le forme ATTR. I pazienti con AC possono presentare multiple comorbidità e sindromi geriatriche fra cui fragilità, malnutrizione e deterioramento cognitivo che incidono negativamente su prognosi e qualità della vita. Il ruolo dell'Infermiere specializzato nella gestione di pazienti con AC non è ancora stato studiato e potrebbe rivestire un avanzamento per molti aspetti quali la valutazione multidimensionale seriata, rinforzo educazionale, monitoraggio da remoto, miglioramento dell'aderenza terapeutica, gestione della terapia diuretica, controllo dei sintomi e comorbidità.

Metodi: Presso l'Ambulatorio Cardiomiopatie della U.O. cardiologia di Trento è stato attivato dal 9/2024 un progetto di nursing avanzato per i pazienti con AC. La prima valutazione prevede la rilevazione di scale multidimensionali e funzionali (Clinical frailty score (CFS), KCCQ, Mini nutritional assessment (MNA), Short portable mental state (SPMSQ), test del cammino (6MWT)); il follow-up successivo viene programmato in base alle caratteristiche all'arruolamento e agli score prognostici (NAC, Mayo) e si può avvalere del supporto di strumenti di telemedicina (App dedicata, kit di telemonitoraggio domiciliare con bilancia, sfigmomanometro e saturimetro).

Risultati: Dal 2/9/2024 sono stati arruolati nel progetto 45 pazienti con AC (8 AL e 37 ATTR); l'età media è di 79 anni e 8 pazienti (18%) sono di sesso femminile. I dati rilevati all'arruolamento sono riportati in tabella. La valutazione multidimensionale ha evidenziato un quadro di fragilità (CFS ≥5) nel 29% dei casi, deterioramento cognitivo (SPMSQ ≥3) nel 43% dei casi e iniziale stato malnutritivo (MNA ≤11) nel 64% dei casi.
Il 60% dei pazienti sono stati seguiti anche con sistemi di telemonitoraggio (5 pazienti (11%) hanno rifiutato di

Pazienti totali	8	37	45
Età media	76	79	79
Sesso F n,(%)	4(50)	4(11)	8(18)
NAC		1.6	
Mayo	2.3		
6MWT (m)	279	334	334
KCCQ	69	71	71
CFS	6	3.3	3.3
MNA	9.5	11.9	11.9
SPMSQ	1.5	2.6	2.6

Tabella 1

ritirare il kit domiciliare, 13 (33%) non aderenti alle rilevazioni periodiche dei parametri). Due pazienti (ATTR, età media 86 anni) sono deceduti durante il follow-up.

Conclusioni: I primi 12 mesi dall'avvio del progetto hanno permesso di verificare la fattibilità di un follow-up integrato con nursing avanzato in pazienti con AC. I dati rilevati hanno permesso di evidenziare una significativa frequenza di sindromi geriatriche, in linea con i dati di letteratura. I sistemi di telemonitoraggio sono stati utilizzati con continuità solo nel 60% dei casi.

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ASSISTENZA CARDIACA IN ACUTO NEL DIPARTIMENTO DI EMERGENZA (ASSISTENZA CARDIACA IN ACUTO)
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RIABILITAZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)

BEYOND TRADITIONAL ROTATIONS: HUB-AND-SPOKE CLINICAL PLACEMENTS ENHANCE CARE CONTINUITY IN CARDIOVASCULAR NURSING

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Introduction: In community care, health policy prioritizes the training and education of nurses to effectively manage patients with significant or priority health problems (PHPs). The focus is on clinical subjects that enable nurses to understand and execute Diagnostic-Therapeutic-Care Pathways (DTCPs).Previous research on the Hub-and-Spoke (HS) model for organizing student placements, shows how this model links a main clinical site (Hub) with additional learning opportunities in others areas of the patient's care pathways (Spokes). This approach helps students'better understand the entire patient care process and improves awareness of the different nursing roles within a service institution.

Aim: To evaluate how the Hub-and-Spoke (HS) model is used in cardiovascular ward placements for Bachelor of Nursing students at the University of Piemonte Orientale (UPO). The specific objective is to measure how well the HS model helps students achieve their clinical learning outcomes, focusing on the priority health issue of heart failure.

Methods: A cross-sectional design will be adopted, enrolling nursing students from the Alessandria campus. Specifically, first- and second-year students who have completed necessary prerequisites and third-year students who have not yet completed their first third-year clinical placement will be included; all third-year students who have already completed their first third-year clinical placement will be excluded. The placement pathways will aligned with the DTCPs of Azienda Sanitaria Locale Alessandria (ASL AL)for heart failure.

The implementation of the HS model will be evaluated using the following measurement tools:

a) The placement performance evaluation form currently in use at UPO;
b) Standardized learning indicators specifically developed for this study, focusing on: students' knowledge of the priority health problem (heart failure) and its DTCP, their ability to identify care needs, communication skills, and educational activities involving the cardiovascular dyad (patient and caregiver);
c) Internship examination evaluation

Data collection will take place over a total period of 9 months, following formal informed consent from students assigned to the placement pathway. This process will occur in two phases: the first at the end

of placement periods (a,b) and the second after the semester examination sessions (c).

Expected Results: The study is expected to have clinical implications, with the HS model being linked to improved student performance in understanding and addressing the complex needs of patients with heart failure.
Additionally, the findings may have scientific implications by supporting the use of the HS model for clinical placements in other cardiovascular diseases (ischemic coronary artery disease).

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TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)
DEFIBRILLATORE IMPIANTABILE (ARITMIE)
ENDOCARDITI (VALVULOPATIE)
SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO)
TERAPIA DI RESINCRONIZZAZIONE (ARITMIE)

A MAN WITH MULTIPLE HEARTS: A CLINICAL ODYSSEY OF SURVIVAL

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(a) AZIENDA OSPEDALIERA SPECIALISTICA DEI COLLI - V. MONALDI; (b) GESCO CONSORZIO COOP. SOCIALE, UOSD CURE DOMICILIARI

Introduction: This case study focuses on the many facets of therapies the patient required. The medical history begins with a severe primary dilated cardiomyopathy (DCM) caused by drug abuse. The DCM required the implantation of an intracavitary cardiac resynchronization defibrillator (CRT-D). After regaining LVEF and cardiac contractility, the patient encountered his first obstacle: severe endocarditis, requiring removal of the leads and generator. After treatment with antibiotics, the patient was protected from fatal arrhythmic events with the implantation of a subcutaneous cardioverter-defibrillator (S-ICD). This reduces the risk of infection, but it did not allow for cardiac resynchronization. Consequently, the left ventricle dilated again, along with the mitral annulus, worsening the failure to a severe degree. The patient also began to become symptomatic. Endovascular implantation of a Mitraclip was necessary, which reduced respiratory failure and obstruction. However, this did not last long, and the patient was urgently admitted to intensive care for severe pulmonary edema.

Materials and Methods: We present the clinical history of a 47-year-old man with severe primary dilated cardiomyopathy secondary to substance abuse. He underwent various advanced therapeutic procedures, including a heart transplant.

Discussion: The man's heart was severely deteriorated, not only due to the disease but also due to all the previous surgeries. An Impella was placed to support the patient's hemodynamics and he was placed on the emergency regional transplant list, but his heart failed, so a Total Artificial Heart (TAH), the CARMAT, was implanted. The patient underwent surgery, and the postoperative course appeared to be good, although his hemoglobin levels were difficult to recover. The sternal wound began to show signs of leakage, including blood, and so he was placed on VacTherapy, which partially resolved the problem but also worsened it, as the vacuum suction drew more and more blood from the wound. A CT angiogram revealed the diagnosis: "an anastomosis between the Carmat and the ascending aorta had failed," and the patient, already infected, had a high risk of mortality from repeat surgery. Once again added to the national emergency transplant list, a donor was fortunately found a few days later, and the patient received the necessary care for a heart transplant. The patient was discharged 10 days after surgery.

Conclusion: This case highlights the extreme complexity of management and the sequence of possible therapeutic strategies, from implantable defibrillator to TAH to transplant. This experience underscores how the total artificial heart can represent a vital bridge to transplant, even in the presence of severe complications.

ASSISTENZA INFERMIERISTICA E TECNICA IN CARDIOLOGIA 569
TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT)
(IMAGING CARDIOVASCOLARE)
INTELLIGENZA ARTIFICIALE (TELECARDIOLOGIA ED E-HEALTH)
IMAGING MIOCARDICO-PERICARDICO
(MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

THE CORONARY CT REVOLUTION: PHOTON COUNTING AND AI

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UOSD CURE DOMICILIARI

Introduction: Coronary CT has become an essential diagnostic tool in the evaluation of coronary artery disease. However, its clinical application is limited by some intrinsic challenges related to traditional technology based on energy-integrated detectors. To overcome these limitations, two complementary technologies have emerged: the introduction of Photon Counting CT (PCCT) detectors and the integration of artificial intelligence (AI). These innovations aim to overcome the limitations of conventional CT, increasing diagnostic accuracy, reducing patient risks, and optimizing clinical workflow.

Materials and Methods: Clinical studies and published reviews evaluating the impact of PCCT and AI on coronary CT were reviewed. The main parameters considered were image quality, spatial resolution, plaque characterization, management of calcification artifacts, reporting times, and radiation dose.

Discussion: Photon Counting CT allows for the counting of individual photons and their energy measurement, obtaining images with extremely high spatial resolution and lower radiation and contrast medium doses. This allows for more detailed visualization of the coronary arteries, even in the presence of calcifications or small-caliber stents, and better tissue characterization of plaques (lipid, fibrous, calcific). AI, on the other hand, plays a fundamental clinical support role: it automates image analysis, reduces artifacts, rapidly and standardizedly quantifies the atherosclerotic burden, suggests potential significant stenoses by assessing flow velocity, and contributes to predictive cardiovascular risk stratification. The integration of these technologies reduces interpretation times, increases reproducibility, and provides more complete data for precision medicine.

Conclusion: Coronary CT with Photon Counting technology or the use of artificial intelligence marks a seismic shift in cardiovascular diagnostics. PCCT improves image quality and accuracy, while AI amplifies their clinical value through automated and predictive analysis. These new diagnostic models overcome the limitations of traditional CT, providing a more precise examination, laying the foundations for safer cardiology, reducing the emission of X-rays and contrast material, but also oriented towards the prevention of coronary events with greater precision.

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RIABILITAZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)

VALIDATION OF RISK PERCEPITION CUT-OFF IN ITALIAN BRIEF PRHDS. IMPLICATION FOR PRIMARY CARDIOVASCULAR PREVENTION

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Background: Effective cardiovascular (CV) prevention requires not only accurate estimation of actual CV risk but also patient engagement, which is influenced by the individual's perception of risk. The Perception of Risk of Heart Disease Scale (PRHDS) is a validated tool to assess perceived CV risk, yet clinical thresholds for its brief Italian version are still lacking.

Objective: This study aimed to (1) provide further evidence for the validity of the brief Italian version of the Perceived Risk of Heart Disease Scale (PRHDS) by replicating the psychometric validation in a new cohort and examining both convergent and divergent validity; and (2) establish clinically meaningful thresholds for the PRHDS and develop a discrepancy index comparing perceived cardiovascular risk with objective risk estimates.

Methods: A multicentre cross-sectional study was conducted among 285 adults aged 40–69 without a history of CV disease. Participants completed the PRHDS, underwent risk assessment using Systematic COronary Risk Evaluation 2 (SCORE2), and provided sociodemographic and clinical data. Psychological distress was assessed using the Patient Health Questionnaire-4 (PHQ-4). Confirmatory Factor Analysis (CFA), correlation analyses, and cut-off definitions were used to validate the scale and analyze discrepancies between perceived and actual risk.

Results: The brief PRHDS showed good internal consistency (Cronbach's $\alpha = 0.85$) and strong convergent validity with perceived risk measured via Likert scale ($r = 0.69$, $p < 0.001$). Clinical thresholds were defined using percentiles: scores 6–12 (low/moderate perception), 13–17 (high), and 18–24 (very high). A significant mismatch was observed: 63.5% of participants at low/moderate actual risk overestimated their risk, while

80% at very high actual risk underestimated it. The perception–reality gap was quantified and confirmed via paired-sample t-test ($p < 0.001$).

Conclusions: The brief Italian PRHDS is a valid tool for assessing CV risk perception and identifying perception gaps. Defining thresholds allows for tailored risk communication and patient-centered interventions, particularly by nursing professionals in primary prevention settings.

Keywords: Cardiovascular risk, risk perception, PRHDS, preventive cardiology, patient engagement, nursing

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ATTIVITÀ FISICA E PREVENZIONE CARDIOVASCOLARE (ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
RIABILITAZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

ESITI COGNITIVI NELLA MOBLIZZAZIONE PRECOCE POST INTERVENTO DI CARDIOLOGIA INTERVENTISTICA AD ACCESSO FEMORALE: UNA REVISIONE SISTEMATICA

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Introduzione: L'immobilizzazione prolungata dopo le procedure di cardiologia interventistica, e in particolare dopo l'impianto di valvola aortica transcatetere (TAVI), rappresenta una pratica diffusa volta a ridurre il rischio di complicanze locali, soprattutto di tipo emorragico. Tuttavia, questa strategia non è priva di conseguenze negative: restare a lungo a letto può favorire l'insorgenza di delirium, peggiorare la fragilità e rallentare il recupero funzionale nei pazienti, che sono spesso anziani e affetti da comorbidità multiple. In questo contesto si colloca l'ipotesi della mobilizzazione precoce, cioè l'avvio del movimento entro sei ore dall'intervento o comunque già nel giorno stesso della procedura. Tale approccio potrebbe migliorare l'andamento clinico e favorire un recupero più rapido, ma l'impatto sugli esiti cognitivi rimane poco definito.

Obbiettivo: L'obiettivo di questa revisione sistematica è stato quello di valutare, seguendo le linee guida PRISMA, se la mobilizzazione precoce nei pazienti sottoposti a TAVI possa avere un'influenza positiva sulla cognizione e, in senso più ampio, sugli aspetti legati alla sicurezza, alla gragilita e alle complicanze correlate.

Materiali e metodi: Per rispondere a questa domanda è stata condotta una ricerca su PubMed fino ad agosto 2025, includendo studi randomizzati controllati, osservazionali e longitudinali. Gli outcome principali considerati sono stati il deterioramento cognitivo, la comparsa di delirium e la performance neuropsicologica dei pazienti. I dati raccolti non hanno consentito una metanalisi quantitativa, pertanto l'analisi è stata condotta in forma qualitativa attraverso una sintesi narrativa.

Risultati: Dalla ricerca iniziale sono stati identificati 133 record. Dopo la rimozione dei duplicati e lo screening dei titoli e degli abstract, solo 8 studi hanno soddisfatto i criteri di inclusione e sono stati analizzati nella sintesi finale. I risultati principali mostrano che la mobilizzazione precoce è generalmente sicura e non aumenta il rischio di complicanze. Inoltre, sembra migliorare il comfort del paziente, ridurre l'ansia e favorire una maggiore autonomia già nei primi giorni post intervento. Un beneficio rilevante è stato osservato anche in relazione alla fragilità, con una riduzione della perdita funzionale rispetto ai pazienti immobilizzati più a lungo. Per quanto riguarda la cognizione, i dati disponibili suggeriscono che le funzioni cognitive appaiono preservate nel lungo termine dopo TAVI, ma non emerge in modo chiaro un legame diretto con l'avvio precoce della mobilizzazione.

Conclusioni: La discussione dei risultati evidenzia quindi che, se da un lato la mobilizzazione precoce si conferma un approccio fattibile e sicuro, dall'altro non è

ancora possibile stabilire con certezza se essa abbia un effetto specifico sugli esiti cognitivi. Le spiegazioni di questa incertezza possono risiedere nel numero limitato di studi disponibili, nella loro eterogeneità metodologica e nella scarsità di valutazioni cognitive standardizzate. In prospettiva, sarà fondamentale che futuri studi clinici randomizzati, con campioni più ampi e follow-up prolungati, affrontino in maniera mirata questo aspetto. In conclusione, la mobilizzazione precoce dopo TAVI rappresenta una strategia promettente, capace di migliorare la sicurezza, il comfort e la fragilità dei pazienti. Tutta via, l'effetto sulla funzione cognitiva rimane ancora da determinare e richiede ulteriori indagini scientifiche.

Keywords: Esiti cognitivi - valvola aortica transcatetere - mobilizzazione precoce – accesso femorale.

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ABLAZIONE TRANSCATETERE (ARITMIE)
ARITMIE SOPRAVENTRICOLARI (ESCLUSA FA) (ARITMIE)
STUDI ELETTROFISIOLOGICI INVASIVI (ARITMIE)
MECCANISMI DELLE ARITMIE (ARITMIE)

EPICARDIAL ABLATION VIA CORONARY SINUS INSTEAD OF EPICARDIAL PUNCTURE: A SAFE AND EFFECTIVE APPROACH

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(a) AOU FEDERICO II

Orthodromic AV reentrant tachycardia (AVRT) is a common type of supraventricular tachycardia, typically occurring in patients with an accessory pathway. It involves anterograde conduction through the AV node and retrograde conduction via the accessory pathway, resulting in a narrow QRS complex tachycardia. The most frequent substrate is a concealed or manifest pathway, often located in the septal or paraseptal regions.

Patient Presentation: A 40-year-old male, with no major cardiovascular risk factors and a highly active lifestyle, experienced palpitations and pre-syncope in 2021 during a football match. He presented to the ER, where symptoms resolved spontaneously. However, the ECG showed a short PR interval and delta wave, suggesting pre-excitation due to a posteroseptal accessory pathway (AP). A stress test induced tachycardia (AVRT) at 93% of the maximum predicted heart rate. The episode was self-limiting and spontaneously reverted to sinus rhythm within one minute. An electrophysiology (EP) study confirmed the presence of a posteroseptal AP, without inducible tachycardia.

Initial Workup: In 2023, the patient was re-evaluated in our department for frequent palpitations. Due to symptom recurrence, we proceeded directly with a repeat EP study and ablation attempt.

Diagnosis and Management: Programmed atrial stimulation induced orthodromic AV reentrant tachycardia (AVRT), with the earliest ventricular activation localized to the posteroseptal region (CS 5-6 dipole). Mapping the left atrium via a patent foramen ovale (PFO) revealed AP potentials 10–15 ms before QRS onset, between CS 5-6 and CS 7-8. However, endocardial ablation attempts failed to modify the pre-excitation pattern. We then proceeded to map within the coronary sinus (CS). The ablation catheter positioned at CS 5-6 recorded early AP potentials. Radiofrequency (RF) energy was delivered (15W), abolishing AP conduction after ~5 seconds. RF was continued for 40 seconds. No recurrence was observed during a 30-minute waiting period, and adenosine confirmed successful pathway elimination. The patient was discharged the following day.

Follow-up: After more than one year of follow-up, the patient remains asymptomatic, and delta waves are no longer present on routine ECGs.

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ELETTROSTIMOLAZIONE (ARITMIE)
SINCOPE (ARITMIE)
TELEMEDICINA IN CARDIOLOGIA (TELECARDIOLOGIA ED E-HEALTH)

GESTIONE IN TEAM INFERMIERE-TFCPC PER L'IMPIANTO DI LOOP RECORDER: MODELLO MULTIPROFESSIONALE INNOVATIVO DELLA NOSTRA REALTA'

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Background: L'impianto di loop recorder (ILR) è una procedura mininvasiva, breve e standardizzabile, con un profilo di sicurezza elevato. L'evoluzione tecnologica ha reso possibile una riorganizzazione dei processi, favorendo l'adozione di modelli innovativi basati su task shifting, skill mix e multiprofessionalità. In letteratura sono riportate esperienze nurse-led con esiti favorevoli (Lim et al., 2019) e analisi economiche che documentano la sostenibilità del setting semplificato (Kanters et al., 2016). Le raccomandazioni internazionali supportano la collocazione di diverse competenze in team multiprofessionali (WHO, 2008; Laurant et al., 2018), ma non sono mai stati descritti modelli in cui infermiere e tecnico di fisiopatologia cardiocircolatoria e perfusione cardiovascolare (TFCPC) collaborino in team nella gestione della procedura.

Obiettivi: Lo scopo del progetto è ridefinire l'organizzazione aziendale dell'impianto ILR mediante un modello multiprofessionale che integra infermiere e TFCPC in un percorso certificato, sicuro e replicabile, che permette di:

- Valorizzare le competenze avanzate di infermieri e TFCPC;
- Standardizzare la procedura attraverso istruzioni operative condivise e audit periodici;
- Garantire elevati standard di sicurezza e qualità clinica mediante monitoraggio strutturato;
- Diffondere un modello multiprofessionale sostenibile e trasferibile.

Metodi: Il progetto, avviato nel 2025, si articola in tre fasi: progettazione, implementazione e consolidamento. La formazione comprende due livelli:

1. Certificazione teorico-pratica, rivolta a infermieri e TFCPC, in collaborazione con aziende biomedicali, con moduli teorici e pratici, con valutazione finale.
2. Formazione sul campo (FSC), riservata agli infermieri dopo aver ottenuto certificazione teorico-pratica con 25 ore complessive e 10 impianti supervisionati dal medico tutor, con 2 valutazioni, una intermedia e una finale tramite scheda oggettiva.

L'autonomia è autorizzata solo dopo completamento positivo della FSC e permette all'infermiere di eseguire l'impianto e al TFCPC di occuparsi dell'attivazione e del monitoraggio del dispositivo, collaborando durante tutte le fasi della procedura.

Conclusioni: Il modello multiprofessionale infermiere–TFCPC per l'impianto ILR rappresenta una grande innovazione organizzativa. Basato su formazione certificata, FSC strutturata e collaborazione tra professionisti con competenze complementari, garantisce sicurezza, valorizza le risorse e definisce un approccio replicabile e sostenibile per la cardiologia mininvasiva.

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ECOCARDIOGRAFIA 3-D (IMAGING CARDIOVASCOLARE)
TELEMEDICINA IN CARDIOLOGIA (TELECARDIOLOGIA ED E-HEALTH)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)

L'ECOCARDIOGRAFIA E LO SCOMPENSO CARDIACO: ATTIVAZIONE DI UN SERVIZIO AMBULATORIALE TERRITORIALE PER MIGLIORARE L'ASSISTENZA AL PAZIENTE

Klaudio Struga (a)
(a) ASST SETTELAGHI VARESE

Lo scompenso cardiaco (SC) colpisce oltre 60 milioni di persone nel mondo, prevalentemente a causa di patologie cardiache (ischemia, valvulopatie, aritmie, cardiomiopatie), ma anche di condizioni sistemiche come ipertensione, malattie infettive, infiltrative o metaboliche. La prevalenza dello SC è stimata tra l'1% e il 3% della popolazione adulta, con età media degli ospedalizzati attorno agli 80 anni, spesso gestiti in reparti di medicina interna o geriatria.

L'ecocardiografia è una metodica diagnostica di primo livello, raccomandata dalle Linee Guida Europee 2024, associata a una riduzione della mortalità nei pazienti con SC. Il suo ruolo è fondamentale già nella fase iniziale: consente una prima valutazione diagnostica, emodinamica e prognostica, orientando accertamenti, terapie e follow-up. È inoltre utile per monitorare la risposta alla terapia, aggiornare la prognosi e supportare le indicazioni all'impianto di dispositivi.

L'assistenza domiciliare sta acquisendo crescente rilevanza in Italia, anche grazie alla riforma dei servizi territoriali promossa dal Piano Nazionale di Ripresa e Resilienza (PNRR, 2021) e sostenuta dalla Legge di Bilancio 2023. Secondo il regolamento nazionale per l'assistenza territoriale, le attività ambulatoriali e diagnostiche devono essere orientate a un approccio integrato e di primo livello, adeguato ai bisogni epidemiologici della popolazione.

Alla luce del ruolo chiave dell'ecocardiografia nello SC e del potenziamento previsto dell'offerta territoriale, il presente progetto propone l'attivazione di un servizio ambulatoriale che garantisca la presenza settimanale di un Tecnico della Fisiopatologia Cardiocircolatoria e Perfusione Cardiovascolare in ciascuna Casa della Comunità della ASST dei Sette Laghi (VA), al fine di migliorare l'accessibilità e la qualità della diagnosi e del monitoraggio dei pazienti con SC.

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CardioSic

ASSISTENZA INFERMIERISTICA E TECNICA IN CARDIOLOGIA 127
GESTIONE DELLA COMPLICANZE PM / ICD (ARITMIE)
DEFIBRILLATORE IMPIANTABILE (ARITMIE)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)

GESTIONE DELLE COMPLICANZE CORRELATE AI DISPOSITIVI CARDIACI IMPIANTABILI

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Introduzione: L'utilizzo di dispositivi elettrici cardiaci impiantabili (CIED), quali pacemaker, defibrillatori cardioverter impiantabili e terapia di risincronizzazione cardiaca, è in continuo aumento.
Con l'aumento del numero di impianti aumentano anche i tassi di comparsa di complicanze quali ematoma e infezione della tasca, dislocazione degli elettrocateteri e pneumotorace.
Le implicazioni per l'assistenza infermieristica consistono nel monitoraggio postoperatorio di possibili sanguinamenti dalla tasca, riconoscere segni e sintomi di un'infezione assicurando un trattamento antimicrobico, monitoraggio del dolore e alterazioni dei parametri vitali.

Scopo: L'obiettivo di questo progetto è quello di indagare le principali complicanze che si verificano a seguito dell'impianto di dispositivi elettrici cardiaci impiantabili (CIED) e sottolineare i migliori interventi infermieristici da mettere in atto.

Materiale e metodi: È stata condotta una revisione narrativa della letteratura, sono stati individuati l'ambito di ricerca e il quesito clinico, quindi è stato formulato il PICO. Gli articoli di questa revisione sono stati reperiti consultando le banche dati biomediche PubMed e Cinhal.

Risultati: Sono stati inclusi 20 articoli. Le tematiche ravvisate sono state le cause, la prevenzione e la gestione di complicazioni o eventi avversi che insorgono a seguito di impianto di un dispositivo cardiaco, il confronto nell'utilizzo di farmaci anticoagulanti rispetto a farmaci antiaggreganti sulla migliore sicurezza ed efficacia e il ruolo dell'infermiere e le misure che può mettere in atto.

Conclusioni: L'infezione della tasca e l'ematoma della tasca risultano le complicanze che insorgono con maggiore frequenza in seguito all'impianto di CIED, per lo più in dispositivi biventricolari o CRT; le misure di prevenzione prevedono l'utilizzo di tecniche asettiche con profilassi antibiotica preprocedurale. Alcuni studi individuano la terapia con bridging di eparina come un fattore che implica l'insorgenza di ematomi della tasca, mentre altri studi, pongono l'accento sull'efficacia della terapia con antiaggreganti. Diversi studi concordano sul fatto che l'infermiere deve essere un professionista specializzato in cardiologia o di terapia intensiva con conoscenze relative alla patologia che richiede l'impianto di un dispositivo il tipo di CIED posizionato e le potenziali complicazioni. L'infermiere deve monitorare il processo di guarigione della ferita ed eventuali complicanze, inoltre, deve essere parte attiva del processo di educazione del paziente e dei famigliari.

ASSISTENZA INFERMIERISTICA E TECNICA IN CARDIOLOGIA 122
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
TELEMEDICINA IN CARDIOLOGIA (TELECARDIOLOGIA ED E-HEALTH)
RIABILITAZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)

EDUCATIONAL NURSING INTERVENTION IN PATIENT WITH OBSTRUCTIVE SLEEP APNOEA AND THEIR PARTNERS TO IMPROVE PAP ADHERENCE: A STUDY PROTOCOL FOR A RANDOMISED CONTROLLED PILOT TRIAL

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Background: Obstructive Sleep Apnea Syndrome (OSAS) is a prevalent sleep disorder in adults that significantly increases cardiovascular risk1, 2. Positive Airway Pressure (PAP) therapy is the primary treatment, but its efficacy is limited by adherence, which is frequently suboptimal1, 3. Emerging evidence suggests that involving bedpartners in the treatment process may enhance adherence1.

Objective: This randomised controlled trial (RCT) will assess the effectiveness of a structured educational intervention delivered jointly to patients with OSAS and their bedpartners, compared to standard care, to improve PAP adherence.

Methods: The study design is a two-arm, open-label, pilot RCT. Participants will be randomly assigned to either the intervention group, which will receive additional nursing education, using show-back methods, delivered to couples, or to the control group, which will receive standard care defined by the training provided solely to sleep technologists.
The primary outcome will be PAP adherence, defined as device use for at least four hours per night on 70% of nights, regardless of the ventilation modality. Secondary outcomes will assess sleep quality, daytime functioning, couple satisfaction, and treatment perception in both patients and bed-partners. Follow-up will take place at three, six and twelve months. The eligibility criteria are described as follows. Inclusion criteria: (i) adult patient (age over 18); (ii) moderate-severe OSAS identified using objective criteria: Apnea Hypopnea Index >15; (iii) patient naive to PAP therapy; (iv) patient living with bedpartner for at least 1 year; (v) bedpartner has to share room or bed; (vi) bedpartner did not receive PAP therapy; (vii) both able to understand and comprehend informed consent and sign it. Exclusion criteria: (i) presence of other sleep disorders, other than insomnia; (ii) presence of psychiatric disorders; (iii) patient is using supplemental oxygen (e.g COPD).

Discussion: This study will provide essential evidence on the effectiveness of a nursing educational intervention involving bed partners. Results may contribute to the growing body of knowledge on the behavioural and psychosocial determinants of PAP adherence. Finally, this trial may lead to a more comprehensive and sustainable treatment strategy for the better well-being of patients and their partners.

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ASSISTENZA INFERMIERISTICA E TECNICA IN CARDIOLOGIA 115
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)
NUTRACEUTICI (FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
RIABILITAZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
DISLIPIDEMIE (DIABETE E MALATTIE DEL METABOLISMO)

INTEGRATING NUTRITION PROFESSIONAL INTO SECONDARY PREVENTION OF CARDIOVASCULAR DISEASE: A SYSTEMATIC REVIEW

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Background: Secondary prevention of cardiovascular disease(CVD)hastraditionallyfocusedonpharmacological therapy, while nutrition—despite being a critical determinant of outcomes—remains underemphasized. Although guidelines acknowledge the role of healthy eating, the latest ACC 2021 recommendations largely restrict dietary advice to sodium reduction.

Objective: To evaluate the impact of incorporating nutrition professionals into the multidisciplinary follow-up of patients with CVD, with the aim of optimizing secondary prevention and improving clinical outcomes.

Methods: A systematic review was conducted following PRISMA guidelines. Databases searched included PubMed, Scopus, Web of Science, and CINAHL. Randomized controlled trials (RCTs) comparing nutritional interventions (delivered or supervised by nutrition professionals) with standard care in CVD patients were included.

Results:

- The BALANCE program (dietary prescription, nutritional education, and intensive monitoring in post-event patients) significantly increased adherence to a cardioprotective diet compared with conventional counseling.
- The CORDIOPREV trial demonstrated the superiority of a Mediterranean diet over a low-fat diet in preventing cardiovascular events in patients with stable coronary artery disease.
- Cardiac rehabilitation programs with structured nutritional education were associated with improved adherence to dietary recommendations, particularly the Mediterranean diet, leading to favorable changes in metabolic and cardiovascular biomarkers.
- An Australian telehealth-based RCT showed that Medical Nutrition Therapy (MNT) delivered remotely by dietitians effectively reduced cholesterol levels and other risk factors, emphasizing the importance of access to nutritional support in rural settings.

Conclusions: Structured nutritional interventions especially when guided by nutrition professionals or integrated into multidisciplinary programs improve dietary patterns, risk factors, and, in some cases, reduce cardiovascular events. Despite this, clinical practice remains heavily centered on pharmacological therapy, with lifestyle and nutrition often overlooked. Systematically including nutrition professionals in follow-up care is essential to optimize secondary prevention and long-term outcomes. Future research should further investigate the role of nutrition in heart failure management and encourage clinical guidelines to formally recognize nutritional deficits as a key therapeutic target.

Keywords: Cardiovascular disease; secondary prevention; nutrition professional; cardiac rehabilitation; Medical Nutrition Therapy

ASSISTENZA INFERMIERISTICA E TECNICA IN CARDIOLOGIA 17 INTERVENTISTICA STRUTTURALE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE) PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE) ABLAZIONE TRANSCATETERE (ARITMIE)

VALUTAZIONE DEGLI ESITI CLINICI DEI PAZIENTI SOTTOPOSTI A TAVI PRIMA E DOPO L'IMPLEMENTAZIONE DEL PROTOCOLLO BENCHMARK-TRANSCATETER VALVE CARE PATHWAY

Patrizia Zumbo (a), Nermin Bergamasco (a), Domenico D´amario (a, b), Giuseppe Pattizia (a, b)
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Background: La stenosi aortica è una patologia valvolare comune, particolarmente nella popolazione anziana, caratterizzata da un restringimento della valvola aortica che ostacola il flusso sanguigno dal ventricolo sinistro all'aorta. La sua incidenza aumenta significativamente con l'età, con una prevalenza stimata del 34% tra gli individui di età superiore ai 75 anni. Questa condizione, se non trattata, può portare a gravi complicanze cardiovascolari, come insufficienza cardiaca e morte improvvisa. La Transcatheter Aortic Valve Implantation (TAVI) si è affermata come una procedura minimamente invasiva efficace per il trattamento della stenosi aortica severa, rappresentando un'alternativa alla chirurgia a cuore aperto (SAVR) per i pazienti ad alto rischio. L'implementazione del Protocollo Benchmark Edwards aveva l'obiettivo di ottimizzare i risultati clinici e l'uso delle risorse sanitarie, puntando a ridurre le complicanze e migliorando l'efficienza del trattamento per i pazienti sottoposti a TAVI.

Obiettivi: L'obiettivo principale di questo studio è valutare l'impatto dell'implementazione del Protocollo Benchmark Edwards sulla gestione clinica e sugli esiti dei pazienti sottoposti a TAVI. In particolare, il protocollo si concentra sull'efficienza assistenziale, la riduzione dei tempi di degenza ospedaliera e la gestione delle risorse.
Gli obiettivi specifici hanno incluso: 1. Valutare l'efficacia clinica del protocollo nella riduzione delle complicanze post-operatorie. 2. Dimostrare l'efficienza del protocollo in termini di riduzione dei tempi di dimissione. 3. Analizzare l'impatto economico legato all'adozione del protocollo attraverso la riduzione dei costi ospedalieri. 4. Evidenziare il ruolo dell'assistenza infermieristica ottimizzata nella gestione dei pazienti post-TAVI.

Metodi: È stato condotto uno studio osservazionale comparativo su due coorti consecutive di pazienti sottoposti a TAVI trans-femorale o trans-succlavia tra Marzo-Agosto 2023 (pre-Benchmark) e Marzo-Agosto 2024 (post-Benchmark), ciascuna composta da 51 pazienti. Le differenze tra i gruppi sono state analizzate con i test t di Student e chi-quadro. I dati clinici e assistenziali sono stati raccolti utilizzando la piattaforma CSA per garantire un'accurata gestione delle informazioni cliniche. Sono stati analizzati vari parametri, tra cui l'uso del catetere vescicale, la necessità di pacemaker temporaneo, il tempo di degenza in terapia intensiva, e il confronto dei tempi di mobilizzazione post-operatoria.

Risultati e conclusioni: L'implementazione del Protocollo Benchmark Edwards nei pazienti sottoposti a TAVI ha portato a una significativa riduzione dei tempi di degenza post-intervento in Terapia Intensiva, con una permanenza mediana diminuita da 2 a 0 giorni (P<0,001). L'uso del catetere vescicale è stato ridotto dal 98% al 23% nel periodo post-attuazione del Protocollo Benchmark (P<0,001) e l'impianto di pace-maker temporaneo dal 92% al 59% (P<0,001). La mobilizzazione precoce è stata attuata entro 24 ore nel gruppo

Benchmark vs 48-96 ore nel gruppo di controllo storico. Dopo l'attuazione del protocollo benchmark si è inoltre osservata una significativa diminuzione delle trasfusioni (6% vs 33%; P<0.001) e della degenza ospedaliera complessiva (mediana di 6 vs 7 gg; P<0,001). I risultati confermano che l'attuazione del protocollo Benchmark nella nostra Istituzione in pazienti sottoposti a TAVI ha migliorato gli esiti clinici, riducendo i costi, ottimizzando la qualità dell'assistenza e favorendo una dimissione più tempestiva.

ASSISTENZA INFERMIERISTICA E TECNICA IN CARDIOLOGIA 640 COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE) INTERVENTISTICA STRUTTURALE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE) PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE) INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE) RIABILITAZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)

PROGETTO ORGANIZZATIVO DI IMPLEMENTAZIONE DEL PROTOCOLLO DI MOBILIZZAZIONE PRECOCE IN PAZIENTI TAVI

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Obiettivi: La sostituzione valvolare aortica transcatetere (TAVI) è oggi il trattamento di riferimento per i pazienti con stenosi aortica severa sintomatica non operabili. L' approccio femorale mininvasivo risulta essere di prima scelta in termini di riduzione delle complicanze post-operatorie e per favorire un rapido recupero e sulla qualità di vita.
L'implementazione di un modello assistenziale condiviso permette di standardizzare l'approccio,ridurre le complicanze, migliorare gli outcome clinici e costi sanitari in continuità assistenziale con il territorio di appartenenza

Materiali e Metodi: Nell'ambito nel modello assistenziale con TAVI coordinator, è stata sviluppata una checklist per favorire il team infermieristico nella procedura di mobilizzazione precoce dei pazienti eleggibili entro 4-6 ore. La checklist include la valutazione multidisciplinare, con i tempi, le fasi e le azioni svolte dai professionisti nei setting assistenziali. L'implementazione è stata preceduta da formazione sul campo, con gruppo di lavoro multidisciplinare permanente per la definizione del percorso che affronta eventuali criticità emerse o ulteriori azioni di miglioramento e revisione del percorso.

Conclusioni: Il modello amplia competenze e autonomia del personale infermieristico, favorisce la riduzione delle complicanze e il miglioramento della qualità di vita percepita. La progettualità in corso avvalla l'uso di checklist infermieristiche come guida e supporto decisionale per una maggiore autonomia, sviluppo di competenze specifiche incidendo positivamente sull'integrazione. L'approccio scientifico e metodologico dell'approccio ha reso evidente la volontà dei professionisti di promuovere la revisione dei percorsi assistenziali, nuovi modelli organizzativi e nuovi ruoli e competenze professionali.

ASSISTENZA INFERMIERISTICA E TECNICA IN CARDIOLOGIA 464
ARITMIE VENTRICOLARI (ARITMIE)
INTELLIGENZA ARTIFICIALE (TELECARDIOLOGIA ED E-HEALTH)
APPS IN CARDIOLOGIA (TELECARDIOLOGIA ED E-HEALTH)

ALARM FATIGUE IN CARDIOLOGIA: STUDIO CROSS-SECTIONAL NEI CONTESTI A BASSA E MEDIA INTENSITÀ DI CURA

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Introduzione: L'avanzamento tecnologico nell'assistenza sanitaria ha determinato un incremento nell'utilizzo di dispositivi medici di monitoraggio, come la telemetria, ampiamente utilizzata nei reparti cardiologici per il monitoraggio continuo dell'elettrocardiogramma. Questo dispositivo è essenziale per rilevare precocemente condizioni cliniche critiche. Tuttavia, genera numerosi allarmi, spesso poco specifici. L'eccessiva esposizione a questi segnali può indurre nel personale sanitario il fenomeno noto come Alarm Fatigue (AF): una desensibilizzazione agli allarmi che può comportare un ritardo o mancata risposta tempestiva alla situazione critica. L'AF è riconosciuta come fattore di rischio nei contesti ad alta intensità di cura, ma è ancora poco studiata nei reparti a media-bassa intensità. Tale fenomeno può impattare sul benessere psico-fisico degli operatori e sulla sicurezza del paziente.

Metodi: è stato condotto uno studio osservazionale cross-sectional coinvolgendo 150 infermieri di tre ospedali del Nord Italia, attivi in reparti cardiologici a bassa-media intensità. L'AF è stata misurata tramite l'Alarm Fatigue Questionnaire (AFQ, range 8–44) validandolo nel setting di studio. I partecipanti hanno risposto a questionari relativi a caratteristiche sociodemografiche, all'identificazione di ostacoli incontrati nella gestione delle telemetrie e agli errori compiuti nel riconoscimento e gestione degli allarmi. È stata utilizzata una Scala Analogica Visiva modificata (VAS) per rilevare sintomi associabili allo stress da allarme. Uno score sintetico di affaticamento è ha indagato la correlazione tra sintomi clinici e AF. I dati sono stati analizzati con t-test di Student, ANOVA e correlazione di Spearman, considerando significativi i valori di $p < 0.05$.

Risultati: Hanno partecipato 115 infermieri: 83% donne, 90% turnisti, età media 45,5 ± 9,1 ed anzianità lavorativa media 8,7 ± 8,1 anni. L'AFQ ha mostrato buona affidabilità nel contesto (α di Cronbach = 0,71). Il punteggio medio di AF è stato 24,5 ± 7,2. Il principale ostacolo riferito nella gestione degli allarmi è stata l'elevata incidenza di falsi allarmi, che interferiscono con le attività assistenziali. Nella popolazione si è riscontrata un'alta prevalenza di cefalea (79%), tensione nervosa (92%) e difficoltà di concentrazione (96%). Lo score sintetico di affaticamento è risultato significativamente correlato ad AF ($p < 0.001$). Il 32% degli infermieri ha riferito almeno un evento avverso attribuibile a una

mancata risposta tempestiva all'allarme, rilevando punteggi di AF superiori alla media.

Conclusioni: Il fenomeno di AF è presente anche nei reparti cardiologici a media-bassa intensità di cura. La sua incidenza non è trascurabile e può compromettere la prontezza degli interventi assistenziali, aumentare lo stress percepito dagli infermieri e influire negativamente sulla qualità delle cure. Interventi mirati, come la formazione specifica relativa agli allarmi, la razionalizzazione dei parametri di monitoraggio e l'adozione di strategie organizzative e ambientali possono rappresentare soluzioni efficaci per migliorare la sicurezza del paziente e il benessere degli operatori. In un contesto cardiologico, dove la tempestività di risposta è cruciale, la prevenzione dell'AF assume un valore strategico.

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86° CONGRESSO NAZIONALE SIC
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ATEROTROMBOSI

ATEROTROMBOSI 67
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
INFIAMMAZIONE E IMMUNITÀ (ATEROTROMBOSI)
TROMBOSI E COAGULAZIONE (ATEROTROMBOSI)

MARKERS OF INFLAMMATION AND HYPOFIBRINOLYSIS ARE ASSOCIATED WITH COGNITIVE DYSFUNCTION AND MOTOR PERFORMANCES IN ATRIAL FIBRILLATION PATIENTS ON ORAL ANTICOAGULANT THERAPY: INSIGHTS FROM STRAT-AF STUDY

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Background: Atrial fibrillation (AF) is the most common supraventricular arrythmia and one of the most commonly encountered heart conditions in clinical practice. Emerging evidence suggests a significant role of inflammation in the pathogenesis of AF. Population studies have also suggested an association between AF and cognitive impairment and dementia. The aim of this study is therefore to assess, in a population of AF patients on oral anticoagulant therapy, the association between circulating biomarkers involved in the pathogenesis of AF and the cognitive and motor performances of the enrolled patients.

Methods: The Strat-AF study is an observational, prospective, single-center, hospital-based study enrolling elderly patients with AF. Results refer to 180 subjects who underwent a complete clinical, biohumoral, cognitive, and functional evaluation.

Results: At multivariate logistic regression, Clot Lysis Time (CLT) and circulating levels of von Willebrand Factor (vWF) remained significantly associated with pathological performances at the Stroop test (expressed as execution time) [OR 95% CI 1.54 (1.02–2.35), p = 0.042 and 1.75 (1.08–2.82), p = 0.023, respectively]. With regard to the Short Physical Performance Battery (SPPB), the circulating levels of IL-8 remained significantly associated with the clinical endpoint [OR 95% CI 2.19 (1.13–4.25), p = 0.020].

Conclusions: Our results suggest a potential innovative tool able to identify AF patients at risk of worse prognosis in terms of cognitive and motor performances. The clinical relevance of these results is due to the fact that we have no efficient methods to predict a deterioration in the cognitive performance and, consequently, the possible onset of dementia in AF patients undergoing oral anticoagulant therapy.

ATEROTROMBOSI 68
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
INFIAMMAZIONE E IMMUNITÀ (ATEROTROMBOSI)
TROMBOSI E COAGULAZIONE (ATEROTROMBOSI)

PLEIOTROPIC EFFECTS OF ORAL ANTICOAGULANT THERAPY: IS THERE A DIFFERENCE BETWEEN VKA AND DOACS?

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Background: Atrial fibrillation (AF) is one of the most common heart rhythm disorders encountered in clinical practice. Emerging evidence suggests a significant role of inflammation in the pathogenesis of AF, but certain questions still remain unanswered, in particular whether AF-related inflammation is a cause or a consequence of the arrhythmia, and whether inflammation reflects underlying disease or AF itself. At the current state of the art, scientific evidence on the role of oral anticoagulants (OAC) in modulating pro-inflammatory cytokines implicated in the pathogenesis of AF remains scarce. The aim of our study was to evaluate, in a population of AF patients undergoing OAC, the different roles of anticoagulant therapy [Vitamin K antagonists (VKAs) and direct oral anti-coagulants (DOACs)] in modulating the levels of inflammatory biomarkers in AF.

Methods: The Strat-AF study is an observational, prospective, single center, hospital-based study enrolling elderly patients with AF. Results refer to 170 subjects with complete clinical and biohumoral assessment.

Results: At multivariate logistic regression analysis, adjusted for several covariates, VKA treatment was an independent protective predictor for having a high grade of inflammation not balanced by anti-inflammatory cytokine levels [OR = 0.26 (0.10–0.69), p = 0.007].

Conclusions: These results from the Strat-AF study are "generators of hypotheses" and provide preliminary evidence for the differential effects of VKAs and DOACs on inflammatory biomarkers (e.g., IL-6, TNF-α) in AF patients. These findings suggest that inflammatory biomarkers could enhance stroke risk prediction models, potentially improving a tailored AF management.

ATEROTROMBOSI 1032
TROMBOSI E COAGULAZIONE (ATEROTROMBOSI)
INFARTO STEMI (CARDIOPATIA ISCHEMICA)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
TRATTAMENTO POST-INFARTO (CARDIOPATIA ISCHEMICA)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)

TROMBOSI NELLA MALATTIA ECTASIANTE DELLE CORONARIE: CHALLENGE PER IL CARDIOLOGO INTERVENTISTA E INTENSIVISTA

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INTRODUZIONE L'infarto del miocardio da trombosi di arteria coronarica ectasica rappresenta una condizione rara e non specificamente trattata nelle linee guida, soprattutto la gestione farmacologica rimane incerta.

IL CASO Paziente di 69 anni, maschio, caucasico. Anamnesi: sovrappeso, ipertensione arteriosa, monorene. No precedenti cardiologici. Durante il trasporto in ambulanza, contattata per presincope e dolore toracico, riscontro di STEMI inferiore complicato da arresto cardiocircolatorio per fibrillazione ventricolare. Alla coronarografia evidenza di diffusa ectasia trivasale con coronaria destra ectasica in tutto il suo decorso (diametro di 7.5-8 mm) interessata da occlusione trombotica al tratto medio, trattata con plurime angioplastiche con pallone seguito da tromboaspirazione meccanica efficace. Durante la procedura venivano somministrati eparina, Cangrelor e successivo switch a ticagrelor. A 12 ore dalla procedura riscontro di nuovo sovraslivellamento del tratto ST in sede inferiore. Alla coronarografia ri-occlusione della coronaria destra al tratto medio, trattato con plurime dilatazioni con pallone e tromboaspirazione manuale. Durante la procedura veniva iniziata terapia con Tirofiban per 24 ore e successivo inizio di enoxaparina in aggiunta a DAPT (dual antiplatelet therapy). All'ecocardiogramma riscontro di frazione d'eiezione (FE) 43% con acinesia infero-postero-laterale. Alla risonanza magnetica cardiaca riduzione della funzione globale (FE 36%) con late-gadolinium enhancement (LGE) a carico dei segmenti acinetici con aree di emorragia e no-reflow. Alla dimissione il paziente veniva dimesso con aspirina (da sospendere dopo 1 mese), ticagrelor e apixaban.

DISCUSSIONE
L'elevato burden trombotico derivante dall'anomalia anatomica della coronaria destra ci ha indotto ad utilizzare la triplice terapia pur non esistendo forti evidenze sulla gestione farmacologica di questi pazienti.
Sono necessari studi volti caratterizzare la fisiopatologia derivante ad un'anatomia coronarica così peculiare. Assume rilevanza pertanto avere evidenze che supportino le migliori scelte terapeutiche long-term in questa popolazione di pazienti, che tenga conto dell'anatomia e della fisiopatologia alla base dei fenomeni trombotici nonché dell'impatto clinico ad essi associati.

ATEROTROMBOSI 882
TROMBOSI E COAGULAZIONE (ATEROTROMBOSI)
PIASTRINE E TERAPIA ANTIAGGREGANTE (ATEROTROMBOSI)
INFARTO NSTEMI (CARDIOPATIA ISCHEMICA)
TRATTAMENTO POST-INFARTO (CARDIOPATIA ISCHEMICA)

BETWEEN BLEEDING AND CLOTTING: A DELICATE BALANCE IN ACS WITH HEMOPHILIA

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Hemophilia A is the most common form of hemophilia, resulting from mutations in the F8 gene encoding coagulation factor VIII and inherited as an X-linked recessive disorder. Clinical severity correlates with residual factor VIII activity (<1% severe, 1–5% moderate, 5–40% mild). Advances in replacement therapy have markedly improved prognosis and life expectancy, but this has also been associated with an increasing prevalence of age-related comorbidities, including acute coronary syndrome (ACS). In this context, the need for antithrombotic therapy poses a major clinical challenge due to the heightened bleeding risk. Current recommendations for ACS management in patients with hemophilia rely mainly on expert opinion, as systematic evidence remains scarce.

We report the case of an 82-year-old man who presented to the Emergency Department with malaise and diaphoresis. His past medical history was notable for partial factor VIII deficiency, previously requiring supplementation only in the setting of invasive procedures. Initial work-up revealed elevated troponin levels (peak 418 pg/mL), sinus rhythm with mild ST-segment depression in leads V3–V6 and preserved left ventricular systolic function (LVEF 60%). A working diagnosis of high-risk non–ST-segment elevation myocardial infarction (NSTEMI) was established, and coronary angiography was indicated. Baseline factor VIII activity was measured at 33%. Accordingly, and following the opinion of the hematologist, the patient received 3000 IU of recombinant factor VIII, achieving an activity level of 89% at 1 h. An additional 1000 IU was administered before coronary angiography, which revealed diffuse ectatic coronary atheromatosis without critical obstructive lesions; percutaneous coronary intervention (PCI) was therefore not required. Factor VIII levels remained adequate during monitoring (125% at 8 h; 74% at 20 h).
The patient was discharged on single antiplatelet therapy and he was also given the recommendation for regular hematology follow-up, the first scheduled at three months, including assessment of coagulation factor VIII levels. Of note, given his mild reduction in baseline factor VIII activity, dual antiplatelet therapy (DAPT) would have been considered feasible if necessary.

In 2023, Chen et al. published a narrative review summarizing available strategies for managing ACS in patients with hemophilia. The authors highlighted the importance of a multidisciplinary approach involving hematologists and cardiologists. Current expert consensus supports the safe use of anticoagulation and antiplatelet therapy when performed under appropriate coagulation factor replacement, although high-quality evidence remains limited.

ATEROTROMBOSI 869
ELETTROSTIMOLAZIONE (ARITMIE)
TROMBOSI E COAGULAZIONE (ATEROTROMBOSI)
CARDIOPATIE CONGENITE NELL´ADULTO
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)

QUANDO IL PACEMAKER ENTRA IN UN ATRIO UNICO: GESTIONE DEL RISCHIO TROMBOEMBOLICO

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Caso clinico: paziente donna di 72 anni con anamnesi positiva per valvulopatia mitro-aortica reumatica. Accede in pronto soccorso per episodi di presincope associata a diaforesi da circa un mese. All'elettrocardiogramma documentato blocco atrioventricolare di primo grado, con blocco bifascicolare e ipertrofia ventricolare sinistra. Durante l'osservazione in area medica, evidenziate fasi di blocco atrioventricolare di II grado Mobitz 2, per cui si procedeva ad impianto di pacemaker definitivo. All'ecocardiogramma transtoracico, si riscontrava un ampio difetto interatriale ostium primum, tale da configurare funzionalmente un atrio unico, associato a insufficienza mitralica di grado moderato, insufficienza tricuspidale di grado moderato, pressioni stimate in arteria polmonare aumentate e ventricolo destro severamente dilatato con funzione sistolica conservata. Alla luce di tali reperti, considerando l'impianto del pacemaker e quindi la presenza di un elettrocatetere in un atrio funzionalmente unico, emergeva il quesito clinico circa la necessità di intraprendere o meno terapia anticoagulante orale, in relazione all'aumentato rischio di tromboembolismo sistemico.

Discussione: la presenza di un difetto interatriale ostium primum con atrio unico comporta un significativo rischio di embolia paradossa, aggravato dalla dilatazione marcata delle cavità destre e dall'ipertensione polmonare. Sebbene le linee guida non forniscano raccomandazioni specifiche sull'anticoagulazione in assenza di fibrillazione atriale o trombi intracardiaci nell'adulto, evidenze presenti in letteratura suggeriscono che in pazienti pediatrici il rischio tromboembolico sia significativamente aumentato,

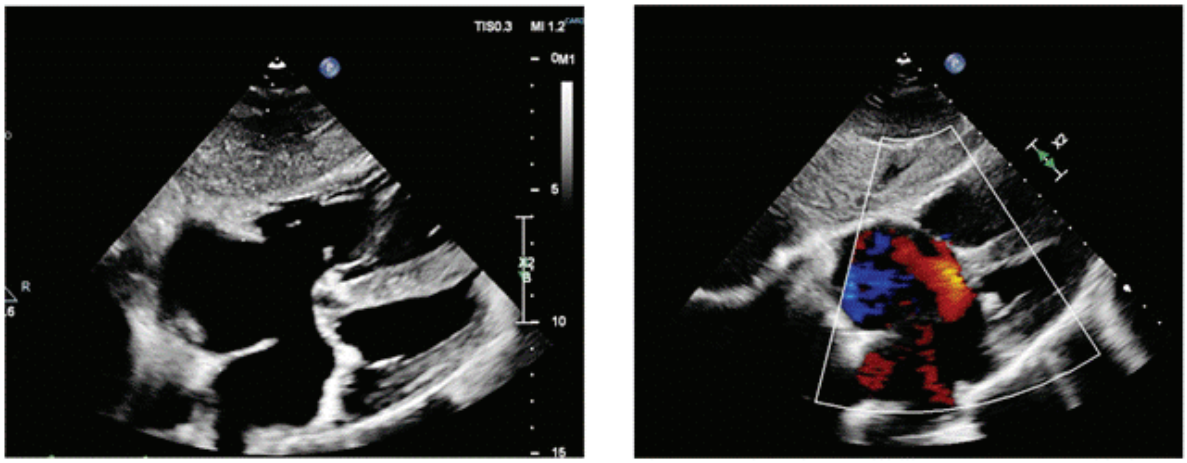


Figure 1

ammettendo la possibilità di iniziare terapia anticoagulante orale in presenza di impianto di pacemaker e shunt sinistro-destro o destro-sinistro, con classe di raccomandazione IIb C (Giglia et al. Circulation. 2013). Non potendo contare su raccomandazioni forti, la scelta ha richiesto una valutazione personalizzata e multidisciplinare. In considerazione del quadro in esame, si decideva di intraprendere terapia anticoagulante orale con warfarin dopo l'impianto del dispositivo.

ATEROTROMBOSI 861
PIASTRINE E TERAPIA ANTIAGGREGANTE (ATEROTROMBOSI)
TRATTAMENTO POST-INFARTO (CARDIOPATIA ISCHEMICA)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)

ETHNIC VARIATION IN THE EFFECTS OF ASPIRIN AND CLOPIDOGREL FOR CORONARY ARTERY DISEASE

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Introduction: Aspirin has long been the cornerstone of antiplatelet therapy in coronary artery disease (CAD), supported by placebo-controlled trials from the late 1970s to early 1990s. The CAPRIE trial (1996) showed a modest ischemic benefit of clopidogrel over aspirin in patients with prior MI, stroke, or peripheral artery disease, but not in the CAD subgroup; thus, aspirin remained the preferred, low-cost agent for decades. More recently, two large East Asian trials (HOST-EXAM, SMART-CHOICE 3) demonstrated superior ischemic protection with clopidogrel over aspirin without excess bleeding. However, given ethnic differences in bleeding and ischemic risk, the generalizability of these findings is uncertain. We therefore conducted a meta-analysis of RCTs comparing clopidogrel and aspirin monotherapy in CAD across ethnic groups.

Methods: RCTs comparing aspirin vs clopidogrel monotherapy in patients with CAD and reporting the primary endpoint of interest were included (CRD420251145176). The primary endpoint was study-defined major adverse cardiovascular (CV) events (MACE). Secondary endpoints included major bleeding, all-cause death and net adverse clinical events [NACE]), MI, stroke and any bleeding. Frequentist random-effect model to compute incidence rate ratios (IRRs) and 95% confidence intervals (CIs) were used to account for different follow-up durations across trials. All analyses included a pre-specified interaction analysis for subgroups depending on ethnicity (i.e., East Asian vs non-East Asian). Trial sequential analysis to evaluate conclusiveness of the results was performed for the primary endpoint according to pre-specified subgroups.

Results: After screening, 7 RCTs (CAPRIE, CADET, ASCET, HOST EXAM, STOPDAPT-2, STOPDAPT-3, SMART-CHOICE 3) encompassing a total of 31,770 patients and 96,343 patient-years were included. Mean follow-up duration was 33.1 months In the overall analysis, we found high-quality evidence that clopidogrel significantly reduced MACE compared with aspirin (IRR 0.84, 95% CI 0.71–0.99; I2=69%; GRADE= high). However, a significant subgroup interaction was observed by ethnicity (Pint=0.023). Specifically, clopidogrel showed conclusive evidence of reducing MACE in East Asian patients (IRR 0.78, 95% CI 0.66–0.92; I2=50%), whereas in non–East Asian patients the reduction was neither statistically significant nor conclusive (IRR 1.01, 95% CI 0.87–1.18; I2=58%; Figure). Among secondary endpoints, clopidogrel significantly reduced NACE (IRR 0.83, 95% CI 0.74-0.92; I2=17%; GRADE= high) and MI (IRR 0.80, 95% CI 0.64-0.99; I2=47%; GRADE= high), compared with aspirin. There were no differences between groups in the outcomes of all-cause death (IRR 1.01, 95% CI 0.90-1.13; I2=8% GRADE= high), stroke (IRR 0.79, 95% CI 0.59-1.04; I2=47%; GRADE= high), major bleeding (IRR 0.91, 95% CI 0.70-1.19; I2=40%; GRADE= moderate) and any bleeding (IRR 0.98, 95% CI 0.75-1.24; I2=67%; GRADE= moderate). There were no significant subgroup interaction in secondary endpoints except for

any bleeding (Pint=0.004), as there was no difference between clopidogrel and aspirin among East Asian patients (IRR 0.98, 95% CI 0.83-1.15), while clopidogrel significantly increased bleeding in non-East Asian patients (IRR 1.56, 95% CI 1.10-2.22).

Conclusions: This updated meta-analysis of RCTs demonstrates that, while clopidogrel reduces thrombotic events and improves net clinical benefit compared with aspirin in the overall population, a significant interaction between treatment effect and ethnicity was observed for both MACE and bleeding. In non–East Asian patients, clopidogrel offered no reduction in MACE but was associated with increased bleeding, whereas in East Asian patients it conferred a 22% reduction in MACE without a corresponding rise in bleeding.

ATEROTROMBOSI 612
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
TROMBOSI E COAGULAZIONE (ATEROTROMBOSI)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)

E SE FOSSE LUPUS (ANTICOAGULANT): UN CASO DI ISCHEMIE RICORRENTI

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DI, donna di 60 anni, giungeva alla nostra attenzione per valutazione cardiologica periodica, con anamnesi familiare di mortalità cardiovascolare in età giovanile dal versante parentale paterno e di un germano. Riferiva frequenti episodi di paresi transitorie degli arti negli anni precedenti, a risoluzione entro 24-48 h, e storia di interruzioni spontanee di gravidanza. Esibiva risultati di RMN encefalo esibente un quadro di vasculopatia cerebrale cronica severa con multipli reliquati di eventi ischemici remoti nel tempo e non databili. Alla luce dell'anamnesi venivano disposti accertamenti reumatologici nel sospetto di sindrome da anticorpi antifosfolipidi (APA). Durante il ricovero riscontro al TTE di sovraccarico diastolico, non evidenza di HF agli ematochimici, normale funzione sistolica, diffusa ateromasia carotidea non significativa. Il pannello per anticorpi antifosfolipidi e Lupus AntiCoagulant riportava però valori borderline e non diagnostici, per cui non era formulabile diagnosi: alla luce del quadro complessivo veniva imbastita una terapia antiaggregante in prevenzione secondaria per la storia di TIA. Negli anni successivi la paziente sospendeva follow up reumatologico presso ogni centro per sua insoddisfazione; proseguiva esecuzione pannello APA di sua sponte, con risultati negativi o ancora bordeline. Proseguivano episodi di TIA per cui in ossequio all' ABCD2 score il personale del DEA avviava DAPT. Nel corso dell'anno seguente, durante il quale non avvenivano nostre rivalutazioni, la paziente aveva ripetuto ancora il pannello APA, con esito prima debolmente e poi chiaramente positivo. In assenza di follow up reumatologico ancora non era stata avviata TAO, carenza cui si era rimediato non appena rivalutata la paziente presso il nostro centro con l'introduzione di VKA in accordo con le linee guida pertinenti. Purtroppo subito emergevano problemi con la gestione del trattamento, con valori di INR stabilmente subottimali (in alcuni casi inferiori a 1.0, al punto che si effettuava una palliazione correttiva con LMWH); cionondimeno la paziente riferiva assenza di nuovi eventi acuti degni di nota, a fronte di una QoL scadente per il peggioramento funzionale instauratosi negli anni.

La paziente poi per riferiti reiterati e autolimitanti episodi di cardiopalmo (ricondotto poi a benigna extrasistolia sopraventricolare) effettuava ECG presso una farmacia di zona: il (discutibilissimo) referto automatizzato suggeriva un quadro di ischemia in sede inferiore a fronte di un tracciato pressoché invariato al 2022, data del nostro primo contatto con la paziente. La stessa, allarmata dalla mancanza di contesto, veniva inviata dal curante a effettuare coroTC: l'esame tomografico dimostrava assenza (prevedibile) di lesioni compatibili con ischemia inferobasale, ma con riscontro accidentale di stenosi del 70-75% su ramo circonflesso, indicante approfondimento coronarografico.

La paziente, nonostante parere contrario nostro e di tutti i sanitari consultati, rifiutava però la procedura. Nonostante la perdita a follow-up, il caso merita

riflessione alla luce dell'intenso stato trombofilico della paziente, complicato peraltro dalla tendenza dell'INR a rimanere sottosoglia e, anche dopo pronte correzioni e corretta igiene alimentare, ai limiti inferiori del range terapeutico. Peraltro la forte trombofilia della paziente rende, alla luce delle evidenze disponibili (Cohen et al.; Pastori et al.), sconsigliabile l'introduzione offlabel di NOAC, in quanto anche a fronte di suggerita sovrapponibilità tra VKA e NOAC nella popolazione generale, in quanto i dosaggi standard dei NOAC sembrerebbero non essere protettivi rispetto a VKA a intensità standard nelle forme di APA ricorrente a fenotipo arterioso.

ATEROTROMBOSI 1069
PIASTRINE E TERAPIA ANTIAGGREGANTE (ATEROTROMBOSI)
TRATTAMENTO POST-INFARTO (CARDIOPATIA ISCHEMICA)
TROMBOSI E COAGULAZIONE (ATEROTROMBOSI)

SEX DIFFERENCES AMONG ELDERLY ACS PATIENTS UNDERGOING PERCUTANEOUS CORONARY INTERVENTION RECEIVING TICAGRELOR 60 MG VS. 90 MG

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Background. No sex-based data are available on the pharmacodynamic and pharmacokinetic profile of ticagrelor 60 mg twice daily as alternative to its standard dose during the early phase after acute coronary syndrome (ACS).

Methods. This post-hoc study is a sex-based secondary analysis of the PLINY THE ELDER randomized, crossover trial (NCT04739384), which compared ticagrelor 60 vs. 90 mg in elderly patients with ACS undergoing percutaneous coronary intervention (PCI). The primary endpoint was the pre-dose P2Y12 reaction units (PRU)

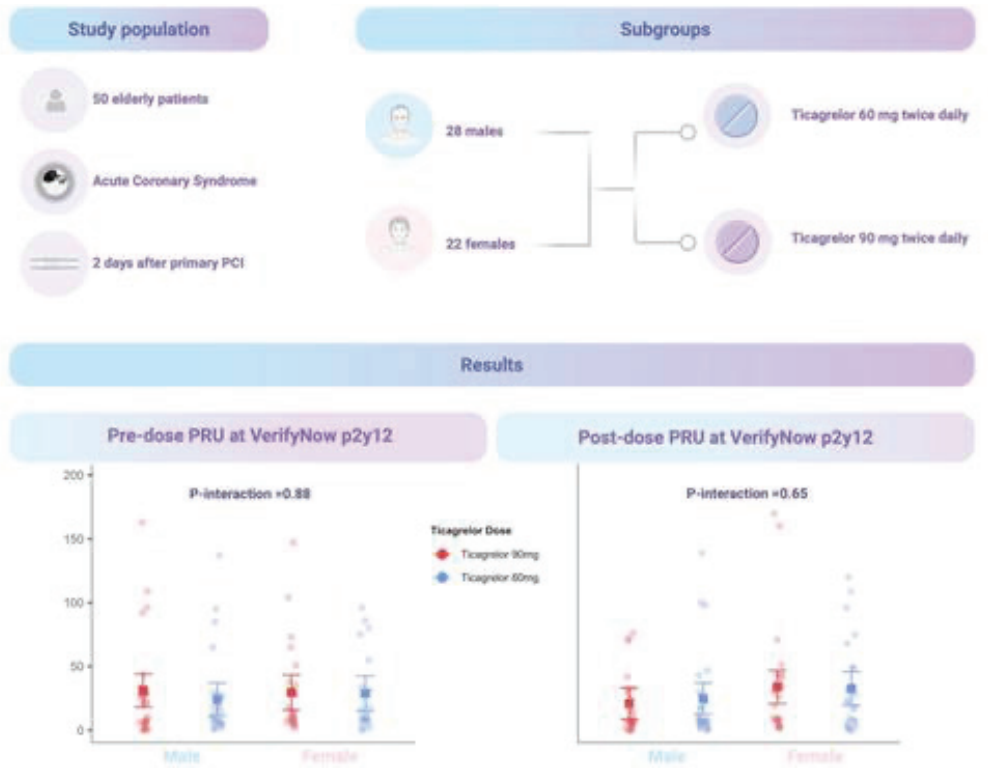


Figure 1

using the VerifyNow-P2Y12 (Accumetrics, San Diego, CA, USA) at 14 days after treatment with ticagrelor 60 or 90 mg twice daily.

Results. A total of 50 elderly patients with ACS was included in the study. Of these patients, 28 (56%) were males and 22 (44%) females. The two doses of ticagrelor had a comparable pre-dose PRU in both males (pre-dose: LSM difference60 vs. 90 -7.00, 95%CI -25.3 to 11.3, p =0.44) and females (pre-dose: LSM difference60 vs. 90 -0.89, 95%CI -20.3 to 18.5, p =0.93), with no evidence of sex-based interaction (pre-dose: p for interaction =0.88). Consistently, transmittance aggregometry and multiple electrode aggregometry showed a similar pharmacodynamic profile between the two doses of ticagrelor in both male and female patients. Plasma levels of ticagrelor were significantly lower using the reduced dose of ticagrelor as compared with the standard dose in both males (pre-dose: LSM difference60 vs. 90 -212, 95%CI -391 to -33.0, p <0.002; post-dose: LSM difference60 vs. 90 -308, 95%CI -510 to -105, p =0.004) and females (pre-dose: LSM difference60 vs. 90 -131, 95%CI -332 to 69.1, p =0.19; post-dose: LSM difference60 vs. 90 -670, 95%CI -898 to -442, p <0.001).

Conclusions. Ticagrelor 60 mg and ticagrelor 90 twice daily yielded the same magnitude of platelet inhibition among elderly patients with ACS irrespective of sex.

ATEROTROMBOSI 149
INFIAMMAZIONE E IMMUNITÀ (ATEROTROMBOSI)
DIABETE E MALATTIE CARDIOVASCOLARI
(DIABETE E MALATTIE DEL METABOLISMO)
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)

ENDOTHELIAL NITRIC OXIDE SYNTHASE DEFICIENCY AFFECTS INSULIN SIGNALING AND INDUCES A PRO-INFLAMMATORY PHENOTYPE IN ENDOTHELIAL CELLS

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(a) UNIVERSITY OF PISA, DEPARTMENT OF SURGICAL, MEDICAL AND MOLECULAR PATHOLOGY AND CRITICAL CARE, CARDIOLOGY DIVISION; (b) UNIVERSITY OF PISA, DEPARTMENT OF SURGICAL, MEDICAL AND MOLECULAR PATHOLOGY AND CRITICAL CARE, LABORATORY OF BIOCHEMISTRY; (c) CARDIOVASCULAR DEPARTMENT, FONDAZIONE TOSACANA GABRIELE MONASTERIO, PISA; (d) CNR INSTITUTE OF CLINICAL PHYSIOLOGY, PISA

Patients with prediabetes can develop coronary artery disease and diastolic heart failure before clinical diabetes. High insulin levels induce early endothelial activation, and impaired endothelial nitric oxide synthase (eNOS) activation, due to genetic alterations or deletion, as in eNOS knockout (KO) mice, promotes insulin resistance, metabolic stress, and endothelial dysfunction. The endothelial surface adhesion molecule VCAM-1 is a specific marker and a key player in the early stages of atherogenesis.

Aims: To examine the impact of genetic background resulting from the eNOS gene deletion on insulin signaling and VCAM-1 expression in endothelial cells.

Methods: Mouse aortic endothelial cells (MAEC), both wild-type (WT) and eNOS knockout (KO), were exposed for 24 hours to normal glucose (5.5 mM, basal), high glucose (30.5 mM), high insulin (10 nM), or the combination of high glucose and high insulin. Protein lysates were collected and analyzed by Western blot.
Results: As expected, eNOS protein was detected only in WT cells. Here, high insulin in combination with high glucose strongly increased phosphorylated (p) pAKT/AKT ratio (18-fold relative to basal), while decreasing pENOS/NOS ratio (4.5-fold relative to basal), suggesting a compensatory up-regulation of pAKT in response to the loss of functional p-eNOS due to hyperinsulinemia+hyperglycemia. This response was lost in KO cells, where high insulin alone or in combination with high glucose resulted in a strong downregulation of pAKT (2.5-fold and 3-fold relative to basal, respectively). The pERK/ERK ratio was mildly reduced in WT cells under all conditions (from 0.64 to 0.94-fold relative to basal), whereas KO cells displayed a trend toward higher pERK, particularly with high glucose (1.1-fold relative to basal). Endothelial activation, assessed by total VCAM-1, was only mildly increased in WT (1.2-fold relative to basal) but markedly upregulated in KO cells (1.8-fold with insulin; 3.5-fold with combined treatment), indicating enhanced endothelial activation.

Conclusions: genetic or acquired eNOS deficiency plays a key role in amplifying deleterious effects of hyperinsulinemia with or without hyperglicemia, a hallmark of prediabetes. Loss of eNOS shifts insulin signaling toward mitogenic pathways and promotes endothelial activation, therefore inducing early vascular dysfunction. Thus, impaired eNOS activity may contribute to atherosclerosis in cardiometabolic disease.

ATEROTROMBOSI 208
TROMBOSI E COAGULAZIONE (ATEROTROMBOSI)
PIASTRINE E TERAPIA ANTIAGGREGANTE (ATEROTROMBOSI)
INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INFARTO STEMI (CARDIOPATIA ISCHEMICA)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)

PHARMACODYNAMIC EFFECTS OF CANGRELOR IN PATIENTS WITH OR WITHOUT STEMI UNDERGOING PERCUTANEOUS CORONARY INTERVENTION: INSIGHTS FROM THE POMPEII STUDY

Lina Manzi (a), Narciso Viviana (a), Imma Forzano (a), Luca Sperandeo (a), Domenico Simone Castiello (a), Fiorenzo Simonetti (a), Domenico Florimonte (a), Mario Enrico Canonico (a), Marisa Avvedimento (a), Roberta Paolillo (a), Alessandra Spinelli (a), Luigi Di Serafino (a), Carmen Anna Maria Spaccarotella (a), Anna Franzone (a), Raffaele Piccolo (a), Plinio Cirillo (a), Giovanni Esposito (a), Giuseppe Gargiulo (a)

(a) DEPARTMENT OF ADVANCED BIOMEDICAL SCIENCES, FEDERICO II UNIVERSITY OF NAPLES

Aims: Cangrelor is approved for oral P2Y12 inhibitor naïve patients undergoing percutaneous coronary intervention (PCI). Pharmacodynamic (PD) investigations in different clinical settings, using various assays have shown contrasting data in terms of entity of platelet inhibition and rates of high residual platelet reactivity (HRPR). We assessed the PD effects in patients with or without ST elevation myocardial infarction (STEMI) receiving cangrelor during PCI.

Methods and results: The PharmacOdynaMic effects of cangrelor in PatiEnts wIth acute or chronIc coronary syndrome undergoing percutaneous coronary intervention (POMPEII) registry (NCT04790032) is an investigator-initiated, prospective study assessing PD at 4 time-points with 3 assays. From March 2021 to June 2024, 126 patients naïve from oral P2Y12 inhibitors underwent PCI with cangrelor (32 with STEMI and 94 without). All STEMI patients switched from cangrelor to ticagrelor, while most patients without STEMI switched to clopidogrel. Inhibition of platelet aggregation (IPA%) during cangrelor infusion was lower in patients with STEMI compared with those without STEMI (LTA 20-±M-ADP 51.5±16.2% vs 59.7±16.2%; p=0.017). Conversely, after switching from cangrelor to an oral P2Y12 inhibitor, IPA was greater in patients with STEMI compared to those without STEMI. Rates of HRPR were consistent with lower platelet inhibition in STEMI during cangrelor and greater after its discontinuation compared with patients without STEMI. Within STEMI patients, cangrelor-induced IPA was lower compared with ticagrelor-induced IPA (p=0.036).

Conclusions: Cangrelor-induced platelet inhibition was lower in patients with STEMI compared to those without STEMI, and was lower than that induced by ticagrelor among STEMI patients. The switch from cangrelor to an oral P2Y12 inhibitor exposed patients without STEMI to greater HRPR compared to those with STEMI.

ATEROTROMBOSI 1104
TROMBOSI E COAGULAZIONE (ATEROTROMBOSI)
INFIAMMAZIONE E IMMUNITÀ (ATEROTROMBOSI)
BIOLOGIA MOLECOLARE CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)

GALECTIN-3 AMPLIFIES IL-6 PROTHROMBOTIC'S EFFECT ON ENDOTHELIAL CELLS VIA TISSUE FACTOR PATHWAY REGULATION

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Background: Galectin-3 (Gal-3) is a lectin that plays an important role in several phenomena. It has been postulated that it might be involved in cardiovascular disease too by modulating inflammation. Aim of the study was to assess whether Gal-3 might drive pro-thrombotic and pro-inflammatory responses in endothelial by evaluating its effects on Tissue Factor (TF) and soluble adhesion molecules (sCAMs)

Methods: Human umbilical vein endothelial cells (HUVECs) were treated with Gal-3 (1 μg/ml), or IL-6 (well-known mediator of inflammation, 0.5 ng/ml) or a combination of both. TF mRNA expression was assessed by RT-qPCR, TF protein by Western blot, and TF activity using a two-step chromogenic assay for FXa generation. Soluble ICAM-1, VCAM-1 and NF-κB levels were quantified by ELISA.

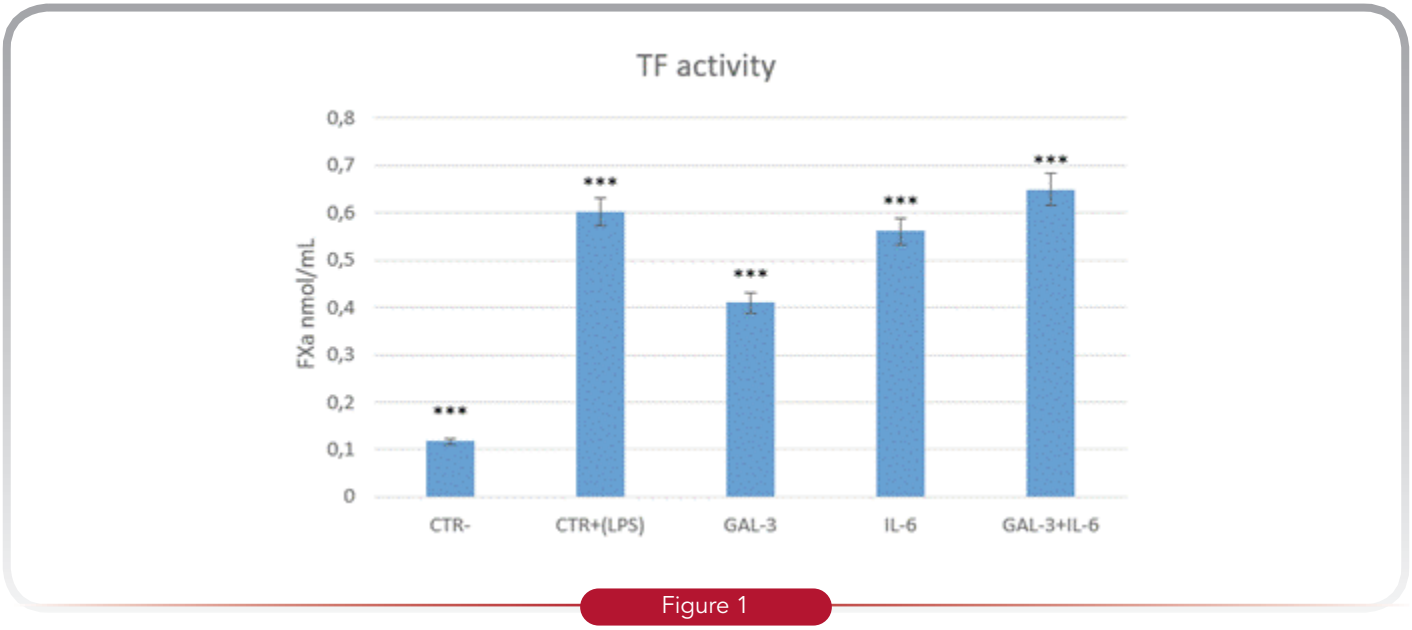


Figure 1

Results: Gal-3 alone caused the slight increase of TF mRNA, TF expression/activity, and NF-κB expression compared with untreated cells,. In HUVEC stimulated simultaneously with Gal-3 and IL-6 a clear synergistic effect was observed, with a significant increased expression of TF mRNA, TF protein and TF activity (Figure). Similar effects were observed on CAMs and NF–κB levels.

Conclusions: Our findings demonstrate that Gal-3 should not be considered as an inert biomarker but it might be identified as an active partaker of endothelial activation. Interestingly, the slight effects of Gal-3 alone on TF, sCAMs, and NF-κB were significantly amplified in the presence of IL-6, a pro-inflammatory cytokine typically elevated during systemic or vascular inflammation.
Our results shed a brighter light on the hypothetical role played by this lectin in the pathophysiology of cardiovascular disease

ATEROTROMBOSI 659
TROMBOSI E COAGULAZIONE (ATEROTROMBOSI)
INFIAMMAZIONE E IMMUNITÀ (ATEROTROMBOSI)
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

A CASE OF WELLENS SYNDROME AFTER HIGH-DOSE INFLIXIMAB INFUSION IN A PATIENT WITH CROHN'S DISEASE

Francesca Rocchi (a)
(a) UNIVERSITA' DELL'AQUILA

Inflammatory bowel disease (IBD) is a risk factor of thrombotic accidents. This risk is high in the flare and chronic activity phase but low in the remission period. Infliximab is a potent anti-tumor necrosis factor (TNF) antibody, highly effective in inflammatory bowel disease (IBD). Infection and development of malignancy, especially systemic lymphoma, are well-known adverse event of Infliximab (IFX). Furthermore, it seems likely that the administration of IFX to IBD patients further increases the risk of arterial or venous thrombotic complications. The location and timing of the thrombotic complications have been widely inconsistent among these patients. We reported a case of acute and proximal occlusion of the left anterior descending (LAD) coronary artery in a patient with Crohn's disease, in an endoscopic remission phase, after high-dose IFX administration.

A 46-years-old men was sent to our center because of severe chest pain. He had been diagnosed with Crohn's disease five years earlier. Initially, his disease had been controlled using but later had required the additional use of oral steroid due to deterioration. Despite high-dose steroid administration, Crohn's disease remained active and refractory to conventional medical therapy. Therefore, steroids were discontinued and IFX was started. The patient was treated using high-dose IFX at 10 mg/kg with a 6 week interval, maintained disease remission. He experienced chest pain 3 day after the last injection of IFX. The ECG showed biphasic T waves in leads V1-V2-V3 and the cardiac enzymes are elevated. The cardiac catheterization with percutaneous coronary intervention (PCI) relieved the trombotic occlusion of the LAD coronary artery, without coronary atherosclerosis. The occlusion was treated with thromboaspiration and secondary reperfusion of the coronary artery. Extensive work-up provided no evidence of predisposing factors for coronary thrombosis. We concluded that coronary artery thrombosis was related to high-dose IFX infusion. The expression of TNF-α receptors has been proposed as a possible reason for thrombosis occurring in IBD patients after IFX administration. The TNF-α driven procoagulant loop increase the incidence of thrombosis after TNF-α administration. A counter-regolation mechanism might upregulate the expression of TNF-α receptors on the inflammatory cell membrane when IFX administration leads to a reduction in serum TNF-α levels, resulting in thrombus formation.

1) Junlong Ma, Jiangfan Cai, Heng Chen, Zeying Feng Cardiovascular Adverse Events Associated with Tumor Necrosis Factor-alpha inhibitors: a real-world pharmacovigilance analysis J Atheroscler Thromb. 2024 Dec 1;31(12):1733-1747.

2) Lemaitre C, Iwanicki-Caron I, De Vecchi C, Carabello et al. Acute renal artery occlusion following infliximab infusion World J Nephrol 2013 August 6;2(3):90-93.

3)Tatsuoka J, Takahiro I et al. High-Dose-Infliximab-Associated Cerebral Venous Sinus Thrombosis: A case report and review of the literature Intern Med 60: 2677-2681, 2021

CardioSic

ATEROTROMBOSI 975
PIASTRINE E TERAPIA ANTIAGGREGANTE (ATEROTROMBOSI)
INFIAMMAZIONE E IMMUNITÀ (ATEROTROMBOSI)
TROMBOSI E COAGULAZIONE (ATEROTROMBOSI)
BIOLOGIA MOLECOLARE CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)

PROTHROMBOTIC EFFECTS OF PLATELET-ENDHOTELIUM INTERACTION VIA TF EXPRESSION

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Background: Several evidences indicate that platelets (PLTs) are involved in many mechanisms besides modulating haemostasis. Endothelial cells, once activated, play a role in pathophysiology of atherothrombosis by expressing Tissue Factor (TF) and Adhesion Molecules (CAMs). Aim of this study was to investigate whether PLT-aggregation might induce a pro-atherothrombotic phenotype in cultivated endothelial cells.

Methods: Human Endothelial Cells (HUVECs) were cultivated in a chamber designed to permit co-cultivation with PLTs to study the effects of PLT-mediators but avoiding cell-cell interaction. HUVEC were incubated with: 1. PLTs activated by TRAP and ADP (20 μM, alone or in combination), 2. Non activated PLTs, 3. LPS, ADP or TRAP. At different time points, TF gene and protein expression were assessed by RT-PCR and Western blot respectively, TF procoagulant activity was evaluated by FXa generation assay, NF-κB activation was assessed by nuclear translocation assay. CAMs expression was measured by ELISA.

Results: PLTs activated with both ADP and TRAP caused significant increase of TF-mRNA, TF protein expression and activity. The most pronounced effects were observed when PLTs were stimulated with ADP and TRAP simultaneously (Figure). Similar results were observed with CAMs. All these effects were mediated by NF.kB activation.

Conclusions: PLTs, once activated, induce a pro-atherothrombotic phenotype in endotelial cells by stimulating TF and CAMs expression. These phenomena seem modulated by NF-kB. Taken together, these results contribute to draw a more complete scenario on the role of PLTs in the pathophysiology of atherothrombotic events.



Figura 1

CardioSic

86° CONGRESSO NAZIONALE SIC
Roma, 4-7 dicembre 2025

ATTIVITÀ FISICA E CARDIOLOGIA DELLO SPORT

ATTIVITA' FISICA E CARDIOLOGIA DELLO SPORT 867
CARDIOLOGIA DELLO SPORT
(ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
IDONEITA' SPORTIVA (ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
CARDIOPATIE CONGENITE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)

SUDDEN CARDIAC ARREST IN A YOUNG ATHLETE: A DIAGNOSTIC TWIST

Annalisa Bernabei (a, c), Alessandro Altinier (c), Irena Tavcar (c), Mauro Lo Rito (b), Massimo Zecchin (c), Laura Massa (c), Gianfranco Sinagra (c)
(a) UNIVERSITÀ DEGLI STUDI DI TRIESTE; (b) U.O. CARDIOCHIRURGIA, IRCCS POLICLINICO SAN DONATO, MILANO; (c) U.O. CARDIOLOGIA, POLO CARDIOLOGICO CATTINARA (ASUGI), TRIESTE

Patient presentation. A 17-year-old male collapsed during a football match after an elbow strike to the chest. CPR was initiated within 2 minutes, and an AED confirmed ventricular fibrillation. Return of spontaneous circulation occurred after 24 minutes. He arrived at the ED intubated and sedated, with no prior medical issues or family history. Annual sports screenings had been unremarkable. Echocardiography showed preserved biventricular function with mild apical hypokinesia, and CT excluded cerebrovascular injury or trauma. He was extubated on day two without neurological deficits except for amnesia of the event and transferred to cardiology.

Diagnosis and management. Given the occurrence of sudden cardiac arrest (SCA) in a healthy athlete, a comprehensive evaluation was conducted to exclude structural heart disease, inherited arrhythmia syndromes, and coronary pathology. Echocardiography and serial ECGs were normal, and telemetry showed no arrhythmias. The presentation was consistent with commotio cordis; however, coronary CT angiography revealed an incidental anomalous origin of the right coronary artery (AAORCA) from the left coronary sinus, with an interarterial course, acute take-off angle, long intramural segment, and slit-like orifice - features associated with SCD in athletes [Fig. 1]. Cardiac MRI and stress echocardiography demonstrated normal function without LGE or ischemia. A diagnosis of SCA secondary to commotio cordis was established. ICD implantation was deferred in favor of a loop recorder, and prophylactic surgery for AAORCA was not recommended at this point given the absence of symptoms and ischemia. The patient was advised to refrain from competitive sports pending further risk assessment.

Follow-up. At the three-month follow-up, the ECG was unchanged, and the loop recorder had not detected any arrhythmias. However, stress myocardial perfusion SPECT demonstrated a moderate reversible perfusion defect in the mid-to-distal anterior wall and mid-anterior septum. A dobutamine stress cardiac MRI

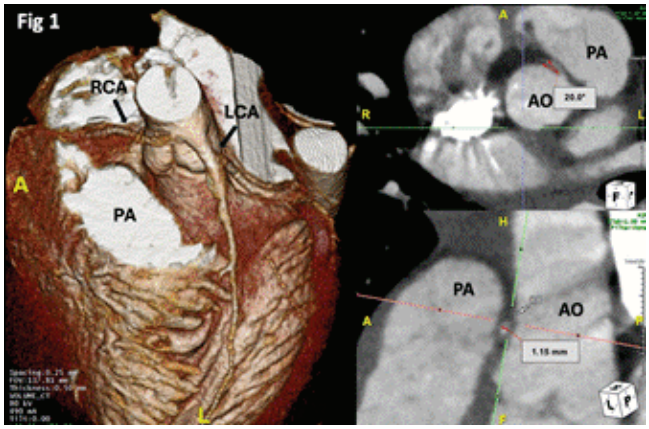


Figure 1

was subsequently performed, confirming inducible ischemia in the proximal and mid-septum as well as the distal inferior wall. Coronary angiography with functional assessment revealed a hemodynamically significant AAORCA (FFR 0.63). Based on these findings, a cardiac surgery consultation was obtained, and coronary unroofing was recommended.

Conclusions. SCA in athletes requires systematic evaluation to assess recurrence risk and guide return-to-play decisions. Commotio cordis, although life-threatening, is reversible with prompt CPR and AED use, highlighting the importance of widespread AED availability at sporting events. In this case, post-arrest evaluation supported commotio cordis as the likely cause but also revealed a high-risk AAORCA requiring surgical correction. Return-to-play should be risk-based, with resumption considered only after surgical management of high-risk coronary anomalies.

ATTIVITA' FISICA E CARDIOLOGIA DELLO SPORT 227
CARDIOLOGIA DELLO SPORT
(ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
ATTIVITÀ FISICA E PREVENZIONE CARDIOVASCOLARE
(ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)

DETERMINANTI DELLE SOGLIE VENTILATORIE OTTENUTE AL TEST CARDIOPOLMONARE IN UN'AMPIA COORTE

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(a) DIPARTIMENTO DI BIOTECNOLOGIE MEDICHE, UOS MEDICINA DELLO SPORT E RIABILITATIVA, UNIVERSITÀ DI SIENA

Background. Le soglie ventilatorie (VTs: VT1 e VT2), ottenute dal test da sforzo cardiopolmonare (CPET) sono marcatori metabolici importanti. Tuttavia, i fattori che le determinano—e in particolare il delta tra VT1 e VT2 (ΔVT1-VT2) —sono ancora poco chiariti. Obiettivo di questo studio è stato identificare i determinanti di VT1, VT2 e ΔVT1-VT2.

Metodi. Sono stati analizzati i dati di 865 soggetti (età media 44±17 anni; 83% maschi) sottoposti a CPET, con valutazioni cliniche ed ecocardiografiche. La popolazione comprendeva individui sani e pazienti cardiopatici. Le soglie ventilatorie e il ΔVT1-VT2 sono stati valutati per sottogruppi e fasce di età e ne sono stati identificati i predittori indipendenti.

Risultati. I pazienti cardiopatici presentavano VO_2peak (1901±631 vs. 2409±717 mL/min) ed efficienza ventilatoria inferiori rispetto ai sani (p<0,001). Con l'età, VT1 e VT2 diminuivano, e ΔVT1-VT2 era ridotto nei pazienti (28±15 vs. 37±14 bpm, p<0,001) e nei più anziani (43±12 bpm nei ≤35 anni vs. 24±12 bpm nei ≥55 anni). VT1 era associato a terapia betabloccante, età, peso, condizione clinica e pendenza VE/VCO_2 (R=0,615, MAE=11,8). VT2 era predetto da età, uso di betabloccanti, METMAX, PowerMAX e indice di massa corporea (R=0,803, MAE=12,6). Il ΔVT1-VT2 era influenzato da età, frazione di eiezione ventricolare sinistra, METMAX, PowerMAX e diagnosi clinica (R=0,745, MAE=7,7).

Conclusioni. Lo studio identifica predittori specifici delle soglie ventilatorie e propone il ΔVT1-VT2 come nuovo marcatore di flessibilità metabolica. Questi risultati offrono spunti rilevanti per la prescrizione personalizzata dell'esercizio, la stratificazione del rischio e il monitoraggio sia in ambito clinico sia sportivo.



Figura 1

ATTIVITA' FISICA E CARDIOLOGIA DELLO SPORT 229
PATOLOGIA DELL´AORTA (MALATTIE DEI VASI)
IDONEITA' SPORTIVA (ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
CARDIOLOGIA DELLO SPORT
(ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)

DIAMETRIE AORTICHE IN ATLETI NON PROFESSIONISTI

Luna Cavigli (a), Gian Luca Ragazzoni (a), Marta Focardi (a), Maria Concetta Pastore (a), Giulia Elena Mandoli (a), Matteo Cameli (a), Flavio D´ascenzi (a)
(a) DIPARTIMENTO DI BIOTECNOLOGIE MEDICHE, UOS MEDICINA DELLO SPORT E RIABILTIATIVA, UNIVERSITÀ DI SIENA

Introduzione: Le dimensioni aortiche sono influenzate da numerosi fattori. In ambito sportivo l'effetto dell'esercizio fisico sul rimodellamento cardiaco è ben studiato ma il suo impatto specifico sull'aorta, in particolare nei soggetti sportivi non professionisti, resta poco definito.

Obiettivi: Lo scopo di questo studio è stato quello di individuare i principali determinanti del diametro aortico in una popolazione di sportivi agonisti non professionisti e valutarlo in relazione al volume di allenamento e al tipo di attività sportiva praticata.

Metodi: È stato condotto uno studio retrospettivo su una popolazione di 434 atleti sani non professionisti (330 maschi e 104 femmine), con un'età di 31±12 anni, e 7,3±4,4 ore di attività fisica settimanali. La dimensione dell'aorta è stata misurata dalla finestra 2D parasternale asse lungo perpendicolarmente all'asse dell'aorta, secondo la tecnica "leading-edge to leading-edge".

Risultati: Solo il 3,0% degli uomini e il 3,8% delle donne presentavano un diametro della radice aortica maggiore o uguale o ai limiti superiori normalmente riconosciuti come normalità (≥40 mm e ≥34 mm rispettivamente). I principali determinanti delle dimensioni aortiche si sono confermati essere età, BSA e sesso (p-value<0.001). Il volume di allenamento e la tipologia di attività fisica non risultavano essere predittori indipendenti del diametro aortico.

Conclusioni: Nel campione preso in esame le dimensioni dell'aorta sembrano dipendere più da caratteristiche individuali che dall'attività sportiva in sé. Il tipo e la quantità di sport praticato non hanno mostrato un impatto diretto e indipendente sul diametro aortico, suggerendo di valutare tali atleti confrontandoli ai riferimenti esistenti per la popolazione generale.

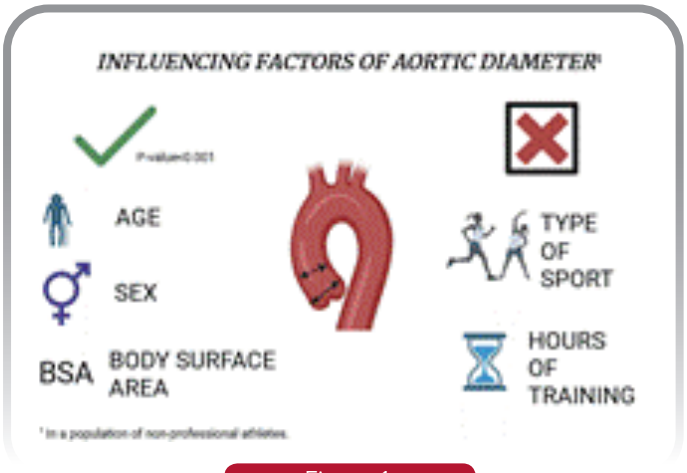


Figura 1

ATTIVITA' FISICA E CARDIOLOGIA DELLO SPORT 918
ATTIVITÀ FISICA E PREVENZIONE CARDIOVASCOLARE
(ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
CARDIOLOGIA DELLO SPORT
(ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IDONEITA' SPORTIVA (ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)

MYOCARDIAL STRESS CMR PERFUSION TO DIFFERENTIATE BETWEEN ATHLET'S HEART AND ISCHEMIC AND NONISCHEMIC CARDIOMYOPATHIES: THE MYO-SPORT STUDY

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(a) DEPARTMENT OF NEUROSCIENCE, IMAGING AND CLINICAL SCIENCES, "G.D'ANNUNZIO" UNIVERSITY OF CHIETI-PESCARA, 66100 CHIETI, ITALY; (b) DEPARTMENT OF CLINICAL MEDICINE, PUBLIC HEALTH, LIFE AND ENVIRONMENTAL SCIENCES, UNIVERSITY OF L'AQUILA, 67100 COPPITO, ITALY; (c) SAN TOMMASO SPORTS MEDICINE CENTER, ASCOLI PICENO, ITALY; (d) DEPARTMENT OF PREVENTION, SPORTS MEDICINE UNIT, ASL 3 ABRUZZO, 65124 PESCARA, ITALY; (e) BARTS HEART CENTRE, BARTS HEALTH NHS TRUST, LONDON, EC1A 7BE, UK; (f) NIHR BARTS BIOMEDICAL RESEARCH CENTRE, WILLIAM HARVEY RESEARCH INSTITUTE, QUEEN MARY UNIVERSITY OF LONDON, LONDON, UK; (g) NEWHAM UNIVERSITY HOSPITAL, BARTS HEALTH NHS TRUST, LONDON E13 8SL, UK; (h) ROYAL BROMPTON AND HAREFIELD HOSPITALS, GUYS AND ST THOMAS NHS TRUST LONDON, LONDON, UK; (i) SCHOOL OF BIOMEDICAL ENGINEERING AND IMAGING SCIENCES, FACULTY OF LIFE SCIENCES AND MEDICINE, KINGS COLLEGE LONDON, LONDON, UK; (j) INSTITUTIE OF ADVANCED BIOMEDICAL TECHNOLOGIES, "G.D'ANNUNZIO" UNIVERSITY OF CHIETI-PESCARA, 66100 CHIETI, ITALY; (k) UNIVERSITY CARDIOLOGY DIVISION, SS ANNUNZIATA UNIVERSITY HOSPITAL, ASL2 ABRUZZO, 66100 CHIETI, ITALY

Background: Differentiating exercise-induced remodeling from ischemic and non-ischemic heart disease in master athletes is challenging, with no established screening method.

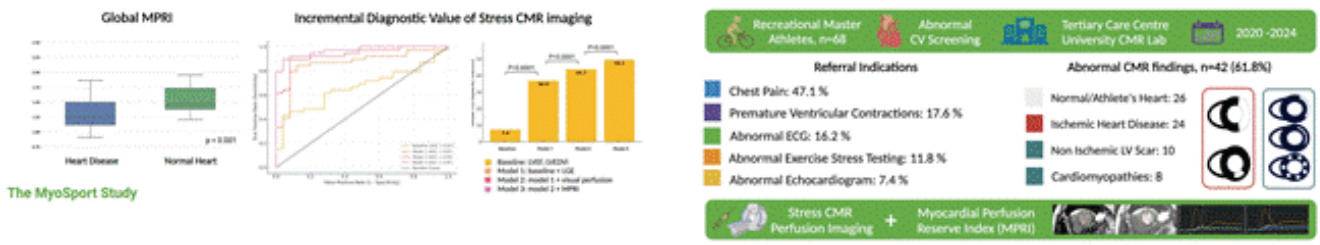
Objective: To assess the incremental value of a stress CMR perfusion study in the diagnostic workup of master athletes with suspected cardiovascular pathology.

Methods: Between 2020–2024, we enrolled master athletes referred for stress CMR following abnormal sports pre-participation screening. All underwent vasodilator stress CMR with visual and semi-quantitative myocardial perfusion analysis. Clinical data, ECG, and rest/stress CMR findings were collected. A multidisciplinary team adjudicated diagnoses as either normal heart (including exercise-induced cardiac remodeling) or abnormal heart (ischemic disease, non-ischemic left ventricular scar, or cardiomyopathy). Diagnostic performance was assessed using the area under the receiver operating characteristic curve (AUC) and global chi-squared statistics across sequential models: baseline function/volumes, baseline+LGE (model 1), model 1+visual perfusion (model 2), model 2+myocardial perfusion reserve index (MPRI) (model 3).

Results: We enrolled 68 recreational master athletes (mean age 57±11 years, 82% male), with 18 (26%) training more than 8 hours per week. Referral reasons included chest pain (47.1%), premature ventricular

contractions (17.6%), abnormal ECG (16.2%), abnormal exercise stress testing (11.8%), and abnormal resting echocardiography (7.4%). Vasodilator stress CMR was performed using regadenoson (57.4%), adenosine (41.2%), or dipyridamole (1.5%). The final adjudicated diagnosis classified 26 (38.2%) cases as having a normal heart, while 42 (61.85) were diagnosed with heart disease, including ischemic heart disease (n=24), nonischemic left ventricular scar (n=10), and cardiomyopathy (n=8). LGE was present in 52.9% of cases, and stress-induced myocardial perfusion defects were visually identified in 16.2%. Myocardial perfusion reserve index was lower in abnormal hearts compared to normal hearts (1.6±0.3 vs 1.3±0.3; p<0.001), yielding alone an AUC of 0.76 with best cut-off of 1.29. The diagnostic yield improved with sequential imaging integration: baseline assessment had limited discrimination (AUC 0.67), +LGE (AUC 0.87), +visual stress perfusion (AUC 0.93), +MPRI (AUC 0.97). The global chi-squared statistic increased stepwise from 7.4 to 49.5 across models (p < 0.0001 for all comparisons). At a median follow-up of 31 months, no deaths occurred.

Conclusions: Stress CMR perfusion provides significant incremental value in distinguishing physiological remodeling from ischemic and nonischemic disease in master athletes with abnormal pre-participation screening.



Figure

CardioSic

ATTIVITA' FISICA E CARDIOLOGIA DELLO SPORT 106
ARITMIE VENTRICOLARI (ARITMIE)
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)
CARDIOLOGIA DELLO SPORT
(ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)

INQUADRAMENTO E STRATIFICAZIONE DEL RISCHIO NEI PAZIENTI CON EXTRASISTOLIA VENTRICOLARE

Domenico Mario Giamundo (a), Marco Rebecchi (a), Cinzia Crescenzi (a), Germana Panattoni (a), Fabiana Romeo (a), Leonardo Calò (a)
(a) DIVISIONE DI CARDIOLOGIA POLICLINICO CASILINO, ROMA

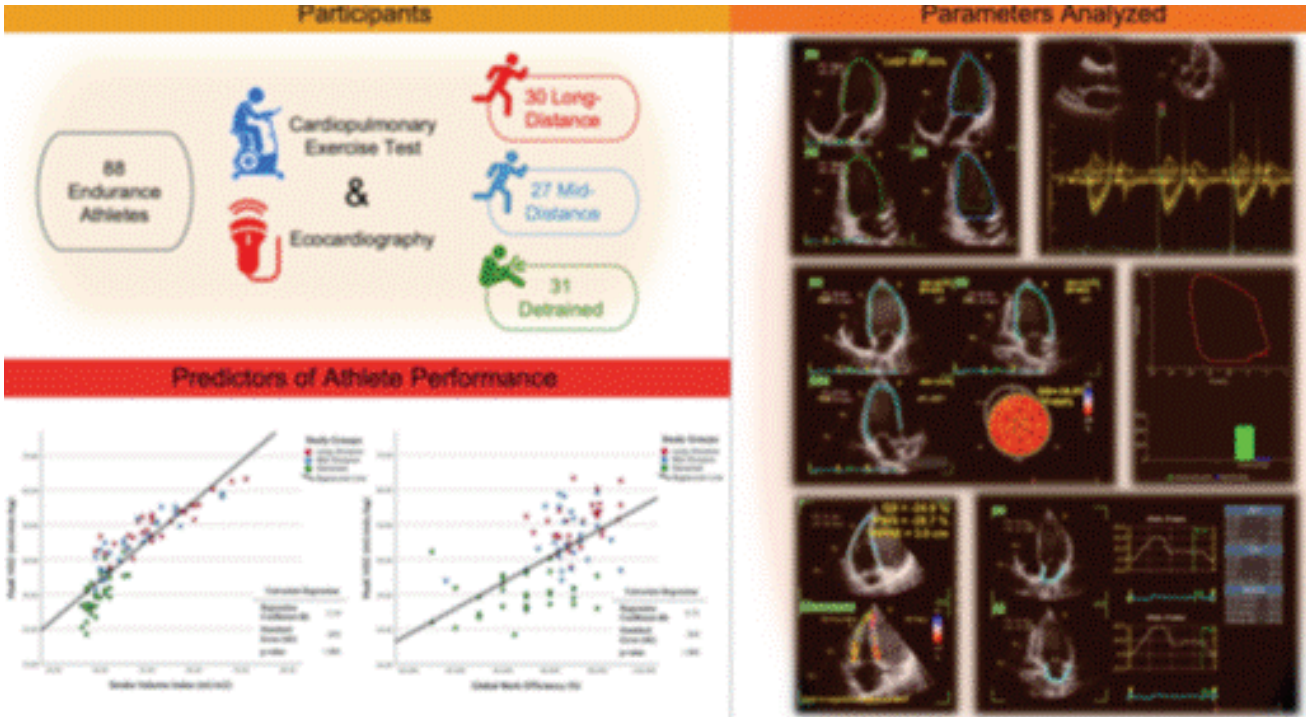
Durante una valutazione cardiologica, è possibile riscontrare delle extrasistoli ventricolari o battiti ectopici ventricolari (BEV), che richiedono un'attenta valutazione mediante metodiche diagnostiche volte a discernere in quali pazienti vi sia un elevato rischio di cardiopatia strutturale e di morte cardiaca improvvisa. I dati epidemiologici rilevano che i BEV si verificano in circa il 75% degli individui sani (o apparentemente sani), cioè senza evidenza di patologie cardiache strutturali sottostanti. I BEV sono generalmente asintomatici, ma possono anche manifestarsi con palpitazioni, dispnea, sincope e affaticamento. Le indagini di primo livello comprendono una valutazione clinica, anamnestica e l'ECG a 12 derivazioni; quest'ultimo è fondamentale per descrivere le caratteristiche dei BEV (morfologia, origine, complessità, comportamento in relazione ad esercizio fisico o pasti) che possano suggerire la benignità o la malignità dell'aritmia. L'ecocardiografia è importante per valutare la funzione ventricolare sinistra (frazione di eiezione) e la risonanza magnetica cardiaca è utile per individuare eventuali aree di fibrosi, quando la valutazione suggerisce la presenza di una cardiopatia strutturale associata. Pertanto, scopo di questa review è quello di analizzare criticamente il processo di valutazione dell'extrasistolia ventricolare, che è fondamentale per un'accurata stratificazione del rischio e per un corretto iter terapeutico (farmacologico o ablativo).

ATTIVITA' FISICA E CARDIOLOGIA DELLO SPORT 340
ATTIVITÀ FISICA E PREVENZIONE CARDIOVASCOLARE
(ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
CARDIOLOGIA DELLO SPORT
(ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE
(IMAGING CARDIOVASCOLARE)

PREDITTORE ECOCARDIOGRAFICI DELLA PERFORMANCE ATLETICA: ANALISI COMPARATIVA TRA DIVERSI PROLIDI DI ALLENAMENTO

Emiliano Guerra (a), Andrea Segreti (b), Myriamo Carpenito (b), Corrado Lettieri (a), Renato Rosiello (a), Francesco Grigioni (b)
(a) OSPEDALE CARLO POMA. DIPARTIMENTO CARDIO-TORACO-VASCOLARE, MANTOVA, ITALIA; (b) FONDAZIONE POLICLINICO UNIVERSITARIO CAMPUS BIO-MEDICO, ROMA ITALIA

Questo studio ha indagato parametri ecocardiografici standard e avanzati in atleti di endurance con differenti profili di allenamento, studiandone l'associazione con la performance (VO2 di picco) Sono stati arruolati tutti gli atleti di endurance sottoposti a screening cardiologico o a valutazione ortopedica per infortuni al ginocchio mediante ecocardiografia e CPET. Gli atleti sono stati suddivisi in tre gruppi: a) Long-Distance (n=30),



Figure

partecipanti a maratone e ultramaratone; b) Mid-Distance (n=27), partecipanti a gare di media distanza (800m-10km); c) Detraining (n=31), con ≥6 mesi di interruzione forzata dell'allenamento.
La FE non differiva tra i gruppi. Il gruppo Long-Distance mostrava lo Stroke volume indicizzato (SVi) più elevato, poi il gruppo Mid-Distance e infine il gruppo Detraining (p<.001). Gli atleti di Long-Distance presentavano valori assoluti inferiori di GLS ventricolare sinistro (p=.003) e di strain atriale sinistro reservoir (p=.003) rispetto agli altri gruppi. Non sono state osservate differenze nello strain della parete libera del ventricolo destro. L'analisi del lavoro miocardico ha evidenziato un global work index e un construtive work maggiore e una riduzione del wasted work, determinando una maggiore efficienza del lavoro miocardico (GWE) nel gruppo Long-Distance (p<.001). Nell'analisi multivariata, sia lo SVi (β=1.03, p<.001) sia il GWE (β=0.891, p=.008) risultavano indipendentemente associati alla VO_2 di picco, mentre il GLS no.
L'ecocardiografia avanzata aiuta nella valutazione funzionale del cuore d'atleta, con gli indici di MW più sensibili del GLS nel differenziare gli adattamenti cardiaci indotti dall'allenamento. Anche lo strain atriale sinistro risente del profilo di allenamento dell'atleta. Lo SVi e il GWE sono risultati perdittori affidabili della performance atletica. Questi risultati supportano l'integrazione dei parametri ecocardiografici avanzati nel monitoraggio degli atleti e nella distinzione tra cuore d'atleta e condizioni patologiche.

ATTIVITA' FISICA E CARDIOLOGIA DELLO SPORT 427
ATTIVITÀ FISICA E PREVENZIONE CARDIOVASCOLARE (ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
CARDIOLOGIA DELLO SPORT (ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
IDONEITA' SPORTIVA (ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)

WHEN MEALS MAKE THE DIFFERENCE: A CASE REPORT OF IMPROVED CARDIOPULMONARY PERFORMANCE FOLLOWING FOOD INTAKE AFTER FASTING

Virginia Klun (a, b), Luca Cumitini (b), Ailia Giubertoni (b), Giuseppe Patti (a, b)
(a) DEPARTMENT OF TRANSLATIONAL MEDICINE, UNIVERSITY OF EASTERN PIEDMONT, NOVARA;
(b) DIVISION OF CARDIOLOGY, DEPARTMENT OF THORACIC AND CARDIOVASCULAR DISEASES, MAGGIORE DELLA CARITÀ HOSPITAL, NOVARA

Introduction: Cardiopulmonary exercise testing (CPET) is an essential tool for assessing functional capacity. While short-term fasting is typically recommended before testing, the impact of prolonged fasting remains poorly understood.

Case presentation: A 39-year-old man was referred to our department for evaluation of exertional atypical precordial discomfort and dyspnoea. Initial CPET was performed during a 26-day period of intermittent fasting for religious reasons, which involved abstaining from food and liquids during daylight hours. The test showed mildly reduced aerobic capacity, with peak oxygen uptake (VO_2) of 26.0 mL/kg/min (72% predicted), normal peak oxygen pulse (95% predicted), and an appropriate VO_2/work rate (VO2/WR) slope (10 mL/min/W). A subsequent CPET performed later under unrestricted dietary conditions demonstrated improved performance, with a peak VO_2 of 29.8 mL/kg/min (82% predicted) and peak oxygen pulse (99% predicted), without relevant changes in other parameters. The figure illustrates a comparison of the patient's clinical parameters measured during the two examinations: after prolonged intermittent fasting and under unrestricted dietary conditions.

Conclusions: These findings suggest that prolonged fasting appears capable of reducing peak aerobic capacity as measured by CPET, likely through combined metabolic and hemodynamic mechanisms. Awareness of this phenomenon and appropriate standardization of pre-test conditions may help clinicians avoid underestimating true functional capacity and ensure the validity of CPET-derived prognostic indices.

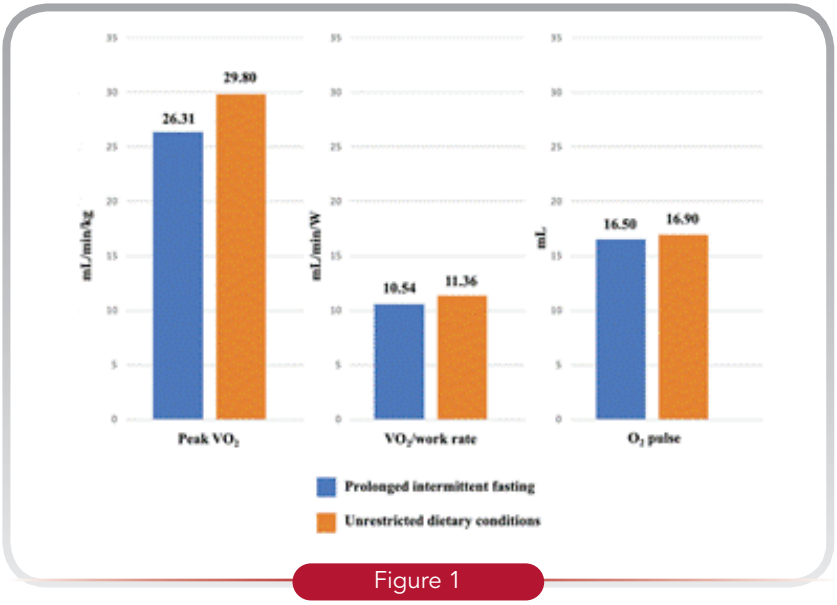


Figure 1

ATTIVITA' FISICA E CARDIOLOGIA DELLO SPORT 817
ATTIVITÀ FISICA E PREVENZIONE CARDIOVASCOLARE (ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
CARDIOLOGIA DELLO SPORT (ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
IDONEITA' SPORTIVA (ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)

A NOVEL 5-MINUTE ECG SCREENING APPROACH TO ENHANCE CVD DETECTION IN MASTER ENDURANCE ATHLETES: INSIGHTS FROM THE HEART AND RUN PROJECT

Paola Liporace (a), Danilo Ricciardi (a), Lorenzo Frau (a), Daniele Valente (a), Vito Calabrese (a), Flavio Angelo Gioia (a), Francesvco Picarelli (a), Francesco Grigioni (a), Gian Paolo Ussia (a)
(a) FONDAZIONE POLICLINICO UNIVERSITARIO CAMPUS BIO-MEDICO DI ROMA

Introduction: Many athletes aged over 40 practise endurance sports and high-intensity physical exertion. As CVD are an important cause of death and injuries in athletes during exercise, especially in this specific group the use of a screening method, based on medical history, spirometry, urine test and maximal exercise test could be insufficient. The aim of the study is to evaluate whether a 5-minute 'Event Recorder ECG', associated with the conventional examination, can be an additional tool for early screening and prevention of CVD in older endurance sport population.

Materials and Methods: The masters athletes population was selected as part of the larger 'Heart And Run' project, an electrocardiographic collection of endurance athletes. A matched control group of healty individuals was also collected for comparison. The ECG traces were recorded at rest, for 5 minutes, with the Kardia Mobile device 6L™. Two study groups were compared for an ECG morphological analysis and for HRV parameters in the time and frequency domain.

Results: A total of 676 subjects (377 athletes and 299 controls), were screened. The athletes show a higher incidence of sinus arrhythmias, left anterior fascicular block (LAFB), 1° degree AV Block, J-point and ST-segment abnormalities and shorter QTc compared to controls ($p<0.05$). Differences between the two groups were also found in the time and frequency HRV domain analysis, showing an increased vagal tone ($p<0.05$). Due to the absence of normality range in the literature, we considered values lower of the 5th or higher of the 95th percentile range, for the main HRV parameters, as abnormals. We identified HRV or morphological abnormalities in more than 18% of our masters athletes population.

Conclusions: The addition of a 5-minute ECG could enhance the sensitivity for detecting ECG abnormalities, and thus potential CVD, in masters athletes. This may help identify individuals who require further clinical and instrumental evaluation to prevent sudden cardiac death (SCD).

ATTIVITA' FISICA E CARDIOLOGIA DELLO SPORT 868
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)
ATTIVITÀ FISICA E PREVENZIONE CARDIOVASCOLARE
(ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
CARDIOLOGIA DELLO SPORT
(ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
IDONEITA' SPORTIVA (ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)

ECG SCREENING AND SUDDEN CARDIAC DEATH PREVENTION IN ENDURANCE ATHLETES: THE "HEART AND RUN" PROJECT

Enrico Crispino (a), Danilo Ricciardi (a), Paola Liporace (a), Lorenzo Frau (a), Daniele Valente (a), Flavio Angelo Gioia (a), Vito Calabrese (a), Francesco Picarelli (a), Francesco Grigioni (a), Gian Paolo Ussia (a)
(a) FONDAZIONE POLICLINICO UNIVERSITARIO CAMPUS BIO-MEDICO DI ROMA

Introduction: Many athletes aged over 40 practise endurance sports and high-intensity physical exertion. As CVD are an important cause of death and injuries in athletes during exercise, especially in this specific group the use of a screening method, based on medical history, spirometry, urine test and maximal exercise test could be insufficient. The aim of the study is to evaluate whether a 5-minute 'Event Recorder ECG', associated with the conventional examination, can be an additional tool for early screening and prevention of CVD in older endurance sport population.

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Conclusions: The addition of a 5-minute ECG could enhance the sensitivity for detecting ECG abnormalities, and thus potential CVD, in masters athletes. This may help identify individuals who require further clinical and instrumental evaluation to prevent sudden cardiac death (SCD).

CardioSic

ATTIVITA' FISICA E CARDIOLOGIA DELLO SPORT 722
ATTIVITÀ FISICA E PREVENZIONE CARDIOVASCOLARE
(ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
CARDIOLOGIA DELLO SPORT
(ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
BIOMARCATORI DELLO SCOMPENSO (SCOMPENSO CARDIACO)

FROM SEA LEVEL TO 3647 METERS: EXPLORING THE HIGH-ALTITUDE CHALLENGE OF MAXIMAL EXERCISE AND PHYSIOLOGICAL ADAPTATION

Irene Mattavelli (a), Elisabetta Salvioni (a), Massimo Mapelli (a, b), Carlo Vignati (a, b), Rebecca Caputo (a), Alessandro Pisano (c), Giulia Andrea Guadalupi (d), Giuseppe Bizzarro (d), Valeria Di Muzio (d), Piergiuseppe Agostoni (a, b)
(a) CENTRO CARDIOLOGICO MONZINO, IRCCS, MILANO; (b) UNIVERSITÀ DEGLI STUDI DI MILANO, MILANO; (c) ISTITUTO DI MEDICINA AEROSPAZIALE DI MILANO, AERONAUTICA MILITARE, MILANO; (d) DIVISIONE AEREA DI SPERIMENTAZIONE AERONAUTICA E SPAZIALE, AERONAUTICA MILITARE, POMEZIA (RM)

Background: Individuals who reach high altitudes engage in strenuous physical activity that increases their oxygen demand in an environment where atmospheric oxygen availability is reduced and the body's ability to use it is compromised. These effects are influenced by hypoxia but also by adverse environmental conditions, such as cold and low humidity, which imply greater energy consumption compared to exercise performed at sea level. Aim of this analysis is to evaluate in detail the cardiovascular, respiratory, and muscular adaptations to high altitude, in order to improve understanding of the underlying physiological mechanisms.

Methods: 12 healthy subjects (46±12 y/o, 75% males) performed maximal cardiopulmonary exercise testing (CPET) at sea level and at Capanna Gnifetti (Monte Rosa, 3647 m.), after at least 1 day of acclimatization. The same ramp protocol, on an electronically braked cycle ergometer, was applied for each individual. Before and after each test, a blood sample was collected for the assessment of haemoglobin, haematocrit, lactates and BNP. This is a preliminary analysis of data from a larger research project that includes the simultaneous measurement of peripheral muscle extraction (NIRS – Near Infra-Red Spectroscopy) and non-invasive cardiac output (Physioflow) during maximal physical exertion.

Results: Effects of high altitude are already evident at

		Sea level Mean± SD	High altitude Mean± SD	p
REST	SBP (mmHg)	120.8± 10.0	131.7± 14.8	0.004
	SpO_2 (%)	96.9± 1.0	87.3± 3.9	0.000
	$PetO_2$ (mmHg)	111.8± 3.6	61.1± 4.5	0.000
	$PetCO_2$ (mmHg)	33.7± 2.4	28.5± 4.6	0.003
	VE (L/min)	11.1± 1.5	13.5± 2.0	0.002
	Hb (g/dL)	13.36± 1.17	14.81± 1.35	0.000
	Hct (%)	43.90± 3.29	41.86± 4.16	0.027
	Lactates (mmol/L)	0.96± 0.17	1.30± 0.63	0.164
	BNP (pg/mL)	23.5± 13.3	43.3± 38.3	0.164
PEAK EXERCISE	Workload (watt)	215± 55	166± 53	0.000
	RQ	1.17± 0.10	1.09± 0.19	0.246
	VE (L/min)	90.6± 25.2	97.0± 26.6	0.252
	RR (1/min)	37.5± 7.4	41.0± 5.4	0.051
	TV (L)	2.46± 0.59	2.39± 0.68	0.413
	VCO_2 (mL/min)	2801± 670	2130± 712	0.000
	$PetO_2$ (mmHg)	116.8± 5.8	70.7± 2.3	0.000
	$PetCO_2$ (mmHg)	37.5± 5.9	25.2± 3.7	0.000
	SpO_2 (%)	95.0± 1.9	82.4± 3.6	0.000
	HR (bpm)	171.2± 16.7	155.8± 18.6	0.001
	Y intercept (L/min)	3.0± 3.6	0.0± 4.1	0.051
	VO_2/work (mL/min/watt)	9.64± 0.67	9.05± 1.36	0.246
	Hb (g/dL)	14.70± 1.40	14.58± 1.37	0.760
	Hct (%)	48.05± 4.13	40.93± 4.26	0.000
	Lactates (mmol/L)	10.59± 2.82	4.29± 2.18	0.000
	BNP (pg/mL)	38.4± 29.7	75.5± 50.5	0.044

Figure 1

rest with higher systolic blood pressure and ventilation, and lower SpO_2, $PetCO_2$, $PetO_2$ compared to sea level ($p<0.05$). High altitude also affects peak exercise performance, with a lower workload achieved, heart rate, and oxygen consumption ($peakVO_2$), regardless the increase in Hb induced by altitude. There is no statistically significant effect on ventilation, but ventilatory efficiency (VE/VCO_2 slope) is increased by being at high elevation. BNP increases during exercise in both environments but never exceeding the threshold of clinical significance. The increase in lactate levels induced by physical exertion is reduced at high altitudes.

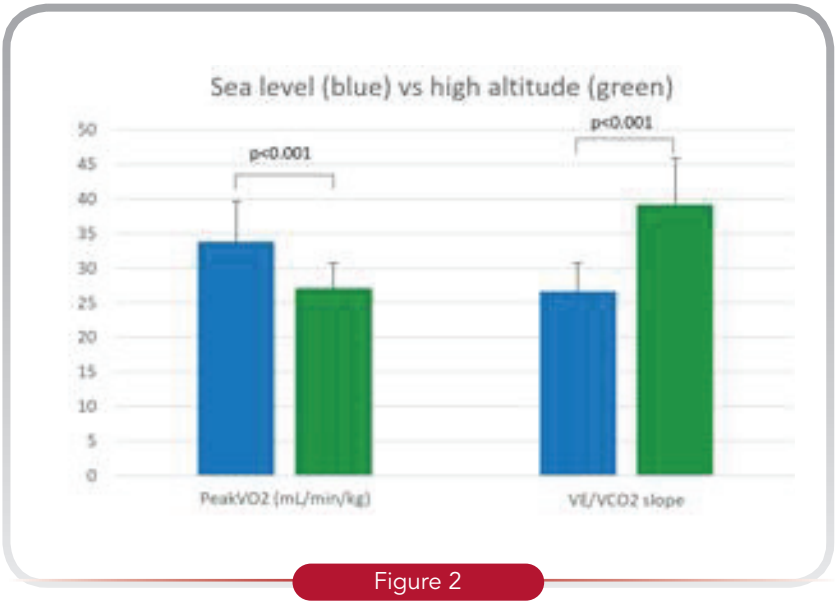


Figure 2

Conclusions: Although ventilation peak values are very similar, our data confirm a significant reduction in performance after exposure to high altitude in a non-hyperacute manner. Further analyses considering peripheral muscle extraction and cardiac output are underway.

ATTIVITA' FISICA E CARDIOLOGIA DELLO SPORT 733
ATTIVITÀ FISICA E PREVENZIONE CARDIOVASCOLARE (ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
CARDIOLOGIA DELLO SPORT (ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)

POSTURE MATTERS: EFFECTS OF EXERCISE POSITION ON CARDIOPULMONARY EXERCISE TEST PARAMETERS AND NON-INVASIVE CARDIAC OUTPUT ASSESSMENT IN HEALTHY SUBJECTS

Fiorella Puttini (a), Massimo Mapelli (a), Giovanni Ferrarini (a), Elisabetta Salvioni (a), Irene Mattavelli (a), Rebecca Caputo (a), Laura Manfrin (a), Simona Costantino (a), Mattia Biroli (a), Massimo Valenti (a), Camilla Lustri (a), Mattia Canevari (a), Carlo Vignati (a), Piergiuseppe Agostoni (a)
(a) CENTRO CARDIOLOGICO MONZINO, IRCCS, MILANO

Background: Cardiopulmonary Exercise Testing (CPET) is the gold standard for the integrated assessment of cardiovascular, respiratory, and metabolic function during exercise. Physiological responses may vary according to body posture: upright (UP), supine (SP), and semi-recumbent (SR). Previous studies have reported differences in CPET parameters (VO_2peak, VE/VCO_2 slope, anaerobic threshold, O_2 pulse, peak heart rate), but the available evidence remains heterogeneous and does not allow definitive conclusions. Moreover, non-invasive hemodynamic monitoring through thoracic bioimpedance (PhysioFlow®) enables the assessment of cardiac parameters (stroke volume, cardiac output, cardiac index) during exercise. A standardized comparative analysis of UP, SP, and SR postures, integrating both respiratory and hemodynamic data, is therefore crucial to improve CPET interpretation and to support the development of shared operational protocols.

Methods: Twelve healthy subjects (30.9±4.4 y/o, 50% females) were enrolled and randomly assigned to perform three CPETs in different postures: UP, SP, and SR. Throughout all CPET sessions, non-invasive hemodynamic monitoring was performed using PhysioFlow®, and perceived exertion was assessed with the Borg scale. Data were collected and analyzed at baseline, anaerobic threshold, intermediate exercise steps, and peak exercise.

Results: At rest, significant reductions were observed in heart rate (HR, p = 0.002; p for trend = 0.007) and a decreasing trend in VO_2 and VE, mainly explained by lower tidal volume (VT) with stable respiratory rate (RR). At the anaerobic threshold, VO_2 values were reduced (p for trend = 0.017) with evidence of an earlier threshold

	UP	SP	SR	p
HR rest	79.67±13.57	70.83±10.43	65.83±7.93	0,0001
CO rest	6.4±1.22	6.71±0.68	6.63±1	0,6146
VO2/kg rest	5.31±0.92	4.87±0.7	4.81±0.66	0,0800
VE rest	12.44±3.18	10.76±1.94	10.38±1.06	0,0079
VT rest	0.77 (0.58;0.83)	0.6 (0.52;0.77)	0.56 (0.47;0.76)	0,0609
RR rest	17.59±3.14	16.92±3.57	17.88±2.77	0,5813
HR peak	178.58±7.68	173.25±10.4	164.92±13.18	<.0001
CO peak	23.77±16.57	19.5±4.76	20.98±7.33	0,4975
VO2/kg peak	37.32±9.78	36.36±9.54	32.85±8.03	0,0004
VE peak	107.44±41.47	102.74±39.09	94.12±36.01	0,0018
VT peak	2.23±0.66	2.27±0.77	2.09±0.66	0,0059
RR peak	47.47±8.16	45.34±7.39	44.87±8.57	0,2326

table 1

across positions. At peak exercise, VO_2 remained significantly lower, while cardiac output (CO) showed no significant variation despite the decrease in watts. Dyspnea perception, measured by the Borg scale, significantly decreases at peak exercise in parallel with the reduction in workload (watts).

Conclusions: SR and SP positions are associated with a progressive reduction in exercise performance, while cardiac output remains stable. The functional limitation appears to be driven by a reduction in tidal volume. Further iso-watt comparisons are underway.

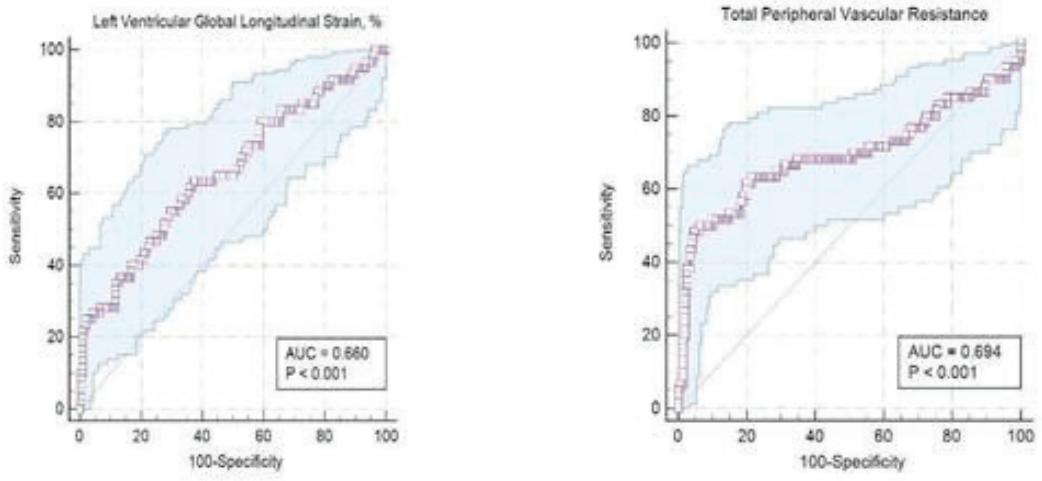
ATTIVITA' FISICA E CARDIOLOGIA DELLO SPORT 314
ATTIVITÀ FISICA E PREVENZIONE CARDIOVASCOLARE (ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
GRAVIDANZA E CARDIOPATIA (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)

ASSETTO EMODINAMICO, FUNZIONE MIOCARDICA PREGRAVIDICA E RECIDIVA PRE-ECLAMPSIA

Federico Moretti (b), Giorgia Di Bartolomeo (b), Laura Colarocchio (b), Andrea Giovanni Parato (b), Valerio Marongiu (b), Diego De Angelis (b), Gian Paolo Novelli (a), Giuseppe Stifano (a), Andrea Natale (b), Gaetano Chiricolo (b)
(a) UOC CARDIOLOGIA POLICLINICO TOR VERGATA; (b) UNIVERSITÀ TOR VERGATA

Introduzione: La pre-eclampsia è un disordine ipertensivo della gravidanza associato a significativa morbilità materna e perinatale, e il rischio di recidiva rimane elevato nelle donne con una precedente storia della condizione. L'identificazione precoce dei predittori emodinamici può consentire interventi mirati per ridurne il rischio.
Le resistenze vascolari periferiche (TPVR) e la deformazione longitudinale globale ventricolare sinistra (LVGLS) sono emersi come promettenti marcatori funzionali di adattamento cardiovascolare in corso di gravidanza. Lo scopo del nostro studio è stato quello di verificare se tali marcatori potessero predire la recidiva di preeclampsia in pazienti normotese.

Materiali e metodi: Abbiamo reclutato 281 donne normotese, non obese con una storia di preeclampsia ad insorgenza precoce che stavano pianificando una nuova gravidanza. Le pazienti sono state sottoposte ad ecocardiogramma color Doppler a distanza di cir-



La figura A mostra la curva ROC per la ricerca del cut-off del LVGLS%.
La figura B mostra la curva ROC per la ricerca del cut-off delle TPVR -21,73% identificano donne con assetto emodinamico e funzione miocardica non ottimali per intraprendere una seconda gravidanza.

Figura A - B

ca 14-18 mesi dalla prima gravidanza e 6 mesi prima della seconda gravidanza.
Le curve ROC sono state utilizzate per determinare i valori di cut-off predittivi di recidiva di preeclampsia nella seconda gravidanza.

Risultati: La curva ROC per la TPVR mostra come predittivo un valore di TPVR>1667 (IC 95%: 1516–1712),AUC 0,694 (IC 95%: 0,634–0,750; p<0,0001). uno LVGLS> -21,73% (IC 95%: >-23,36 a >-21,20),AUC 0,660 (IC 95%: 0,598–0,717; p< 0,0002) prima della gravidanza sia predittivo di preeclampsia ricorrente.

Conclusioni: Lo studio ha mostrato come TPVR e LV-GLS siano predittori di recidiva di preeclampsia. In donne con pregressa preeclampsia precoce, valori di TPVR superiori a 1667 dyne·s·cm e di LVGLS>-21,73% identificano verosimilmente donne con assetto emodinamico e funzione miocardica non ottimali per intraprendere una seconda gravidanza.

ATTIVITA' FISICA E CARDIOLOGIA DELLO SPORT 742
ATTIVITÀ FISICA E PREVENZIONE CARDIOVASCOLARE
(ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI
(PREVENZIONE E RIABILITAZIONE)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE
(IMAGING CARDIOVASCOLARE)

EFFETTI DI UN PROGRAMMA DI ESERCIZIO FISICO ADATTATO SUI PARAMETRI CARDIACI IN UNA POPOLAZIONE DI ANZIANI FRAGILI E SARCOPENICI: IL PROGETTO CARDIOSPRINTT

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(a) DIPARTIMENTO DI MEDICINA E CHIRURGIA, UNIVERSITÀ DI PARMA, PARMA; (b) DIPARTIMENTO DI SCIENZE GERIATRICHE E ORTOPEDICHE, UNIVERSITÀ CATTOLICA DEL SACRO CUORE, ROMA

L'attività fisica, associata ad una dieta equilibrata, rientra fra i principali stili di vita per restare in buona salute e, in una popolazione anziana, può contrastare il rischio di disabilità fisica. In questi soggetti spesso coesistono fragilità fisica e sarcopenia, condizioni correlate ad un aumentato rischio di eventi cardiaci tantoché sono da considerarsi nuovi fattori di rischio cardiovascolare. Da questi presupposti è nato il progetto CARDIOSPRINTT, studio ancillare dello SPRINTT, che ha valutato, in un campione di soggetti fragili e sarcopenici, l'influenza sui parametri cardiaci, valutati con ecocardiografia, di un programma di esercizio fisico adattato della durata di due anni associato a consulenza nutrizionale (MCI) rispetto ad un programma educazionale (gruppo HALE). E' stata inoltre considerata la correlazione fra massa ventricolare sinistra (LVM) e massa muscolare scheletrica (SMM), precedentemente dimostrata, per la quale era stato coniato il termine di sindrome cardio-sarcopenica.
Al termine dello studio (circa 25 mesi), MCI non mostrava variazione dei parametri ricavati da entrambi i ventricoli rispetto HALE. Tuttavia abbiamo osservato in entrambi i gruppi gli effetti dell'invecchiamento cardiovascolare con una riduzione dei volumi del ventricolo sinistro e un peggioramento della funzione sisto-diastolica biventricolare. Si è confermata la correlazione fra LVM e SMM ($r=0.571$, $p<0.001$) indipendente dall'età, dalla pressione sistolica e BMI. Questo studio suggerisce che, nell'eterogeneità della popolazione di anziani fragili e sarcopenici con differente grado di disabilità, è necessario adottare un protocollo di esercizio personalizzato per migliorare la salute del cuore contrastandone l'invecchiamento.
La modulazione dell'asse cuore-muscolo potrebbe essere un target per prevenire la cardio-sarcopenia.

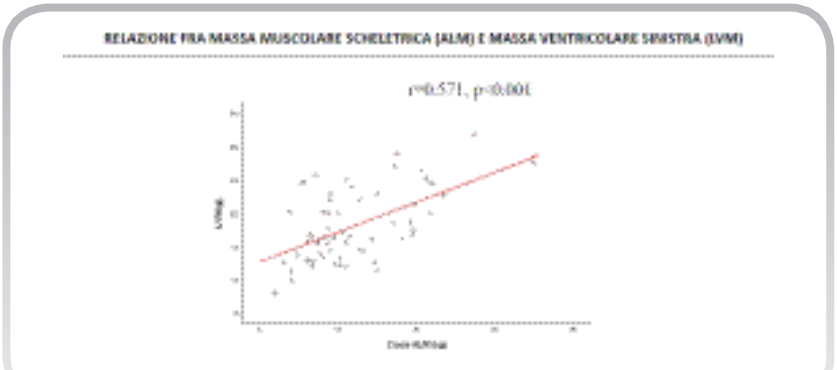


Figura 1

ATTIVITA' FISICA E CARDIOLOGIA DELLO SPORT 307
CARDIOLOGIA DELLO SPORT
(ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
MIOCARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
ARITMIE VENTRICOLARI (ARITMIE)

CLINICAL FEATURES AND OUTCOMES OF MYOCARDITIS IN ATHLETES AND NON-ATHLETES

Giorgio Barbera (a), Alessia Fausta Trezza (a), Andrea Villatore (a), Rossella Raimondo (a), Domenico Cianflone (a), Giovanni Peretto (a)
(a) OSPEDALE SAN RAFFAELE, MILANO

Background: While arrhythmic myocarditis is well studied in the general population, its presentation and outcomes in athletes remain less understood.

Aims: We present a single center, retrospective and prospective study, aimed at: 1) comparing presentation and outcomes of myocarditis in athletes and non-athletes; 2) evaluating the occurrence of major ventricular arrhythmias (VA) and their relationships with sport types; 3) exploring the role of cardiopulmonary exercise test (CPET) in athletes and controls 6 months after clinical presentation.

Methods: This observational case-control study included consecutive patients diagnosed with myocarditis either by gold standard techniques, namely endomyocardial biopsy (EMB) and/or cardiac magnetic resonance (CMR). Athletes (n=74) were compared with a control group of non-athletes matched by age, sex and clinical presentation type (chest pain; heart failure; arrhythmias). A subgroup of ten patients (5 cases and 5 matched
controls) underwent CPET by 6-month follow-up to assess cardiopulmonary performance. The primary study endpoint was occurrence of major VA, namely sustained ventricular tachycardia, ventricular fibrillation or appropriate cardiac device treatment by 6-month follow-up.

Results: The median age of the study population was 32±10 years, and 81% were males. The mean left ventricular ejection fraction at presentation was 55.5 %. As compared to controls, athletes more commonly reported history of cardiogenic syncope (respectively: 15% vs. 4%, p=0.025). Baseline clinical features were otherwise comparable between groups, except for a higher prevalence of viral myocarditis and right bundle branch block in athletes (respectively: 23% vs 10%, p=0.026; and 29% vs. 12%, p=0.016). All patients received gold standard medical treatment for myocarditis and underwent multidisciplinary reassessment every 3 months before return-to-play. During follow-up, athletes had higher prevalence of non-life-threatening arrhythmic events on exercise stress test (respectively: 34% vs. 11%, p=0.030). However, they had no evidence of spontaneous major VA (respectively: 16% vs 21%, p=0.529). Also, mortality was comparable between groups (1.3% - both patients died of HF) and no patients underwent heart transplant. 6 month-CPET was proven safe in both groups and showed a trend toward greater performance in athletes (higher aerobic capacity, ventilation performance, and muscular endurance). 70% of patients were able to return to play after 6 months from clinical evidence.

Conclusion: At a third-level center equipped with dedicated multidisciplinary facilities for myocarditis, athletes and non-athletes have a comparable clinical course and lack of life-threatening VA. A tailored approach, integrating clinical, imaging and arrhythmic risk assessment is the cornerstone for a safe return-to-play.

ATTIVITA' FISICA E CARDIOLOGIA DELLO SPORT 455
ATTIVITÀ FISICA E PREVENZIONE CARDIOVASCOLARE (ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
ELETTROCARDIOGRAFIA/ CARDIOVERSIONE/ DEFIBRILLAZIONE (ARITMIE)

THE ROLE OF MOTIVATIONAL COACHING IN OPTIMIZING CARDIAC AUTONOMIC REGULATION IN YOUNG ATHLETES

Emanuela Paoloni (a, b), Maria Luisa Poli (a, b), Elisa Lodi (a, b), Maria Grazia Modena (a, b)
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Introduction: Heart rate variability (HRV) is widely recognized as a non-invasive marker of autonomic regulation and cardiovascular stress in athletes. The present study investigated whether a coach-focused educational program, aimed at strengthening motivational strategies and optimizing the interplay between individual and environmental factors, could modulate HRV in youth basketball players (n = 26).

Methods: Before (PRE) and after (POST) the intervention, athletes underwent Holter monitoring during training sessions. HRV metrics—including PNS index, SNS index, Stress index, mean RR, SDNN, RMSSD, LF/HF ratio, SD1, SD2, and DFA $\alpha 1/\alpha 2$—were extracted with Kubios software and compared across training phases (PRE, DURING, POST). Statistical analysis was performed with paired t-tests (significance set at $p < 0.05$).

Results: Post-intervention recordings revealed higher parasympathetic modulation at rest, with increased PNS index (PRE: −2.89 ± 1.10 vs. POST: −1.60 ± 0.95, $p = 0.003$) and decreased sympathetic drive, reflected in reductions of SNS index (5.58 ± 2.45 vs. 2.05 ± 1.32, $p = 0.001$) and Stress index (21.5 ± 5.2 vs. 10.7 ± 3.7, $p < 0.001$). Resting global HRV (SDNN) and vagal-related activity (RMSSD) improved significantly (both $p < 0.001$). During training, sympathetic markers (SNS index, Stress index) were also attenuated ($p = 0.015$ and $p = 0.009$, respectively). A consistent decrease in LF/HF ratio across phases indicated better autonomic balance, while nonlinear indices (SD1, SD2) rose at rest ($p < 0.01$), supporting enhanced autonomic stability.

Conclusions: Coach education grounded in motivational principles contributed to favorable shifts in cardiac autonomic function among young athletes, increasing vagal influence and lowering physiological stress markers. These outcomes highlight the potential of coach-driven motivational strategies to promote cardiovascular recovery and adaptive regulation in competitive sport.

ATTIVITA' FISICA E CARDIOLOGIA DELLO SPORT 461
ATTIVITÀ FISICA E PREVENZIONE CARDIOVASCOLARE
(ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
FISIOPATOLOGIA DELL'IPERTENSIONE ARTERIOSA
(IPERTENSIONE ARTERIOSA)
IDONEITA' SPORTIVA (ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)

EXERCISE-INDUCED HEMODYNAMIC CHANGES AND URINARY ANOMALIES IN YOUNG ATHLETES: IMPLICATION FOR CARDIOVASCULAR PREVENTION

Emanuela Paoloni (a, b), Maria Luisa Poli (a, b), Elisa Lodi (a, b), Gustavo Savino (c), Roberta D´alisera (c), Maria Grazia Modena (a, b)

(a) CENTRO P.A.S.C.I.A. (PROGRAMMA ASSISTENZIALE SCOMPENSO CARDIACO, CARDIOPATIE DELL'INFANZIA E A RISCHIO) AOU POLICLINICO DI MODENA ; (b) UNIVERSITÀ DEGLI STUDI DI MODENA E REGGIO EMILIA, AOU POLICLINICO DI MODENA ; (c) SERVIZIO DI MEDICINA DELLO SPORT, AZIENDA USL DI MODENA

Background: In pediatric athletes, urinary findings such as hematuria and proteinuria are often observed following strenuous exercise. While sometimes reflecting transient renal stress, they may also point toward subtle alterations in cardiovascular control, particularly regarding blood pressure (BP) adjustment during physical exertion.

Objective: To estimate the prevalence of urinary abnormalities in young athletes and to explore their potential relationship with cardiovascular function, with a focus on hemodynamic responses to exercise.

Methods: We examined 861 athletes (mean age 13.7 ± 2.1 years) as part of pre-participation screening. Based on urinalysis, participants were grouped according to the presence (n = 80) or absence (n = 781) of abnormalities. Data collected included demographic and anthropometric measures, urine chemistry, resting and post-exercise BP and heart rate (HR), as well as echocardiographic parameters.

Results: Urinary anomalies were identified in 9.3% of athletes, mainly hematuria and proteinuria ($p < 0.001$). Age, sex, BMI, and sport discipline did not differ between groups. However, those with urinary abnormalities showed higher resting diastolic BP (64.9 ± 8.5 vs. 62.7 ± 6.5 mmHg, $p = 0.005$) and a more pronounced exercise-related rise in DBP, both in absolute terms (ΔDBP: 5.8 ± 10.5 vs. 3.1 ± 9.4 mmHg, $p = 0.017$) and percentage change (ΔDBP%: 7.8% vs. 4.3%, $p = 0.045$). HR patterns and echocardiographic measures were comparable between groups.

Conclusions: Young athletes with urinary abnormalities demonstrated a modest yet consistent exaggeration of DBP reactivity to exercise, possibly reflecting early vascular or autonomic imbalance. These results reinforce the importance of considering cardiovascular assessment when interpreting urinary screening, and suggest that exercise-induced DBP changes could represent an early signal of renal–vascular interaction.

ATTIVITA' FISICA E CARDIOLOGIA DELLO SPORT 682
CARDIOLOGIA DELLO SPORT
(ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
IDONEITA' SPORTIVA (ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
FISIOPATOLOGIA DELL'IPERTENSIONE ARTERIOSA
(IPERTENSIONE ARTERIOSA)

CARDIOVASCULAR RESPONSE TO A THREE-MINUTES HARVARD STEP TEST IN PAEDIATRIC COMPETITIVE ATHLETES

Gian Luca Ragazzoni (a), Alex Boncompagni (a), Guglielmo Manfredi (a), Silvia Giangrandi (a), Elisa Pucci (a), Sofia Capparuccia (a), Marta Focardi (b), Giulia Elena Mandoli (b), Maria Concetta Pastore (b), Cosetta Meniconi (c), Andrea Franchini (c), Massimo Capitani (c), Matteo Cameli (b), Serafina Valente (b), Marco Bonifazi (d), Flavio D´ascenzi (a)
(a) SPORTS CARDIOLOGY AND REHAB UNIT, DEPARTMENT OF MEDICAL BIOTECHNOLOGIES, UNIVERSITY OF SIENA; (b) DIVISION OF CARDIOLOGY, DEPARTMENT OF MEDICAL BIOTECHNOLOGIES, UNIVERSITY OF SIENA; (c) AUSL TOSCANA SUD-EST, SPORTS MEDICINE UNIT, SIENA; (d) DEPARTMENT OF MEDICAL BIOTECHNOLOGIES, UNIVERSITY OF SIENA

Background. The Italian pre-participation screening (PPS) program includes a simplified 3-minute step test to assess cardiovascular responses in pediatric athletes, yet limited data exist on the cardiovascular response to this test in the paediatric population.

Objectives. To evaluate heart rate (HR), blood pressure (BP), and arrhythmic responses to a step test in healthy children undergoing PPS.

Methods. We prospectively enrolled 647 athletes (mean age 13 ± 2 years; 51% male) undergoing PPS from September 2023 to May 2024. All participants performed a 3-minute step test with continuous ECG monitoring and BP measurements at rest, peak, and recovery. Subgroup analyses were performed by sex and age group. Regression analyses were used to assess predictors of peak HR, % of predicted HRpeak and systolic BP.

Results. The mean resting HR was 81 ± 17 bpm, with HRpeak of 169 ± 14 bpm (85% of predicted). The most significant increase in HR occurred within the first minute. BPpeak remained modest (128/60 mmHg). Female athletes had higher HRs but lower BP than males ($p < 0.001$). Resting HR declined with age, while HRpeak remained constant across groups. BP increased with age, though only systolic BP differed at peak. Regression analysis identified resting HR, sex, and BMI as predictors of HRpeak, while weight alone predicted systolic BPpeak. Exercise-induced premature ventricular beats (PVBs) occurred in 0.46% of athletes, all with benign morphology and no underlying structural heart disease.

Conclusions. The step test elicits a strong HR response in pediatric athletes and has a low arrhythmic yield. However, it is not suitable for assessing hypertensive responses during exercise.

ATTIVITA' FISICA E CARDIOLOGIA DELLO SPORT 684
CARDIOLOGIA DELLO SPORT
(ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
IDONEITA' SPORTIVA (ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE
(IMAGING CARDIOVASCOLARE)

RAPPORTO RADICE AORTICA VENTRICOLO SINISTRO: COME DISTINGUERE LA DILATAZIONE AORTICA NEGLI ATLETI AGONISTI

Gian Luca Ragazzoni (a), Luna Cavigli (a), Niccolò Andreani (a), Walter Pastore (a), Silvia Giangrandi (a), Alessandra Roselli (b), Flavio D´ascenzi (a)
(a) DIPARTIMENTO DI BIOTECNOLOGIE MEDICHE, UNITÀ DI MEDICINA DELLO SPORT E RIABILITATIVA, UNIVERSITÀ DI SIENA; (b) CENTRO DI MEDICINA DELLO SPORT SAN MINIATO, ITALIA

Introduzione: Le dilatazioni aortiche negli atleti possono essere fisiologiche o patologiche. Questo studio mira a validare, nella popolazione atletica, il parametro ecocardiografico Ao/DTDVS rapporto tra il diametro del bulbo aortico e il diametro telediastolico del ventricolo sinistro (cut-off 0,71) proposto da Cavigli et al., per distinguere tra dilatazioni proporzionate e armoniche e forme patologiche, sproporzionate rispetto al ventricolo sinistro.

Materiali e metodi: Lo studio ha incluso 1.392 soggetti, suddivisi in atleti agonisti con normali dimensioni aortiche (n=993) e atleti con dilatazione aortica (n=399). La dimensione dell'aorta ai Seni di Valsalva è stata misurata dalla finestra 2D parasternale asse lungo perpendicolarmente all'asse dell'aorta, secondo la tecnica "leading-edge to leading-edge", e successivamente rapportata al DTDVS.

Risultati: Il campione analizzato presentava 982 uomini (70,5%) e 410 donne (29,5%). L'età media dell'intera coorte è di 32,3±13,0 anni, con un range compreso tra i 18 e i 65 anni. Gli atleti agonisti mostravano un DTDVS di 51.9±4.5 mm e un diametro della radice aortica di 29.2±3.3 mm, mentre gli atleti con dilatazione aortica presentavano un DTDVS di 48.9±3.4 mm e una radice aortica di 39.1±2.9 mm ($p<0.001$ per entrambi i parametri, nella differenza fra gruppi). Il rapporto Ao/DTDVS pari a 0.71 si è dimostrato altamente sensibile (98.7%) e specifico (98.8%), con un valore prognostico negativo del 99.5%.

Conclusioni: Alla luce dei risultati, il rapporto Ao/DTDVS si conferma un indice semplice e utile nella valutazione degli sportivi. Il suo impiego clinico consente l'identificazione precoce di possibili rimodellamenti aortici patologici, favorendo una gestione terapeutica e sportiva più appropriata.

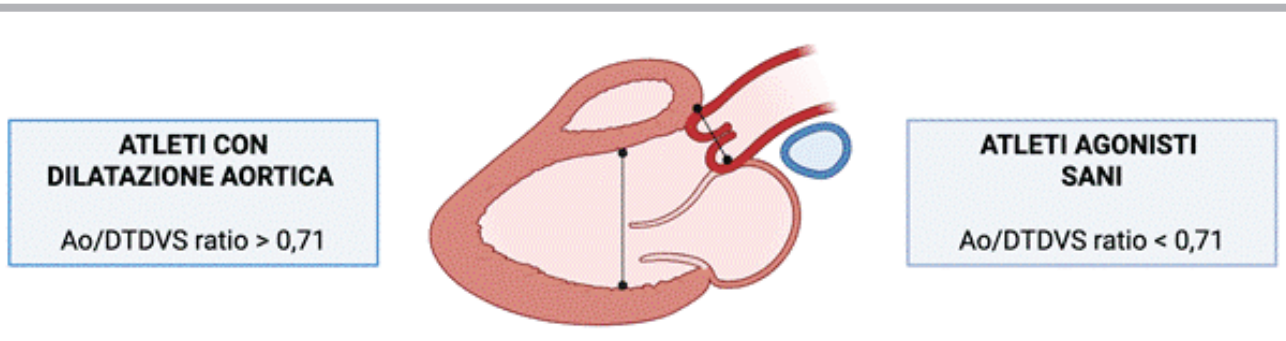


Figura 1

ATTIVITA' FISICA E CARDIOLOGIA DELLO SPORT 454
CARDIOLOGIA DELLO SPORT
(ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
RIABILITAZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI
(PREVENZIONE E RIABILITAZIONE)

VALUTAZIONE PROSPETTICA DEGLI EFFETTI DEL TRAINING FISICO NELLA CARDIOMIOPATIA ARITMOGENA

Patrizio Sarto (a), Teresina Vessella (a), Alessandro Nava (a, b), Alessandro Meleleo (a, c), Cinzia Pegoraro (a), Flaviano Giorgiano (a), Barbara Barra (a), Giulio Meneguzzo (a), Mauro Ramigni (d), Cinzia Piovesan (d), Ilaria Rigato (e), Barbara Bauce (e), Laura Merlo (a)
(a) UOC MEDICINA DELLO SPORT AULSS 2 MARCA TREVIGIANA-CENTRO DI RIFERIMENTO REGIONALE PER LO SPORT NEI GIOVANI CON CARDIOPATIE ; (b) SCULA SPECIALIZZAZIONE IN MEDICINA DELLO SPORT ED ESERCIZIO FISICO-UNIVERSITÀ DI TRIESTE; (c) SCUOLA DI SPECIALIZZAZIONE IN MEDICINA DELLO SPORT E DELL'ESERCIZIO - UNIVERSITÀ DI PISA ; (d) SERVIZIO DI EPIDEMIOLOGIA - AULSS2 MARCA TREVIGIANA, TREVISO; (e) DIPARTIMENTO DI SCIENZE CARDIO-TORACO-VASCOLARI E SALUTE PUBBLICA- UNIVERSITÀ DEGLI STUDI PADOVA

Introduzione: Le attuali raccomandazioni sull'esercizio fisico nella Cardiomiopatia aritmogena (CMA) derivano principalmente da modelli animali e da studi retrospettici mentre mancano dati prospettici sull'impatto clinico e funzionale di programmi di training fisico personalizzati.

Obiettivo: Il nostro studio si proponeva di valutare gli effetti di un programma di training personalizzato su una coorte di pazienti affetti da CMA (il primo studio prospettico su questa popolazione).

Metodo: Tutti i pazienti sono stati sottoposti a valutazione clinico-funzionale e stratificazione del rischio aritmico con eventuale modifica della terapia beta-bloccante. Ogni paziente ha eseguito una prima fase di allenamento monitorato presso la nostra palestra, permettendoci di ottimizzare le frequenze cardiache e le intensità allenanti. Successivamente sono state fornite indicazioni dettagliate sul programma di training aerobico e della forza con richiesta di monitorare gli allenamenti mediante un dispositivo wearable e di registrare volume e intensità del training praticato. Ogni sei mesi veniva eseguita una rivalutazione clinica e ogni anno una valutazione clinico-funzionale.

Risultati: Sono stati arruolati 43 soggetti affetti da CMA di cui 39% con forma biventricolare, 21% a prevalenza destra e 40% a prevalenza sinistra (età media 32,5 ± 17,3 anni; 72 % maschi), 51 % dei quali ex atleti agonisti. Nel 67 % dei casi vi era una mutazione genetica patogena o verosimilmente patogena (mutazione prevalente era PKP2 nel 20,9% dei pazienti). Dopo la prima valutazione è stato necessario modificare la terapia betabloccante nel 60% dei casi. Dopo un follow-up medio di 26 mesi non abbiamo osservato modifiche significative nella capacità funzionale (consumo di ossigeno di picco: pre 2339 ml/min Vs post 2273 ml/min, p 0.48), nel burden aritmico (battiti ectopici ventricolari totali all'Holter pre 2285/24 h Vs post 1958/24 h, p 0.24; numero coppie all'Holter pre 146/24 h Vs post 77/24 h, p 0.1) e della morfologia cardiaca (diametro tele diastolico del ventricolo sinistro: pre 51,8 mm Vs post 53,3 mm, p 0.12; frazione di eiezione: pre 56,5 % Vs post 56,4%, p 0.86; frazione di accorciamento ventricolo destro: 38 % pre Vs 36% post, p 0.36). Sono invece stati registrati tre eventi aritmici maggiori (arresto cardiaco, tachicardia ventricolare sostenuta e scarica inappropriata dell'ICD) durante attività fisica ad alta intensità (calcio, padel, ciclismo) non conforme alle nostre indicazioni e un episodio di scompenso cardiaco in un soggetto aderente al programma.

Conclusione: In conclusione, nella CMA l'adozione del nostro protocollo di training, integrato alla gestione clinica, può garantire la stabilità del quadro funzionale, elettrico e morfologico dei pazienti. Gli eventi aritmici maggiori si sono registrati solo in chi ha praticato sport ad alta intensità.

ATTIVITA' FISICA E CARDIOLOGIA DELLO SPORT 460
CARDIOLOGIA DELLO SPORT
(ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
ARITMIE VENTRICOLARI (ARITMIE)

DOSAGGIO PERIODICO DELLA TROPONINA NELLA GESTIONE DEL TRAINING IN PAZIENTI CON CARDIOMIOPATIA ARITMOGENA

Alessandro Meleleo (a, c), Laura Merlo (a), Barbara Bauce (b), Patrizio Sarto (a)
(a) UOC MEDICINA DELLO SPORT- CENTRO REGIONALE DI RIFERIMENTO PER LO SPORT NEI GIOVANI CON CARDIOPATIA- AULSS 2 MARCA TREVIGIANA, TREVISO; (b) DIPARTIMENTO DI SCIENZE CARDIO-TORACO-VASCOLARI E SALUTE PUBBLICA UNIVERSITÀ DEGLI STUDI DI PADOVA ; (c) SCUOLA DI SPECIALIZZAZIONE IN MEDICINA DELLO SPORT ED ESERCIZIO FISICO- UNIVERSITÀ DI PISA

Le attuali raccomandazioni sull'esercizio fisico nella Cardiomiopatia aritmogena (CMA) derivano principalmente da modelli animali e da studi retrospettici mentre mancano dati prospettici sull'impatto clinico e funzionale di programmi di training fisico personalizzati. Il nostro studio si proponeva di valutare gli effetti di un programma di training personalizzato su una coorte di pazienti affetti da CMA (il primo studio prospettico su questa popolazione). Sono stati arruolati 43 soggetti (età media 32,5 anni; 72 % maschi), 51 % dei quali ex atleti agonisti.
Nel 67 % dei casi vi era una mutazione genetica patogena o verosimilmente patogena (mutazione prevalente era PKP2 presente nel 20,9% dei pazienti). Tutti i pazienti sono stati sottoposti a valutazione clinico-funzionale e stratificazione del rischio aritmico con eventuale modifica della terapia beta-bloccante (indicata nel 60% dei pazienti) e a tutti sono state fornite indicazioni dettagliate sul programma di training con richiesta di monitorare gli allenamenti mediante un dispositivo wearable e di registrare volume e intensità del training praticato. Ogni sei mesi veniva eseguita una rivalutazione clinica e ogni anno una valutazione clinico-funzionale.
Dopo un follow-up medio di 26 mesi non abbiamo osservato modifiche significative nella capacità funzionale, nel burden aritmico e della morfologia cardiaca.
Sono invece stati registrati tre eventi aritmici maggiori (arresto cardiaco, tachicardia ventricolare sostenuta e scarica inappropriata dell'ICD) durante attività fisica ad alta intensità (calcio, padel, ciclismo) non conforme alle nostre indicazioni e un episodio di scompenso cardiaco in un soggetto aderente al programma. In conclusione, nella CMA l'adozione del nostro protocollo di training, integrato alla gestione clinica, può garantire la stabilità del quadro funzionale, elettrico e morfologico dei pazienti.

ATTIVITA' FISICA E CARDIOLOGIA DELLO SPORT 477
CARDIOLOGIA DELLO SPORT
(ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
ATTIVITÀ FISICA E PREVENZIONE CARDIOVASCOLARE
(ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
RIABILITAZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI
(PREVENZIONE E RIABILITAZIONE)

LA PRESCRIZIONE DELLA PERFORMANCE: UN ATLETA CARDIOPATICO VERSO L'IRONMAN

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In molti casi l'idoneità non può essere concessa, ma ciò non esclude la possibilità di pianificare programmi di allenamento anche molto ambiziosi, purché guidati da criteri clinici rigorosi e orientati alla sicurezza.
Presentiamo la nostra esperienza con un giovane paziente, affetto da una cardiopatia incompatibile con lo sport agonistico. L'obiettivo era testare la possibilità di pianificare una performance di lunga durata, fino a una distanza Ironman, dove non doveva mai essere cercato il risultato cronometrico, ma la possibilità di realizzare un'attività sostenibile, personalizzata, divertente e soprattutto sicura.
La prima tappa del nostro precorso è stata la valutazione funzionale multiparametrica: impedenzometria, test cardiopolmonare (CPET), test del lattato (Mader modificato) per valutare la risposta metabolica, e il test a carico costante con controllo metabolico per confermare le frequenze cardiache allenanti emerse dalla valutazione (CPET+ MADER).
La valutazione è stata eseguita utilizzando la gestualità tecnica più vicina possibile allo sport praticato. In questo modo è stato possibile identificare aree di intensità personalizzate e costruire un piano di allenamento basato su parametri confermati oggettivamente.
Il programma è stato pianificato in maniera progressiva, modulando l'intensità su obiettivi metabolici e utilizzando strumenti di monitoraggio costante (cardiofrequenzimetri, report digitali, registrazioni elettrocardiografiche prolungate), valutazioni ematochimiche, consulenze nutrizionali e psicologiche. Sono stati eseguiti controlli periodici clinico-funzionali proponendo la stessa modalità valutativa per registrare eventuali adattamenti e modulare il programma di allenamento. Non è stato registrato nessun evento dopo un anno di follow-up.
Questa esperienza potrebbe rappresentare un modello da proporre in pazienti selezionati.

ATTIVITA' FISICA E CARDIOLOGIA DELLO SPORT 593
IDONEITA' SPORTIVA (ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
CARDIOLOGIA DELLO SPORT
(ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
ARITMIE VENTRICOLARI (ARITMIE)
ABLAZIONE TRANSCATETERE (ARITMIE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

CICATRICE NON ISCHEMICA DEL VENTRICOLO SINISTRO E ARITMIE "UNCOMMON" NELL'ATLETA DI ALTO LIVELLO: IMPLICAZIONI PER L'IDONEITÀ AGONISTICA

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(b) UNIVERSITÀ VITA-SALUTE SAN RAFFAELE, MILANO, ITALIA

Introduzione: La cicatrice non ischemica del ventricolo sinistro (NLVS), rilevabile alla CMR come LGE subepicardico/intramurale, può rappresentare un substrato aritmogeno in atleti giovani con funzione ventricolare preservata. La coesistenza con aritmie ventricolari (VA) emerse allo sforzo solleva questioni gestionali e di idoneità agonistica, in un contesto di raccomandazioni orientate alla prudenza e alla valutazione in centri esperti.

Caso clinico: Atleta uomo di 27 anni, sport gruppo B (COCIS 2023), allenamento ~20 h/sett, anamnesi negativa per sincope/familiarità; bicuspidia aortica Sievers 0 ben tollerata.
A marzo 2025 il test da sforzo (TdS) massimale evidenzia BEV monomorfi "uncommon" (BBD, asse superiore) non soppressi con lo sforzo: idoneità sospesa e avvio dell'iter diagnostico.
ECG nei limiti; ECO-TT: FE 62%, non anomalie di rilievo; Holter 24 h: 251 BEV accentuati con lo sforzo; CMR: LGE subepicardico infero-inferolaterale medio (2 segmenti), T1 nativo normale; genetica negativa. Dopo detraining di 3 mesi il TdS e l'Holter mostrano rispettivamente 3 BEV singoli nel recupero e 330 BEV a morfologia invariata, la CMR è sovrapponibile; la valutazione aritmologica suggerisce origine epi/subepicardica e conferma la non idoneità.
In un secondo centro: studio elettrofisiologico negativo e ablazione TC-RF mirata all'inserzione del muscolo papillare posteriore sinistro con abolizione dell'ectopia al basale e con isoproterenolo.
TdS post-procedura massimale: assenza di aritmie durante l'esercizio; rari BEV soppressi nelle prime fasi dello sforzo.

Conclusioni: Il quadro definisce una NLVS circoscritta non settale con BEV coerenti con la sede del LGE. L'orientamento iniziale alla restrizione è in linea con le raccomandazioni COCIS 2023, che ammettono idoneità condizionata (classe II) solo se cicatrice <3 segmenti non settale, FE preservata, ECG senza anomalie maggiori e assenza di VA significative a test massimale/Holter con allenamento, con F-UP serrato. Nel nostro caso l'ablazione ha soppresso l'ectopia e migliorato il profilo funzionale, ma la presenza di LGE mantiene incertezza prognostica: l'ATC non è una strategia "standard" per normalizzare il rischio intrinseco della NLVS, né modifica da sola i criteri di idoneità.
La gestione resta quindi individualizzata in centri di riferimento, con sorveglianza programmata. I β-bloccanti possono essere considerati nei fenotipi adrenergici, bilanciando efficacia clinica e impatto prestazionale. Sono necessari studi prospettici dedicati per definire il ruolo dell'ablazione e affinare i percorsi decisionali negli atleti con NLVS.

CardioSic

86° CONGRESSO NAZIONALE SIC
Roma, 4-7 dicembre 2025

CARDIO-ONCOLOGIA E CARDIO-TOSSICITÀ

CARDIO-ONCOLOGIA E CARDIO-TOSSICITÀ 807
MIOCARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
DIAGNOSI, PREVENZIONE E TRATTAMENTO DELLA CARDIOTOSSICITA'
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
CARDIOTOSSICITA' DA FARMACI
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')

NAVIGATING CARDIAC RISK IN PDGFR-A+ EOSINOPHILIC LEUKEMIA: A CASE OF EARLY MYOCARDIAL INVOLVEMENT AND CARDIOTOXICITY

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(a) CAMPUS BIO-MEDICO

We describe the case of a 31-year-old male with a recent diagnosis of myeloid neoplasm with eosinophilia and PDGFR-α rearrangement, complicated by early cardiac manifestations and subsequent antineoplastic therapy-related cardiotoxicity.

The patient presented to the Emergency Department with low-grade fever, diffuse petechiae, profound asthenia and resting chest pain, exacerbated by inspiration and radiating to the left shoulder. His past medical history was negative for cardiovascular disease; the only significant finding was the recent diagnosis of chronic eosinophilic leukemia. Laboratory tests revealed elevated troponin I (peak 2.608 pg/ml), marked eosinophilia (12.700/μL), and elevated CRP (5.2 mg/dl). The ECG showed ST-segment depression up to 2 mm in the anterolateral leads and T-wave inversion in the inferior leads. Echocardiography demonstrated mid-basal septal hypokinesia, apical obliteration in systole consistent with pseudo-apical hypertrophy, preserved LVEF (55%), borderline RV function (TAPSE 17 mm), and posterior pericardial hyper-reflectance with minimal effusion.

Suspecting NSTEMI, the patient was admitted to the Cardiology Unit. However, coronary CT angiography excluded significant coronary stenosis. Cardiac MRI revealed non-ischemic late gadolinium enhancement with edema-like features, supporting the diagnosis of eosinophilic myocarditis secondary to peripheral eosinophilia. During hospitalization, telemetry recorded a single episode of non-sustained ventricular tachycardia, treated with beta-blocker therapy. Brain MRI demonstrated multiple bilateral lesions suggestive of myeloid sarcomas, associated with leptomeningeal carcinomatosis.

After cardiologic stabilization, the patient was transferred to the Hematology Department and treated with high dose cytarabine and tyrosine kinase inhibitors (imatinib/dasatinib). Treatment was complicated by cytarabine syndrome and symptomatic bradycardia with ventricular bigeminy. Multidisciplinary management resulted in significant clinical improvement, with partial regression of both cardiac and neurological findings.

In this case, cardiac involvement guided the subsequent diagnostic work-up, enabling identification of CNS secondary disease (myeloid sarcomas/chloromas), and led to a revision of the hematologic diagnosis from chronic to acute leukemia.

This case highlights that cardiological evaluation in oncologic patients must consider not only therapy-induced cardiotoxicity, but also primary cardiovascular involvement related to the malignancy, which may occur early in acute leukemias. Hematologic neoplasms such as eosinophilic leukemia with PDGFR-α rearrangement represent a paradigmatic model of combined cardiovascular risk, in the context of limited available evidence and incomplete guidelines.

A cardio-oncological approach based on strict monitoring, individualized risk stratification and continuous multidisciplinary collaboration is crucial to reduce major cardiovascular and systemic complications, to ensure safe continuation of oncologic treatments and to improve overall outcomes.

CARDIO-ONCOLOGIA E CARDIO-TOSSICITÀ 819
TUMORI CARDIACI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT) (IMAGING CARDIOVASCOLARE)

CASE OF SUSPECTED CARDIAC ANGIOSARCOMA WITH PULMONARY METASTASES: CLINICAL, IMAGING AND DIASTOSTIC FINDINGS

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(a) UNIVERSITA DEGLI STUDI DE L'AQUILA

An 80-year-old man was admitted to our ER presenting with progressive exertional dyspnea, palpitations, and an 8 kg weight loss over the past month. No cardiovascular risk factors were reported in his medical history. The ECG showed atrial tachycardia and non-specific repolarization abnormalities. The echocardiogram showed LVEF of 60%, a thickened right ventricular wall with a spongy appearance, and a round hyperechoic mass (15 mm x 15 mm) adherent to and protruding into the right atrium. Moderate tricuspid regurgitation was noted, with a PAPs of 37 mmHg. A mild circumferential pericardial effusion (maximum 9 mm) was also observed. A whole-body CT scan with and without contrast showed a mass in the right atrium and multiple nodular areas in the bilateral pulmonary parenchyma with evidence of liquefaction.

Cardiac MRI revealed a mass in the right atrium (86 x 49 mm) infiltrating the interatrial septum and extending to the tricuspid plane, occupying the aorto-atrial space and superiorly involving the caval junction. The lesion appeared markedly heterogeneous, with lobulated margins, a large central liquefied component, and heterogeneous vascularization. Microcystic-like areas were observed, along with a prominent liquefied central component and more pronounced vascularization in the anterior septal and interatrial regions. There was marked signal restriction on diffusion-weighted imaging, suggestive of significant tissue disorganization and cellularity. The lesion extended into the pericardium.

Based on clinical, echocardiographic, and imaging data, cardiac angiosarcoma with pulmonary metastases was hypothesized. A cardiothoracic surgical consultation was requested; however, the patient was deemed inoperable due to the advanced stage of the disease and high surgical risk. The patient passed away one month later, prior to undergoing a PET-CT examination.

CONCLUSIONS: We encountered a case of suspected cardiac angiosarcoma with metastases to the lungs. Angiosarcoma is an aggressive sarcoma. It originates in the right atrium in approximately 75% of cases and typically fills this chamber and infiltrates the pericardium, tricuspid valve, right ventricle, and right coronary artery. Metastases develop in 47% to 89% of patients, most commonly affecting the lungs. It has a high likelihood of metastasis at the time of presentation. Patients typically present with symptoms of right heart failure, shortness of breath due to hemopericardium, and palpitations secondary to supraventricular arrhythmias. Complete surgical resection offers the best longterm outcome; however, this is rarely possible due to anatomical considerations and metastatic spread.

CARDIO-ONCOLOGIA E CARDIO-TOSSICITÀ 922
CARDIOTOSSICITA' DA FARMACI
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
DIAGNOSI, PREVENZIONE E TRATTAMENTO DELLA CARDIOTOSSICITA'
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
ECOCARDIOGRAFIA 3-D (IMAGING CARDIOVASCOLARE)

NEW FRONTIER OF METASTATIC BREAST CANCER TREATMEN AND CARDIOTOXICITY: THE RESUL AFTER ONE YEAR OF THERAPY WITH TRASTUZUMAB-DERUXTECAN

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(a) DIPARTIMENTO DI MEDICINA CLINICA E CHIRURGIA, UNIVERSITÀ FEDERICO II, NAPOLI

Background: Trastuzumab-deruxtecan (T-DXd), a HER2-directed antibody and DNA topoisomerase I inhibitor conjugate, is being developed for the treatment of HER2-expressing solid tumours, including breast cancer, gastric cancer, colorectal cancer and non-small cell lung cancer. It has shown significant clinical benefits in HER2+ metastatic breast cancer patients. Interstitial lung disease (ILD) and cardiotoxicity, such as left ventricular dysfunction (LV) and heart failure, are the most significant toxicities associated with T-DXd, but there arenâ€™t currently many studies on cardiovascular effects in the literature.

Purpose of the study: The aim of our study was to evaluate eventual echocardiographic alterations in patients with HER2+ metastatic breast cancer being treated with T-DXd.

Metods: We performed standard and advanced echocardiographic examination, including study of Global Longitudinal Strain (GLS) of LV, in 18 patients

Static analysis of echocardiographic parameters before and after 12 months of treatment

Parameters	Basal (N=18)	Follow up ÂÂ (N=18)	P
HR (bpm)	70 ±Â 11	71 ±Â 11	0,6
SBP (mmHg)	135 ±Â 16	128 ±Â 19	0,2
BSA (m^2)	1,7 ±Â 0,1	1,7 ±Â 0,1	0,11
End diastolic LV dimension (mm)	45,7 ±Â 4,9	45,7 ±Â 4,2	1
RWT	2,2 ±Â 7,6	2,1 ±7,4	0,3
LVMi	40 ±Â 12	38,7 ± 12	0,4
EF	58,7 ±Â 4,9	59 ±Â 4	0,6
GLS	20,8 ±Â 2,2	21 Â ±Â 2,4	0,7
LAVi	29,5 ± 11	31 ± 12	0,2
Ee	7,9 ±Â 1,7	7,2 ±Â 2	0,2
SPAP	29,6 ±Â 6,5	26 ±Â 4,8	0,1
TAPSE	22,7 ±Â 4,4	22 ±2,9	0,6

Body Surface Area, HR: Heart Rate; EF: Ejection Fraction; GLS: Global Longitudinal Strain; LAVi: left atrial volume index; LVMi = Left ventricular mass index; LV: Left ventricle; SBP: Systolic Blood Pressure; RWT = Relative wall thickness; SPAP: Systolic Pulmonary Artery Pressure; TAPSE: Tricuspid annular plane systolic excursion.

Table 1

with HER2+ metastatic breast cancer before the start of T-DXd and after 12 months of therapy. Statistical analysis was carried out using SPSS software.

Results: (Table 1)

Conclusion: As shown in Table 1, our analysis did not highlight statistically significant changes in the echocardiographic parameters analized in 18 patients with breast cancer, after 12 months of treatment with T-DXd. Â Despite the small number of patients, this study shows that treatment with T-Dxd did not have cardiovascular toxic effects, but active surveillance, early detection and management of T-DXd-related toxicity by a multidisciplinary team may ultimately improve patient outcomes.

CARDIO-ONCOLOGIA E CARDIO-TOSSICITÀ 585
CARDIOTOSSICITA' DA FARMACI (CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO)
DIAGNOSI, PREVENZIONE E TRATTAMENTO DELLA CARDIOTOSSICITA' (CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')

NIVOLUMAB AND IPILIMUMAB-INDUCED COMPLETE HEART BLOCK IN A PATIENT WITH PLEURAL MESOTHELIOMA: A RARE IMMUNE-RELATED ADVERSE EVENT

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Background: Immune checkpoint inhibitors (ICIs), including nivolumab and ipilimumab, have improved outcomes in several malignancies, including biphasic pleural mesothelioma. However, they can lead to rare but serious immune-related adverse events (irAEs), such as myocarditis and cardiac conduction disturbances.

Case Summary: A 75-year-old man with recently diagnosed biphasic pleural mesothelioma presented with progressive dyspnea and fatigue two weeks after initiating combined nivolumab and ipilimumab therapy. He was found to have complete atrioventricular (AV) block with a ventricular escape rhythm at 30 bpm. Laboratory tests showed elevated troponin levels, and echocardiography demonstrated preserved biventricular systolic function without pericardial effusion. Coronary angiography excluded obstructive coronary artery disease. High-dose intravenous corticosteroids were started for suspected ICI-related myocarditis with conduction system involvement. Despite a mild initial improvement, the patient experienced sudden clinical deterioration and died before permanent pacemaker implantation could be performed.

Discussion: ICI-induced myocarditis is a rare but potentially fatal complication, often presenting within the first few weeks of therapy. It may involve the conduction system even in the absence of structural heart disease, and troponin elevation may be the only biochemical clue. Early diagnosis is challenging, and outcomes can be poor despite immunosuppressive treatment and supportive measures.

Conclusion: This case highlights complete heart block as a rare and life-threatening manifestation of ICI-associated myocarditis. Clinicians should maintain a high level of suspicion in patients on ICI therapy presenting with bradycardia or conduction abnormalities. Early recognition and aggressive management are essential, although prognosis may remain poor despite timely intervention

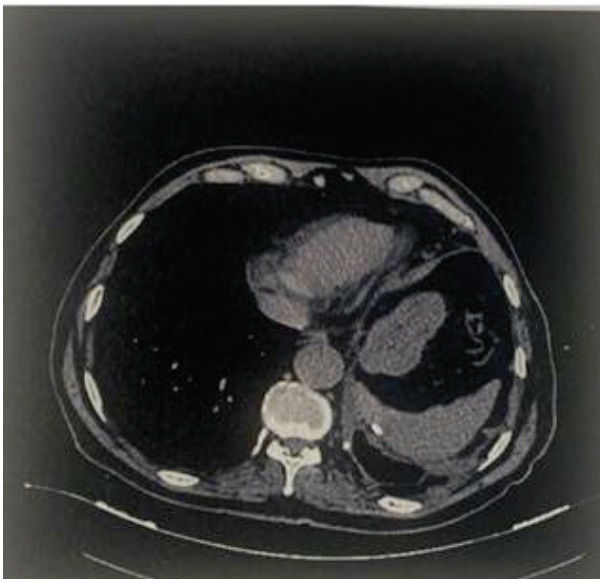


Figure 1

CARDIO-ONCOLOGIA E CARDIO-TOSSICITÀ 34
CARDIOTOSSICITA' DA FARMACI
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
DIAGNOSI, PREVENZIONE E TRATTAMENTO DELLA CARDIOTOSSICITA'
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
PATOLOGIA DELLE VENE (MALATTIE DEI VASI)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)

THE CHALLENGING CASE OF A PATIENT WITH BREAST CANCER RECEIVING ABEMACICLIB, COMPLICATED BY VENOUS THROMBOSIS SUCCESSFULLY TREATED WITH EDOXABAN: DRUG-DRUG INTERACTION MATTERS

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Introduction: Venous thromboembolism (VTE) is a common and potentially fatal complication of cancer whose treatment and prevention are crucial.

Case report: A 44 y-o woman with breast cancer receiving abemaciclib and hormone therapy (exemestane and triptorelin) performed a routine CT-scan that detected an incidental PORT-related VTE of the right subclavian and axillary veins. She was devoid of neither cardiovascular risk factors nor hepatic and renal impairment. The Breast Cancer Team of our Institute collegially indicated anticoagulant therapy with warfarin, a CYP2C9 substrate, to avoid drug-drug interactions (DDIs) with abemaciclib, a substrate and a minor inhibitor of P-gp (PGP). After 1 year of anticoagulant treatment, a duplex ultrasound showed VTE resolution. Despite the patient's preference for the withdrawal of warfarin due to frequent and troublesome blood monitoring, the oncologist confirmed warfarin for the secondary thromboprophylaxis due to the high VTE burden (active cancer, anticancer regimen, PORT, previous VTE). At the cardiological evaluation before breast prosthesis surgery, warfarin was replaced with enoxaparin and again the patient complained about the inconvenience of warfarin therapy. Therefore, after breast implant, the cardiologist replaced warfarin with edoxaban 60 mg once daily and the PORT was removed. At 3-month follow up since surgery, the oncologist raised doubts on the possible reduced anticancer efficacy of abemaciclib while receiving edoxaban. For this reason, a DDI evaluation was requested at the Niguarda Clinical Pharmacology Service. Edoxaban is a clinically relevant substrate of PGP which represents its main way of DDIs as a victim of other concomitant medications (i.e. PGP inhibitors or inducers); conversely, it is not an inhibitor or inducer of CYPs or transporters. On the other side, abemaciclib is metabolized mainly by CYP3A4. Thus, the effects of edoxaban on the blood levels and the clinical efficacy of abemaciclib were not expected. On the contrary, a slight increase in edoxaban blood levels was conceivable, although of limited clinical relevance, without neither contraindication to edoxaban nor need for dose reduction. To corroborate these pharmacokinetic considerations, a steady state edoxaban peak (after 3 hours from assumption) and trough (just before administration) blood levels were performed, resulting within normal range. At 6-month since surgery, the patient was still concomitantly taking abemaciclib and edoxaban without side effects.

Conclusions: VTE is a dreadful issue in cancer. It causes delays or interruptions of anticancer agents,

leading to reduced oncological benefits. Anticoagulant management could be challenging due to potential DDIs with anticancer regimens. It is advisable, whenever feasible, to achieve an effective and safe level of anticoagulation with tolerable and convenient drugs. In this regard, the support of the Clinical Pharmacologist could be a useful tool to improve quality of life and compliance of the patients in burdensome scenarios like this clinical case.

CARDIO-ONCOLOGIA E CARDIO-TOSSICITÀ 148
CARDIOTOSSICITA' DA FARMACI
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
DIAGNOSI, PREVENZIONE E TRATTAMENTO DELLA CARDIOTOSSICITA'
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE
(IMAGING CARDIOVASCOLARE)

CARDIAC TOXICITY FROM ONCOLOGICAL THERAPY IN HER2+ BREAST CANCER PATIENTS: INCIDENCE AND PREDICTORS

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(a) AOUI VERONA

Introduction: anti-HER2 drugs have improved the prognosis of HER2+ breast cancer patients; indeed, they are associated with the development of cardiotoxicity, particularly CTRCD.

Purpose: this study aims to evaluate whether the addition of pertuzumab to trastuzumab can increase the incidence of asymptomatic CTRCD and to identify possible echocardiographic, clinical and haematochemical predictors of cardiac dysfunction.

Methods: 175 HER2+ breast cancer female patients treated with anti-HER2 drugs were enrolled and divided into group T, including patients treated with trastuzumab, and group T+P including those treated with trastuzumab and pertuzumab. Patients' echocardiographic and haematochemical exams, prior performed during 12 months follow-up, were analysed and anamnestic data, such as previous exposition to anthracyclines, were collected. Asymptomatic CTRCD was diagnosed following 2022 ESC guidelines, distinguishing mild form, described as normal LVEF and > 15% decline of LVGLS, from the moderate and severe forms characterized by decline of LVEF. The distribution of gathered data and the incidence of CTRCD and its forms of severity between the two therapeutic groups were compared using Chi-Quadro test and the Student t-test. In addition, the distribution of the collected data was compared using the same tests, between patients who developed CTRCD and those who did not. From this second analysis, the variables whose distribution difference was significant were inserted into binary logistic regression models to assess whether they were predictors of cardiac dysfunction and its clinical forms. Statistical significance was setted at $p < 0,05$.

Results: data from 164 patients of which 133 were part of the T group and 31 of the T+P group were analysed. The median age of the population was 54 ± 12 years. The difference in incidence of CTRCD between group T and T+P was not significant, being 47.4% and 54.8% respectively, without differences in incidence of the severity forms. No cases of severe toxicity were observed. From models of logistic regression, previous anthracycline exposure and higher neutrophil value at baseline were found to be predictors of cardiac dysfunction, particularly of mild CTRCD, while the LAVi/PALS ratio at baseline, as a morpho-functional index of the left atrium, was found to be predictor of the moderate CTRCD.

Conclusions: the incidence of asymptomatic CTRCD related to anti-HER2 therapies is not negligible and the mild form is the most frequent; however, the addition of pertuzumab to the treatment schedule does not increase the incidence of cardiac dysfunction. Previous anthracycline exposure and higher baseline neutrophil value, interpretable as indicator of a pro-inflammatory state, could be possible predictors of asymptomatic CTRCD and the mild form, while the LAVi/PALS ratio at baseline of the moderate form

CARDIO-ONCOLOGIA E CARDIO-TOSSICITÀ 281
CARDIOTOSSICITA' DA FARMACI
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
DIAGNOSI, PREVENZIONE E TRATTAMENTO DELLA CARDIOTOSSICITA'
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE
(IMAGING CARDIOVASCOLARE)

CARDIOTOXICITY OF BCR-ABL INHIBITORS IN A COHORT OF PATIENTS WITH CHRONIC MYELOID LEUKEMIA

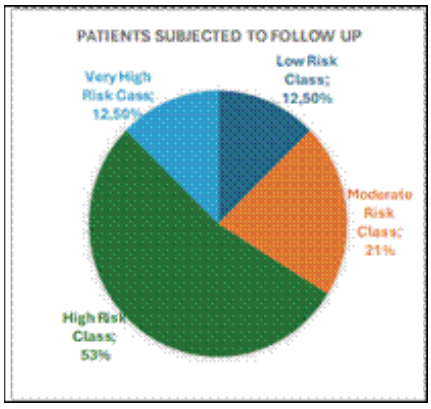
Salvatore Giovanni Impellizzeri (a), Denise Cristiana Faro (a), Valentina Losi (a), Davide Capodanno (a, b), Ines Paola Monte (a, b)
(a) UNIVERSITY OF CATANIA, ITALY, DEPARTMENT OF GENERAL SURGERY AND SURGICAL MEDICAL SPECIALTIES; (b) CARDIOLOGY UNIT, G. RODOLICO UNIVERSITY HOSPITAL, CATANIA

Background. BCR-ABL tyrosine kinase inhibitors (TKIs) have transformed the prognosis of chronic myeloid leukemia (CML), but are increasingly associated with cardiovascular (CV) adverse effects. Stratification tools such as the HFA-ICOS score may support early identification of patients at higher risk of cardiotoxicity.

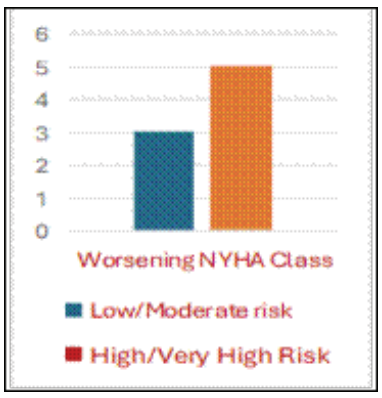
Objectives. To evaluate early signs of cardiac dysfunction in CML patients treated with BCR-ABL TKIs, with particular focus on the predictive value of the HFA-ICOS risk stratification system.

Methods. This retrospective observational study included 60 adult CML patients treated with BCR-ABL TKIs, referred between October 2019 and December 2023. Thirty-two underwent structured follow-up (median 18 months) with clinical assessment, ECG, and TTE including Speckle Tracking Echo. Patients were stratified into low/moderate or high/very high CV risk according to the HFA-ICOS score.

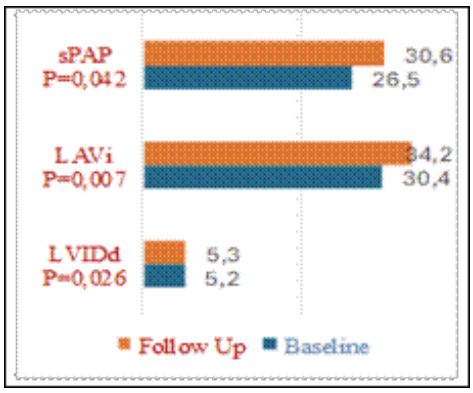
Distribution of HFA-ICOS Risk Classes Among Patients Undergoing Follow-Up



Worsening of NYHA FC from baseline to Follow-up, comparison between the two groups



Baseline and follow up TTE of all the patients subjected to Follow-Up



Figures

Results. Worsening of NYHA functional class occurred in 22% of patients, with significantly higher incidence in the high/very high-risk group (p=0.008). In this group, TTE revealed significant increases in LVIDd, EDV, LAVi, and sPAP, as well as worsening of diastolic function indices (E/A, E/e'). Although mean LVEF and LV-GLS remained within normal limits, 25% of patients showed a >10% reduction in LVEF, and 15% had a comparable reduction in LV-GLS- mostly in high-risk individuals treated with dasatinib or ponatinib.

Conclusions. Early functional and structural cardiac changes can occur in CML patients receiving BCR-ABL TKIs, particularly in those with high HFA-ICOS risk. The HFA-ICOS score is a valuable tool for guiding surveillance intensity and tailoring cardio-oncology strategies to reduce long-term cardiac complications.

CARDIO-ONCOLOGIA E CARDIO-TOSSICITÀ 524
DIAGNOSI, PREVENZIONE E TRATTAMENTO DELLA CARDIOTOSSICITA' (CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
CARDIOTOSSICITA' DA FARMACI (CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
FARMACI CARDIOVASCOLARI (FARMACI CARDIOVASCOLARI E NUTRACEUTICI)

ROLE OF 24-HOUR HOLTER ECG MONITORING IN THE CARDIOVASCULAR MANAGEMENT OF CHRONIC LYMPHOCYTIC LEUKEMIA PATIENTS TREATED WITH BTK INHIBITORS: A TOOL FOR EARLY ARRHYTHMIA DETECTION AND THERAPEUTIC OPTIMIZATION

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Background: Bruton's tyrosine kinase inhibitors (BTK-i) have improved outcomes in chronic lymphocytic leukemia (CLL) but they are associated with an increased risk of cardiovascular adverse events (CVAEs), particularly atrial fibrillation (AF). The role of 24-hour Holter ECG monitoring in the early detection and therapeutic management of such events remains unclear.

Methods: We conducted a retrospective longitudinal study in CLL patients, categorized as untreated, candidates for BTK-i, and currently receiving BTK-i therapy. All patients underwent clinical and echocardiographic evaluation and were invited to perform 24-hour Holter ECG monitoring at baseline and during follow-up. The study population was further stratified into subgroups according to baseline Holter execution and Holter outcome. The prevalence of arrhythmias, subsequent therapeutic adjustments, and echocardiographic changes were analyzed.

Results: Among 94 patients, 47 (50%) underwent baseline Holter monitoring; of them, 28 (59.6%) showed significant arrhythmias, particularly those on BTK-I, in whom 6 of the 7 new-onset AF cases were detected. Holter-positive patients showed an altered echocardiographic profile suggestive of greater electrical and structural vulnerability, characterized by atrial remodeling and subclinical alterations of atrial function. Holter findings influenced therapeutic optimization in 59.6% of cases, mainly through beta-blocker therapy (89.3%). In patients already on BTK-i, early optimization was associated with a reduction in Holter positivity (52,6%→41%) and a significant decrease in new beta-blocker prescriptions (47.4%→5.3%; p=0.022). Nevertheless, in this subgroup, a progressive impairment of left atrial function was observed (mean PALS 25.86 ± 10.02% vs 21.27 ± 8.02%, p=0.028). Subgroup analysis showed that patients with baseline Holter monitoring (n=33) benefited from earlier and more effective optimization, with fewer post-Holter modifications (51.5%→24.2%, p=0.049) and reduced new beta-blocker prescriptions (39.4%→9.1%, p=0.013) at follow-up. Patients without baseline Holter (n=18) required more frequent therapeutic changes at follow-up (22.2%→61.1%, p=0.039).

Conclusions: Baseline 24-hour Holter ECG monitoring, integrated with echocardiographic evaluation, enables early detection of subclinical arrhythmias in patients

receiving BTK-i therapy and guides targeted therapeutic interventions, supporting timely therapy optimization and reducing later treatment changes. Despite optimization, atrial deterioration may still progress in BTK-I patients, highlighting the need for ongoing monitoring. This strategy may contribute to arrhythmic burden stabilization and improved cardiovascular management in this high-risk population.

CARDIO-ONCOLOGIA E CARDIO-TOSSICITÀ 14
CARDIOTOSSICITA' DA FARMACI
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
DIAGNOSI, PREVENZIONE E TRATTAMENTO DELLA CARDIOTOSSICITA'
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)
TOMOGRAFIA AD EMISSIONE DI POSITRONI (PET)
(IMAGING CARDIOVASCOLARE)

INTRAMYOCARDIAL MELANOMA METASTASIS ON 18-FDG-PET-CT: A CASE REPORT

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(a) S.C. CARDIOLOGIA- IRCCS - FONDAZIONE "G.PASCALE" - NAPOLI

Patient presentation: We present the case of a patient with a recent melanoma metastasis to the left ventricle (LV). The patient is a 57-year-old male who, in March 2013, underwent excision of a pigmented lesion of the right hip with histological diagnosis of superficial spreading melanoma, Breslow 0,86, not ulcerated. Wide excision and sentinel lymph node biopsy were subsequently performed with no signs of melanoma metastases. In 2021, a second pigmented lesion of the left foot was excised, with histological diagnosis of melanoma. Wide excision was negative for residual tumor while sentinel lymph nodes biopsy showed melanoma metastases in three lymph nodes. No adjuvant treatment was performed. In July 2024, a follow up computerized tomography (CT) scan showed nodular lesion suspect for metastasis. Patient thus underwent splenectomy with pathological confirmation of melanoma metastasis, BRAF V600E mutation. From June 2024 to February 2025 adjuvant Nivolumab 240mg q14 was administered. In February, the patient routinely performed a CT scan that showed melanoma recurrence with lymph nodes and lung involvement. An urgent positron emission tomography (PET) with 18-fluorodeoxyglucose (FDG) scan was performed and revealed multifocal, intensely avid, metastatic deposits. In addition, focal uptake was seen in the LV myocardium.

Diagnosis and management The patient was sent for cardiac magnetic resonance (CMR) that revealed well-defined iso-to-hypointense (melanin-containing) homogenous masses in LV (13 x 16 millimeters). It showed increased values on T1 and T2 mapping, as well as increased signal intensity on T2-weighted imaging and enhancement on late gadolinium enhancement images. The findings are highly suggestive of melanoma metastasis with a rich capillary network. Taking into consideration the primary resistance to anti-PD-1 moloclonal antibodies, patient was promptly commenced on targeted therapy with BRAF tyrosine kinase inhibitor, Encorafenib and MEK inhibitor, Binimetinib.
After two months of treatment, the patient showed a substantial reduction in 18-FDG uptake in the myocardium and at other sites of secondary lesions on the 18-FDG PET scan.

Conclusions: Metastatic involvement of the heart is 20 times more frequent than primary tumors. The advent of targeted therapies and immunotherapy has led to a dramatic improvement in 5-year survival rates for metastatic melanoma. Cardiac metastases from melanoma, before the advent of immunotherapy, were treated with palliative therapy. However, with

the advent of immunotherapy, some cases are treated with immunotherapy with excellent results. Patients with BRAF-mutated melanoma tend to respond very quickly to treatment with RAF and MEK inhibitors, often showing significant tumor regression in a short time. Studies have demonstrated very high response rates, sometimes exceeding 70-80% in combination therapy. Given the primary resistance to anti-PD-1 monoclonal antibodies and the life-threatening nature of the LV metastasis, the patient was promptly started on targeted therapy with BRAF tyrosine kinase inhibitor, Encorafenib, and MEK inhibitor, Binimetinib. This case shows a great response to targeted treatment and proves how medical treatment without surgery can drastically reduce a malignant tumor's mass.

CARDIO-ONCOLOGIA E CARDIO-TOSSICITÀ 187
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
TUMORI CARDIACI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
DIAGNOSI, PREVENZIONE E TRATTAMENTO DELLA CARDIOTOSSICITA' (CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')

DIRECT LEFT ATRIAL INVASION BY LUNG CANCER THROUGH THE PULMONARY VEIN: A CASE REPORT OF A RARE CAUSE OF SYLENT SYSTEMIC EMBOLIZATION

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(a) UNIVERSITA DEGLI STUDI DI CAGLIARI

Background: Intracardiac extension of lung cancer through the pulmonary veins is an uncommon but clinically significant manifestation, often associated with advanced-stage disease and poor prognosis.

Case Summary: We report the case of a 58-year-old heavy smoker who presented with rapid weight loss, asthenia, and food intolerance. Imaging revealed a large necrotic right lower lobe mass with direct invasion into the left atrium via the right inferior pulmonary vein, extending to the mitral valve. Despite the extensive cardiac involvement, the patient remained hemodynamically stable. Echocardiography showed a mobile intra-atrial mass without significant mitral obstruction but with high embolic potential. Multiple visceral infarcts were noted in the spleen and kidneys. The presence of brain metastases, bilateral adrenal involvement, and mediastinal lymphadenopathy confirmed advanced stage IV disease. The patient was deemed inoperable and referred for palliative care.

Discussion: This case highlights a rare yet critical route of cardiac invasion in lung cancer. The combination of direct left atrial involvement and silent systemic embolization underscores the importance of multimodal imaging in diagnosis and risk assessment. Despite the absence of mitral obstruction, the presence of a hypermobile intracardiac mass should prompt consideration of embolic complications.

CardioSic

CARDIO-ONCOLOGIA E CARDIO-TOSSICITÀ 112
CARDIOTOSSICITA' DA FARMACI
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
DIAGNOSI, PREVENZIONE E TRATTAMENTO DELLA CARDIOTOSSICITA'
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI
(PREVENZIONE E RIABILITAZIONE)

INCIDENCE OF CANCER TREATMENT-RELATED CARDIOTOXICITY IN PATIENTS WITH LYMPHOMA TREATED WITH NON-PEGYLATED LIPOSOMAL DOXORUBICIN

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(a) DIPARTIMENTO DI MEDICINA INTERNA E SPECIALITÀ MEDICHE (DIMI), UNIVERSITÀ DEGLI STUDI DI GENOVA;
(b) IRCCS OSPEDALE POLICLINICO SAN MARTINO, GENOVA

Background: Anthracyclines are a cornerstone of first-line treatment of lymphoma, but are burdened by cancer treatment-related cardiovascular toxicity (CTR-CVT), which is particularly relevant in patients with advanced age or pre-existing cardiac disease. The risk of CVT is mitigated by the use of non-pegylated liposomal doxorubicin (NPLD).

Purpose: To assess the outcomes of patients who received NPLD for non-Hodgkin lymphoma (NHL) and Hodgkin lymphoma (HL).

Methods: We retrospectively collected clinical, echocardiographic, and outcome data of patients with newly diagnosed or relapsed NHL/HL, who had been treated with NPLD and then followed at our institution between January 1st, 2007 and December 31st, 2023. The risk of CTR-CVT was evaluated at baseline as recommended by the HFA-ICOS. CTR-CVT included development of left ventricular dysfunction (LVD), new-onset or worsening heart failure (HF), and acute coronary syndrome (ACS) during follow-up.

Results: Of a total of 199 patients included in the study, 127 (63.8%) had diffuse large cell lymphoma (DLBCL), 43 (21.6%) indolent NHL, 14 (7%) HL, and 15 (7.5%) T-cell lymphoma (Fig. 1) . The median age at diagnosis was 73 (66-78) years and 112 (56.2%) were male. NPLD was completed in 169 (85%) patients and CTR-CVT occurred in 24 (12%): 1 (0.5%) had LVD, 16 (8%) HF, and 7 (3.51%) ACS. The median onset time of HF (9.1 [3.3-22.7] months) was shorter than that of ACS (32.1 [19.4-43.6] months). CTR-CVT was significantly more likely in patients older than 75 years (Fig. 2A) and in those with very high or high HFA-ICOS risk estimate (Fig. 2B). Overall, 67 (33.6%) patients died, because of lymphoma progression (38 [56.7%)], infection (17 [25.3%]), secondary neoplasm (1 [1.49%]), or unknown causes (11 [16.4%]). No death was attributed to CTR-CVT. PFS and OS were evaluated at 5 years for each lymphoma subtype. In patients with high risk diffuse large B-cell lymphoma PFS was 55% (95% CI [41-75%]) and OS was 55% (95% CI [39-77%]), respectively.
Facing CTR-CVT was not associated with worse PFS or OS (Fig. 2C-D).

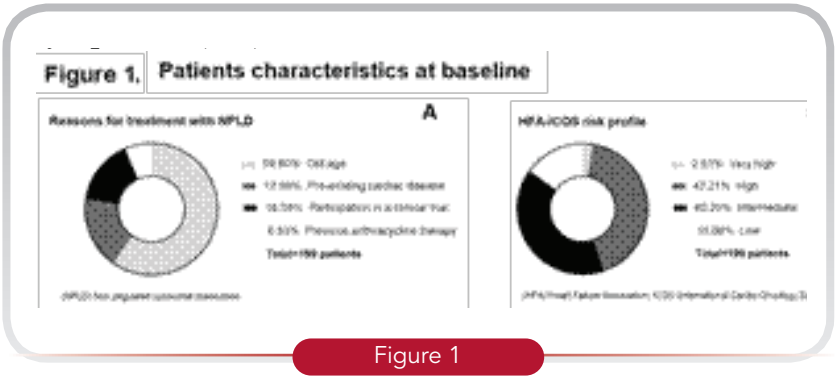


Figure 1

Conclusions: Our findings confirm a favorable balance between feasibility, effectiveness, and CV safety of NPLD-containing chemotherapy for lymphoma. The HFA-ICOS approach well stratified the risk of CTR-CVT, which did not affect cancer outcomes and mortality in our cohort.

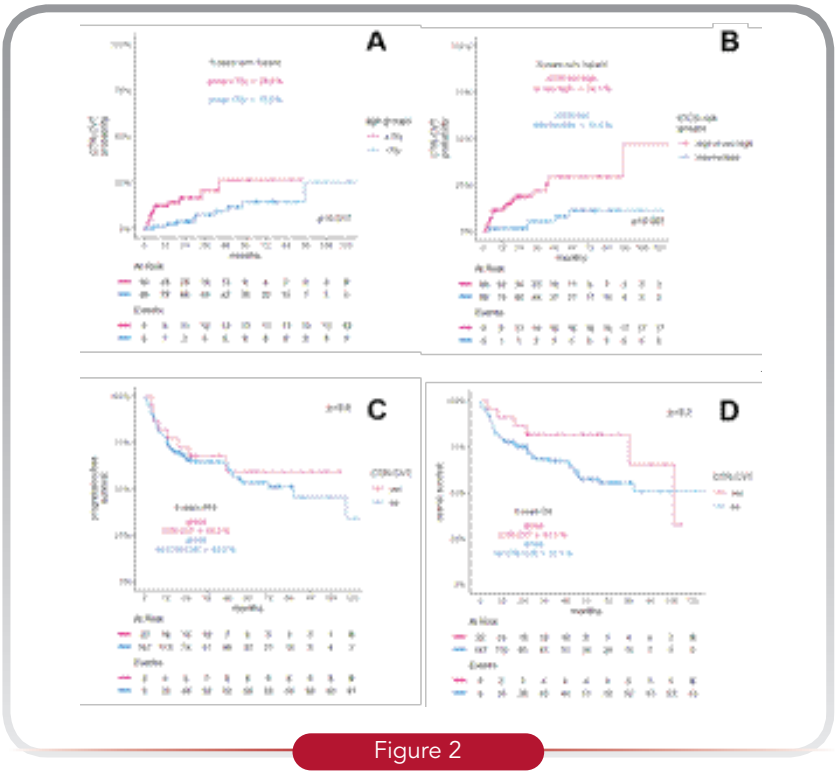


Figure 2

CARDIO-ONCOLOGIA E CARDIO-TOSSICITÀ 297
DIAGNOSI, PREVENZIONE E TRATTAMENTO DELLA CARDIOTOSSICITA' (CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
CARDIOTOSSICITA' DA FARMACI (CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
BIOMARCATORI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)

FOLLOW-UP CARDIOVASCOLARE SERIATO IN PAZIENTI SOTTOPOSTI A TERAPIA CON INIBITORI DEI CHECKPOINT IMMUNITARI (ICI) PER IL TRATTAMENTO DEI TUMORI SOLIDI

Lucrezia Netti (a, b), Sara Monosilio (a, b), Vincenza Paladino (a, b), Ilaria D´angeli (a, b), Valentina Coia (a, b), Viviana Maestrini (a, b), Carmine Dario Vizza (a, b)
(a) POLICLINICO UMBERTO I (ROMA); (b) UNIVERSITÀ "SAPIENZA" DI ROMA

Introduzione: L'utilizzo degli inibitori dei checkpoint immunitari (ICI) è in costante crescita, grazie alla loro elevata efficacia terapeutica. Questi farmaci sono gravati da possibili eventi avversi cardiovascolari (CV) immuno-mediati, tra cui la miocardite che, sebbene rara, rappresenta la complicanza più nota e potenzialmente fatale. Le attuali evidenze sulla cardiotossicità da ICI provengono principalmente da studi retrospettivi, trial clinici randomizzati e studi di farmacovigilanza. Al contrario, sono ancora scarsi i dati derivanti da studi prospettici che prevedano una valutazione cardiovascolare completa e seriata su ampie coorti di pazienti.
Obiettivo: Descrivere qualsiasi tipo e grado di cardiotossicità in una coorte di pazienti affetti da tumori solidi con indicazione ad iniziare una terapia con ICI (singolo o in combinazione). Ulteriore obiettivo è quello di confrontare i parametri clinici, bioumorali, elettrocardiografici ed ecocardiografici avanzati prima e dopo l'inizio dell'immunoterapia con ICI.

Materiali e Metodi: Sono stati arruolati pazienti consecutivi con tumori solidi e indicazione ad eseguire terapia con ICI, singolarmente o in combinazione.

Tutti i pazienti sono stati sottoposti a una valutazione cardiovascolare seriata in tre tempi: al baseline (T0), dopo il secondo (T1) e dopo l'ottavo ciclo (T2) di immunoterapia. La valutazione ha incluso la visita clinica, l'elettrocardiogramma, l'ecocardiogramma con analisi della deformazione miocardica mediante strain, oltre al dosaggio di biomarcatori di danno miocardico (troponine, NT-proBNP) e di stress ossidativo (NOX2 solubile, isoprostani, H_2O_2 e potere antiossidante). I dati ottenuti sono stati confrontati

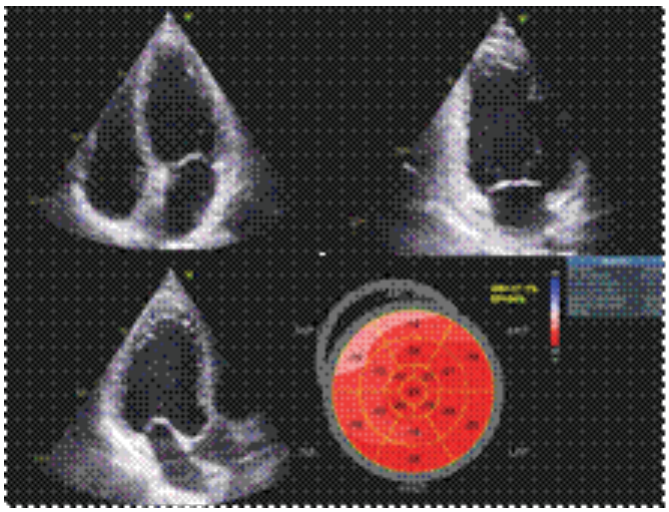


Figura 1

longitudinalmente nei tre tempi previsti dal protocollo e posti in relazione con eventuali ospedalizzazioni per tutte le cause e tossicità cardiovascolare correlata agli ICI.

Risultati: Sono stati arruolati 22 pazienti, di cui il 64% (14) di sesso maschile. I dati preliminari non hanno mostrato cardiotossicità manifesta in termini di miocardite, pericardite, insufficienza cardiaca, aritmie (p>0.05). Tutti i pazienti in terapia di associazione degli ICI con VEGFi hanno sviluppato ipertensione arteriosa sistemica o necessità di implementare la terapia antipertensiva. I parametri ecocardiografici standard e avanzati non hanno presentato variazioni significative, così come i biomarcatori di danno miocardico.

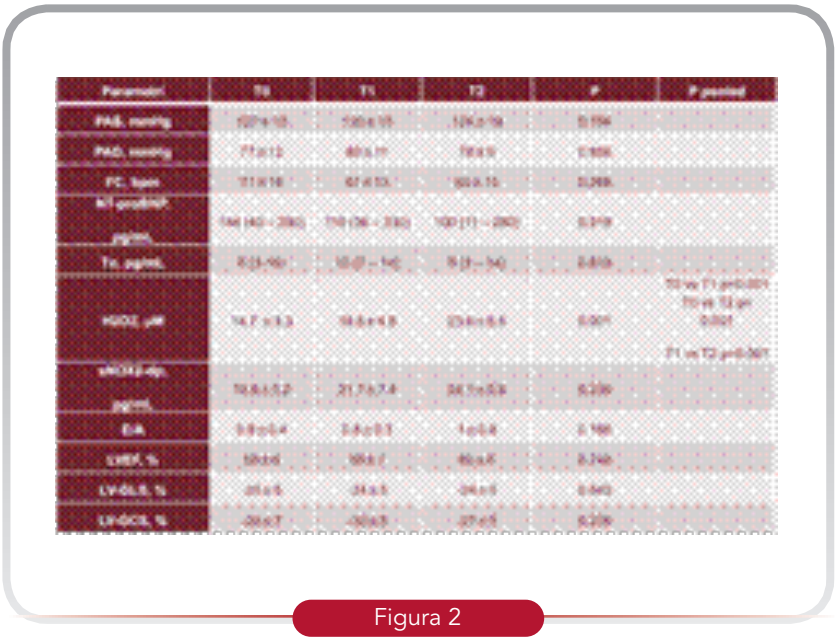


Figura 2

L'analisi dei biomarcatori di stress ossidativo ha mostrato una variazione statisticamente significativa dell'H_2O_2 nei tre tempi previsti dal protocollo (p=0.001), mentre la sNOX2-dp ha evidenziato un trend in aumento senza significatività statistica. Si sono verificati due eventi trombo-embolici: un caso di trombosi endoventricolare e un caso di embolia polmonare in pazienti con condizioni predisponenti e terapia oncologica di associazione. Il confronto tra pazienti con e senza ospedalizzazioni non ha rilevato differenze significative, ad eccezione dei valori basali di NT-pro-BNP, più elevati nei pazienti ricoverati (p=0.021).

Conclusioni: Il nostro studio non ha mostrato cardiotossicità clinica o subclinica correlata alla terapia con ICI. Il follow-up CV seriato e multiparametrico è fondamentale per l'identificazione precoce ed il trattamento tempestivo degli eventi avversi, nonché per l'individuazione di marcatori sensibili e specifici predittivi di cardiotossicità.

CARDIO-ONCOLOGIA E CARDIO-TOSSICITÀ 283
CARDIOTOSSICITA' DA FARMACI
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
DIAGNOSI, PREVENZIONE E TRATTAMENTO DELLA CARDIOTOSSICITA'
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)

SGLT2 INHIBITORS IN PATIENTS WITH CANCER

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(a) KING'S COLLEGE LONDON, BRITISH HEART FOUNDATION CENTRE OF RESEARCH EXCELLENCE SCHOOL OF CARDIOVASCULAR MEDICINE, LONDON, UK; (b) UNIVERSITY OF GENOA , DEPARTMENT OF INTERNAL MEDICINE, GENOA,ITALY; (c) CAMPUS BIO-MEDICO UNIVERSITY OF ROME, DEPARTMENT OF MEDICINE AND UNIT OF CLINICAL PHARMACOLOGY, ROME, ITALY; (d) ROYAL BROMPTON HOSPITAL, CARDIO-ONCOLOGY CENTRE OF EXCELLENCE, LONDON, UK; (e) DIVISION OF CARDIOLOGY, UNIVERSITY HOSPITAL P. GIACCONE, DEPARTMAENT OF PROMISE, UNIVERSITY OF PALERMO

Aims: Cardiovascular disease and cancer represent significant global health challenges. An overlap between oncology and cardiology is compounded by cancer therapies, which are known to have cardiotoxic effects. Sodium–glucose cotransporterv2 inhibitors (SGLT2i), initially developed for treating diabetes, have shown promising cardiovascular benefits in non-cancer populations, particularly in preventing heart failure (HF) and reducing HF-related hospitalization and mortality in large randomized controlled trials (RCTs) across the spectrum of left ventricular ejection fraction. However, their potential cardioprotective role in cancer patients remains unclear. This systematic review and meta-analysis evaluated cardiovascular outcomes in cancer patients with type 2 diabetes undergoing chemotherapy with concomitant use of SGLT2i compared with those not using SGLT2i. Subgroup analyses were performed to explore patients without baseline HF and patients treated exclusively with anthracyclines.

Methods and results: A systematic review identified 11 observational retrospective studies (n = 104 327 patients). Based on the National Institutes of Health Quality Assessment Tool checklist, two studies were at moderate risk of bias, while all other included studies had a low risk of bias. Meta-analysis indicated that the use of SGLT2i was associated with a significant reduction in all-cause mortality [0.47, 95% confidence interval (CI) 0.33–0.67, P<0.0001] and risk of HF hospitalization (0.44, 95% CI 0.27– 0.72, P=0.001).

Conclusion: The use of SGLT2i may be associated with a significant reduction in all-cause mortality and risk of HF hospitalization in actively treated cancer patients with Type 2 diabetes. Our study highlights the need for further investigation through prospective RCTs to confirm the efficacy and safety of SGLT2i in attenuating cardiotoxicity and supporting cardiovascular health in oncology settings.

CARDIO-ONCOLOGIA E CARDIO-TOSSICITÀ 378
CARDIOTOSSICITA' DA FARMACI
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
DIAGNOSI, PREVENZIONE E TRATTAMENTO DELLA CARDIOTOSSICITA'
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE
(IMAGING CARDIOVASCOLARE)

ASSESSMENT OF CANCER THERAPY-RELATED CARDIAC DYSFUNCTION IN BREAST CANCER WOMEN USING A NEW SPECKLE TRACKING ECHOCARDIOGRAPHY INDEX: THE GAVS

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Background: Recently, peak atrial longitudinal strain (PALS) has emerged as a possible predictor of Cancer therapy-related cardiac dysfunction (CTRCD) in cancer patients (CP), in addition to left ventricular global longitudinal strain (GLS). Thus, considering the link between left atrium and left ventricle, the aim of this study was to assess the global atrio-ventricular strain (GAVS) in CP, to detect early cardiotoxicity.

Methods: A prospective study was carried out enrolling 131 breast cancer women (mean age 51.4 ± 10.4 years) receiving anti-cancer treatment. Clinical and echocardiographic evaluation was performed at baseline (T0), 3 (T1), 6 (T2) and 12 months (T3) after starting treatment. CTRCD was defined according to the 2022 ESC Cardio-Oncology guidelines.

Results: Forty-four patients developed CTRCD (3 moderate and 41 mild CTRCD group A) and 87 patients did not (group B). In group A, significant changes in GLS, PALS, GAVS, LASi (left atrial stiffness index) and LVEF/GLS occurred earlier than LVEF, that reduced significantly only at T3 (p-value < 0.05). Significant changes in LASi, PALS and GAVS occurred even in group B but reduction in GAVS (-21% vs. -5%) and PALS (-24% vs. -12%) was significantly greater in group A compared to group B (p-value = 0.04).

Conclusions: Our study confirms high sensitivity of speckle tracking echocardiography in detecting subclinical myocardial damage in CP and the usefulness of a multiparametric echocardiographic evaluation including PALS and GLS (GAVS) for having a global evaluation of the phenomenon cardiotoxicity.

CARDIO-ONCOLOGIA E CARDIO-TOSSICITÀ 389
DIAGNOSI, PREVENZIONE E TRATTAMENTO DELLA CARDIOTOSSICITA' (CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
CARDIOTOSSICITA' DA FARMACI (CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)

INDICATORI DI QUALITA' IN CARDIO-ONCOLOGIA: SURVEY DEL GRUPPO DI STUDIO SIC "CARDIOTOSSICITA' DA FARMACI E CARDIOPROTEZIONE"

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Background: Recently, quality indicators (QIs) for the management of patients with cancer or cancer survivors have been identified in cardio-oncology and the first ESC Guidelines on cardio-oncology have been published in 2022. The management of cancer patients requires dedicated healthcare professionals, a multidisciplinary team which should consist of at least an oncologist, cardiologist and a specialist nurse.

Purpose: to investigate the adherence to QIs in Italian cardio-oncology clinic and the application in clinical practice of ESC Cardio-oncology Guidelines.

Methods: A cross-sectional survey was developed by members of the Working group of cardiotoxicity and cardioprotection of the Italian Society of Cardiology (SIC). The survey consisted of 19 questions which include demographic information, multiple-choice questions related to organization and quality of cardio-oncology laboratories.

Results: 77 answers were received from Italian hospitals (of whom 80% from university hospital). We found that dedicated cardio-oncology clinics were present in 70% of hospitals which answered. 75% of these hospitals had at least one physician dedicated to cardio-oncology. Clinical application of ESC Guidelines on cardio-oncology was performed in 83% of hospitals. Regarding the number of dedicated cardio-oncological visits performed weekly: 54% of centers performed between 0-12 visits, 30% between 13-24, 6% between 25-36, 11% performed > 36 visits. Multi-disciplinary team was present in 65% of hospitals and it included only cardiologist and oncologist in 50% of cases; only 20% conformed the presence of a multi-disciplinary team with cardiologist, oncologist, radiologist, professional nurse, surgeon, palliative care. Baseline cardiovascular risk was assessed in 54% of participants; 65% of participants organized follow-up according to the ESC guidelines. The prevalent tumor referred to the cardio-oncology clinic was : breast cancer (45%), followed by gastro-intestinal (14%), hematological (23%), lung (17%). Regarding hospitalization for cardiovascular complication in 1 year were: 78% had between 0-10 hospitalizations, 17% between 11-22, 6% had > 35 hospitalizations. Heart failure was the most frequent cardiovascular complication (59%). Only 72% of participants routinely performed assessment of global longitudinal strain; only 48% always assessed cardiac biomarkers. Cardio-protection has been started

in patients at high and very high risk only in 53% of cardio-oncology clinic. Only 19% of participants thinks that current cardio-oncology clinics have criteria that meet the current ESC Cardio-oncology guidelines.

Conclusion: Data emerging from this survey outline that ESC cardio-oncology guidelines have been received by the Italian community however implementation in clinical practice still need to be improved and quality indicators are not fully achieved. Further efforts and resources are needed to meet necessary quality indicators in cardio-oncology.

CARDIO-ONCOLOGIA E CARDIO-TOSSICITÀ 489
PROGNOSI (SCOMPENSO CARDIACO)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)

THE IMPACT OF CARDIAC AMYLOIDOSIS ON PATIENTS WITH MULTIPLE MYELOMA: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Background: Immunoglobulin light chain (AL) amyloidosis is a well-recognized complication of multiple myeloma (MM), with important prognostic implications. However, the effect of cardiac AL amyloidosis on survival in MM patients has been rarely investigated. We conducted a systematic review and meta-analysis to quantitatively assess the prognosis of MM patients with and without concomitant cardiac AL amyloidosis.

Methods: We searched PubMed, Scopus and Cochrane databases for studies comparing the survival of MM patients with and without concomitant cardiac AL amyloidosis. The primary outcome was all-cause mortality at 12 months (short-term), while secondary outcomes included all-cause mortality at 24 and 36 months (long-term). We also reconstructed individual patient data (IPD) from Kaplan–Meier curves to estimate Restricted Mean Survival Time (RMST). We pooled risk ratios (RR) with 95% confidence intervals (CI) using a random-effects model.

Results: We included five studies encompassing 272 patients, of whom 110 (40%) presented MM with concomitant cardiac AL amyloidosis. All-cause mortality at 12 months was nearly five times higher in MM patients with cardiac involvement compared to those without cardiac involvement (RR 4.25; 95% CI 1.99-9.04; p=0.0002). This trend remained consistent at long-term follow-up, with increased mortality observed in patients with cardiac involvement at 24 months (RR 1.84; 95% CI 1.19-2.84; p=0.006) and 36 months (RR 1.78; 95% CI 1.26-2.52; p=0.001. RMST was 27.3 months shorter in patients with cardiac involvement (p<0.0001).

Conclusion: These findings suggest that Cardiac AL amyloidosis is a major determinant of survival in MM patients.

CARDIO-ONCOLOGIA E CARDIO-TOSSICITÀ 699
DIAGNOSI, PREVENZIONE E TRATTAMENTO DELLA CARDIOTOSSICITA' (CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
MIOCARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

MULTIMODALITY IMAGING FOR THE DETECTION OF CARDIOTOXICITY IN CANCER PATIENTS TREATED WITH IMMUNE CHECKPOINT INHIBITORS

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Introduction: Immune checkpoint inhibitors (ICI) is the new frontier of cancer therapy. However, in some cases ICI may cause cardiotoxicity, mainly myocarditis, pericarditis, with potential life-threatening consequences. Speckle tracking echocardiography (STE) is recommended as a sensitive, quick, available tool to identify chemotherapy-related cardiotoxicity, with left ventricular (LV) global longitudinal strain (GLS) being an early predictor of LV damage; it has also proven useful to aid the diagnosis of myocarditis. However, cardiac magnetic resonance (CMR) is the gold standard imaging method to diagnose myocarditis. To date, large scale prospective data on cardiac imaging after ICI are still lacking. Thus, our aim is to assess the diagnostic value of STE for ICI-related cardiotoxicity and evaluate the correlation between STE and CMR in cancer patients treated with ICI.

Methods: In this prospective study, cancer patients referred for cardiologic evaluation before immune-checkpoint-inhibitors initiation were enrolled. Patients with known cardiac dysfunction (LV ejection fraction < 40%) were excluded.
Patients underwent clinical, biohumoral and echocardiographic evaluation completed by STE at baseline and after around 6 months after immunotherapy initiation. Patients with suspect myocarditis underwent cardiac magnetic resonance.
Then, patients were followed for clinical events i.e. all-cause or cardiovascular death, acute myocarditis, hospitalization for cardiovascular reasons, extra-cardiac toxicity.

Results: We enrolled 108 patients (66±12 years) referred for ICIs. Over 7±6 months follow up, medium LV GLS values showed a slight reduction after therapy with ICI (-20±5% at baseline vs. 18±7% at follow up), although remaining within the normal ranges. Other STE variables did not show significant differences at follow up.
During follow up, these events were registered: 15 deaths (1 cardiovascular), 3 acute myocarditis, 2 myocardial infarction, 1 pulmonary thromboembolism, 1 heart failure, 25 extra-cardiac toxicity. Among patients who developed ICI-related myocarditis, showing a significant reduction of LV GLS (-9% and -13%) with a regional distribution in accordance with evidence of regional myocardial injury at CMR, the

third has a minimal involvement only of the right ventricle, with normal LV GLS (Fig.1).

Conclusions: These preliminary results suggest that multimodality imaging may optimize the management of cancer patients undergoing ICI.

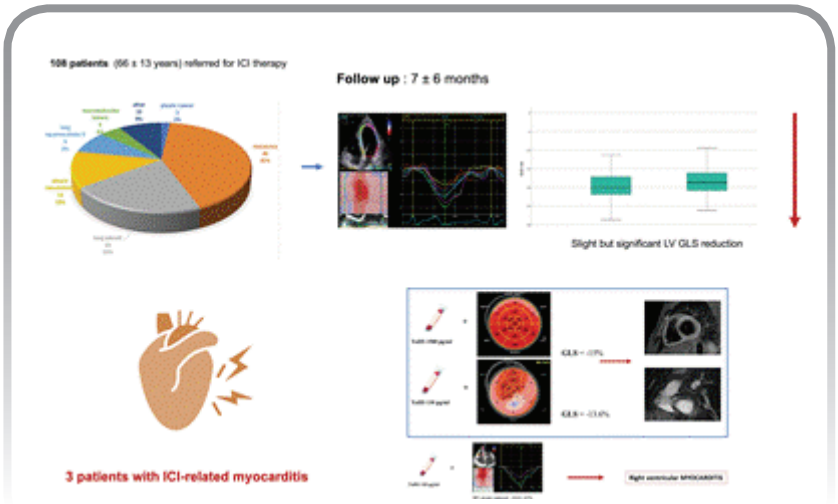


Figure 1

CARDIO-ONCOLOGIA E CARDIO-TOSSICITÀ 842
CARDIOTOSSICITA' DA FARMACI
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
DIAGNOSI, PREVENZIONE E TRATTAMENTO DELLA CARDIOTOSSICITA'
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)

CARDIOTOXICITY PROFILE OF BRUTON TYROSINE KINASE INHIBITORS (BTKI) IN CHRONIC LYMPHOCYTIC LEUKEMIA: INSIGHTS FROM A MONOCENTRIC OBSERVATIONAL STUDY

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Background: Bruton tyrosine kinase inhibitors (BTKi) are a cornerstone in the treatment of chronic lymphocytic leukemia (CLL), yet their cardiovascular safety profile remains under investigation. This study aimed to describe the clinical and cardiovascular characteristics of CLL patients either undergoing or eligible for BTKi therapy, and to compare them with a group of untreated patients.

Methods: In this monocentric observational study, 94 consecutive CLL patients referred to a cardio-oncology clinic between January 2022 and May 2025 were included. Exclusion criteria were: other active malignancies, therapies for CLL other than BTKi, and incomplete cardiovascular assessment. Patients were stratified into three groups: Group A (BTKi-naïve, treatment candidates; n=27), Group B (on BTKi therapy at baseline; n=47), and Group C (non-candidates for treatment; n=20). Statistical analyses were performed using IBM SPSS v29.0.1.0.

Results: The mean age was 68.8±11.5 years, with a male predominance (64.9%). Cardiovascular risk assessment using SCORE2 and SCORE2-OP algorithms revealed a high baseline cardiovascular risk across the study cohort. Notably, Group C exhibited a significantly greater comorbidity burden, quantified by the Cumulative Illness Rating Scale for Geriatrics (CIRS-G), with a mean score of 10.8. The CIRS-G systematically evaluates the presence and severity of chronic conditions across multiple organ systems, providing an integrated measure of overall health status in elderly patients. Furthermore, Group C demonstrated a significantly higher prevalence of carotid atherosclerosis (30% vs 6.4%, p=0.028) and chronic coronary syndrome (25% vs 4.3%, p=0.035) compared to Group B, underscoring the greater cardiovascular disease burden within this subgroup. Group A exhibited a significantly higher prevalence of dyslipidemia (85.2%) than Groups B and C (p<0.05). Smoking habits also differed significantly between Group A and Group B (p=0.023).

Conclusions: Patients not eligible for BTKi therapy showed a significantly higher cardiovascular burden, including greater prevalence of carotid and coronary atherosclerosis, suggesting that existing cardiovascular disease may limit treatment eligibility. In contrast, patients already receiving BTKi (Group B) demonstrated a more favorable cardiovascular profile at baseline, which may reflect a careful pre-treatment selection of lower-risk individuals. Although these findings do not directly imply a protective effect of BTKi therapy, they highlight the fundamental role of comprehensive cardiovascular evaluation before and during treatment. This approach is pivotal for optimal patient stratification, early detection of cardiovascular complications, and tailored therapeutic management to improve clinical outcomes.

CARDIO-ONCOLOGIA E CARDIO-TOSSICITÀ 377
CARDIOTOSSICITA' DA FARMACI
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
DIAGNOSI, PREVENZIONE E TRATTAMENTO DELLA CARDIOTOSSICITA'
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
DIABETE E MALATTIE CARDIOVASCOLARI
(DIABETE E MALATTIE DEL METABOLISMO)

SGLT2I DAPAGLIFLOZINATTENUATES MYOCARDIAL INJURY INDUCED BY PI3K SELECTIVE INHIBITOR ALPELISIB AND FULVESTRANT UNDER HYPERGLYCEMIA

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PIK3CA mutations occur in approximately 40% of hormone receptor-positive (HR+)/HER2-negative (HER2−) breast cancers and are associated with endocrine resistance. The combination of the PI3Kα inhibitor alpelisib and fulvestrant significantly improves progression-free survival (PFS) in this patient population, as demonstrated by the SOLAR-1 trial. However, treatment-induced hyperglycemia—observed in over 60% of patients—can not only compromise cardiovascular health but also promote cancer progression through compensatory hyperinsulinemia and reactivation of the PI3K/AKT pathway. Retrospective clinical data suggest that co-administration of sodium-glucose co-transporter 2 (SGLT2) inhibitors may mitigate these effects, prolonging time on treatment and potentially improving PFS. This study aimed to investigate the direct cardiotoxic effects of alpelisib and fulvestrant on human cardiomyocytes under hyperglycemic conditions (25 mM glucose), and assess whether dapagliflozin, an SGLT2 inhibitor, provides cardioprotection in vitro, under co-treatment condition. Human iPSC-derived cardiomyocytes were exposed to alpelisib and fulvestrant under hyperglycemic conditions (50 mM) to simulate the clinical metabolic milieu of treated breast cancer patients. Dapagliflozin was introduced either concomitantly. Cellular viability, mitochondrial membrane potential, reactive oxygen species (ROS), and markers of cardiotoxicity and apoptosis (BNP, troponin I, caspase-3) were quantified. Transcriptomic analysis was performed to explore cardiometabolic signaling pathways. Dapagliflozin significantly attenuated cardiotoxic responses induced by alpelisib/fulvestrant, including preservation of mitochondrial function, reduction in ROS, and inhibition of apoptotic signaling. Transcriptomic analysis revealed suppression of pro-inflammatory and insulin-related stress pathways. Our findings demonstrated the novel molecular mechanism of dapagliflozin-mediated cardioprotection during alpelisib and fulvestrant treatment under hyperglycemic conditions. These in vitro data support the potential clinical utility of SGLT2 inhibitors in minimizing cardiotoxic risk and improving treatment tolerance in HR+/HER2− PIK3CA-mutant breast cancer patients

CARDIO-ONCOLOGIA E CARDIO-TOSSICITÀ 414
CARDIOTOSSICITA' DA FARMACI
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
DIAGNOSI, PREVENZIONE E TRATTAMENTO DELLA CARDIOTOSSICITA'
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
BIOLOGIA MOLECOLARE CARDIOVASCOLARE
(GENETICA E BIOLOGIA MOLECOLARE)

SACUBITRIL VALSARTAN REDUCES HFABP, HS-CRP, HS-CTNT AND MONOCYTE TO LYMPHOCYTE RATIO IN ANTHRACYCLINE- TREATED PRECLNICAL MODELS THROUGH INHIBITION OF NLRP3 PATHWAYS

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Introduction: The SARAH trial, presented in November 2024 at the American Heart Association Scientific Sessions, evaluated the efficacy of sacubitril/valsartan in preventing cardiotoxicity among high-risk cancer patients undergoing anthracycline-based chemotherapy. A significant reduction in the primary endpoint (incidence of ≥15% reduction in global longitudinal strain (GLS) at 6 months) was observed in the sacubitril/valsartan group compared to placebo (7.1% vs. 25.0%; hazard ratio [HR] 0.23;p = 0.015). In this study, we analyzed for the first time biochemical pathways of sacubitril/valsartan cardioprotection in pteclinical models.

Methods: Female C57Bl/6 mice were untreated (Sham, n=6) or treated for 10 days with doxorubicin i.p at 2.17 mg/kg (DOXO, n=6), sacubitril/valsartan at 60 mg/kg (n=6) or doxorubicin combined to sacubitril/valsartan (DOXO- sacubitril/valsartan, n=6). Ejection fraction, radial and longitudinal strain were analyzed through transthoracic echocardiography (Vevo 2100). Systemic levels of H-FABP, hs-cTnT, hs-CRP and Monocyte-to-Lymphocyte ratio were analyzed thorugh selective ELISA and hemocytometry methods; myocardial NLRP3, Akt and mTOR were assessed thorugh ELISA and western blot methods.

Results: Sacubitril/valsartan improved significantly the EF and prevented the reduction of radial and longitudinal strain after 10 days of treatment with doxorubicin. Reduced systemic levels of H-FABP (-43,7%; p<0.001), hs-cTnT (-63,2 %; p<0.05) and hs-CRP (-44,8%;p<0.001) were seen in DOXO-sacubitril/valsartan group vs DOXO, indicating significant cardioprotection. Monocyte-to-Lymphocyte ratio was 0.08 in sham, 0.37 in DOXO treated mice and 0.12 in DOXO-sacubitril/valsartan group, indicating anti-inflammatory properties. Myocardial levels of NLRP3, Akt and mTOR were significantly reduced in DOXO-sacubitril/valsartan group vs DOXO.

Conclusion: For the first time, new biochemical cardioprotective pathways of sacubitril/valsartan have been analyzed in models of anthracycline-induced cardiotoxicity, mediated by the NLRP3/mTOR/AkT signaling pathway.

CARDIO-ONCOLOGIA E CARDIO-TOSSICITÀ 416
CARDIOTOSSICITA' DA FARMACI
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
DIAGNOSI, PREVENZIONE E TRATTAMENTO DELLA CARDIOTOSSICITA'
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
DISLIPIDEMIE (DIABETE E MALATTIE DEL METABOLISMO)

PCSK9 INHIBITOR INCLISIRAN ATTENUATES CARDIOTOXICITY INDUCED BY SEQUENTIAL ANTHRACYCLINE AND TRASTUZUMAB EXPOSURE VIA NLRP3 AND MYD88 PATHWAY INHIBITION

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Background: Cardiotoxicity induced by anthracyclines and trastuzumab represents a critical limitation in cancer therapy, reducing both treatment efficacy and patient survival. Mechanistically, this toxicity involves activation of the NLRP3 inflammasome and MyD88-dependent inflammatory signaling. Proprotein convertase subtilisin/kexin type 9 inhibitors (PCSK9i), such as inclisiran, are primarily used for lipid lowering, yet recent evidence suggests broader biological effects, including potential cardioprotection. This study explores whether inclisiran mitigates anthracycline and trastuzumab-induced cardiotoxicity through modulation of NLRP3 and MyD88 pathways, independently of lipid regulation.

Methods: Human induced pluripotent stem cell-derived cardiomyocytes (hiPSC-CMs) were treated with subclinical concentrations of doxorubicin (1 μM) and trastuzumab (200 nM) in sequential exposure, either alone or combined with inclisiran (100 nM) for 24h. Post-treatment analyses included assays for apoptosis, reactive oxygen species (ROS), lipid peroxidation (malondialdehyde, 4-hydroxynonenal), intracellular calcium, mitofusin-2, troponin, and BNP via ELISA. Morphological assessment and F-actin organization were performed using confocal microscopy. Additionally, intracellular expression of NLRP3, MyD88, and twelve cytokines/growth factors (IL-1α, IL-1β, IL-2, IL-4, IL-6, IL-10, IL-12, IL-17α, IFN-γ, TNF-α, G-CSF, GM-CSF) were evaluated.

Results: Co-incubation with inclisiran significantly improved cardiomyocyte viability (88.9%) compared to doxorubicin/trastuzumab alone ($p<0.001$). Inclisiran markedly reduced oxidative stress, NLRP3, MyD88, and multiple pro-inflammatory mediators ($p<0.001$).
Conclusion: This is the first demonstration that PCSK9i inclisiran exerts strong anti-inflammatory and cardioprotective effects against anthracycline/HER2 inhibitor-induced cardiotoxicity via NLRP3 and MyD88 signaling, independent of lipid-lowering activity. Findings support its role in primary prevention of cancer therapy-related cardiac dysfunction (CTRCD).

CARDIO-ONCOLOGIA E CARDIO-TOSSICITÀ 418
CARDIOTOSSICITA' DA FARMACI
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
DIAGNOSI, PREVENZIONE E TRATTAMENTO DELLA CARDIOTOSSICITA'
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
BIOLOGIA MOLECOLARE CARDIOVASCOLARE
(GENETICA E BIOLOGIA MOLECOLARE)

PCSK9 SELECTIVE ANTAGONIST REDUCES ANTHRACYCLINE+/- TRASTUZUMAB INDUCED CARDIOTOXICITY THROUGH INHIBITION OF FERROPTOSIS AND ACTIVATION OF PAMPK PATHWAYS

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Background: Combining anthracyclines and trastuzumab is highly effective in treating HER2-positive breast cancer but significantly increases the risk of cardiotoxicity. The sequential approach is often preferred, where anthracyclines are given first, followed by trastuzumab, with careful monitoring of heart function.

Purpose: We report for the first time the cardioprotective effects of NLRP3i dapansutrile against anthracycline and HER-2 blocking agents cardiotoxicity through NLRP3/AKT mTORC1 pathway

Methods: Human cardiomyocytes (HFC cell line) were exposed to subclinical concentration of doxorubicin and trastuzumab in sequential therapy alone or combined to Dapansutrile (50,100 and 200 nM) for 48h. After the incubation period, we performed the following tests: determination of cell viability, through analysis of mitochondrial dehydrogenase activity, study of lipid peroxidation (quantifying cellular Malondialdehyde and 4-hydroxynonenal), cyclooxygenase-2 (COX-2) levels intracellular Ca2+ homeostasis. Moreover, pro-inflammatory studied were also performed (activation of NLRP3; expression of TLR4/MyD88; mTORC1 Fox01/3a; transcriptional activation of p65/NF-κB and expression of cytokines involved in cardiotoxicity (IL-1α, IL-1β, IL-2, IL-4, IL-6, IL-10, IL-12, IL17-α, IFN-γ, TNF-α, G-CSF, GM-CSF).

Results: Dapansutrile co-incubated with anthracycline/trastuzumab in sequential regimen exerts significant cardioprotective effects enhancing cell viability of 88.7 % compared to only doxorubicin/trastuzumab treated cells ($p<0,05$ for all). A significant reduction in mTORC, COX-2, NLRP-3 and MyD-88 levels in cardiomyocytes were seen ($p<0.001$ for all). Troponin T, HFABP and BNP were significanty reduced after exposure to dapansutrile. Ferroptosis and Mitochondrial damages were significantly reduced. Significant reductions in intracellular levels of IL-1α, IL-1β, IL-2, IL-4, IL-6, IL-12, IL17-α, IFN-γ, TNF-α, G-CSF, GM-CSF were seen in dapansutrile/doxorubicin-trastzumab group vs doxorubicin-trastuzumab ($p<0.001$); instead, IL-10

were increased by 36.8% ($p<0.05$).

Conclusion: For the first time, NLRP3i dapansutrile was effective to reduce anthracycline+ trastuzumab mediated cardiotoxicity through NLRP3/AKT/mTOR pathways. The overall picture of the study warrent on the use of dapansutrile in primary prevention of anthracycline and trastuzumab induced cardiovascular events in cancer patients.

CARDIO-ONCOLOGIA E CARDIO-TOSSICITÀ 419
CARDIOTOSSICITA' DA FARMACI
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
DIAGNOSI, PREVENZIONE E TRATTAMENTO DELLA CARDIOTOSSICITA'
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
FARMACI ANTI-DIABETICI (DIABETE E MALATTIE DEL METABOLISMO)

CARDIO-RENAL EFFECTS OF DAPAGLIFLOZIN ON SHORT TERM ANTHRACYCLINE AND HER 2 BLOCKING AGENT CARDIOTOXICITY IN PRECLINICAL MODELS: ANALYSIS OF MULTIPLE PATHWAYS INVOLVED

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Background: Anthracyclines and human epidermal growth factor receptor 2 (HER2) inhibitors are cornerstone therapies for breast cancer but are associated with significant cardiotoxicity. While SGLT2 inhibitors such as dapagliflozin have demonstrated cardio-renal protective effects during anthracycline treatment, their efficacy in preventing cardiotoxicity from sequential anthracycline and HER2 blockade remains poorly understood. This study investigates the cardioprotective role of dapagliflozin in a preclinical model of chemotherapy-induced cardiotoxicity.

Methods: Female C57Bl/6 mice were divided into four groups and treated for 10 days as follows: (1) a normal control group receiving saline (Sham); (2) a model control group receiving doxorubicin (2.17 mg/kg/day for 5 days) followed by HER2-blocking monoclonal antibody (2.25 mg/kg/day for 5 days); (3) a dapagliflozin-only group (10 mg/kg/day via oral gavage); and (4) a treatment group receiving the combination of doxorubicin, HER2 inhibitor, and dapagliflozin. Cardiac function was assessed using echocardiography (VEVO 2100). Biomarkers of myocardial injury (NLRP3, MyD88, CXCR4, H-FABP, troponin-T, and cytokines) were quantified via ELISA and immunohistochemistry. Circulating markers such as mitofusin-2, cardiac myosin light chain, malondialdehyde (MDA), and 4-hydroxy-2-nonenal (4-HNE) were also measured.

Results: Dapagliflozin significantly preserved ejection fraction and reduced both radial and longitudinal strain impairment in mice treated with the doxorubicin–HER2 inhibitor combination ($p < 0.001$). Levels of myocardial NLRP3, MyD88, CXCR4, H-FABP, interleukin-1β, and troponin-T were significantly lower in the dapagliflozin-treated group compared to the only chemotherapy group. Serum markers of oxidative stress and cardiac injury, including mitofusin-2, MDA, 4-HNE, BNP, and high-sensitivity C-reactive protein (hs-CRP), were also reduced by dapagliflozin treatment.

Conclusion: Our findings demonstrate that dapagliflozin effectively mitigates early cardiac dysfunction and injury in a preclinical model of sequential doxorubicin and HER2 inhibitor therapy.

CARDIO-ONCOLOGIA E CARDIO-TOSSICITÀ 822
ABLAZIONE TRANSCATETERE (ARITMIE)
ARITMIE VENTRICOLARI (ARITMIE)
STUDI ELETTROFISIOLOGICI INVASIVI (ARITMIE)
CARDIOTOSSICITA' DA FARMACI (CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
ASPETTI GENETICI DELLE ARITMIE (ARITMIE)

VENTRICULAR TACHYCARDIA DURING BREAST CANCER THERAPY: SUCCESSFUL CATHETER ABLATION ALLOWED NO DELAY IN ESSENTIAL ONCOLOGIC TREATMENT

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Presentiamo il caso di una donna di 49 anni, recentemente trattata con antracicline e ciclofosfamide per carcinoma mammario, che durante la preparazione anestesiologica per mastectomia unilaterale ha sviluppato una tachicardia ventricolare (TV) sostenuta con instabilità emodinamica e verosimile origine dal tratto di efflusso destro. L'intervento è stato differito e la paziente è stata ricoverata in terapia intensiva cardiologica.
Pur in presenza di funzione biventricolare conservata e imaging cardiaco negativo, la familiarità per aritmie e morte improvvisa ha sollevato il sospetto di un possibile substrato aritmogeno.
La terapia farmacologica ha ridotto, ma non abolito, gli episodi aritmici; la paziente è stata pertanto dimessa con un defibrillatore indossabile come protezione temporanea in attesa di studio elettrofisiologico. L'impianto di defibrillatore impiantabile (ICD) è stato escluso in considerazione della potenziale natura benigna della tachicardia, dei reperti normali alla risonanza magnetica e della necessità di radioterapia toracica imminente.
Lo studio elettrofisiologico ha confermato l'inducibilità di una TV sostenuta con origine dal tratto di efflusso del ventricolo destro ed è stata trattata con successo mediante ablazione transcatetere. La paziente ha potuto proseguire senza interruzioni la terapia oncologica e sottoporsi alla radioterapia nei tempi previsti. Al follow-up di sei mesi non ha presentato recidive aritmiche. L'analisi genetica ha identificato varianti a significato incerto a carico di TCAP e JPH2. Questo caso sottolinea come l'ablazione transcatetere rappresenti un'opzione sicura ed efficace nelle TV benigne correlate a chemioterapia e refrattarie ai farmaci. La tempestività dell'intervento ablativo ha consentito di evitare l'impianto di ICD al fine di garantire la prosecuzione delle cure oncologiche salvavita.

CARDIO-ONCOLOGIA E CARDIO-TOSSICITÀ 591
IPERTENSIONE POLMONARE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
CARDIOTOSSICITA' DA FARMACI
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
DIAGNOSI, PREVENZIONE E TRATTAMENTO DELLA CARDIOTOSSICITA'
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')

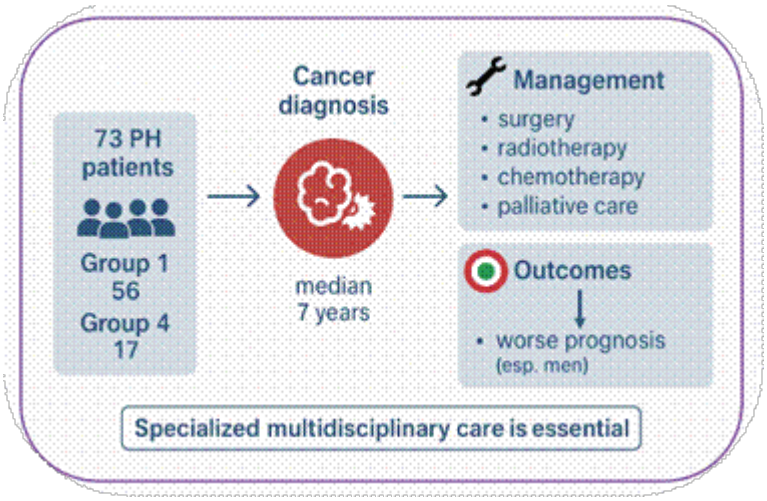
NEOPLASIA IN PATIENTS DIAGNOSED WITH PULMONARY HYPERTENSION: INCIDENCE, MANAGEMENT AND PROGNOSIS

Belen Biscotti Rodil (a), Tommaso Recchioni (b), Roberto Badagliacca (b), Pilar Escribano Subias (a), Carmine Dario Vizza (b)
(a) 12TH OF OCTOBER UNIVERSITY HOSPITAL, MADRID, SPAIN; (b) DIPARTIMENTO DI SCIENZE INTERNISTICHE, ANESTESIOLOGICHE E CARDIOVASCOLARI, SAPIENZA, UNIVERSITÀ DI ROMA

Introduction: Limited evidence suggests a potential increase in cancer incidence among patients with pulmonary hypertension (PH). Cancer management in these patients is complicated by PH, affecting surgical and chemotherapy (CHT) options due to associated cardiovascular risks. Specialized care and further studies are crucial to improve long-term outcomes and optimize therapeutic strategies in this complex population. The study aimed to describe the incidence, etiology, management, and prognosis of patients diagnosed with cancer after a PH diagnosis.

Methods: This observational, longitudinal, and retrospective descriptive study included patients diagnosed with cancer following a diagnosis of PH. The patients belonged to groups 1 and 4 of the Spanish Pulmonary Arterial Hypertension Registry (REHAP) and the Italian Pulmonary Hypertension Network (IPHNET) followed between 2005 to 2025. A total of 73 patients (20 men and 53 women) with a mean age of 54 years were included: 56 belonged to group 1 (6% toxin induced, 6% pulmonary veno-occlusive disease, 9% heritable, 13% idiopathic, 13% HIV associated, 13% congenital heart disease, 13% portopulmonary hypertension, 27% systemic sclerosis) and 17 to group 4. PH treatment included 13% on monotherapy, 35% on dual therapy, 13% on oral triple therapy, 23% on systemic triple therapy, 13% on inhaled triple therapy, and 1 patient on systemic triple therapy plus sotatercept.

Results: The average time between PH and cancer diagnoses was 7 years. Regarding cancer treatment, 27 patients received palliative care, 32 underwent surgery, 9 received radiotherapy, and 5 underwent chemotherapy. At the time of PH diagnosis, women showed greater hemodynamic severity (PVR 11 vs. 9WU, p=0.05). However, no significant differences



Central figure

Figure 1

were found between genders in PH severity or echocardiographic parameters at the time of cancer diagnosis (Table 1). Mortality was higher especially in men (67% vs. 33%, p=0.09).

Conclusions: PH significantly complicates cancer management and worsens prognosis. Specialized care and a multidisciplinary approach are essential to optimize outcomes in this vulnerable population.

CARDIO-ONCOLOGIA E CARDIO-TOSSICITÀ 604
TROMBOSI E COAGULAZIONE (ATEROTROMBOSI)
PATOLOGIA DELLE VENE (MALATTIE DEI VASI)
EMBOLIA POLMONARE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)

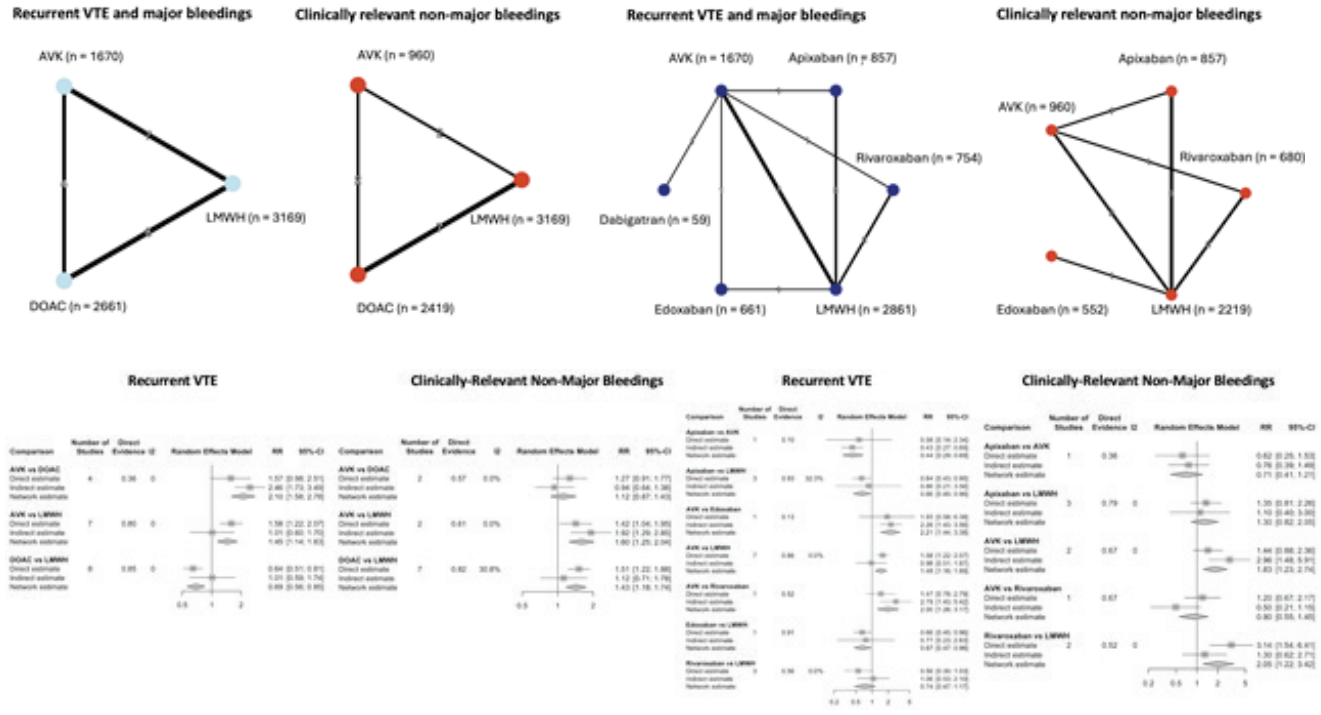
ANTICOAGULATION IN CANCER-ASSOCIATED VENOUS THROMBOEMBOLISM: A COMPARATIVE NETWORK META-ANALYSIS OF DOACS AND OTHER ANTICOAGULANTS

Michela Schenone (a), Silvia Giaracuni (a), Marco Ferraris (a), Lorenzo Bianchi (a), Matteo Sarocchi (b), Italo Porto (a, b), Pietro Ameri (a, b)
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Background: Cancer markedly increases the risk of venous thromboembolism (VTE), a major cause of morbidity and mortality, making effective anticoagulation a key decision in patient management to reduce complications and improve outcomes.

Aim: This updated network meta-analysis of recent studies evaluated efficacy and safety of DOACs vs. other anticoagulation strategies in patients with active cancer to identify the optimal approach.

Methods: We performed a network meta-analysis of randomized trials (RCT) (updated to August 2025). Treatments compared were VKAs, LMWH, and DOACs for recurrent VTE, major bleeding, CRNMB, and all-cause mortality, with DOAC subgroup analyses to assess drug-type impact.



Figure

Results: 23 RCTs including 10,436 patients (mean age 65 ± 11.3 years, 46.7% male, 54.9% with metastatic cancer; follow-up ranged from 3 to 18 months) were analyzed. DOACs reduced recurrent VTE vs. LMWH, while VKAs increased recurrence vs. both DOACs and LMWH. Apixaban and edoxaban were superior to LMWH without increasing bleeding risk; while rivaroxaban and VKAs increased CRNMB. All-cause mortality resulted similar across class and drug type.

Conclusions: DOACs—especially apixaban and edoxaban—are more effective than LMWH in preventing recurrent VTE and as safe as LMWH, while VKAs show lower efficacy and higher bleeding risk, supporting DOACs' preferential role in cancer-associated VTE

CARDIO-ONCOLOGIA E CARDIO-TOSSICITÀ 925
CARDIOTOSSICITA' DA FARMACI
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
DIAGNOSI, PREVENZIONE E TRATTAMENTO DELLA CARDIOTOSSICITA'
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE
(IMAGING CARDIOVASCOLARE)

STRAIN DERIVED MYOCARDIAL WORK INDICES IN ADULT CANCER SURVIVORS: RESULTS FROM AN OBSERVATIONAL STUDY AND COMPARISON WITH AVAILABLE REFERENCE RANGES

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Aims: Adult survivors of haematological malignancies are at increased risk of long-term cardiovascular sequelae. Several echocardiographic metrics have been tested to detect subclinical myocardial dysfunction before it progresses toward cardiac events. Myocardial work (MW) is a load-independent echocardiographic index that conjugates noninvasive arterial blood pressure and global longitudinal strain (GLS).

Methods: Sixty-three disease-free survivors of Hodgkin Lymphoma (HL) [49% male, median age 42 (33,0–50,5) years], without known cardiovascular disease or reported cardiological symptoms, were included in this observational study. Myocardial work data from cancer survivors were compared with those from healthy subjects recruited in the EACVI NORRE Study.

Results: Mean left ventricular ejection fraction and GLS were, respectively, 57,0% (55,0–60,0) and −18,0% (-19,2– 17,1). Global work efficiency [GWE, 96% (94–97)], global work index (GWI, 1732±340 mmHg%) and global wasted work [GWW, 78 (55–131) mmHg%] did not differ between male and female survivors; however, global constructive work (GCW, 2116±386 mmHg%) was lower in males. Of importance, GWI and GCW were lower in cancer survivors compared to healthy subjects from the EACVI NORRE study (p=0,0008 and p=0,0324, respectively). When evaluating associations of MW indices with patients' characteristics, only systolic blood pressure and ejection fraction were independently associated with both GWI and GCW at multivariable analysis.

Conclusion: For the first time, this report provides values of MW indices in asymptomatic HL survivors without cardiovascular disease. GWI and GCW were significantly lower in HL survivors compared to healthy subjects. MW metrics might serve as valuable markers of subclinical cardiac dysfunction in this population.

CARDIO-ONCOLOGIA E CARDIO-TOSSICITÀ 1052
CARDIOTOSSICITA' DA FARMACI
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
DIAGNOSI, PREVENZIONE E TRATTAMENTO DELLA CARDIOTOSSICITA'
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE
(IMAGING CARDIOVASCOLARE)

ECHOCARDIOGRAPHIC AND BIO-HUMORAL MARKERS MODIFICATIONS IN PATIENS TREATED WITH CAR-T CELLS THERAPY: RESULTS OF THE CARDIO-TOX STUDYWITH A FOCUS ON THE RIGHT VENTRICLE

Ilaria Torre (a), Giulia Tamburrini (a), Lorenzo Tinti (c), Ludovica Leo (a), Priscilla Lamendola (a), Ludovica Amore (a), Marcello Viscovo (a), Massimiliano Camilli (a), Antonella Lombardo (a)
(a) POLICLINICO GEMELLI ROMA; (b) OSPEDALE ISOLA TIBERINA-GEMELLI ISOLA;
(c) UOC CARDIOLOGIA OSPEDALE SANTA ROSA VITERBO

Chimeric antigen receptor T (CAR-T) cells therapy is a pioneering treatment for B-cell lymphomas that involves genetically engineered autologous T cells to express a synthetic receptor that recognizes antigen CD19, a tumor cell surface antigen, thus allowing the T cell to kill the tumor cells.
This novel paradigm of therapy is associated with cardiovascular (CV) toxicities, mainly related to cytokine release syndrome (CRS), an aberrant inflammatory activation. In the pivotal study CARdio-TOX, applying 2022 ESC guidelines definitions, we observed a significant development of left ventricular (LV) dysfunction in the acute phase of treatment, which tends to improve in the next weeks, closely related to the grade and trend of CRS.
Likewise, we can suppose that this detrimental cardiotoxic effect involves also right ventricle (RV). The right ventricle remains the 'forgotten chamber' in the clinical assessment of cancer therapy-related cardiac dysfunction (CTRCD), despite emerging evidences recognized prevalence and clinical significance of RV involvement in patient treated with cancer therapy, as this condition can significantly impact treatment decisions and overall patient outcomes.
In this novel study, we want to expand data concerning LV dysfunction following CAR-T therapy. Moreover, we want to focus on RV dysfunction in these patients, applying a recent definition of RV CTRCD proposed by a 2024 HFA scientific statement. Moreover, we tried to assess a relationship between RV dysfunction and grade of CRS and inflammatory response, through monitoring of serum inflammation biomarkers.
Sixty patients have enrolled and have been evaluated prospectively at baseline and after 7 days and 30 days from CAR-T cells infusion through echocardiography, serum inflammatory markers and serum cardiac biomarkers (high sensitivity troponin I and NT-proBNP).
Incidence of LV CTRCD and RV CTRCD was high at 7 days (55% and 50%, respectively), largely based on subclinical indexes like GLS and serum cardiac biomarkers for left ventricle and RVFWLS for right ventricle. In patients with RV CTRCD, we found higher levels of high-sensitivity troponin I ($p = 0.01$) and NT-proBNP ($p = 0.004$) and lower LV GLS values ($p = 0.015$).

CardioSic

86° CONGRESSO NAZIONALE SIC
Roma, 4-7 dicembre 2025

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 883
INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
FISIOLOGIA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INFARTO NSTEMI (CARDIOPATIA ISCHEMICA)

INTEGRATED ASSESSMENT OF CORONARY PHYSIOLOGY AND PLAQUE VULNERABILITY FOLLOWING RESORPTION OF MAGNESIUM-RESORBABLE SCAFFOLDS

Simone Fezzi (a), Ettore Ventura (b), Domenico Tavella (a), Hesham Abu Abied (a), Edoardo Genta (b), Sara Lomi (a), Yari Noacco (a), Sara Maisenti (a), Roberto Scarsini (a), Flavio Ribicchini (a), Stefano Galli (b)
(a) DIVISION OF CARDIOLOGY, DEPARTMENT OF MEDICINE, UNIVERSITY OF VERONA, VERONA, ITALY; (b) CENTRO CARDIOLOGICO MONZINO, IRCCS, MILAN, ITALY

Background: Bioresorbable scaffolds (BRS) provide temporary vascular support after PCI, aiming to restore vascular function upon resorption. The Magmaris Resorbable Magnesium Scaffold (MRS; Biotronik) has shown favorable outcomes, but its long-term effects on plaque vulnerability and coronary physiology remain unclear.

Methods: We retrospectively analyzed 150 patients (158 vessels) from a prospective two-center cohort treated with MRS and followed at a median of 17 months. Plaque vulnerability was assessed by Radial Wall Strain (RWS ≥13%) and coronary physiology by Murray's law-based quantitative flow ratio (μFR ≤0.80). Analyses were performed at pre-PCI, post-PCI, and follow-up.

Results: At baseline, median μFR was 0.73 [0.59–0.83], with 109 vessels (68.9%) classified as ischemia-inducing, while median RWS was 20.7 [17.6–26.5] %, with 149 vessels (94.3%) deemed vulnerable. Post-PCI, μFR significantly improved to 0.95 [0.91–0.98], with only 3 vessels (1.9%) still ischemia-inducing. RWS markedly decreased to 11.5 [9.6–12.6] %, with 26 vessels (16.5%) remaining vulnerable. At follow-up, μFR remained high at 0.93 [0.87–0.96], showing a significant improvement from baseline (mean difference +0.21 [95% CI 0.18–0.24]; p=0.001), with 22 vessels (13.9%) ischemia-inducing. RWS slightly increased to 12.5 [11.1–16.2] %, but was still significantly lower than baseline (mean difference -8.7 [95% CI -10.0 to -7.49]; p=0.001), with 62 vessels (39.2%) classified as vulnerable. Net functional gain correlated positively with baseline RWS (R=0.293; p=0.001).

Conclusion: Complete MRS resorption was associated with sustained improvement in coronary physiology and reduced plaque vulnerability. These results support MRS as a tool for durable vascular restoration, promoting plaque passivation and stabilizing high-risk lesions.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 495
PLACCA VULNERABILE (ATEROTROMBOSI)
DIAGNOSTICA INVASIVA INTRAVASCOLARE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
FISIOLOGIA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

PROGNOSTIC IMPACT OF HIGH-RISK PLAQUE MORPHOLOGY AND IMPAIRED PHYSIOLOGY IN UNTREATED NON-CULPRIT CORONARY LESIONS: A SYSTEMATIC REVIEW AND META-ANALYSIS

Vincenzo Acerbo (a, b), Arturo Cesaro (a, b), Flavio Giuseppe Biccirè (c, d), Francesco Scialla (a, b), Giovanni Argenziano (a, b), Vincenzo De Sio (a, b), Antonio Capolongo (a, b), Maria Grazia Monaco (a, b), Elisabetta Moscarella (a, b), Felice Gragnano (a, b), Francesco Prati (c, d), Paolo Calabrò (a, b)
(a) UNIVERSITÀ DEGLI STUDI DELLA CAMPANIA "LUIGI VANVITELLI", NAPLES, ITALY; (b) A.O.R.N. "SANT'ANNA E SAN SEBASTIANO" HOSPITAL, CASERTA, ITALY; (c) SAPIENZA UNIVERTIY OF ROME, ROME, ITALY; (d) SAN GIOVANNI-ADDOLORATA HOSPITAL, ROME, ITALY

Background. The optimal management of angiographically intermediate coronary lesions (AICLs) remains challenging. While physiological assessment guides revascularization, it may miss residual risk associated with high-risk plaque features in deferred non-ischemic non-culprit lesions (NCLs).

Aims. The objective was to evaluate the prognostic impact of high-risk plaque morphology, impaired physiology, and their combination in untreated NCLs, through a systematic review and meta-analysis.

Methods. A systematic literature search was conducted in PubMed, Embase, and Web of Science. The analysis identified 10 studies (4 randomized controlled trials, 6 observational studies) including both morphological (optical coherence tomography [OCT], intravascular ultrasound [IVUS], or near-infrared spectroscopy [NIRS]) and functional (fractional flow reserve [FFR], instantaneous wave-free ratio [iFR], quantitative flow ratio [QFR], Murray fractal law-based QFR [μQFR], optical flow reserve [OFR], OCT-FFR, IVUS-FFR) assessment in the same untreated AICLs. A total of 4,757 patients and 7,662 NCLs were stratified into four groups: a reference group (AICLs with both morphological and physiological negative assessment), a morphology-positive group (AICLs with high-risk plaque morphology and physiology negative assessment), a functional-positive group (AICLs with impaired physiological assessment without high-risk plaque morphology), and a morpho-functional-positive group (AICLs with both high-risk plaque morphology and physiology positive assessment). The main endpoint was target vessel failure (TVF), mainly defined as a composite of cardiac death, target-vessel myocardial infarction, and target-vessel revascularization.

Results. Compared with the reference group, the risk of TVF significantly increased in morphology-positive NCLs (HR 2.94, 95% CI 2.22–3.90, p<0.0001) and functional-positive NCLs (HR 3.59, 95% CI 1.56–8.27, p=0.0026) The combination of high-risk morphology and impaired physiology conferred the highest risk (HR 8.75, 95% CI 4.93–15.55, p<0.0001). In an indirect comparison, morphology-positive NCLs showed a non-significant trend toward higher risk compared with functional-positive lesions (HR 1.27, 95% CI 0.63–2.53, p=0.50). Findings were consistent across imaging modalities.

Conclusions. High-risk plaque morphology carries a prognostic impact comparable to ischemia in untreated NCLs, while their coexistence identifies the subgroup at greatest risk. These findings highlight the complementary value of morphology and physiology in guiding clinical decisions and support integrated morpho-functional assessment for more accurate risk stratification.

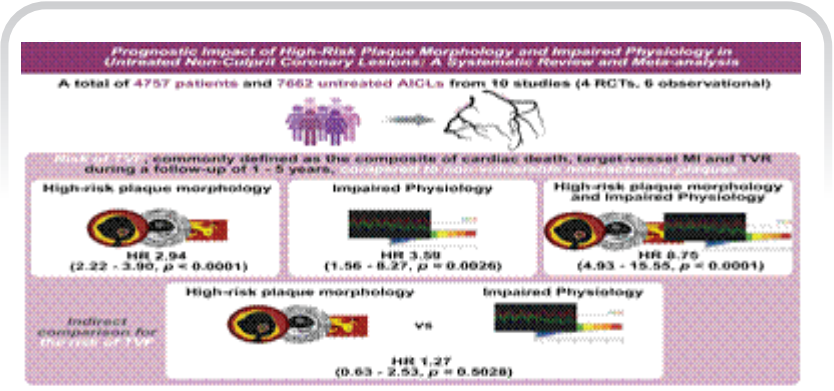


Figure 1

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 783
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
INTERVENTISTICA STRUTTURALE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
ARITMIE SOPRAVENTRICOLARI (ESCLUSA FA) (ARITMIE)

CLINICAL AND PROCEDURAL OUTCOMES OF THE PERCUTANEOUS LAA CLOSURE IN ATRIAL FIBRILLATION PATIENTS WITH HIGH CLINICAL AND BLEEDING RISK. INSIGHT FROM THE MULTI-CENTER LAIT (LAMBRE ITALIAN) REGISTRY

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Background: Left atrial appendage (LAA) closure represents a valuable option for atrial fibrillation (AF) patients at high bleeding risk who cannot tolerate long-term oral anticoagulation. The LAMBRE™ Closure System (Lifetech Scientific, Shenzhen, China) device offers a novel approach: preliminary data hypothesized some advantages of this system related to the very proximal atrial cavity of the landing zone of the device, avoiding both deep location of the delivery sheath and device manipulation at the distal LAA, compared to other device, reducing the risk of acute perforation. To date, real-world data in older, comorbid cohorts remain limited.

Purpose: We sought to evaluate the periprocedural safety and procedural outcomes of LAMBRE™ implantation in a multicenter Italian registry (LAIT registry: LAmbre ITalian registry).

Methods: A total of 225 consecutive patients (mean age 76.2 ± 7.7 years; 65.3% male) underwent LAMBRE™ implantation in 10 centers. Comorbidities were frequent, including hypertension (82.2%), dyslipidemia (49.3%), diabetes (32.0%), and a mean Charlson Index of 6.0 ± 2.6. Most patients (98.2%) had AF (53.3% paroxysmal, 31.1% persistent, 12.9% permanent), with mean CHA_2DS_2-VASc and HAS-BLED scores of 4.2 ± 1.5 and 3.4 ± 1.2, respectively. The primary indications included previous major bleeding (56.9%) or high-risk features (e.g., recurrent minor bleeding, fall risk). Intraprocedural imaging was predominantly transesophageal echocardiography (97.8%); 10 patients had no follow-up, leaving 215 for outcome assessment (median 3.5 months, IQR 2.0–6.3).

Results: Procedural success was achieved in 99.1% (223/225), with a mean procedure time of 72.3 ± 28.7 minutes and mean fluoroscopy time of 14.1 ± 9.0 minutes. Device embolization occurred in 1.9% (4/215), including one periprocedural event and one at 281 days. 1 patient (0.5%) failed the tug-test. Cardiac tamponade was noted in 1.4% (3/215) at various time points (day of implant, 33 days, 317 days). TIA/stroke occurred in 2.3% (5/215), with a median onset of 265 days. Major bleeding during follow-up was observed in 7.0% (15/215). No device-related mortality was reported; non–device-related deaths occurred in 11.2% (24/215), and 1.4% (3/215) had unknown cause of death.

Conclusion: In this real-world, high-risk population characterized by advanced age and multiple comorbidities, LAMBRE™ LAA closure demonstrated a high procedural success rate and a low incidence of significant complications. These findings support LAMBRE™ as a feasible option for patients contraindicated to long-term anticoagulation, warranting further prospective validation to refine patient selection and optimize management.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 47
INTERVENTISTICA STRUTTURALE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE (IMAGING CARDIOVASCOLARE)

SYMPTOMATIC IMPROVEMENT AFTER TAVI IN PATIENTS WITH PARADOXICAL LOW FLOW LOW GRADIENT AORTIC STENOSIS

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Background: Paradoxical low-flow, low-gradient aortic stenosis (pLFLG-AS) is a challenging subtype of severe AS, often presenting with heart failure symptoms despite preserved left ventricular ejection fraction and low transvalvular gradients. The symptomatic benefit of transcatheter aortic valve implantation (TAVI) in this population remains controversial.

Methods: Relevant clinical data of patients undergoing TAVI procedures in a single center were collected. The definition of pLFLG-AS was aortic valve mean gradient <40mmHg, stroke volumed indexed <35ml/m2, systolic function on echocardiogram >50% and aortic valve area by continuity equation (AVA) of <1.00cm2. Only patients with "likely" or "highly likely" Agatston calcium scores ranges were considered to have true severe pLFLG-AS and were included in the analysis. Symptoms were assessed at baseline and routine follow up at 3 months.

Results: 398 patients were included in this study, 70% (n280) with normal flow aortic stenosis (NF-AS), 15% (n61) with classical low-flow low-gradient AS (c-LFLG-AS) and 57 (14%) with p-LFLG-AS. Baseline characteristics included (showed as median/interquartile range and %) age 83/9, female gender 41%, Euroscore II 4.1/5.5, Rockwood's frailty score 4/7, eGFR 65/22, urgent inpatient procedure 23%, transfermoral TAVI 90%, COPD 18%, previous myocardial infarction, stroke or TIA 16%, previous CABG 9%, valve calcium score 3128/1814. In three groups median calcium score was above 2000. Symptoms improvement was achieved in 84% of the total cohort, similar among all the three categories of patients NF-AS 86%, c-LGLG-AS 88% and p-LFLG-AS 84% (p=NS). At logistic regression analysis, the only independent predictor of symptomatic improvement was lower systolic pressure at baseline 145mmHg (IQR 45mmHg) vs 139mmHg (IQR 37mmHg) (<0.05).

Conclusions: In this retrospective analysis, although most pLFLG-AS patients experience symptomatic improvement after TAVI, their functional recovery was often incomplete with a higher proportion remaining in NYHA III–IV compared to other AS subtypes. Lower baseline systolic blood pressure was the only independent predictor of improvement, suggesting that relief of predominant valvular afterload may drive clinical benefit. These findings support the need for comprehensive hemodynamic evaluation and tailored patient selection to optimize outcomes in this complex population.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 935
INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INFARTO STEMI (CARDIOPATIA ISCHEMICA)
TROMBOSI E COAGULAZIONE (ATEROTROMBOSI)
INFARTO NSTEMI (CARDIOPATIA ISCHEMICA)

LEFT MAIN SPONTANEOUS CORONARY ARTERY DISSECTION: INTEGRATING GENETICS AND INTRAVASCULAR IMAGING IN CLINICAL DECISION-MAKING

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Introduction: Spontaneous coronary artery dissection (SCAD) is a non-atherosclerotic and non-iatrogenic cause of acute coronary syndrome (ACS), resulting from intramural hematoma formation or an intimal tear leading to coronary luminal narrowing or complete occlusion. It predominantly affects young to middle-aged women without conventional cardiovascular risk factors, accounting for 1–4% of all ACS cases and up to 35% of acute myocardial infarctions in women under 50 years.
The most frequently involved coronary arteries are the left anterior descending (60–70%), circumflex (20–25%), and right coronary artery (10–15%). Left main involvement is rare (<10% of cases) but is associated with a potentially severe prognosis. Certain genetic polymorphisms have been hypothesized as predisposing factors, although their pathogenic role remains unclear.
We report two cases of left main SCAD, one managed with surgical revascularization and the other with a conservative approach.

Case 1
A 46-year-old woman, non-smoker, without family history of coronary artery disease or sudden cardiac death, with recently diagnosed hypertension.
She was heterozygous for the MTHFR gene mutation, with a history of spontaneous miscarriages and a prior pregnancy complicated by preeclampsia requiring cesarean delivery at 33 weeks.
She presented with typical chest pain; ECG showed high lateral STEMI. Emergency coronary angiography revealed an intramural hematoma of the ostial left main coronary artery, extending to the proximal left anterior descending (LAD) and circumflex arteries, both suboccluded (TIMI 2) with preserved distal perfusion. The right coronary artery was large, tortuous, and disease-free.
Echocardiography demonstrated mildly reduced global left ventricular systolic function (LVEF 50%) with apical wall motion abnormalities. Due to the anatomical severity and high risk of progression, she underwent urgent coronary artery bypass grafting (left internal mammary artery to LAD and saphenous vein graft to the intermediate branch). The postoperative course was uneventful. She was discharged on day 10, asymptomatic (NYHA class I, CCS class I), with echocardiography showing full recovery of LV systolic function (LVEF 55%) and resolution of wall motion abnormalities.

Case 2
A 62-year-old woman with untreated hypertension, mitral valve prolapse complicated by previous endocarditis, and patent foramen ovale was admitted to the coronary intensive care unit with NSTEMI.
ECG revealed T-wave inversion in inferolateral and posterior leads, with mild elevation of high-sensiti-

vity troponin I (peak 839 ng/L). Echocardiography demonstrated preserved global LV systolic function (LVEF 60%) with akinesia of the mid-lateral and inferolateral segments.

Coronary angiography diagnosed SCAD of the left main coronary artery extending to the distal LAD, confirmed by intracoronary imaging, with preserved coronary flow. No indication for surgical or percutaneous revascularization was made. The patient was managed conservatively with titrated beta-blocker and ACE inhibitor therapy. During hospitalization, she remained asymptomatic; repeat angiography on day 5 demonstrated near-complete resolution with a small residual hematoma in the mid-LAD, without significant luminal narrowing or flow impairment.

Given her clinical stability, conservative management was maintained. Immuno-inflammatory screening and total-body CT angiography excluded extracoronary vascular abnormalities or vasculitis. She was discharged on day 12 with normalization of ECG and echocardiographic findings. At 1-year follow-up, coronary CT angiography showed complete resolution of the residual hematoma with normal left coronary artery findings.

Conclusions: Left main SCAD is a rare but highly challenging clinical condition. Intravascular imaging (IVUS, OCT) is crucial for confirming the diagnosis, defining dissection extent, and guiding therapeutic strategy.

In hemodynamically stable patients without impaired coronary flow, conservative management allows preservation of ventricular function and may result in complete spontaneous healing. Conversely, in complex cases or those at risk of adverse progression, early surgical or percutaneous revascularization is warranted.

The presence of genetic variants, as illustrated in the first case, may represent a potential predisposing factor, whereas their absence in the second case highlights the heterogeneity of SCAD pathogenesis.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 971
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
FARMACI ANTI-DIABETICI (DIABETE E MALATTIE DEL METABOLISMO)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)

ROLE OF GLP1 AGONIST AFTER TAVI: INSIGHTS FROM MOTIVE REGISTRY

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Introduction: GLP-1 receptor agonists (GLP-1a) are a novel class of cardiometabolic drugs that have been shown to reduce the risk of major adverse cardiovascular events (MACE) and cardiovascular mortality in patients with type 2 diabetes, overweight, or obesity. Improved outcomes have also been reported in patients undergoing transcatheter aortic valve implantation (TAVI) treated with the SGLT2 inhibitor dapagliflozin in the recent DAPA-TAVI trial. Whether GLP-1a could provide similar benefits in patients with valvular heart disease, such as aortic stenosis, remains unknown.

Methods: We retrospectively analyzed TAVI patients enrolled in the monocentric MOTIVE registry at Molinette Hospital, Turin, between 2015 and 2025. Patients were stratified according to whether they were prescribed GLP-1a at discharge. Outcomes were compared between groups using both propensity score matching (PSM) and inverse probability weighting (IPW). Cox regression was applied to assess the following endpoints: the composite of all-cause death and hospitalization for heart failure (HHF), all-cause death, cardiovascular death, HHF, and stroke.

Results: A total of 803 TAVI patients were included, of whom 45 (5.6%) received GLP-1a at discharge. The mean age was 81.1 ± 6.2 years, with a slight female predominance (403, 50.2%). Mean left ventricular ejection fraction was 56.5 ± 11.3%, and mean transvalvular gradient was 42.1 ± 12.3 mmHg. A self-expandable valve was implanted in 509 patients (63.4%), most commonly the Evolut R/PRO/PRO+ (362, 45.0%). Baseline, echocardiographic, and procedural characteristics were balanced between groups, except for diabetes, which was markedly more prevalent in the GLP-1a group (43/45, 95.5%). After a median follow-up of 363.5 days (IQR 224–592), in the IPW-adjusted cohort, GLP-1a prescription at discharge was associated with a lower risk of the composite endpoint of all-cause death or HHF (HR 0.34, 95% CI 0.17–0.68, p = 0.01), primarily driven by a reduction in HHF (HR 0.30, 95% CI 0.15–0.56, p = 0.008). No significant differences were observed in cardiovascular death or stroke during long-term follow-up.

Conclusions: In this contemporary cohort of TAVI patients, GLP-1a prescription at discharge was associated with a marked reduction in the composite of all-cause death and HHF, mainly due to fewer heart failure hospitalizations. Given the observational and monocentric nature of this study, these findings should be considered hypothesis-generating. Larger multicenter registries and randomized controlled trials are warranted to confirm these preliminary results.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 877
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT)
(IMAGING CARDIOVASCOLARE)
ENDOCARDITI (VALVULOPATIE)

VALVE-IN-VALVE IN PAZIENTI COMPLESSI, UN FUTURO NON TROPPO LONTANO

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La stenosi valvolare aortica primaria (SVAo) è la principale valvulopatia richiedente intervento in Europa e Nord America. Le opzioni terapeutiche sono due: sostituzione chirurgica (SAVR) o l'impianto percutaneo (TAVI). La scelta tra le due dipende da diversi fattori tra cui età, rischio chirurgico e aspettativa di vita. In alcuni casi, purtroppo, la nuova valvola (sia percutanea che chirurgica) può andare incontro a degenerazione strutturale (structural valve deterioration - SVD) richiedendo un nuovo intervento. In questo setting si è sviluppata la tecnica TAVI-in-SAVR o TAVI-in-TAVI. La procedura consiste nell'impiantare una nuova valvola per via percutanea all'interno della protesi già presente. Questa metodica è sempre più presa in considerazione per via dell'elevato rischio chirurgico di un re-intervento e dell'età avanzata dei pazienti che solitamente sviluppano SVD. In questi casi un planning preoperatorio ottimale è fondamentale per la riuscita dell'intervento e per evitare il patient-prosthesis mismatch (PPM).
Presentiamo oggi il caso di un paziente di 79 anni sottoposto già a due interventi cardiochirurgici: Bentall nel 2011 complicata da sepsi da E. faecalis e versamento pericardico tardivo richiedente pericardiocentesi chirurgica e re-intervento nel 2019 di Bentall con tubo valvolato con protesi Perimount Magna n.25 per aneurisma dell'arco aortico complicato da endocardite nel 2020 con attacco ischemico transitorio (TIA), in flutter atriale permanente dal 2014, con diversi fattori di rischio cardiovascolare (ipertensione arteriosa sistemica, diabete mellito di tipo 2, sovrappeso, iperuricemia, familiarità ed iperomocisteinemia) giunto alla nostra osservazione per episodio di scompenso cardiaco (HF) acuto dovuto a SVD. Alla Tomografia Computerizzata (TC) si può notare una residua dissezione aortica di tipo B coinvolgente l'iliaca comune di destra e un true-ID della valvola precedentemente impiantato inferiore rispetto a quello indicato sulle specifiche valvolari (21).
Alla luce delle molteplici comorbidità e dell'elevato rischio chirurgico, si è optato per una TAVI in SAVR, piuttosto che ad un terzo reintervento, mediante una valvola balloon-expandable (Edwards Sapien 23) a gonfiaggio nominale con un ottimo risultato angiografico ed ecocardiografico. Non vi sono state complicanze periprocedurali.
Questo caso clinico vuole dimostrare come, anche in caso di paziente con rischio operatorio proibitivo, un planning preoperatorio minuzioso possa superare queste difficoltà tecniche e far procedere ad un intervento che nei prossimi anni diventerà sempre più frequente.

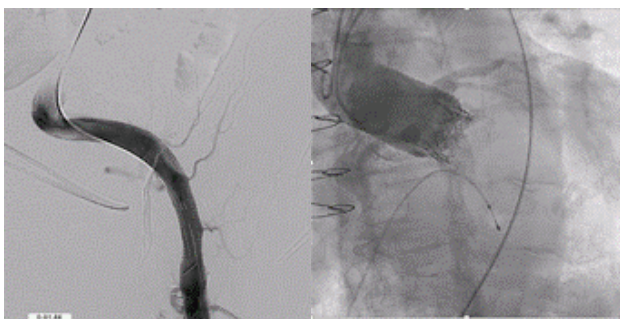


Figura 1

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 218
INTERVENTISTICA STRUTTURALE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

TRANSCATHETER AORTIC VALVE IMPLANTATION (TAVI) IN BICUSPID AORTIC VALVE DISEASE AND GENETICALLY DETERMINED DILATED CARDIOMYOPATHY (DCM)

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A 60-year-old male patient, presented in 2016 with his first episode of acute heart failure. He was found to have severely dilated and dysfunctional left ventricle (LVEF 19%) and right ventricle (FACC 25%), along with biventricular thrombosis, bicuspid aortic valve disease with an associated mild aortic stenosis. Given the presence of biventricular thrombosis, a myocardial biopsy was deferred, despite a clinical picture suspicious for myocarditis. This led to an empirical treatment with corticosteroids. The coronary CT revealed diffuse coronary plaques. Subsequent coronary angiography showed diffuse moderate coronary artery disease which was considered insufficient to explain the patient's severe systolic dysfunction. Cardiac magnetic resonance showed intramural non ischemic late gadolinium enhancement of the interventricular septum. Genetic analysis showed a truncating variant in the NEXN gene. NEXN gene encodes nexilin, an actin filament-binding protein crucial for maintaining the integrity and function of the sarcomeric Z-disk in the heart. Mutations in NEXN have been associated with various cardiomyopathies, particularly dilated cardiomyopathy. In 2017 he was implanted with a bicameral ICD in primary prevention. After the first episode of heart failure, the patient was stabilized on medical therapy alone and remained asymptomatic in NYHA class I for another four years. In 2020 he experienced his second acute heart failure episode. His invasive hemodynamic assessment revealed a cardiac index (CI) of 1.8 L/min/m2 and pulmonary artery pressures of 51/28/35 mmHg, with a pulmonary capillary wedge pressure of 23 mmHg. Rest echocardiography showed that the patient had a severe systolic impairment and a severe aortic stenosis (AVA 0.8 cm2). Dobutamine stress echocardiography showed that the patient had a low-flow low-gradient aortic stenosis which was in fact severe (gradient max/mean 66/42 mmHg, Velocity max 4.05 m/s, AVA 0.88 cm2). Pre-procedural CT confirmed

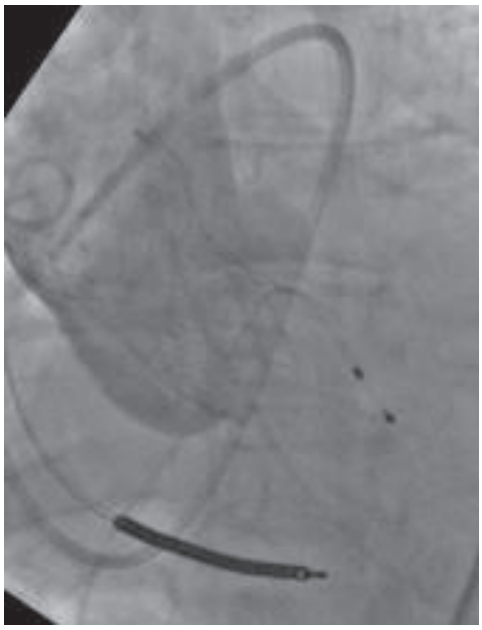


Figure 1

an aortic anulus perimeter of 98 mm, a dilated ascending aorta (45 mm) and suitable femoral accesses. Despite the fact that this patient was theoretically more suitable for cardiac surgery, given his clinical instability and general condition, a percutaneous approach was chosen. A CoreValve Evolut R 34 mm bioprosthesis was implanted without complications. Post-TAVI, invasive hemodynamic assessment demonstrated significant improvement, with CI increasing to 2.58 L/min/m2 and pulmonary artery pressures decreasing to 33/21/13 mmHg, with a PAWP of 13 mmHg.

The patient experienced a remarkable recovery of biventricular contractile function, with LVEF improving from a pre-TAVI nadir of 19% to 52%. The patient's functional status dramatically improved to NYHA class I and has remained stable to this day. This case demonstrates the benefit of TAVI in selected patients with severe aortic stenosis and co-existing dilated cardiomyopathy, even in the context of bicuspid aortic valve, moderate coronary artery disease, myocardial fibrosis, and a predisposing genetic variant.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 863
INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
DIAGNOSTICA INVASIVA INTRAVASCOLARE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

RICANALIZZAZIONE DI OCCLUSIONE CORONARICA CRONICA CALCIFICA CON SUPPORTO DI IMPELLA: APPROCCIO MULTIMODALE CON ATERECTOMIA E LITOTRISSIA INTRACORONARICA

Lucrezia Biagiotti (a), Alessio Mattesini (a), Niccolò Ciardetti (a), Matteo Orlandi (a), Maria Federica Crociani (a), Carlo Di Mario (a), Esma Cetinkaya (a)
(a) INTERVETNISTICA CARDIOLOGICA STRUTTURALE AOU CAREGGI UNIFI

Background: Le occlusioni croniche totali (CTO) calcifiche rappresentano una delle sfide maggiori nell'interventistica coronarica, per l'elevata complessità procedurale e il rischio di insuccesso. Tecniche di modifica di placca e supporto emodinamico percutaneo possono risultare fondamentali in tali contesti.

Caso clinico: Uomo di 83 anni con pregressa angioplastica (PCI) multivasale e frazione di eiezione ridotta giungeva per angina recidivante. La coronarografia mostrava CTO calcifica intrastent di arteria interventricolare anteriore e stenosi critica di tronco distale e primo tratto di arteria circonflessa. In considerazione della complessità della PCI, la procedura è stata eseguita con supporto ventricolare sinistro (Impella CP). Dopo fallimento delle tecniche standard di predilatazione a livello della CTO di IVA, si procedeva ad aterectomia rotazionale e litotrissia intravscolare, ottenendo un buon risultato di modifica della placca. Veniva, quindi, eseguita angioplastica di IVA con pallone medicato, ottenendo un buon risultato angiografico, confermato anche da imaging intravascolare. Si procedeva quindi ad angioplastica dell'asse tronco comune-arteria interventricolare anteriore- arteria circonflessa mediante T-stenting technique. Al termine della procedura è stato rimosso Impella CP.

Conclusioni: L'impiego combinato di supporto emodinamico percutaneo e tecniche avanzate di modifica di placca, come aterectomia rotazionale e litotrissia intravascolare, rappresenta un approccio efficace per il trattamento di angioplastiche complesse come CTO calcifiche ad alto rischio, consentendo un'adeguata preparazione del vaso.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 55
ENDOCARDITI (VALVULOPATIE)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INTERVENTISTICA STRUTTURALE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE) (IMAGING CARDIOVASCOLARE)

INFECTIVE ENDOCARDITIS ON PFO CLOSURE DEVICE: A DIAGNOSTIC AND THERAPEUTIC CHALLENGE

Fulvio Cacciapuoti (a), Fabio Minicucci (c), Brenno Fiorani (d), Mafalda Esposito (a), Ilaria Caso (b), Ciro Mauro (a)
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Patent foramen ovale (PFO) closure with intracardiac devices is an effective strategy for preventing paradoxical embolism and cryptogenic stroke, but rare complications such as infective endocarditis (IE) can occur, often triggered by transient bacteremia after invasive procedures. We describe a 55-year-old woman with hypertension, obesity, and prior PFO closure with an Amplatzer device, who developed IE following a dental procedure without documented antibiotic prophylaxis.

Four days post-procedure, she developed fever, vomiting, and progressive confusion. Initial work-up suggested encephalitis, but transthoracic echocardiography revealed mitral regurgitation and left atrial enlargement. Transesophageal echocardiography demonstrated a large filamentous vegetation attached

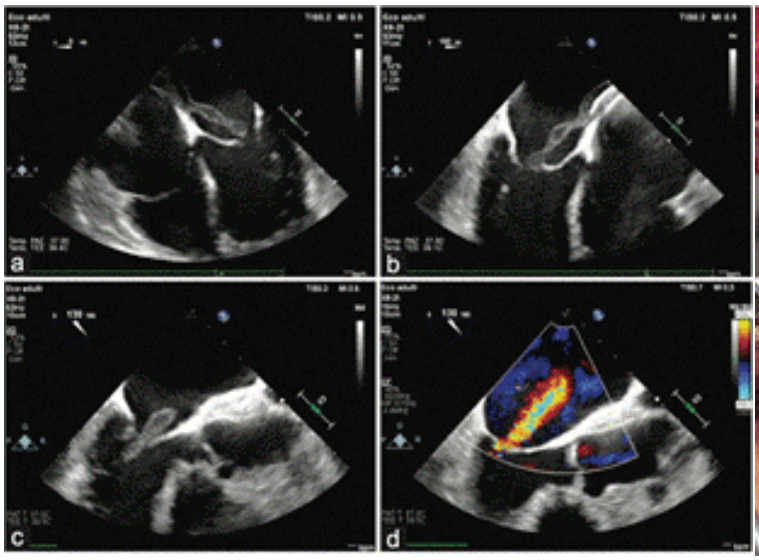


Fig. 1

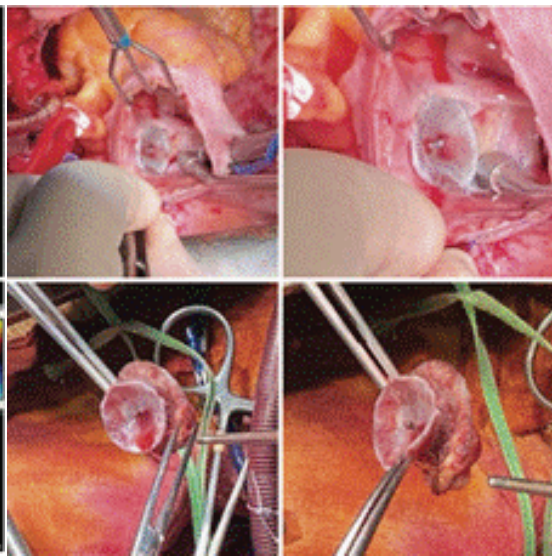


Fig. 2

Figure

to the PFO occluder (Fig. 1), interfering with mitral leaflet coaptation and causing severe functional regurgitation. Brain MRI showed multiple embolic infarcts. Blood cultures grew Staphylococcus aureus and urinary antigen testing detected Streptococcus pneumoniae, indicating a mixed infection.

The patient underwent urgent surgical removal of the infected device (Fig. 2)and mitral valve repair, addressing persistent regurgitation from annular dilation and chronic malcoaptation. Targeted intravenous antibiotics were continued postoperatively, leading to complete clinical recovery.

This case highlights the diagnostic challenge of device-related IE, which may mimic neurological conditions and evade detection on transthoracic imaging. It underscores the pivotal role of transesophageal echocardiography in early identification, the importance of a high index of suspicion in post-device patients with systemic or neurological symptoms, and the potential need for antibiotic prophylaxis in high-risk procedures. Multidisciplinary, timely surgical and medical management remains essential for favorable outcomes.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 690
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
ELETTROSTIMOLAZIONE (ARITMIE)
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

FROM HEMORRHAGIC RISK TO RHYTHM CONTROL: A DUAL-DEVICE APPROACH IN ATRIAL FIBRILLATION

Fulvio Cacciapuoti (a), Davide D´andrea (a), Massimo Russo (a), Vincenzo Fioretti (a), Rossella Gottilla (a), Ciro Mauro (a)
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Atrial fibrillation (AF) remains a major cause of stroke, yet anticoagulation is often contraindicated in patients with a history of intracerebral hemorrhage (ICH). Concurrent bradyarrhythmias further complicate management, especially when rate-control therapy induces symptomatic pauses requiring pacing. We report the case of a 61-year-old man with permanent AF, recent ICH, bradycardia, and recurrent syncope, who underwent an integrated interventional strategy. Coronary angiography revealed critical stenoses in the left anterior descending and right coronary arteries, successfully treated with percutaneous coronary intervention and drug-eluting stents. Given the prohibitive risk of anticoagulation, stroke prevention was achieved via left atrial appendage closure (LAAC) using the LAmbre™ device. Symptomatic bradycardia with prolonged asystolic pauses was managed through implantation of an Aveir™ leadless pacemaker. Both procedures were guided by multimodal imaging, including transesophageal echocardiography and computed tomography, to optimize device selection, positioning, and safety. The interventions were completed without complications (Fig. 1), and the patient was discharged on dual antiplatelet therapy in stable condition.

This case underscores the value of combining LAAC and leadless pacing as a tailored solution for high-risk AF patients with contraindications to long-term anticoagulation and coexisting bradyarrhythmias. The LAmbre device provided secure appendage closure with reduced embolic risk, while the Aveir pacemaker ensured reliable rate control while avoiding the complications of transvenous leads and generator pockets. The multidisciplinary approach, supported by advanced imaging, demonstrates how dual device strategies can simultaneously address thromboembolic prevention, rhythm management, and ischemic burden in complex AF patients.

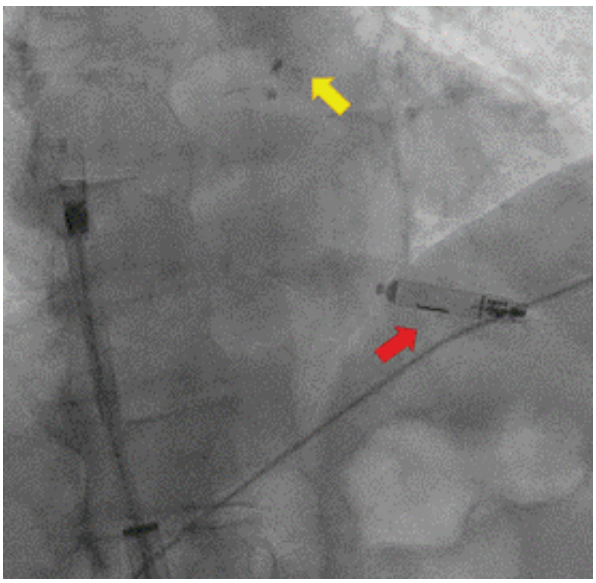


Figure 1

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 276
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT)
(IMAGING CARDIOVASCOLARE)

STENT EXPANSION OF SELF-EXPANDING TRANSCATHETER HEART VALVES ACROSS THE CARDIAC CYLCE: INSIGHTS FROM THE REACCESS 2 STUDY

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(f) UNIVERSITA' DEGLI STUDI DI ENNA "KORE", ENNA, ITALY

BACKGROUND: Due to nitinol stent properties, self-expanding transcatheter heart valves (THVs) have the potential to adapt their frames to native annular dimension excursions during the cardiac cycle and therefore to maintain the physiological relevance of this behaviour.

AIMS: To assess the variations of THV frame dimensions during the cardiac cycle.

METHODS: Patients undergoing transcatheter aortic valve replacement (TAVR) with self-expanding THV platforms enrolled in the REACCESS2 trial were considered. Patients with post-TAVR 4-dimensional computed tomography (4-D CT) assessment not eligible for stent frame analysis were excluded from the analysis. The THV frame dimensions were assessed at three levels: inflow edge, native virtual basal ring (VBR) and bioprosthetic leaflets plane (BLP). Measurements were performed in systolic and diastolic phase acquisitions for each patient. Stent expansion was reported as the difference among systolic and diastolic measurements.

RESULTS: Among a total of 127 patients, 83 patients were considered eligible for the present analysis. 49 and 34 patients received Evolut and Acurate Neo2 THV, respectively. Stent expansion was encountered at VBR (median perimeter variability 0.30 mm) and BLP (median perimeter variability 0.25 mm) levels, but not at the inflow level (median perimeter variability -0.05 mm). Acurate Neo2 had greater variability compared to Evolut THVs (VBR median perimeter variability 0.50 mm vs. 0.10 mm, p=0.02; BLP median perimeter variability 0.60 mm vs. 0.20 mm, p=0.05).

CONCLUSIONS: Self-expanding THVs showed dynamicity across the cardiac cycle with stent expansion in systole at VBR and BLP levels. Acurate Neo2 had greater stent variability compared to Evolut THV.

KEYWORDS: THV, self-expanding, cardiac cycle, frame dynamics, expansion

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 145
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE) INTERVENTISTICA STRUTTURALE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

INCIDENCE AND PREDICTORS OF COMPLICATIOS AFTER TRANSCATHETER AORTIC VALVE IMPLANTATION (TAVI) ACCORDING TO VARC 3-CRITERIA: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Introduction: Despite continuous advancements in devices and procedural techniques, Transcatheter Aortic Valve Implantation (TAVI) is still associated with a range of complications that may significantly affect outcomes. The Valve Academic Research Consortium (VARC) in 2021 renewed the classification of TAVI procedural complications introducing the VARC-3 criteria but only few data are currently available testing their prognostic utility.

Methods: We conducted a systematic literature review and meta-analysis including studies reporting data on complications after TAVI according to VARC-3 criteria from 2021 to 2025. The primary endpoint was the incidence all-cause mortality at latest available follow-up, whereas the major complications defined according to VARC-3 criteria and predictors of adverse events were the secondary ones.

Results: 57 studies encompassing 73,588 patients were included. The average age of our cohort was 81.7 years (IQR 80.5-82.0), 51.7% being women, with preserved ejection fraction (55.5%) and at low-to-moderate surgical risk profile (STS PROM 4.1%). Technical and 30-days device success were achieved in 95% and 90% of cases, respectively, whereas 30-days early safety rate was 66%. At average 12 months' follow-up (IQR 1-24) all-cause mortality occurred in 10.2% cases, while periprocedural death occurred in 3%. Permanent pacemaker implantation (13%) was the most frequent complication, followed by type ≥2 bleeding (9.7%) AKI stage 3-4 (4.7%), major vascular events (4.3%) and stroke (3.0%). Moderate or greater paravalvular regurgitation (PVR) was reported in 4% of cases while moderate-to-severe prosthesis-patient-mismatch (PPM) occurred in 8%. Stage 3 or 4 acute kidney injury (AKI), moderate or greater PVR, type ≥2 bleeding, non-structural valve dysfunction and STS score were independent predictors of all-cause mortality at 12 months, while eccentric or severe aortic calcifications predicted PVR. Meta-regression identified PPM, chronic obstructive pulmonary disease (COPD), stroke, stage 3 and 4 AKI, and MI to be associated with higher mortality, while transfemoral access was protective.

Conclusions: In the modern era, TAVI demonstrates high procedural success and short-term device performance, reporting non-negligible complication rates according to VARC-3 criteria, since even minor complications are now considered for their prognostic significance. Severe and eccentric aortic valve calcification predicted PVR, while AKI, non-structural valve dysfunction, COPD, periprocedural stroke and myocardial infarction were associated with higher all-cause mortality.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 285
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
TROMBOSI E COAGULAZIONE (ATEROTROMBOSI)
CARDIOPATIE CONGENITE NELL´ADULTO
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE)
(IMAGING CARDIOVASCOLARE)

IMPATTO CLINICO E PROGNOSTICO DELLO SHUNT RESIDUO A 6 MESI DOPO CHIUSURA PERCUTANEA DI PFO: RISULTATI DI UNO STUDIO RETROSPETTIVO

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Background: Il forame ovale pervio (PFO) rappresenta una comune anomalia del setto interatriale, presente fino al 25% della popolazione generale. In individui predisposti, il PFO può costituire una via di passaggio per emboli venosi verso il circolo arterioso sistemico, contribuendo all'insorgenza di eventi neurologici, come attacchi ischemici transitori (TIA) o stroke criptogenetico. La chiusura percutanea del PFO si è dimostrata superiore alla sola terapia medica in studi randomizzati su pazienti selezionati. Tuttavia, la persistenza di uno shunt residuo anche mesi dopo la procedura non è rara. L'impatto clinico di questa condizione è ancora controverso: mentre alcuni lavori riportano una possibile associazione con recidive neurologiche o sintomi quali l'emicrania, altri non confermano tali correlazioni. L'obiettivo del presente studio è descrivere le caratteristiche cliniche e procedurali dei pazienti sottoposti a chiusura percutanea di PFO e valutare se la presenza di shunt residuo a 6 mesi sia associata a un aumento del rischio di TIA, stroke o emicrania.

Obiettivi: Valutare l'impatto prognostico dello shunt residuo a 6 mesi, esaminandone l'associazione con eventi neurologici quali TIA, emicrania e stroke.

Metodi: È stata condotta un'analisi retrospettiva su 166 pazienti sottoposti a chiusura percutanea di PFO presso il nostro centro, suddivisi in due gruppi in base alla presenza di shunt residuo a 6 mesi (n = 86 assente, n = 57 presente). Lo shunt residuo è stato documentato tramite ecocontrastografia transcranica o transesofagea e classificato come assente, lieve, moderato o severo. Gli endpoint considerati includevano TIA, emicrania e un composito neurologico. Sono state eseguite analisi univariate e modelli di regressione logistica penalizzata (modello di Firth) per ciascun endpoint.

Risultati: Il 34% dei pazienti presentava uno shunt residuo a 6 mesi. Questo gruppo mostrava una dimensione mediana del PFO significativamente maggiore (4.00 mm vs 3.00 mm; p = 0.004), mentre il diametro del device era solo tendenzialmente più elevato. L'emicrania al follow-up è risultata lievemente meno frequente nei pazienti con shunt (24.6% vs 27.9%; p = 0.703). Non sono emerse differenze significative

nell'incidenza di TIA (p = 0.399) o dell'endpoint composito (p = 1.000). Le regressioni penalizzate hanno confermato l'assenza di associazione significativa tra shunt residuo e TIA (OR 4.59; IC 95% 0.24–675.08; p = 0.31), emicrania (OR 1.19; IC 95% 0.58–2.46; p = 0.63) o endpoint composito (OR 0.93; IC 95% 0.44–1.95; p = 0.85).

Conclusioni: Lo shunt residuo a 6 mesi dopo chiusura percutanea di PFO si associa a caratteristiche anatomiche più complesse ma non a un aumento statisticamente significativo di eventi neurologici in follow-up. Sono necessari studi prospettici con follow-up prolungato e adeguata potenza per chiarire il significato clinico dello shunt residuo.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 484
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)

CONFRONTO TRA I DISPOSITIVI BASATI SU SUTURA E BASATI SU PLUG DI COLLAGENE PER LA CHIUSURA DELL'ACCESSO VASCOLARE FEMORALE DOPO PROCEDURA DI SOSTITUZIONE TRANSCATETERE DELLA VALVOLA AORTICA

Gabriele Carciotto (a), Gabriele Monciino (b), Roberto Licordardi (b), Francesco Pallante (b), Federico Giannino (b), Giuseppe Venuti (c), Andrea Picci (c), Fabrizio Ceresa (d), Francesco Patanè (d), Antonio Micari (a), Giampiero Vizzari (a)
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Background: Le complicanze vascolari rappresentano un importante determinante prognostico nei pazienti sottoposti a TAVI transfemorale. La scelta del dispositivo di chiusura rimane oggetto di dibattito, con evidenze contrastanti circa sicurezza ed efficacia.

Obiettivi: Valutare e confrontare gli outcome clinici associati all'utilizzo di MANTA e ProGlide in una coorte reale di pazienti sottoposti a TAVI transfemorale.

Metodi: Sono stati inclusi 148 pazienti sottoposti a TAVI transfemorale presso il nostro centro (106 con ProGlide e 42 con MANTA). Sono stati analizzati caratteristiche cliniche, esiti procedurali e complicanze secondo i criteri VARC-3. L'analisi statistica è stata condotta mediante test univariati e modelli multivariati di regressione di Cox.

Risultati: I due gruppi risultavano ben bilanciati per le caratteristiche basali, sebbene i pazienti trattati con MANTA presentassero BMI (31.2±5.3 vs 27.4±4.6; p=0.036) e valori di emoglobina pre-procedurale più elevati (12.6±1.8 vs 11.7±1.9; p=0.021). Non sono state osservate differenze significative in termini di mortalità (21% vs 22%; p=0.885), complicanze vascolari maggiori o sanguinamenti periprocedurali (riduzione Hb: -2.10 vs -2.20 g/dl; p=0.963). Tuttavia, al follow-up, il gruppo MANTA presentava un'incidenza maggiore di sanguinamenti minori (57% vs 33%; p=0.045). La creatinina pre-procedurale è risultata predittore indipendente di mortalità (p=0.019).

Conclusioni: In questa coorte real-world di pazienti sottoposti a TAVI transfemorale, MANTA ha mostrato un profilo di sicurezza ed efficacia comparabile a ProGlide, pur associandosi a un aumento significativo di sanguinamenti minori al follow-up. Questi risultati suggeriscono la necessità di una selezione individualizzata del dispositivo e di ulteriori studi prospettici per guidare le decisioni cliniche dell'Heart Team.

CardioSic

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 194
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

PRESERVED HAND PERFUSION AS RATIONALE FOR DISTAL RADIAL ARTERY ACCESS: A LASER DOPPLER STUDY

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Background: The distal radial artery access has been proposed as an alternative route to overcome some limitations of conventional radial access, of which radial artery occlusion is one of the most frequent complications. This study aimed to evaluate the impact of distal versus proximal radial artery occlusion on hand perfusion by simulating both conditions and comparing their effects.

Methods: A prospective, observational study was conducted on 50 healthy volunteers. Laser Doppler perfusion imaging with PeriScan PIM III device (Perimed AB, Järfälla, Svezia) was employed to quantify palmar perfusion under three conditions: baseline, simultaneous occlusion of the distal radial and ulnar arteries, and simultaneous occlusion of the proximal radial and ulnar arteries. The hand perfusion was quantified in terms of perfusion units (PU).

Results: Simultaneous proximal radial and ulnar occlusion reduced perfusion by ~90% (58.18 ± 23.18 PU vs. 5.91 ± 4.48

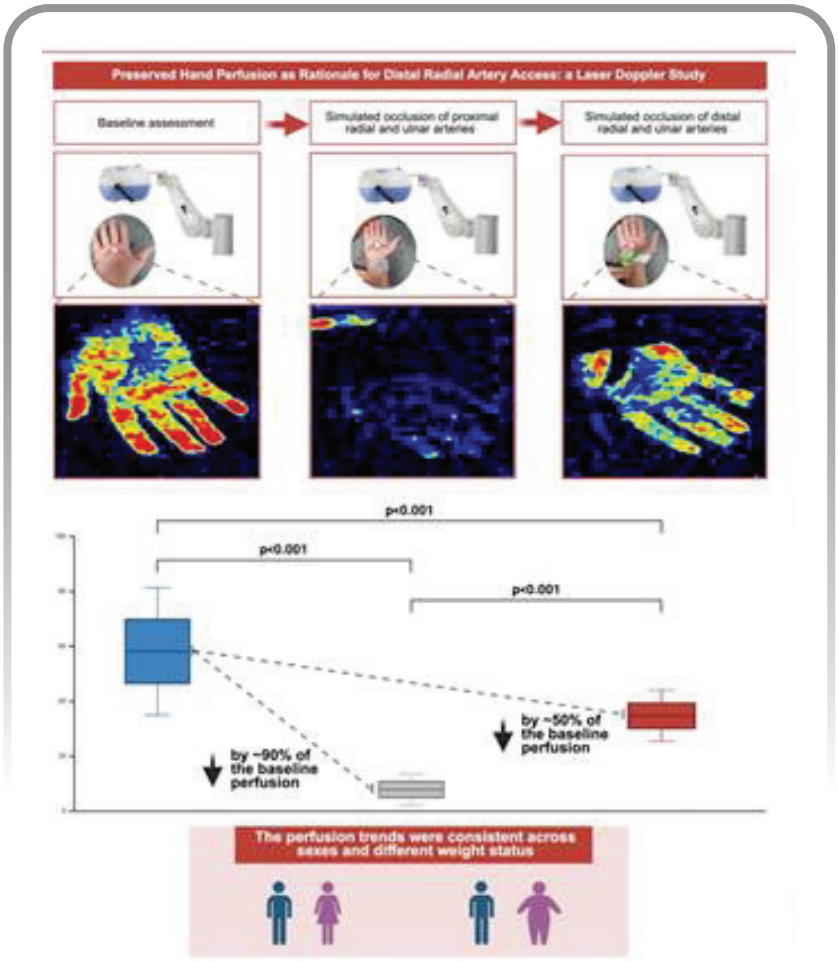


Figure 1

PU, p<0.001), while distal radial artery occlusion with absent ulnar flow reduced palmar perfusion by ~50% of baseline (58.18 ± 23.18 PU vs. 28.46 ± 12.69 PU, p<0.001). Proximal radial occlusion impaired perfusion more than distal occlusion (28.46 ± 12.69 PU vs. 5.91 ± 4.48 PU, p<0.001), suggesting that the superficial palmar branch of the radial artery, proximal to the distal puncture site, contributes significantly to hand perfusion. No significant differences were observed between sexes or between normal-weight and overweight/obese subjects.

Conclusions: This is the first study to demonstrate, through perfusion imaging, the anatomical rationale supporting distal radial artery access. The preserved perfusion following distal radial artery occlusion confirms the safety of this technique, particularly in cases of compromised ulnar flow.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 650
DIAGNOSTICA INVASIVA INTRAVASCOLARE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
FISIOLOGIA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
MINOCA (MYOCARDIAL INFARCTION WITH NORMAL CORONARY ARTERIES)
(CARDIOPATIA ISCHEMICA)
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

MYOCARDIAL BRIDGE, VASOSPASTIC ANGINA AND HEALED PLAQUE: A COMPLEX INTERPLAY

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A 55-year-old woman with a history of hypertension and dyslipidemia (LDL cholesterol: 183 mg/dL) presented to the emergency department with recurrent episodes of nocturnal angina. The electrocardiogram revealed inconclusive ST-segment changes. Laboratory tests revealed a mild elevation of troponin biomarker (440 ng/L). Transthoracic echocardiography showed no regional wall motion abnormalities of the left ventricle. The patient was diagnosed as non-ST elevation myocardial infarction (NSTEMI) and was admitted to the Coronary Care Unit (CCU) for further diagnostic evaluation. Coronary angiography did not reveal critical stenoses, except for a myocardial bridge at the mid left anterior descending (LAD) artery (Fig. 1). The scenario was depicted as a myocardial infarction with non-obstructive coronary arteries (MINOCA). According to recent guidelines on acute coronary syndrome (ACS) management, the patient underwent to an integrated functional (of both the epicardial vessels and the coronary microcirculation) and imaging assessment to achieve a final diagnosis. The #FullPhysiology approach on the LAD branch showed a functional microvascular dysfunction (CFR: 1.2, IMR: 15, Fig. 2). Therefore, acetylcholine testing was performed, followed by a subocclusive vasospasm at low dose (20 mcg), right at the level of the myocardial bridge (Fig. 3). Subsequently, to complete the assessment, the patient underwent optical coherence tomography (OCT) assessment on the LAD artery to confirm the presence of the bridge and to better characterize any plaques that might not be visible on angiography.



Figure 1

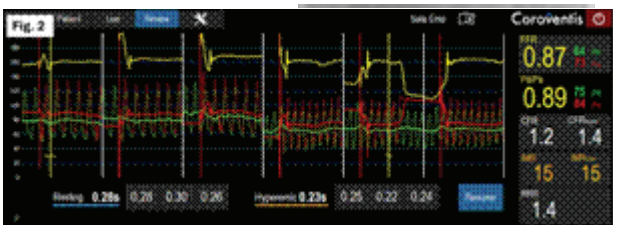


Figure 2

The OCT revealed a multilayer image and high backscatter suggesting a healed plaque in the intramyocardial vascular segment, likely undergone vasospasm. Final diagnosis was vasospastic angina, with a focal spasm at the level of the myocardial bridge, where a healed plaque further contributed to narrowing the LAD lumen (Fig. 4). The clinical course was uneventful, and the patient was discharged on Diltiazem 60 mg TID (stopping the previous beta-blocker therapy) with a strong lipid lowering therapy with Rosuvastatin 20 mg QD, Ezetimibe 10 mg QD and Evolocumab 140 mg every 2 weeks. Myocardial bridges are areas with endothelial dysfunction, where chronic spasm might eventually cause that focal damage of healed appearance at the OCT assessment. This case highlights the need for an integrated functional and intracoronary imaging-based complete assessment to achieve a definitive diagnosis in the MINOCA scenario. Timely chosen therapy could improve quality of life and prognosis.

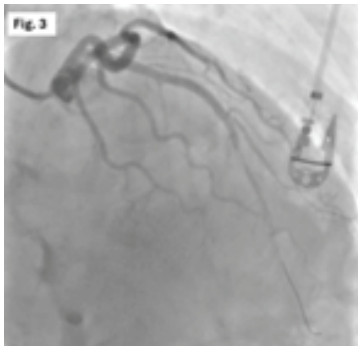


Figure 3

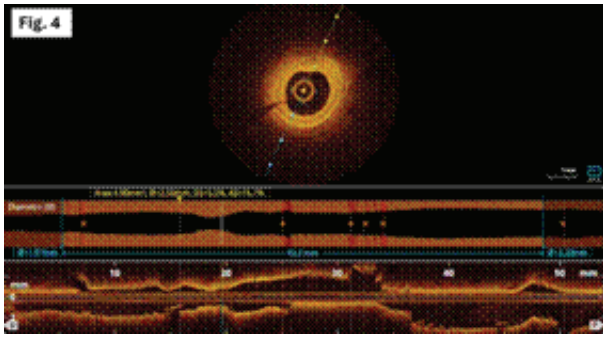


Figure 4

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 651
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PIASTRINE E TERAPIA ANTIAGGREGANTE (ATEROTROMBOSI)
INFARTO STEMI (CARDIOPATIA ISCHEMICA)
DIAGNOSTICA INVASIVA INTRAVASCOLARE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT)
(IMAGING CARDIOVASCOLARE)

PLAQUE EROSION IN A 34-YEAR-OLD STEMI PATIENT: A COMPLEX THERAPEUTIC DECISION

Domenico Simone Castiello (a, b), Alberto Polimeni (a, c), Letizia Rosa Romano (a), Vincenzo Racco (a), Francesco Greco (c), Ciro Indolfi (a), Antonio Curcio (a)
(a) DEPARTMENT OF PHARMACY, HEALTH AND NUTRITIONAL SCIENCES, UNIVERSITY OF CALABRIA; (b) DEPARTMENT OF ADVANCED BIOMEDICAL SCIENCES, UNIVERSITY OF NAPLES FEDERICO II; (c) DIVISION OF INTERVENTIONAL CARDIOLOGY, ANNUNZIATA HOSPITAL OF COSENZA

A 34-year-old man with a negative family history for coronary artery disease (CAD) and without known major cardiovascular events presented to the emergency department with severe chest pain and diaphoresis. The electrocardiogram revealed ST-segment elevation in precordial leads, then the patient was diagnosed as anterior ST-elevation myocardial infarction (STEMI) and was admitted for urgent coronary angiography. A subocclusive stenosis at the mid left anterior descending (LAD) artery was found followed by a complete thrombotic occlusion (TIMI thrombus grade 5) (Fig. 1). Considering this finding, a pharmacological therapy with unfractionated heparin (UFH) combined with mechanical thrombectomy with the CAT-RX Penumbra (Indigo) device were performed (Fig. 2). Therefore, the angiographic control showed a patent LAD, with no significant stenosis (Fig. 3). So, it was decided to not use balloons nor implant any stent device, and an intracoronary imaging assessment was planned some days later aiming to reveal any plaques that might not be visible on angiography. Subsequently, 5 days later, the patient underwent optical coherence tomography (OCT) assessment which showed the of presence of intraluminal thrombus spots attached to an intact and visualized plaque at the mid LAD. (Fig. 4). Final diagnosis was definite plaque erosion and the decision of conservative management with only pharmacological therapy was confirmed. During the

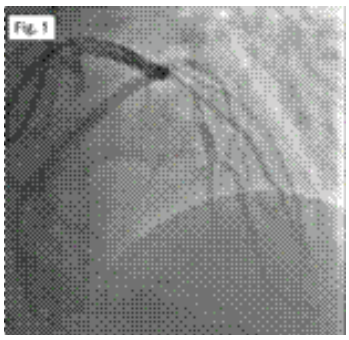


Figure 1

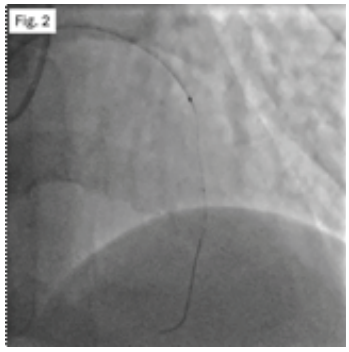


Figure 2

hospitalization a significant dyslipidemia was found (LDL-cholesterol: 213 mg/dl). Furthermore, considering the really young age, a complete thrombophilia screening and drug testing were performed, but both of them showed negative results. The clinical course was uneventful, and the patient was discharged on dual antiplatelet therapy (DAPT) with Aspirin 100 mg qd and Ticagrelor 90 mg bid, with a strong lipid lowering therapy with Rosuvastatin 20 mg qd, Ezetimibe 10 mg qd and Evolocumab 140 mg every 2 weeks. At 1-year follow-up the patient was asymptomatic, without any adverse clinical event and the coronary CT scan showed epicardial coronary vessels with no significant stenoses (Fig. 5). Plaque erosion, a distinct histopathological and clinical entity, accounts for over 30% of acute coronary syndromes (ACS). Early evidence suggests that in patients with ACS caused by plaque erosion,

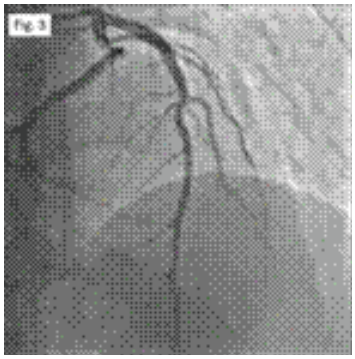


Figure 3

antithrombotic therapy without stenting may be a safe and effective option. This case supports this evidence, showing a successful management strategy in a really young patient.

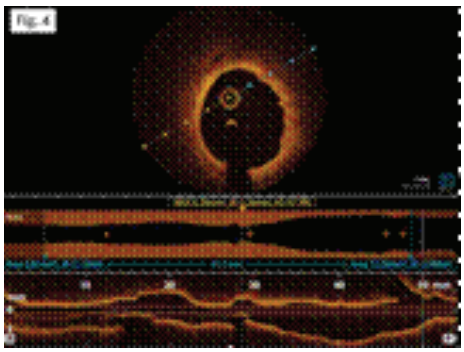


Figure 4

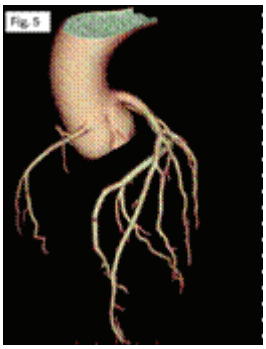


Figure 5

CardioSic

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 171
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

LONG-TERM FOLLOW-UP AFTER MITRAL VALVE TRANSCATHETER EDGE-TO-EDGE REPAIR

Mihail Celeski (a), Antonio Popolo Rubbio (a), Antonio Sisinni (a), Marco Guerrini (a), Nedy Brambilla (a), Marta Barletta (a), Chiara Mainardi (a), Maurizio Tusa (a), Luca Arzuffi (a), Francesco Bedogni (a), Luca Testa (a)
(a) IRCCS POLICLINICO SAN DONATO, MILAN, ITALIA

Introduction: The treatment of patients with severe mitral regurgitation (MR) has been entirely revolutionized by transcatheter mitral edge-to-edge repair (M-TEER). Even though survival data has been published by several studies, there is currently limited evidence regarding long-term consequences and survival trends as well as death causes in real-world registries.

Methods: Consecutive patients undergoing M-TEER with the Mitraclip device for severe MR between February 2016 and June 2021 in 1 interventional center in Northern Italy were included. The main objective of this study was to investigate the long-term causes of death after M-TEER and to compare the baseline characteristics of patients who survived with those who did not, with the goal of identifying predictors of long-term mortality. Secondary aims involved analyzing differences in mortality rates and causes of death across calendar periods, as well as by etiology and risk categories defined by the MitraScore.

Results: During median follow-up time of 3.3 years (maximum 8.5), among 218 patients that underwent M-TEER, there were 130 deaths (59.6%), with 45% due to cardiovascular (CV) cause, and 88 survived patients. There were no differences in terms of cardiac and non-cardiac mortality between the first three years (2016-2019) and those after. After adjusting for possible confounders, ischemic secondary MR etiology, prior Heart Failure, TAPSE/SPAP ≤0.36, MitraScore and at least moderate tricuspid regurgitation where independent predictors of overall mortality. Patients with low risk MitraScore had lower all-cause and cardiovascular mortality compared to those at high risk (48.6% vs 83.9%, p<0.001 and 28.9% vs 42.1%, p=0.005, respectively). After stratification for MR etiology, those with secondary MR had higher all-cause and CV mortality, than patients with primary MR (71.3% vs 57.8%, p=0.013, 47% vs 27.9%, p=0.011, respectively).

Conclusions: M-TEER using the MitraClip device has shown sustained effectiveness and safety, with consistent long-term survival rates and notable functional gains among survivors. Patients with long-term survival rates have residual mortality risk similar to the general population. Although mortality outcomes vary depending on the etiology of MR, the MitraScore continues to serve as a dependable tool for risk evaluation, supporting the effective management of MR patients and minimizing unnecessary interventions.

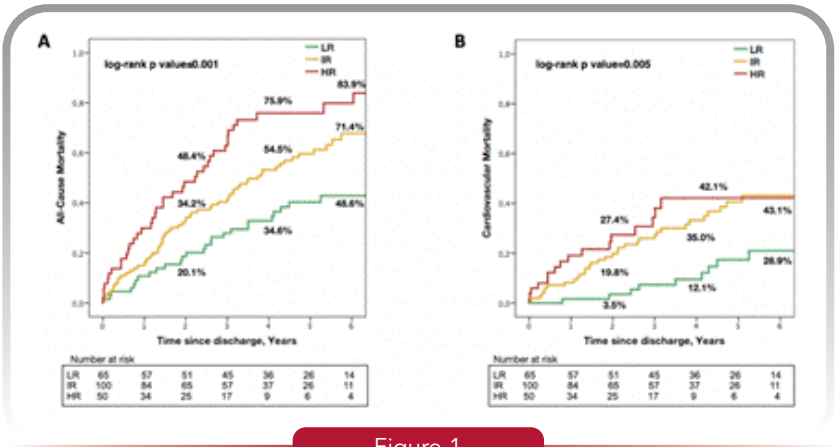


Figure 1

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 172
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)

SNARE-ASSISTED TRANSCATHETER AORTIC VALVE REPLACEMENT FOR MIXED BICUSPID AORTIC VALVE DISEASE

Mihail Celeski (a), Marco Guerrini (a), Antonio Popolo Rubbio (a), Antonio Sisinni (a), Nedy Brambilla (a), Luca Testa (a), Francesco Bedogni (a)
(a) IRCCS POLICLINICO SAN DONATO, MILAN, ITALY

Background: Transcatheter aortic valve replacement (TAVR) is expanding to include younger, lower-risk patients with complex anatomical challenges, like bicuspid aortic valve disease and a horizontal aorta. These complexities have driven the development of specialized techniques for deploying self-expandable (SE) valves. Here, we present case of a 71-year-old man with no prior cardiovascular events admitted to our department for dyspnea, NYHA III. He had a history of poliomyelitis with lower-limb paralysis and underdevelopment and prior ischemic stroke.

Clinical Case: Transthoracic echocardiogram (TTE) showed severe high-flow aortic stenosis in a calcified bicuspid valve associated with moderate aortic regurgitation. Despite the low surgical risk, given the neurological barrier to participation in cardiac rehabilitation and patient's preferences, after heart team evaluation, we opted for TAVR. The pre-operative computed tomography (CT) showed severe calcification of aortic valve cusps with 25.8 mm aortic annulus, appropriate coronary height and sinus of Valsalva diameters, and diameter of femoral arteries bilaterally nearly 4 mm. Level of implantation at the raphe (LIRA) method was used to assess the bicuspid type I L-R valve showing a perimeter of 79 mm. Thus, Evolute Pro Plus 29 mm prosthesis was chosen. The valve was predilated with balloon Valver 20 x 40 mm. However, there were difficulties in advancing the delivery system with a risk of aortic arch lesion, even when using major support with Amplatz stiff wire in left ventricle and Lunderquist wire inside the pigtail. With the snare in place before valve crossing, and providing countertraction, the TAVR delivery was advanced, and the valve was successfully deployed. Post-procedural TTE showed mean gradient 5.7 mmHg, mild paravalvular leak, and no pericardial effusion. After 3 months, the patient had a better quality of life, no significant symptoms, and no major adverse cardiovascular or cerebrovascular events.

Discussion and conclusion: In raphe-type bicuspid aortic valve disease, a novel technique for determining the level at which TAVR prosthesis anchoring is anticipated to take place is the LIRA plane. Moreover, the use of ipsilateral or contralateral snare catheter (SC) applying an external traction force to the delivery system, can increase device trackability. While new technological refinements of SE valves are expected to increase the device trackability, in special scenarios the combined use of SC is a viable option to be considered either in planned or bail-out situations to obtain a successful TAVR. However, specific scores are necessary to identify patients that necessitate SC during the pre-procedural evaluation.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 174
PATOLOGIA DELLA VALVOLA TRICUSPIDE (VALVULOPATIE)
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE
(IMAGING CARDIOVASCOLARE)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE)
(IMAGING CARDIOVASCOLARE)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)

HYBRID IMAGING APPROACH FOR GUIDANCE OF TRANSCATHETER TRICUSPID VALVE REPLACEMENT

Mihail Celeski (a), Marco Guerrini (a), Antonio Popolo Rubbio (a), Nedy Brambilla (a), Marta Barletta (a), Maurizio Tusa (a), Antonio Sisinni (a), Chiara Mainardi (a), Luca Testa (a), Francesco Bedogni (a)
(a) IRCCS POLICLINICO SAN DONATO, MILAN, ITALY

Background: Tricuspid regurgitation (TR) continues to provide a substantial clinical challenge, especially in high-risk patients with severe symptoms. Transcatheter tricuspid valve replacement (TTVR) has recently emerged as a potential and novel therapy option for individuals with at least severe TR. However, the effectiveness of TTVR is strongly reliant on accurate imaging, with transesophageal echocardiography (TEE) serving as the gold standard for assessing tricuspid valve morphology and guiding device placement. However, in some cases imaging guiding may be challenging.

Clinical Case: Here we present a rare case of a 74-year-old female patient, with multiple comorbidities and prior heart surgery, that presented to the emergency department due to worsening of the exertional dyspnea and signs of right heart failure. A trans-thoracic echocardiography (TTE) showed preserved left ventricular ejection fraction, dilated right ventricle (RV) with preserved function and severe right atrium dilation. There was an atrial and lead-associated type B TR and type I morphology with severe tricuspid annulus (TA) dilation. Pre-procedural TEE confirmed massive TR (3D vena contract 98 cm2 and systolic reversal flow in suprahepatic veins) with antero-septal jet, maximal coaptation gap 14 mm, and pacemaker lead in the posterior-septal commissure not contributing to TR. A right heart catheterization was performed reporting mild pre-capillary pulmonary hypertension. Considering the high-surgical risk and comorbidities, after heart team discussion, we opted for transcatheter treatment of TR. After addition of a cardiac computed tomography scan, the patient was confirmed to be anatomically suitable for TTVR using the EVOQUE device. Although TEE provided adequate pre-procedural imaging views for assessing TR severity and morphology, TEE image quality deteriorated during the procedure. This was due to shadowing from the delivery system, shadowing from mitral and aortic prostheses, and the patient's supine position. As a result, TTE was employed as a bailout strategy. Prior to anchor exposure, TTE from the subcostal view was performed to confirm adequate image quality for multiplanar reconstruction (MPR) and assessment of leaflet interaction. After retracting the capsule and exposing the anchors, MPR was performed from subcostal view using TTE, to adjust EVOQUE position and assess the correct native leaflets engagement into the anchors. Once full engagement and valve perpendicularity to TA plane was confirmed, Evoque valve 52 mm was successfully deployed. At 30 days follow-up the patient presented with significantly improved functional capacity and health status.
There were no major adverse cardiovascular events. Control TTE showed inverse RV remodeling with preserved function, mild central jet and no paravalvular leak.

Discussion: TTVR with Evoque system is an effective, feasible procedure even in lead-associated TR, leading to significant improvement in patient's symptoms, quality of life and RV inverse remodeling. In patients with challenging procedural-TEE image quality, 3D ICE may represent a suitable alternative where available, particularly in centers experienced with intracardiac imaging. However, multiplane 2D/3D TTE approach has potential utility for imaging guidance of TTVR, mainly supporting TEE via MPR and leaflet engagement assessment, or perhaps in patients with absolute TEE contraindication and when ICE is not available. Further research is required for establishing the utility of TTE and hybrid imaging methods in TTVR guiding.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 250
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)
TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT)
(IMAGING CARDIOVASCOLARE)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE)
(IMAGING CARDIOVASCOLARE)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)

LEFT ATRIAL DISSECTION

Mario Cristiano (b), Giuseppe Santoro (a), Martina Pucci (b, d), Antonio Totaro (b, c), Arturo Liguori (c), Cristina Lillo (c), Paolo Masiello (b), Francesco Cafarelli (b), Severino Iesu (b), Rodolfo Citro (b)
(a) PEDIATRIC AND ADULT CONGENITAL CARDIOLOGY, TUSCANY FOUNDATION GABRIELE MONASTERIO, MASSA, ITALY; (b) DEPARTEMENT OF CARDIOVASCULAR SCIENCES, RESPONSIBLE RESEARCH HOSPITAL, CAMPOBASSO, ITALY; (c) DEPARTMENT OF MEDICINE AND HEALTH SCIENCES "VINCENZO TIBERIO", UNIVERSITY OF MOLISE, CAMPOBASSO, ITALY; (d) DEPARTMENT OF CLINICAL MEDICINE AND SURGERY, FEDERICO II UNIVERSITY, NAPLES, ITALY

Background: Left atrial dissection (LatD) is an extremely rare and potentially life-threatening complication of mitral valve surgery. Partial AV separation is assumed to be the mechanism for its development.

Case report: A 60-year-old woman developed LatD after mitral valve replacement. Postoperative transesophageal echocardiography (TEE) revealed a pulsatile, anechogenic neocavity into the left atrium (LA) consistent with LatD. An entry tear was detected on the posteromedial side of the mitral annulus with high-velocity systolic flow rising from the left ventricle (LV) actively fueling the false atrial lumen (FL). Cardiac computed tomography (CT) with 3D and multiplanar

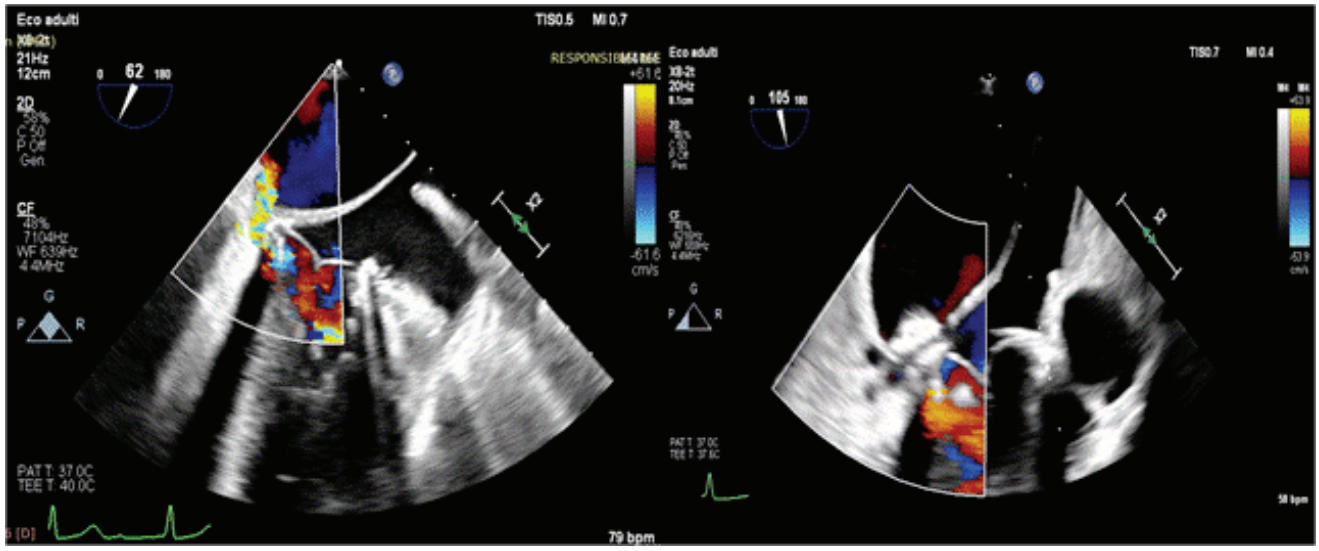


Figure 1

reconstruction confirmed a contained rupture of the atrioventricular groove with a serpiginous tunnel opening into the false lumen. Given the prohibitive surgical risk, a muscular septal occluder was implanted percutaneously with transaortic approach, achieving complete closure. The patient was discharged uneventfully and remained asymptomatic at 1-month follow-up.

Discussion: LatD after mitral surgery represents a surgical challenge due to the fragility of the atrial wall and the proximity to the atrioventricular junction. In this case, multimodality imaging played a pivotal role in early diagnosis, anatomical definition, procedural planning, and device sizing. The use of a muscular septal occluder allowed secure closure of the dissection entry site, avoiding high-risk reoperation.

Conclusion: To our knowledge, this is the first percutaneous closure with a septal defect closure device of an AV groove rupture leading to LatD ever performed. This case highlights the feasibility of percutaneous closure of LatD as a novel alternative to surgery in selected high-risk patients. Integration of CT and TEE is essential for accurate diagnosis, planning, and procedural success.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 408
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE
(IMAGING CARDIOVASCOLARE)

IMPELLA-SUPPORTED MITRACLIP IN CARDIOGENIC SHOCK PATIENT WITH SEVERE MITRAL REGURGITATION: A CASE REPORT

Maria Colangelo (a), Annalisa Mongiardo (a), Elvira Gerbasi (a), Cristina Nesta (a), Alessandro Ferraro (a), Vincenzo Antonio Ciconte (a)
(a) AZIENDA OSPEDALIERA-UNIVERSITARIA "R. DULBECCO" DI CATANZARO

A 76-year-old man was admitted to the cardiac intensive care unit due to cardiogenic shock by chronic coronary artery disease. Despite optimization of medical therapy, the patient had multiple hospitalizations for worsening heart failure and ventricular tachycardia. For this reason the patient had already received an Implantable Cardioverter-Defibrillator and had undergone ventricular tachycardia ablation. He presented with dyspnea on exertion for several weeks, and was subsequently transferred to our hospital for M-TEER consideration in the setting of severe mitral regurgitation. Upon arrival, transthoracic echocardiography revealed dilated left ventricle with diffuse hypokinesia and severe reduction in left ventricular systolic function indices (LVEF 20% Simpson, LVIDd/IDs 78 /64 mm) with not severe right ventricle dysfunction (TAPSE 18 mm). Effective regurgitant orifice area (EROA) by proximal isovelocity surface area was 0.40 cm2 and regurgitant volume (RV) was 55 mL. Coronary angiography showed no significant CAD requiring revascularization. Transesophageal echocardiography revealed severe functional mitral regurgitation (Fig 1) secondary to tethering of the mitral leaflets in patient who remained symptomatic despite guideline-directed medical therapy.

He also had unstable haemodynamic with a systolic arterial BP of 60 mmHg and cardiac index 1.46 L/min/m2 despite inotropic support. Due to hypotension, we decided to support mitral transcatheter edge-to-edge repair (M-TEER) with the Impella device. The MitraClip was placed between P2 and A2, with significant riduction of mitral regurgitation. residual MR was mild (Fig 2,3,4). The Impella device was weaned off in the immediate post-procedure period following an

Fig. 1-2

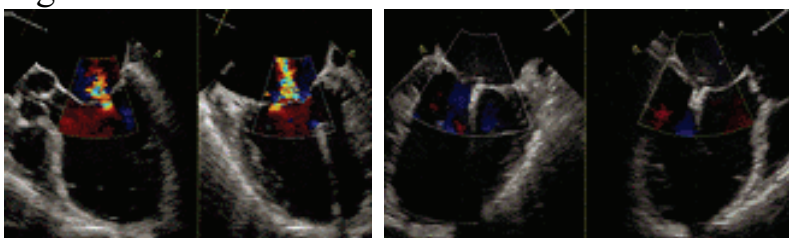


Figure 1 - 2

Fig. 3-4

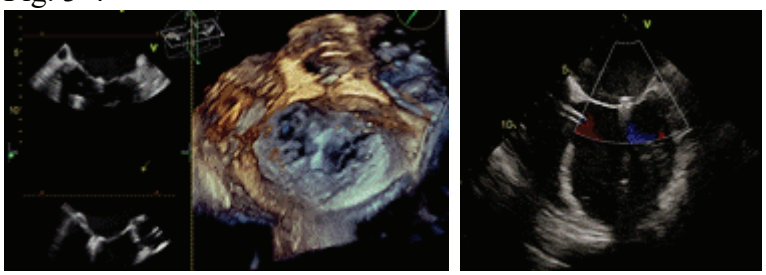


Figure 3 - 4

improvement in intracardiac haemodynamics together with mean arterial BP up to 90 mmHg. There were no complications in the post-operative period. The patient was subsequently able to be discharged on oral medical therapy for HFrEF. This case suggesting that MitraClip, supported by Impella, could be an effective strategy in patients with severe functional MR and hemodynamic instability, in order to reduce HF hospitalizations and improve quality of life, and highlights the vital importance of a collaborative heart team approach in the management of patients with cardiogenic shock.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 213
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PATOLOGIA DELLA VALVOLA TRICUSPIDE (VALVULOPATIE)
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE
(IMAGING CARDIOVASCOLARE)

POST-INTERVENTION IMPROVEMENT OF FUNCTIONAL CAPACITY IN PATIENTS WITH SEVERE TRICUSPID REGURGITATION UNDERGOING TRANSCATHETER VALVE PROCEDURES

Ailia Giubertoni (a), Luca Cumitini (a), Marco Mennuni (a), Anna Degiovanni (a), Giuseppe Patti (a)
(a) MAGGIORE DELLA CARITA' HOSPITAL, UNIVERSITY OF EASTERN PIEDMONT, NOVARA

Aims: Transcatheter tricuspid procedures have recently emerged as treatment options for patients with severe tricuspid regurgitation (TR) and heart failure who are at high surgery risk. In this setting post-intervention clinical improvement has been demonstrated, but data on improvement of functional capacity after transcatheter tricuspid procedures are lacking.

Methods: In this monocentric, prospective, observational study we enrolled patients at high surgical risk with at least severe TR and heart failure undergoing transcatheter tricuspid valve edge-to-edge repair by the PASCAL® device or valve replacement by the EVOQUE® device. Functional capacity was assessed using cardiopulmonary exercise testing (CPET), alongside clinical, laboratory, and echocardiographic parameters, at baseline and after 3 months post-intervention. Primary endpoint was change of peak oxygen consumption (VO2) by CPET at 3 months compared to baseline. Secondary endpoints included changes at 3 months vs. baseline of: other CPET parameters; TR severity by transthoracic echocardiography; New York Heart Association (NYHA) functional class; daily dose of furosemide; pro-brain natriuretic peptide (pro-BNP) levels.

Results: A total of 10 patients were enrolled, with successful device implantation in all cases. Peak VO2 measured by CPET significantly improved from 14.7±3.7 at baseline to 16.4±2.9 ml/kg/min p=0.009) at 3 moths, while peak oxygen (O2) pulse increased from 85.1±20.2% to 103.7±23.3% (p=0.022) and ventilation maximum increased from 39.9 ± 10.3 L/min to 45.7 ± 10.9 L/min (p=0.035). TR severity was significantly decreased (p=0.002), NYHA class improved (p=0.016) and the daily dose of furosemide was reduced (p=0.016). Although pro-BNP levels decreased, this change was not statistically significant. No adverse events occurred during follow-up.

Conclusions: In patients with at least severe TR and heart failure, transcatheter valve procedures were associated with improvement of cardiopulmonary functional capacity, alongside reduction of TR severity, amelioration of heart failure-related symptoms and fewer need for diuretic therapy (Figure 1).

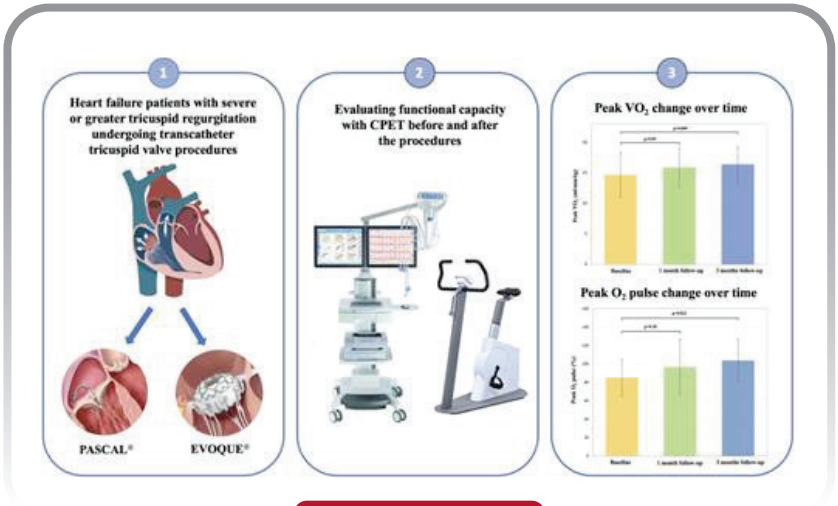


Figure 1

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 467
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INTERVENTISTICA STRUTTURALE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)

INCIDENCE OF STROKE AFTER SEVERE AORTIC STENOSIS TREATMENT: A NETWORK META-ANALYSIS COMPARING SEVERAL STRATEGIES OF INTERVENTION

Antonio Dalu (a, b), Federico Giacobbe (a, b), Marco Nebiolo (a, b), Arianna Morena (a, b), Fabrizio D´ascenzo (a, b), Francesco Bruno (a, b), Ovidio De Filippo (a, b), Federico Conrotto (a, b), Antonio Montefusco (a, b), Pierluigi Omedè (a, b), Gaetano Maria De Ferrari (a, b)
(a) DIVISION OF CARDIOLOGY, CARDIOVASCULAR AND THORACIC DEPARTMENT, CITTÀ DELLA SALUTE E DELLA SCIENZA, TURIN, ITALY; (b) DIVISION OF CARDIOLOGY, DEPARTMENT OF MEDICAL SCIENCES, UNIVERSITY OF TURIN, ITALY

Background: Transcatheter aortic valve implantation (TAVI) with third generation devices has become the standard of care for many patients with severe aortic stenosis. Stroke is a non-negligible complication after TAVI that may affect post-procedural and long-term outcomes, leading to disability. However, comparative data on neurological outcomes across different transcatheter heart valve (THV) models are limited.

Methods: A Network Meta Analysis was performed including all randomized controlled trials comparing third-generation THV, surgical aortic valve replacement (SAVR) and clinical surveillance, with available data on neurological outcomes. The primary endpoint was stroke; major adverse cardiovascular and cerebrovascular events (MACCE) were the secondary ones.

Results: A total of seven randomized trials encompassing 5,232 patients were analysed. The mean age of the study population was 80.2 years, with a slight prevalence (54%) of females. Hypertension (84.8%), dyslipidemia (63.1%), and coronary artery disease (47%) were the most prevalent comorbidities. Procedural success was achieved in 96.6% of cases, with transfemoral access used in 95%. The majority of patients received the Edwards Sapien bioprosthetic valve (40.2%), followed by Evolut R/PRO (20.7%), Acurate NEO (14.7%), and Portico (7.1%). A small subset of patients (8.7%) underwent SAVR, while 446 patients (8.6%) received clinical surveillance alone. No significant differences in the risk of stroke or MACCE were observed across the different THV types (stroke incidence rate ratio [IRR] 0.56, 95% CI 0.21–1.52; MACCE IRR 0.59, 95% CI 0.30–1.17). In contrast, clinical surveillance was associated with significantly worse outcomes for both endpoints, while SAVR was linked to an increased risk of MACCE and showed a non-significant trend toward higher stroke rates. At SUCRA analysis, PORTICO valve resulted the device with the highest probability of preventing strokes. A Sensitivity analysis restricted to THV comparisons confirmed the absence of between-device differences.

Conclusions: In this comprehensive network meta-analysis encompassing different strategies of severe aortic stenosis management no device demonstrated superiority in reducing the risk of stroke or MACCE. Among THV models, PORTICO was the highest ranking in terms of stroke prevention. Conversely, both conservative management and SAVR were associated with less favorable outcomes compared to TAVI.

CardioSic

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 265
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
CARDIOPATIE CONGENITE NELL´ADULTO
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)

LONG TERM OUTCOMES OF PATENT FORAMEN OVALE CLOSURE IN ELDERLY PATIENTS

Daniele Oreste D´atri (a), Michele Morosato (a), Carlo Gaspardone (b), Daniela Trabattoni (c), Francesco Saia (e), Massimo Mancone (f), Francesco Burzotta (i), Giuseppe Tarantini (d), Giuseppe Patti (j), Matteo Montorfano (h), Achille Gaspardone (g), Cosmo Godino (b)
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Aims: Transcatheter patent foramen ovale (PFO) closure is an established treatment for patients with PFO and cryptogenic embolism. However, main randomized trials investigating PFO closure for secondary stroke prevention excluded patients older than 60 years. As a result, limited evidence is available for population. This study aimed to investigate the clinical characteristics and long-term outcomes of elderly patients undergoing transcatheter PFO closure.

Methods and results: This retrospective multicenter registry included patients who underwent transcatheter PFO closure between between 1999 and 2013 at 13 high-volume Centers, ensuring a minimum of 10 years of follow-up. Patients receiving closure for secondary prevention of cryptogenic embolism were identified and stratified by age (<60 vs. ≥60 years). Among 1,245 included patients, 216 (17.3%) were aged ≥60 years. Elderly patients exhibited higher rates of cardiovascular risk factors and a lower Risk of Paradoxical Embolism (RoPE) score (3.9±1.0 vs. 6.7±1.4, p<0.001). In contrast, a history of migraine was more common in younger patients (33.7% vs. 21.8%, p<0.001).

Procedural success rates were high and comparable across age groups (98.6% vs. 99.2%, p=0.39). Rates of in-hospital atrial fibrillation (2.8% vs. 2.0%, p=0.50) and significant residual shunt at discharge (1.3% vs. 1.7%, p=0.75) were similarly low in both groups.
At a median follow-up of 14.5 ± 2.4 years, the incidence of the composite endpoint (stroke, transient ischemic attack, and systemic embolism) was low among elderly patients (0.28 per 100 patient-years, 95% CI 0.12–0.55) and did not differ significantly from younger patients (IRR 1.58, 95% CI 0.75–3.50, p=0.25). However, older patients exhibited a higher incidence of new-onset atrial fibrillation (0.83 vs. 0.20 per 100 patient-years, IRR 4.10, 95% CI 2.37–7.01, p<0.001) and bleeding events (0.30 vs. 0.06 per 100 patient-years, IRR 5.28, 95% CI 1.53–18.25, p=0.01).

Conclusions: In this large multicenter registry with extended follow-up, transcatheter PFO closure in older patients was safe and comparably effective to younger counterparts. Prospective data are warranted to confirm these observations and guide optimal management in this cohort.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 266
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
CARDIOPATIE CONGENITE NELL´ADULTO
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)

SEX DIFFERENCES IN CLINICAL CHARACTERICS AND OUTCOMES AFTER TRANSCATHETER PATENT FORAMEN OVALE CLOSURE

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Aims: Although transcatheter patent foramen ovale (PFO) closure is a well-established intervention for secondary prevention of cryptogenic embolism, whether outcomes differ by sex remains underexplored. We aimed to evaluate sex-based disparities in baseline characteristics, procedural outcomes, and long-term events in patients undergoing transcatheter PFO closure.

Methods and results: From 1999 to 2013, a total of 1,245 patients (694 female [55.7%] and 551 male [44.3%]) at 13 Centers underwent PFO closure for secondary prevention of cryptogenic stroke or systemic embolism. Male patients were older (49±12 vs. 46±13 years, p=0.002), whereas female patients had higher RoPE scores (6.4±1.7 vs. 6.0±1.7, p<0.001) and a greater prevalence of migraine at baseline (38% vs. 23%, p<0.001). Procedural success was high and comparable in both groups (99.0% vs. 99.3%, p=0.82). In-hospital complications were similarly low (2.4% vs. 3.4%, p=0.63).
At a median follow-up of 14.5±2.4 years, the incidence of the composite endpoint (ischemic stroke, transient ischemic attack, or systemic embolism) was not significantly different between female and male patients (0.21 vs. 0.17 per 100 patient-years, IRR 1.29, 95% CI 0.64–2.57, p=0.48).

Conclusions: In this large multicenter registry, sex did not significantly influence long-term safety and efficacy outcomes following transcatheter PFO closure for secondary prevention of cryptogenic embolism. Further prospective studies are warranted to confirm these observations and optimize patient management based on sex-specific risk profiles.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 267
DIAGNOSTICA INVASIVA INTRAVASCOLARE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INTERVENTISTICA STRUTTURALE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
CARDIOPATIE CONGENITE NELL´ADULTO (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)

EFFECTIVENESS OF INTRAPROCEDURAL GUIDANCE MODALITIES ON PFO CLOSURE OUTCOMES: INSIGHTS FROM THE PROLONG REGISTRY

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(a) VITA-SALUTE SAN RAFFAELE UNIVERSITY, MILAN, ITALY; (b) CARDIOLOGY UNIT, IRCCS SAN RAFFAELE SCIENTIFIC INSTITUTE, MILAN, ITALY; (c) IRCCS CENTRO CARDIOLOGICO MONZINO, MILAN, ITALY; (d) DEPARTMENT OF CARDIAC, THORACIC, VASCULAR SCIENCE AND PUBLIC HEALTH, UNIVERSITY OF PADUA, PADUA, ITALY; (e) UNIT OF INTERVENTIONAL CARDIOLOGY, IRCCS SAN RAFFAELE, MILAN, ITALY; (f) DIVISION OF CARDIOLOGY, S. EUGENIO HOSPITAL, ROME, ITALY

Background: Transcatheter patent foramen ovale (PFO) closure is the gold-standard treatment for patients with cryptogenic embolism and PFO. While current guidelines recommend the use of intraprocedural echocardiography, there is no consensus on the optimal imaging strategy.

Objectives: To compare the procedural and clinical outcomes of fluoroscopy-only guidance versus echocardiographic guidance—transesophageal echocardiography (TEE) or intracardiac echocardiography (ICE)—during transcatheter PFO closure.

Methods: The multicenter, retrospective PROLONG registry included 1,302 patients who underwent PFO closure between 1999 and 2013 with available data on intraprocedural guidance. Of these, 714 patients (55%) underwent TEE-guided procedures, 416 (32%) received ICE, and 172 (13%) were treated under fluoroscopy-only guidance. All patients in the fluoroscopy-only group had undergone preprocedural TEE to assess PFO anatomy.

Results: Baseline characteristics were similar across groups, including atrial septal aneurysm (34%, 33%, and 37% in the TEE, ICE, and fluoroscopy-only groups, respectively; p=0.685) and baseline severe right-to-left shunt (58%, 58%, and 49%, respectively; p=0.143). Procedural success was high across all groups (99.0% for TEE, 99.7% for ICE, and 98.2% for fluoroscopy-only; p=0.163). Echocardiographic guidance was associated with significantly shorter procedure duration (33, 28, and 48 minutes for TEE, ICE, and fluoroscopy-only; p<0.001), lower fluoroscopy time, reduced radiation exposure (11, 7.1, and 31 Gy·cm²; p<0.001), and less frequent contrast use (28%, 17%, and 94%; p<0.001). In-hospital and long-term complication rates, including new-onset atrial fibrillation, residual shunt, and recurrent embolic events, were low and comparable across groups.

Conclusions: All intraprocedural imaging strategies for PFO closure were safe and effective. However, echocardiographic guidance was associated with significant procedural advantages and may offer added value even in anatomically straightforward cases. A tailored imaging approach based on patient anatomy, operator expertise, and resource availability is recommended.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 667
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE
(IMAGING CARDIOVASCOLARE)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)
PATOLOGIA DELLA VALVOLA TRICUSPIDE (VALVULOPATIE)

VALIDATION AND COMPARISON OF PROGNOSTIC SCORES FOR SEVERE TRICUSPID REGURGITATION

Carlo Gaspardone (b), Daniele Oreste D´atri (a), Michele Morosato (a), Francesca Braccischi (a), Vincenzo Rizza (d), Francesco Ancona (d), Eustachio Agricola (d), Paolo Denti (c), Francesco Maisano (c), Cosmo Godino (b)
(a) VITA-SALUTE SAN RAFFAELE UNIVERSITY, MILAN, ITALY; (b) CARDIOLOGY UNIT, IRCCS OSPEDALE SAN RAFFAELE, MILAN, ITALY; (c) HEART VALVE CENTER, IRCCS OSPEDALE SAN RAFFAELE, MILAN, ITALY; (d) CARDIOVASCULAR IMAGING UNIT, IRCCS OSPEDALE SAN RAFFAELE, MILAN, ITALY

Background: Severe tricuspid regurgitation (TR) is associated with poor prognosis and significant clinical challenges. Several prognostic risk scores have been developed for this patient population, but they have been poorly externally validated, and their comparative performance remains largely unexplored.

Objectives: This study aimed to validate and compare the performance of established prognostic risk scores in a real-world cohort of patients with severe TR.

Methods: We retrospectively analyzed 476 patients with severe TR treated at our institution between 2018 and 2023. Patients were categorized into three groups based on their treatment strategy: conservative management (n=323), tricuspid valve surgery (n=76), and transcatheter tricuspid edge-to-edge repair (n=77). We evaluated five prognostic risk scores (TRI-SCORE, Wang score, TRIVALVE, Hochstadt score, and TRIO score) using area under the curve (AUC) analyses for all-cause mortality and the composite endpoint (all-cause mortality or heart failure hospitalization) at two years of follow-up.

Results: Among the evaluated scores, the TRI-SCORE consistently demonstrated the highest accuracy across all treatment strategies and endpoints. In the overall cohort, the TRI-SCORE achieved an AUC of 0.71 (95% CI: 0.65–0.76) for all-cause mortality and 0.68 (95% CI: 0.63–0.73) for the composite endpoint. Notably, the TRI-SCORE showed particularly strong performance in surgically managed patients, with an AUC of 0.86 (95% CI: 0.75–0.96) for mortality.

Conclusions: This study represents the first external validation of all currently published prognostic risk scores for severe TR within a real-world cohort. The TRI-SCORE demonstrated the highest predictive accuracy, particularly in patients undergoing surgical intervention, reinforcing its utility in guiding clinical decision-making. Its simplicity and feasibility further enhance its applicability in routine clinical practice.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 1007
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE)
(IMAGING CARDIOVASCOLARE)
PATOLOGIA DELLA VALVOLA TRICUSPIDE (VALVULOPATIE)

THE IMPACT OF GLIDE SCORE ON IMMEDIATE POSTPROCEDURAL AND SHORT-TERM SUCCESS FOLLOWING TRICUSPID TRANSCATHETER EDGE-TO-EDGE REPAIR

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(a) VITA-SALUTE SAN RAFFAELE UNIVERSITY, MILAN, ITALY; (b) CARDIOLOGY UNIT, IRCCS SAN RAFFAELE, MILAN, ITALY; (c) CARDIOVASCULAR IMAGING UNIT, IRCCS SAN RAFFAELE, MILAN, ITALY; (d) CARDIAC SURGERY UNIT, HEART VALVE CENTER, IRCCS SAN RAFFAELE, MILAN, ITALY

Background. Tricuspid transcatheter edge-to-edge repair (T-TEER) represented a game-changer in the management of tricuspid regurgitation (TR). GLIDE score was recently identified as a scoring system able to predict immediate postprocedural success following T-TEER; however, its impact on post-discharge outcomes remains poorly defined.

Objectives. The aim of the study was to assess the impact of GLIDE score in predicting postprocedural and short-term outcomes following T-TEER in a retrospective real-world population.

Methods. Ninety-six patients with at least severe TR underwent T-TEER at our heart valve center between January 2019 and September 2023. T-TEER was performed using the TriClipTM system (Abbott). Baseline and follow-up (FU) clinical data were comprehensively evaluated. The two co-primary endpoints were intraprocedural and FU success, with success defined as TR reduction ≥ 2 grades and/or final TR ≤ 2+. Frequency of reduction ≥ 1 NYHA functional class was evaluated as secondary endpoint.

Results. The median age was 77 years (IQR 70-81), 65 patients (67.7%) being female. Frequency of TR grades were: 62 (64.6%) severe, 24 (25%) massive, 10 (10.4%) torrential. Eighteen subjects (18.8%) presented organic TR. The median GLIDE score was 1 (IQR 0-3). Baseline GLIDE score showed a high discrimination power for both postprocedural (ROC-AUC 0.843; p<0.001) and FU (ROC-AUC 0.834, p<0.001) success prediction, with 2.5 as Youden Index in both contexts. Subjects with score > 2.5 exhibited lower rate of postprocedural (7.9% vs. 93.1%, p < 0.001) and FU success (13.2% vs. 84.5% vs. p < 0.001). Even ≥1 grade NYHA class reduction at FU was more common in the group with lower GLIDE score (63.8% vs. 39.5%, p=0.020). In the multivariable analysis, GLIDE score resulted the only independent predictor of both postprocedural (adj. OR 3.699; p=0.002) and FU (adj. OR 2.733; p<0.001) success.

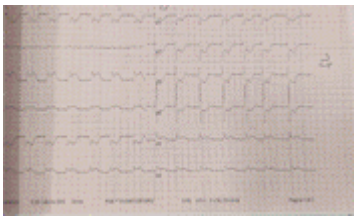
Conclusions. GLIDE score is a valuable tool to predict immediate postprocedural and FU outcomes in patients undergoing T-TEER.

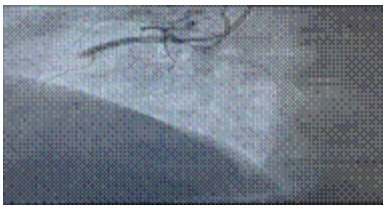
CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 12
DIAGNOSTICA INVASIVA INTRAVASCOLARE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
FISIOLOGIA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

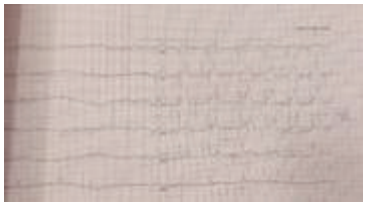
TAKOTSUBO CARDIOMYOPATHY AND CORONARY VASOSPASM: EPIPHENOMENON OF THE SAME DISEASE?

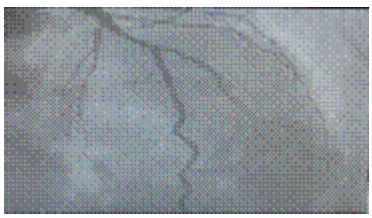
Pasquale De Luca (a), Francesca Magarò (a), Vito Sollazzo (a), Antonio De Luca (a)
(a) OSPEDALE "T. MASSELLI-MASCIA" SAN SEVERO ASL FOGGIA

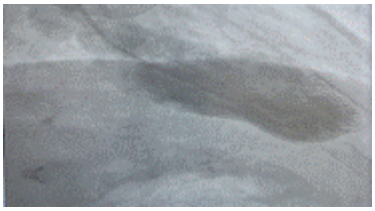
Clinical case: A thirty-year-old man with hypertension and a smoker comes to the emergency room for retrosternal pain. ECG: ST segment elevation in the infero-lateral position and ST segment depression in the anterior position (fig. 1). Echocardiogram: akinesia of the infero-posterior wall. Diagnosis: inferior STEMI. Coronary angiography: thrombotic occlusion of the proximal tract of the right coronary artery, without significant stenosis in the remaining vessels (fig. 2). Angioplasty was performed on the right coronary artery with good final angiographic result and TIMI III flow. Post-angioplasty ECG: evolving signs in the inferior location. After 4 days without symptoms, new episode of chest pain with ST elevation in the anterior location on the ECG (fig. 3).
Second coronary angiography: severe vasospasm of the anterior interventricular artery with, however, good patency of all 3 coronary vessels (fig. 4). Ventriculography: apical ballooning appearance of the left ventricle (fig. 5). After coronary angiography, regression of the symptoms, of the ST-segment elevation in the anterior region (fig. 6) and also of the apical ballooning.

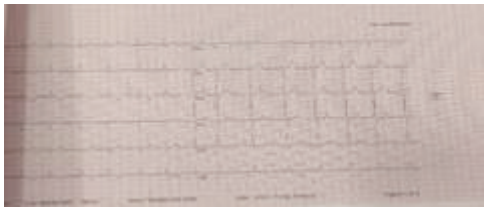

Fig. 1


Fig. 2


Fig. 3


Fig. 4


Fig. 5


Fig. 6

Figures

Conclusions: This is an imaging finding of Takotsubo cardiomyopathy placed in differential diagnosis with vasospasm of the anterior interventricular artery. Endothelial dysfunction, at the basis of both coronary vasospasm and Takotsubo cardiomyopathy, is determined by an imbalance between molecules that mediate vasodilation and have antimitogenic and antithrombogenic properties and substances with vasoconstrictor, prothrombotic and proliferative potential. It remains to be understood whether these are two aspects of the same disease or two conditions that can coexist with similar physiopathological bases. The differential diagnosis requires careful clinical evaluation, ECG and coronary angiography.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 765
INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
INTERVENTISTICA STRUTTURALE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

CORONARY SINUS REDUCER IMPLANTATION IN A PATIENT WITH CARDIAC RESYNCHRONIZATION THERAPY AND DEFIBRILLATOR

Daniele Di Lorenzo (a), Sergio Falato (a), Francesco Terracciano (a), Francesco Granata (a), Gennaro Maresca (a)
(a) OSPEDALE SANTA MARIA DELLA PIETÀ, NOLA (NA)

Background: Coronary sinus reducer (CSR) is an hourglass-shaped stainless-steel stent that is percutaneously inserted in the coronary sinus. It improves myocardial perfusion by narrowing the coronary sinus and dilating the arterioles into the ischemic subendocardium.

Case summary: A 79-year-old man with chronic coronary syndrome, previously implanted with a cardiac resynchronization therapy and defibrillator (CRT-D), presented to our hospital for refractory angina. He was under optimized medical therapy (OMT) and not amenable to further revascularization. Therefore, a CSR was implanted.

Discussion: The 2024 European Society of Cardiology (ESC) guidelines for the management of chronic coronary syndrome suggest a CSR implantation in patients with refractory angina (IIb - B). This procedure in patients with CRT-D is not currently defined by any guidelines, and data in literature are anecdotal.

Take Home Messages: Refractory angina is a serious epidemiological issue that greatly limits patients' quality of life. CSR implantation appears to be a safe and effective procedure even in patients with CRT-D.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 114
FISIOLOGIA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
DISFUNZIONE DEL MICROCIRCOLO (CARDIOPATIA ISCHEMICA)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)

INVASIVE DIAGNOSIS OF CORONARY MICROVASCULAR DYSFUNCTION: A COMPARISON BETWEEN MICROVASCULAR RESISTANCE RESERVE (MRR) AND INDEX OF MICROCIRCULATORY RESISTANCE (IMR)

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(a) DEPARTMENT OF ADVANCED BIOMEDICAL SCIENCES, UNIVERSITY OF NAPLES FEDERICO II, NAPLES, ITALY

Background: Currently, the invasive functional coronary angiography (FCA) can rule out the presence of hemodynamic significant epicardial stenosis and subsequently it can evaluate the coronary microvascular and endothelial function. The conventional evaluation includes the measurement of Coronary Flow Reserve (CFR) and Index of Microcirculatory Resistance (IMR), while Acetylcholine (Ach) test allows the evaluation of coronary vasomotor function. The FCA strategy allows to stratify patients affected by Ischemia with Non-Obstructive Coronary Artery Disease (INOCA) in different endotypes including Coronary Microvascular Dysfunction (CMD), Vasospastic Angina (VSA), a combined class (CMD and VSA) or Non-Cardiac Chest Pain (NCCP). Microvascular Resistance Reserve (MRR) is recently emerging as a new index to assess coronary microvascular dysfunction, independent of epicardial coronary disease and hemodynamic variations.

Methods: Patients undergoing clinically indicated invasive functional coronary angiography (FCA) were enrolled at the Cardiology Department of Federico II University of Naples. The present study tried to analyze the stratification ability of MRR in INOCA patients as compared with the conventional strategy based on CFR/IMR. Through the MRR analysis, we tried to investigate its changes in each of the above-mentioned endotypes, with the aim of improving diagnosis and clinical management, stratifying patient's risk and prognosis and identifying potential future therapeutic applications.

Results: A total of 77 patients were enrolled. Comparing the conventional evaluation (including CFR/IMR) with the additional MRR evaluation (cut-off value < 2.7), INOCA endotypes were significantly reclassified respectively in 19 vs 16 patients (25 % vs 21 %) for CMD, 19 vs 26 (25 % vs 34 %) for VSA, 14 vs 7 (18 % vs 9 %) for CMD and VSA, 25 vs 28 patients (33 % vs 36 %) for NCCP. In the setting of CMD endotype, CFR/IMR evaluation identified 33 (42 %) patients with CMD. Structural CMD was identified in 8 (24 %) patients, Compensated CMD in 19 (58 %) patients and Functional CMD in 6 (18 %) patients. Adopting MRR evaluation, CMD detection significantly reduced to 23 (30 %) of cases. In particular, MRR alone was not able to correctly stratify different subgroups of patients, significantly underdiagnosing patients with Compensated CMD (2 vs 19 patients).
Combining the MRR/IMR evaluation, CMD was identified in 38 (49 %) patients, VSA in 19 (25 %) and NCCP in 20 patients (26 %). In the setting of CMD endotype, MRR/IMR evaluation identified Structural CMD in 10 (26 %) patients, Compensated Structural CMD in 13 (34 %) and Functional CMD in 15 (40 %) patients. Patients also showed a statistically significant improvement in quality of life as demonstrated by the Seattle Angina Questionnaire (SAQ-7) scores in all INOCA endotypes.

Conclusions: The combined use of IMR and MRR for invasive functional coronary angiography (FCA) could improve INOCA endotype diagnosis, clinical management and prognostic stratification leading to a more effective targeted therapeutic strategy.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 180
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
FISIOLOGIA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INFARTO STEMI (CARDIOPATIA ISCHEMICA)

RESIDUAL ADDED INDEX TO RISK-STRATIFY STEMI PATIENTS AFTER PRIMARY PCI

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Background. Multivessel disease (MVD) affects almost half of the patients presenting with ST-elevation myocardial infarction (STEMI) and significantly impairs short and long-term outcomes. Functional scores, such as the FFR-guided SYNTAX score (SS) have been showed to predict clinical outcome better than the classic SS in patients with MVD undergoing primary percutaneous coronary intervention (pPCI). We have recently validated the "Angiography-DeriveD hEmoDynamic index" (ADDED index, AI), able to predict the ischemic potential of coronary artery stenosis, and it might be used to predict the FFR values of residual intermediate coronary artery stenoses.

Methods. We retrospectively included 596 STEMI patients in whom pPCI was successful. Both residual AI (rAI) and residual SS (rSS) were calculated. All patients were divided in rAI and rSS tertiles, while patients without residual coronary artery stenosis served as control group. Primary endpoints were: 1) major adverse cardiac events (MACE), composite of overall death, myocardial infarction, clinically driven revascularizations; 2) non-target vessel oriented adverse clinical events (VOCE), composite of overall death, deferred non-target vessel related myocardial infarction and deferred non-target vessel related clinically driven revascularizations.

Results. Follow-up was obtained in 98% of patients at a median of 24 months (14–36 months). At multivariate analysis, MACE rate was significantly higher in the third tertile of both rAI and rSS. The rate of VOCE was equally significantly higher in the third tertile of both rAI and rSS. Logistic regression analysis showed a significant increase in MACE and VOCE risk for every unitary increase in rAI such as in rSS. Both rAI and rSS had a moderate accuracy to predict future VOCE.

Conclusions. The rAI represents a simple prognostic tool for patients with residual coronary artery stenosis after pPCI, allowing prediction of 2-years MACE and VOCE as well as a validated index such as rSS.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 984
DISFUNZIONE DEL MICROCIRCOLO (CARDIOPATIA ISCHEMICA)
FISIOLOGIA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
DIAGNOSTICA INVASIVA INTRAVASCOLARE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

EFFETTI DELLA SOMMINISTRAZIONE DI NITRATI INTRACORONARICI SULLA VALUTAZIONE INVASIVA DEL MICROCIRCOLO CORONARICO

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Introduzione: L'ischemia miocardica riconosce diversi meccanismi patogenetici. Oltre alla presenza di stenosi a carico delle coronarie epicardiche, ulteriori meccanismi sono rappresentati dalla disfunzione microvascolare (CMD) e dal vasospasmo coronarico (epicardico oppure microvascolare). La condizione clinica in cui è presente evidenza di ischemia miocardica in assenza di stenosi coronariche significative prende il nome di INOCA (Ischemia and No Obstructive Coronary Artery Disease. L'obiettivo dello studio che presentiamo è quello di chiarire se la somministrazione preventiva di nitrati (NTG) per via intracoronarica abbia un impatto significativo sui parametri emodinamici valutati e, conseguentemente, sull'accuratezza diagnostica dell'angiografia funzionale.

Materiali e metodi: Lo studio è basato sull'analisi dei dati clinici, angiografici ed emodinamici ottenuti in pazienti sottoposti a coronarografia funzionale presso il Laboratorio di Emodinamica e dell'AOU Federico II di Napoli. Sono stati inclusi pazienti con sintomatologia anginosa tipica, evidenza di ischemia miocardica ai test non invasivi e assenza di stenosi epicardiche angiograficamente o funzionalmente significative.

Risultati: Sono stati arruolati 61 pazienti, con un'età media di 60 anni. Alla valutazione funzionale, il mean Transit Time ottenuto dopo somministrazione di NTG ($mTT_{postNTG}$= 0.78 [0.47 – 1.27]), è aumentato significativamente rispetto allo stesso valore ottenuto prima della somministrazione di NTG (mTT_{preNTG}= 0.56 [0.38 – 0.91]). Tale incremento significativo si è osservato sia nei pazienti con disfunzione (Ach+) che in quelli con preservata funzione (Ach-) endoteliale. Allo stesso modo, le resistenze microvascolari basali (BRI) sono significativamente aumentate dopo somministrazione di NTG ($BRI_{postNTG}$= 72 [39 – 105] vs BRI_{preNTG}= 56 [32 – 89]). Analogamente, anche i valori di Coronary Flow Reserve (CFR) sono risultati significativamente condizionati dalla somministrazione di NTG. Infatti, la CFR ottenuta dopo somministrazione di NTG ($CFR_{postNTG}$=3.3±1.5) è significativamente aumentata rispetto ai valori ottenuti se il calcolo della CFR fosse stato eseguito senza somministrazione di NTG (CFR_{preNTG}=2.7±1.3). Infine, il valore della riserva delle resistenze microvascolari (MRR) è anch'esso significativamente aumentato dopo somministrazione di NTG (MRR_{preNTG}: 3.3±1.6 vs $MRR_{postNTG}$: 4.1±2.0). L'eventuale variabilità del valore di IMR in seguito alla somministrazione NTG non è invece stata testata poiché già nota non essere condizionata dalle resistenze del compartimento epicardico. In tal modo, la stratificazione per endotipo dei pazienti in base ai valori di CFR/IMR è significativamente condizionata dalla somministrazione di NTG, determinando una significativa riduzione della diagnosi di CMD per tutti gli endotipi.

Conclusioni: Questo studio ha evidenziato come la metodologia e, in particolare, la corretta sequenza diagnostica invasiva, con la somministrazione di NTG prima dell'esecuzione dello studio funzionale, sia importante per eseguire un'appropriata endotipizzazione dei pazienti INOCA, evitando una possibile sovrastima diagnostica e terapeutica.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 613
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INTERVENTISTICA STRUTTURALE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)

"DON'T LET ME DOWN": A BAILOUT STRATEGY WITH SNARING TECHNIQUE OF A TAVI VALVE JUMPED INTO THE LEFT VENTRICLE

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Background. Downward dislocation of a transcatheter heart valve (THV) into the left ventricle is a rare but potentially life-threatening complication of transcatheter aortic valve implantation (TAVI).

Case Presentation. An 81-year-old obese male with a history of diabetes mellitus, arterial hypertension, dyslipidemia, chronic total occlusion of the circumflex artery, and prior percutaneous coronary intervention (PCI) on the mid-left coronary artery was referred for TAVI due to severe symptomatic aortic stenosis. His medical history was also notable for atrial fibrillation and chronic kidney disease. Pre-procedural transthoracic echocardiography (TTE) demonstrated a mean transvalvular gradient of 35 mmHg, a peak gradient of 70 mmHg, mild aortic regurgitation, an aortic valve area of 0.7 cm^2, severe left ventricular hypertrophy, and preserved biventricular systolic function. Multidetector computed tomography revealed an aortic annulus area of 512.8 mm^2, a left coronary artery height of 16.2 mm, a right coronary artery height of 17.3 mm, and a maximal left ventricular outflow tract (LVOT) diameter of 31.4 mm. Based on multimodal imaging and annular sizing, a 31 mm self-expanding ALLEGRA THV was selected.

Technical Course. Following balloon aortic valvuloplasty with a PTV 24/40 balloon and initiation of the permaflow stage, deployment of the valve inflow was performed. At this stage, the valve slipped into the LVOT. Despite this complication, the patient remained hemodynamically stable. Maintaining wire position and under continued rapid ventricular pacing, the embolized valve was successfully captured using bilateral femoral 27–45 mm En Snare devices. This bailout strategy allowed controlled retrieval of the valve

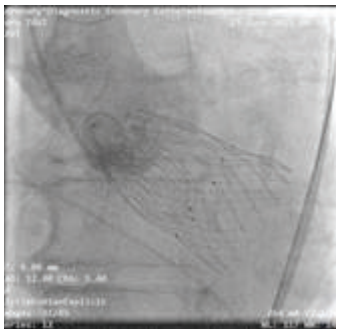


Figure 1



Figure 2

from the LVOT and safe deployment within the aortic arch, with no evidence of dissection and preserved flow through the supra-aortic vessels. Post-procedural TTE showed a reduction in mean transvalvular gradient to 23 mmHg with residual mild aortic regurgitation. Subsequently, a 26 mm balloon-expandable Sapien 3 valve was successfully implanted without difficulty in crossing the previously embolized prosthesis.

Clinical Implications and Perspectives. Valve embolization during TAVI, while infrequent, remains a potentially catastrophic event. In this case, a dual-snare retrieval technique proved to be both safe and effective for managing valve migration, avoiding hemodynamic collapse. Snaring techniques may serve as a valid bailout approach, particularly when the embolized prosthesis remains accessible and rapid intervention is feasible. Current data on predictors and optimal management strategies for THV embolization are limited and primarily anecdotal. Although thorough pre-procedural planning is key to minimizing this risk, procedural realities can often diverge from theoretical expectations.

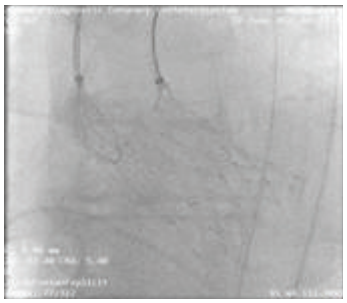


Figure 3

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 1077
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

IMPATTO DELLE CALCIFICAZIONI DEL TRATTO DI EFFLUSSO DEL VENTRICOLO SINISTRO NEL DETERMINARE IL SUCCESSO PROCEDURALE E CLINICO DOPO IMPIANTO PERCUTANEO DI PROTESI VALVOLARI ESPANDIBILI CON PALLONE DI NUOVA GENERAZIONE

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Introduzione: Le calcificazioni del tratto di efflusso ventricolare sinistro (LVOT) rappresentano uno storico predittore di complicanze procedurali e di rigurgito paravalvolare (PVL) dopo impianto transcatetere di valvola aortica (TAVI). Tuttavia, il loro impatto in pazienti trattati con valvole espandibili con pallone (balloon-expandable - BE) di ultima generazione rimane poco esplorato.

Scopo dello studio: Valutare l'impatto della presenza di calcificazioni del LVOT sull'incidenza di PVL dopo impianto di TAVI con protesi BE.

Metodi: Abbiamo analizzato retrospettivamente i pazienti sottoposti a TAVI presso il nostro centro dal 08/2021 al 08/2025 con impianto di protesi BE (Sapien 3 Ultra, Edwards LifeSciences, Irvine, CA, USA). Sulla base della valutazione pre-procedurale con TAC multidetettore le calcificazioni del LVOT sono state classificate, in base alla severità, come segue: lieve: un singolo nodulo di calcio che si estende per meno di 5 mm in qualsiasi direzione e che interessa meno del 10% della circonferenza del tratto di efflusso ventricolare sinistro (LVOT); moderata: due noduli di calcificazione, oppure un singolo nodulo che si estende per più di 5 mm in una qualsiasi direzione o che interessa più del 10% della circonferenza del LVOT; severa: multipli noduli di calcificazione oppure un singolo focolaio che si estende per più di 1 cm in lunghezza o che interessa più del 20% della circonferenza del LVOT.
I pazienti sono stati divisi in due gruppi in base alla presenza o assenza di calcificazioni almeno moderate del LVOT. Gli outcome considerati erano il successo procedurale secondo definizione VARC-3, la presenza di PVL all'ecocardiogramma post-procedurale e durante il follow-up precoce, nonché la comparsa di complicanze procedurali maggiori.

Risultati: Nel campione analizzato (N = 480), sono stati individuati 92 pazienti con calcificazioni moderate del LVOT e nessuno con calcificazioni severe. La presenza di calcificazioni almeno moderate del LVOT in nessun caso ha limitato l'espansione del device e/o ha determinato la comparsa di PVL clinicamente significativo. Il successo procedurale è stato ottenuto nel 100% dei casi, senza complicanze maggiori.

Conclusioni: Questi dati preliminari suggeriscono che le calcificazioni moderate del LVOT non rappresentano un predittore di PVL né di fallimento procedurale e/o clinico nei pazienti sottoposti a TAVI con protesi BE di nuova generazione. Tali dati preliminari dovranno essere validati da studi clinici randomizzati.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 977
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
GRAVIDANZA E CARDIOPATIA
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)

MANAGEMENT DELLA STENOSI REUMATICA IN ETÀ FERTILE: UN CASO CLINICO

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Luigi Salemme (b), Tullio Tesorio (b)
(a) UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II; (b) CASA DI CURA CLINICA MONTEVERGINE;
(c) UNIVERSITÀ SAPIENZA DI ROMA

Razionale: Donna, 27 anni, senza fattori di rischio cardiovascolari accedeva in pronto soccorso per dispnea da sforzo ingravescente con comparsa di dispnea a riposo con diagnosi di edema polmonare acuto. All'EcocolorDoppler cardiaco transtoracico (TTE): Stenosi Mitralica (SM) severa [Gradiente medio (G med) 14 mmHG a FC di 75 bpm, MVA 3D 1 cm²] ed insufficienza di grado lieve. All' EcocolorDoppler Cardiaco Transesofageo (TEE): valvola mitralica con esiti di malattia reumatica (Carpentier IIIA) in assenza di significative calcificazioni a carico dell'apparato sottovalvolare, dei lembi, delle commissure e dell'anello (Wilkins Score 5).

Risoluzione Tecnica: Dopo valutazione in Heart Team del caso clinico, in considerazione della giovane età della paziente, del suo desiderio di una futura gravidanza, della severità della SM, della sintomatologia associata e dell'assenza di criteri anatomici che controindicavano l'intervento percutaneo, veniva posta indicazione ad eseguire Commissurotomia Percutanea (PMC). L'intervento veniva eseguito con supporto TTE in sala di emodinamica e la puntura del setto interatriale veniva eseguita con guida angiografica mediante opacizzazione della fossa ovale con mezzo di contrasto. Si praticava PMC con catetere singolo a palloncino (di Inoue). Si praticavano tre dilatazioni. Al baseline: G med 12 mmHg, MVA planimetrica 1 cm², minima insufficienza mitralica; al termine: G med 4 mmHg, MVA 2,2 cm², evidenza di splitting di entrambe le commissure con insufficienza mitralica di grado moderato.
La paziente veniva dimessa in buon compenso emodinamico riferendo miglioramento della sintomatologia dispnoica. Al controllo clinico dopo 18 mesi la paziente riferiva permanente miglioramento della sintomatologia. Al TTE si confermava G med 4 mmHg, MVA 2,2 cm² ed insufficienza mitralica di grado moderato.

Implicazioni cliniche: La PMC è la prima scelta nei pazienti con stenosi mitralica reumatica severa con anatomia favorevole. La chirurgia è riservata nei casi in cui la PMC è controindicata: anatomia sfavorevole (es. calcificazioni), rigurgito mitralico associato almeno moderato, altre valvulopatie e/o coronaropatia concomitanti con necessità di intervento cardiochirurgico o in caso di failure di precedente commissurotomia. La chirurgia con impianto di valvola meccanica risulta essere una possibile alternativa in tali condizioni, ma prevede l'utilizzo di anticoagulanti orali inibitori della vitamina K per tutta la vita per la prevenzione del rischio tromboembolico. Nei casi di donne giovani con desiderio di gravidanza tale alternativa comporta una scelta complicata legata all'effetto teratogeno non trascurabile di tale classe di farmaci e al rischio di sanguinamento intracranico del feto. Altra problematica è la gestione della terapia anticoagulante nel periodo peripartum con rischio di emorragia per la madre. Le alternative considerate più sicure per il feto, quali l'UFH e l'eparina a basso peso molecolare, non garantiscono la

stessa protezione del rischio tromboembolico legato alla valvola meccanica.

Prospettive: La gravidanza in donne portatrici di valvola meccanica è ad alto rischio (soprattutto quando la protesi è in posizione mitralica) ed ha esito positivo solo nel 54% dei casi.

Vi è necessità di trovare nuove strategie in questo setting clinico per garantire anche a queste pazienti standard di cura come nel resto della popolazione senza doverle porre davanti alla scelta tra la propria salute e quella del feto e senza dover rinunciare al desiderio di maternità.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 979
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

LONG TERM OUTCOMES OF SEB IN CORONARY ANGIOPLASTY IN DENOVO LESIONS VERSUS ISR: A SINGLE CENTER EXPERIENCE

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Drug eluting stent (DES) are the milestone of coronary artery disease (CAD) treatment. Sirolimus eluting balloon (SEB) are emerging as an alternative in specific setting. Recent guidelines downgraded the class of evidence for the use of drug eluting balloon (DEB) in in-stent restenosis (ISR). In this study we compared the outcome of SEB in ISR vs de novo atherosclerosis.
From December 2020 to November 2024, 496 patients (age:69±9 years) with significant CAD were treated with predilation(100%) with a balloon to artery ratio (BTAR) 1-1. If no flow limiting dissection and no residual stenosis >30% were detected SEB Selution (Med. Alliance, SA, MontsurRolle, Switzerland) was used to complete the procedure with a BTAR 0.8-1. Final angiographic result was considered successful if the residual stenosis was <30% and dissection was type A or B (type C or D were stented).
A total of 443 patients were enrolled. Coronary segment treated was LAD 48% (225); LCx 21% (97); RCA 31% (146); LM 0,2% (1). Lesion calcification was mild 55% (260); moderate 35% (163); severe 9% (44). Bailout stenting was performed in 10% (53) of cases.

	Follow- outcome. Median FU 311 days (186-582)				
TLF 4.2% (19)	6.6% (10) ISR	2.2% (4) sv	4.5% (5) lv	TOT de novo 3.5%	p=0.08
Death 1.1% (5)	0.7% (1) ISR	1.7% (3) sv	2.7% (3) lv	TOT de novo 1.3%	p=0.4
Cardiac death 0.6% (3)	0.7% (1) ISR	0.5% (1) SV	3.6% (4) lv	TOT de novo 1%	p=0.6
Any-MI 1.5% (7)	2% (3) ISR	1.1% (2) sv	1.8% (2) lv	TOT de novo 1.4%	p=0.8
TV-MI 1.3% (6)	1% (3) ISR	0.5% (1) sv	1.8% (2) lv	TOT de novo 2%	p=0.5
TLR 3.8% (17)	5.3% (8) ISR	2.2% (4) sv	4.5% (5) lv	TOT de novo 3.1%	p=0.09
TVR 4% (18)	3.1% (9) ISR	2.8% (5) sv	3.6% (4) lv	TOT de novo 6%	p=0.07

Any-MI Any Myocardial Infarction; ISR: In-stent restenosis; lv large Vessels; sv Small Vessels; TLF Target Lesion Failure; TLR Target Lesion Revascularization; TVR Target Vessel Revascularization; TV-MI Target Vessel Myocardial Infarction.

Table 1

Complication were: Perforation 0; Acute vessel occlusion were 0; Spasm occurred in 0. Indication for SEB was: ISR 33% (156); Small vessels 37% (176); Large vessel 23% (111).

Follow-up was performed in 95% of patients. Median (IQR) follow-up time was 311 days (186-582). FU outcome are summarized in the table. No significant differences were found into this study.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 1048
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)

FEASIBILITY AND SAFETY OF PROTECTED VS UNPROTECTED FEMORAL ACCESS IN TAVI: A SINGLE CENTER, ALL-COMERS, REGISTRY

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(a) UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II; (b) CASA DI CURA CLINICA MONTEVERGINE

Background: TAVI is predominantly performed via large-bore transfemoral access (≥14 Fr). Vascular access complications remain among the most frequent adverse events, contributing to TAVI-related morbidity, impacting outcomes. To mitigate these risks, some centers adopt a "protected access" strategy, consisting of the placement of a peripheral intervention wire through a secondary arterial access, enabling both bailout endovascular manoeuvres and balloon-assisted closure (endoclamping) to facilitate hemostasis. Although this approach may reduce the incidence of vascular complications, it may also prolong fluoroscopy time, increase contrast medium exposure and potentially cause endothelial injury due to balloon inflation. We compared the efficacy and safety of protected versus unprotected femoral access in a high-volume, experienced TAVI center (>150 procedures/year).

Methods: this was a single-center, observational registry including 212 consecutive patients who underwent transfemoral TAVI for symptomatic severe aortic stenosis between July 2023 and April 2025. Assignment to protected or unprotected access strategy was at operator discretion. Vascular closure was routinely performed with a single ProGlide. In the unprotected group, no protective wire was used. In the protected group, a protective wire was systematically advanced, and hemostasis was always achieved with balloon-assisted closure in the ipsilateral femoral/iliac axis at low pressure, sized one-to-one to the vessel diameter. Primary efficacy outcome: procedural success of transfemoral TAVI (device implantation at the intended site with no procedural mortality or need for conversion to surgery or failure of vascular access management); primary safety outcome: freedom from major access-related vascular complications at discharge (by VARC-3); secondary safety outcomes: freedom from minor access-related vascular complications (VARC-3), blood transfusions and haemoglobin (Hb) drop; Procedural outcomes: fluoroscopy time, contrast volume, and length of hospital stay. Results: 212 patients were included, 112 in the protected group and 100 in the non-protected group. The primary efficacy outcome was achieved in 100% of patients in both groups (112/112 protected, 100/100 unprotected, p=1.00). The primary safety outcome was 96.4% (108/112) in the protected group and 96.0% (96/100) in the unprotected group (p=1.00). The secondary safety outcome was 92.9% (104/112) in the protected group and 94.0% (94/100) in the unprotected group, corresponding to minor complications in 7.1% (8/112) and 6.0% (6/100) of patients, respectively (p=0.95). Blood transfusions were required in 14 patients (12.5%) in the protected group (mean Hb drop of 1.88 ± 0.83 g/dl), and in 11 patients (11.0%) in the unprotected group (mean Hb drop of 1.75 ± 0.73 g/dl) (p=0.9 and p=0.22). Mean length of hospital stay was 6.0 ± 1.8 days in the protected group

and 5.9 ± 1.4 days in the unprotected group (p=0.58).

Conclusions: we demonstrated comparable procedural efficacy and vascular safety irrespective of whether a protected or unprotected femoral access strategy was adopted in TAVI. Procedural success was achieved in all patients, and rates of both major and minor vascular complications were low and similar across groups. Lower contrast use and reduced fluoroscopy time was observed in the unprotected group, without significant clinical implications. These findings suggest that routine use of femoral access protection may not provide additional benefit in experienced centers, and larger prospective randomized studies are warranted to further clarify its role.

CardioSic

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 1055
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

LONG TERM OUTCOMES OF SEB ANGIOPLASTY IN LARGE VESSELS VERSUS SMALL VESSELS: A SINGLE CENTER EXPERIENCE

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(c) CASA DI CURA CLINICA MONTEVERGINE

Drug eluting stent (DES) are the milestone of coronary artery disease (CAD) treatment. Sirolimus eluting balloon (SEB) are emerging as an alternative in specific setting. The actual evidences for de novo CAD for the use of drug eluting balloon (DEB) are mainly for the small vessels. In our study we evaluated the acute performance and the safety of SEB in large vessel (>=3 mm) vs small vessels (<3 mm).

From January 2021 to November 2024, 283 patients with significant de novo coronary stenosis were treated with predilation (100%) with a balloon to artery ratio (BTAR) 1-1. If no flow limiting dissection and no residual stenosis >30% were detected SEB Selution (Med. Alliance, SA, Mont-sur-Rolle, Switzerland) was used to complete the procedure with a BTAR 0.8-1. Final angiographic result was considered successful if the residual stenosis was <30% and dissection was type A or B (type C or D were stented).

A total of patients 283 were enrolled. Baseline characteristics are summarized into the figure.

Complication were: Perforation 0; Acute vessel occlusion: 0; Spasm: 0. Indication for SEB was: small vessels 61% (175); large vessel 39% (108).

Follow-up was performed in 95% of patients. Median (IQR) follow-up time was 311 days (186-582). FU outcome are summarized in the figure. We observed a worse trend of outcomes in large vessels compared to small vessels, with a higher incidence of adverse events in large vessels compared to small vessels. However, this difference did not reach statistical significance. These findings suggest that SEB may represent a reasonable option across different vessel sizes. Randomized studies are required to confirm the potential differences in efficacy between small and large vessels.

	Small vessel (n=175)	Largevessel (n=108)	P value
Age	68.8 ± 9.4	69.6 ± 8.7	0.52
Male	136 (78%)	79 (73%)	0.39
Smoker	30 (17%)	29 (27%)	0.051
Former smoker	36 (21%)	24 (22%)	0.77
Hypertension	147	95	0.36
Dyslipidemia	161	86	0.004
Diabetes	80	46	0.61
Prior CABG	13	7	0.76
Prior PCI	89	53	0.77
Prior MI	23	12	0.602
LAD diseased	125	74	0.60
LCx diseased	82	32	0.004
RCA diseased	92	55	0.79
Lesion length	26.6 ± 11	30 ± 17.7	0.043
Death	1	3	0.06 (LOG RANK)
Cardiac death	1	1	0.72 (LOG RANK)
Any MI	2	2	0.18 (LOG RANK)
TV-MI	1	2	0.43 (LOG RANK)
TLR	4	5	0.056 (LOG RANK)
TLF	4	5	0.054 (LOG RANK)

Any-MI Any Myocardial Infarction; ISR: In-stent restenosis; TLF Target Lesion Failure; TLR Target Lesion Revascularization; TVR Target Vessel Revascularization; TV-MI Target Vessel Myocardial Infarction.

COX REGRESSION (Large vs small)

TLF HR (95% CI) 3.46 (0.91; 13.2) P 0.069
TLR HR (95% CI) 3.42 (0.90; 13.03) P 0.071
TV-MI HR (95% CI) 2.56 (0.22; 29.12) P 0.45
Any-mi HR (95% CI) 4.58 (0.22; 51.1) P 0.45
Cardiac death HR (95% CI) 1.66 (0.1; 26.6) P 0.72
ANY Death HR (95% CI) 6.58 (0.68; 66.9) P 0.10

Figure 1

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 86
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
CARDIOPATIE CONGENITE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)

TAILORING ANTIPLATELET THERAPY DURATION AFTER PFO CLOSURE: INSIGHTS FROM THE PROLONG REGISTRY

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(a) SAN RAFFAELE HOSPITAL, MILAN, ITALY; (b) CENTRO CARDIOLOGICO MONZINO, MILAN, ITALY; (c) PADUA HOSPITAL, PADUA, ITALY; (d) NOVARA HOSPITAL, NOVARA, ITALY; (e) POLICLINICO SAN'ORSOLA, BOLOGNA, ITALY; (f) MONZA HOSPITAL, MONZA, ITALY; (g) UMBERTO I HOSPITAL, ROME, ITALY; (h) SAN EUGENIO, ROME, ITALY

Background: Following patent foramen ovale (PFO) device closure, dual antiplatelet therapy (DAPT) is administered for 1-6 months and followed by single antiplatelet therapy (SAPT), but the optimal duration of SAPT lacks evidence and consensus.

Objectives: To evaluate the impact of antiplatelet therapy duration on long-term outcomes after PFO device closure.

Methods: The PROLONG (PFO Transcatheter Occlusion Long-Term Outcomes National Group) registry is a multicenter retrospective study including 1,245 patients who underwent PFO device closure for cryptogenic embolism across 12 Italian hospitals between 1999 and 2013. This analysis included only patients with successful device implantation, no significant residual shunt, no indication for chronic antithrombotic therapy unrelated to PFO closure, and complete data on postprocedural antithrombotic therapy. Patients were categorized according to antiplatelet therapy duration following device implantation, adopting either a short-term (≤12 months) or a long-term (>12 months) strategy. The primary outcome was a composite of ischemic events (ischemic stroke, transient ischemic attack [TIA], or systemic embolism) and major bleeding (Bleeding Academic Research Consortium [BARC] type ≥3).

Results: This analysis included 940 patients (mean age 47 ± 12 years, 55% women) with a mean follow-up of 14.0 ± 3.1 years. A non-significant trend favoring the short-term strategy was observed for the composite outcome (HR: 0.61; 95% CI: 0.33–1.10; p=0.101), largely driven by a significantly lower incidence of major bleeding (HR: 0.32; 95% CI: 0.10–0.95; p=0.046), while ischemic event rates were comparable (HR: 0.76; 95% CI: 0.37–1.55; p=0.447). The Risk of Paradoxical

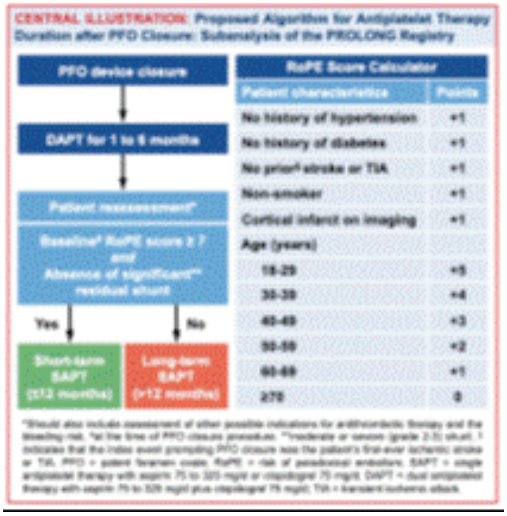


Figure 1

Embolism (RoPE) score was the only independent predictor of the composite outcome (HR: 0.83; 95% CI: 0.71–0.96; p=0.031). In stratified analyses, the benefit of the short-term strategy on the composite outcome was evident among patients with a RoPE score ≥7 (HR: 0.35; 95% CI: 0.12–0.92; p=0.043), whereas no difference was observed in those with a score <7 (HR: 0.86; 95% CI: 0.41–1.79; p=0.683).

Conclusions: After PFO device closure, in patients with a baseline RoPE score ≥7, discontinuing antiplatelet therapy within 12 months was associated with a significantly lower incidence of the composite outcome of ischemic and major bleeding events.

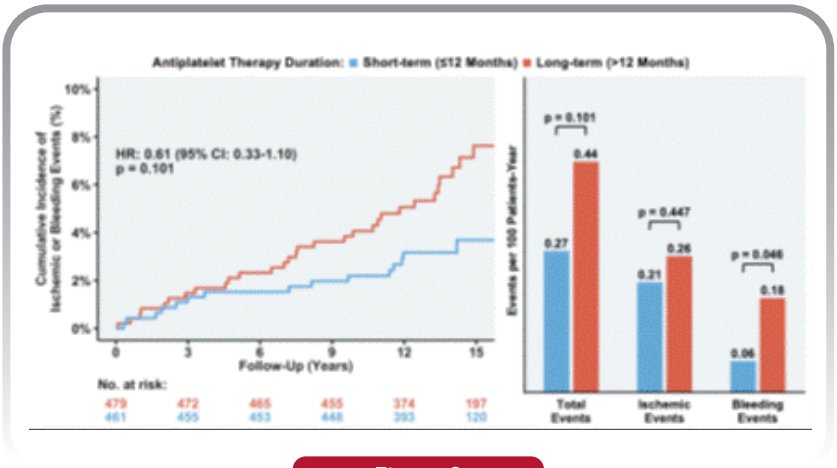


Figure 2

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 32
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

FORMAZIONE IN CARDIOLOGIA INTERVENTISTICA: COSA E' CAMBIATO

Eleonora Balzi (a), Gabriele Bischetti (a), Davide Negossi (a)
(a) AZIENDA OSPEDALIERO UNIVERSITARIA SANT'ANDREA

L'aumento dell'aspettativa di vita con conseguente incremento dei fattori di rischio quali cattive abitudini alimentari, mancanza di esercizio fisico, tabagismo e aumento dello stress, determina un costante aumento della prevalenza delle malattie cardiache come i disturbi del ritmo o valvolari o ancora di insufficienza soprattutto nella popolazione più anziana e affetta da comorbilità.

È in questo scenario che la cardiologia interventistica assume un ruolo di rilievo che necessita di competenze specialistiche capaci di rispondere alle esigenze dell'utenza.

In tal proposito si pone un importante gap teorico-pratico di formazione generato dall'assenza di corsi e master universitari specifici. A oggi, il percorso di formazione e crescita professionale avviene interamente secondo un approccio pratico basato sull'affiancamento a un collega anziano volto ad acquisire le abilità teoriche e pratiche con cui diventare autonomo nella gestione peri/intra/post procedurale del paziente e delle apparecchiature specifiche.

La teorica dell' infermieristica Patricia Benner adatt il modello di acquisizione delle competenze dei fratelli Dreyfus al nursing e ci port alla pubblicazione del testo "from notice to expert". Secondo la Benner, infatti, vi è una stretta correlazione tra le nozioni teoriche acquisite con lo studio e l'esperienza acquisita direttamente sul campo: l'unione di teoria e pratica conferisce il livello di competenza raggiunto.

Secondo questa definizione di "competenze", quanto è importante il background del professionista quando si affaccia al mondo della cardiologia interventistica? Nel processo di formazione e affiancamento iniziale, le esperienze pregresse possono aiutare e quindi velocizzare il percorso? Quanto negli ultimi venti anni la cardiologia interventistica si è evoluta e come, quindi, sono cambiate la formazione e le competenze dell'infermiere?

Basandoci sullo schema del continuum temporale su cinque livelli stipulato dalla Benner e sul "core curriculum" pubblicato dal ACNAP nel 2015, ci proponiamo di confutare le teorie sopracitate analizzando e mettendo a confronto le esperienze personali di due colleghi con bagaglio formativo differente assunti a distanza di pochi mesi nel primo semestre 2025 nel centro di cardiologia interventistica dell'azienda ospedaliero-universitaria Sant'Andrea di Roma ponendo l'attenzione su come la materia sia progredita per cui mutata negli ultimi anni.

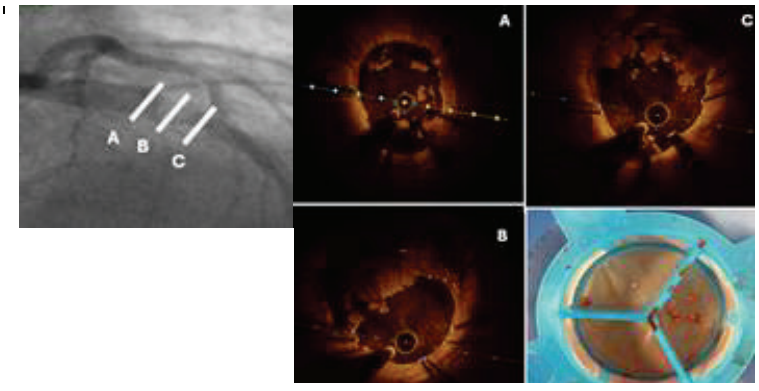
CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 678
INFARTO STEMI (CARDIOPATIA ISCHEMICA)
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
DIAGNOSTICA INVASIVA INTRAVASCOLARE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

UN CASO DI SINDROME DI KOUNIS DA PUNTURA DI TAFANO

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(a) UNIVERSITÀ DEL PIEMONTE ORIENTALE; (b) OSEPDALE MAGGIORE DELLA CARITÀ NOVARA

La Sindrome di Kounis è una sindrome coronarica acuta che si presenta nel contesto di una reazione di ipersensibilità, di un'allergia o di un'anafilassi.
È distinta in tre tipi:
1. da spasmo coronarico in presenza arterie normali
2. da instabilità delle placche in arterie coronariche aterosclerotiche
3. da trombosi di stent coronarici.
Presentiamo il caso di un paziente di 44 anni che, a seguito di una reazione anafilattica, andava incontro ad infarto miocardico di tipo STEMI.

T.C., uomo di 44 anni ex fumatore, sovrappeso, dislipidemico, con familiarità per cardiopatia ischemica. Nota allergia da graminacee; non note altre allergie. In anamnesi cardiologica: nel 2013 eseguita angioplastica con impianto di uno stent medicato (DES) su coronaria destra, 9 anni dopo angioplastica con impianto di un DES su arteria interventricolare anteriore (IVA) ed angioplastica con solo pallone (POBA) sul primo ramo diagonale (DG1). Riferita corretta assunzione della terapia farmacologica prescritta.
L'8 giugno 2025, mentre si trovava in giardino, insorgevano improvvisamente sintomi di natura allergica (rash cutaneo, prurito diffuso con successivo edema della glottide); veniva pertanto trasportato in DEA. All'arrivo emodinamica stabile, ECG nei limiti di norma. In anamnesi il paziente negava l'assunzione di nuovi farmaci o alimenti, riferita verosimile puntura di tafano mentre si trovava in giardino. Il medico del 118 aveva somministrato: terapia cortisonica, antistaminica e adrenalina. Dopo circa 30 minuti di permanenza di pronto soccorso comparsa di dolore toracico descritto come urente retrosternale, irradiato alle gengive; all'ECG comparsa di sopraST nelle derivazioni infero-posteriori. Alla coronarografia urgente: trombosi subocclusiva intrastent su IVA prossimale; eseguita tromboaspirazione manuale, alla valutazione con tomografia a coerenza ottica (OCT) evidenza di trombosi intrastent con minima sottoespansione dello stent, per cui si procedeva a POBA.
L'ecocardiogramma mostrava un ventricolo sinistro dilatato, con acinesia infero-basale, apicale e dei segmenti distali del setto anteriore e della parete antero-laterale, con LVEF 37%. La valutazione allergologica concludeva per reazione anafilattica verosimilmente da puntura di insetto e si prescriveva adrenalina autoiniettiva. Durante i primi giorni di ri-



Figure

covero extrasistolia ventricolare isolata talvolta organizzata in brevi tachicardie ventricolari non sostenute. Restante degenza priva di complicanze, il paziente veniva trasferito in un istituto per la riabilitazione cardiopolmonare dopo 5 giorni di ricovero con diagnosi di Sindrome di Kounis dopo reazione anafilattica verosimilmente da puntura di tafano; gli esami allergologici che eseguirà compreso il dosaggio di IgE anti tafano confermeranno o meno questa ipotesi.

CardioSic

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 620
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)
PROGNOSI (SCOMPENSO CARDIACO)

TRANSCATHETER EDGE-TO-EDGE REPAIR PLUS GUIDELINE-DIRECTED MEDICAL THERAPY VS GUIDELINE-DIRECTED MEDICAL THERAPY ALONE FOR SYMPTOMATICA MODERATE-TO-SEVERE MITRAL REGURGITATION

Daniele Giacoppo (a), Nicola Ammirabile (a), Davide Landolina (a), Placido Maria Mazzone (a), Marco Spagnolo (a), Davide Capodanno (a)
(a) POLICLINICO "RODOLICO-SAN MARCO", UNIVERSITY OF CATANIA, CATANIA, ITALY

Background: Transcatheter edge-to-edge repair (TEER) has emerged as a promising treatment for patients with symptomatic moderate-to-severe functional mitral regurgitation (FMR) who are unsuitable for surgery. However, the evidence supporting clinical benefits over guideline-direct medical therapy (GDMT) alone is discordant. Against this background, we conducted a comprehensive, up-to-date meta-analysis of randomized trials comparing long-term outcomes between TEER plus GDMT and GDMT alone for symptomatic moderate-to-severe FMR.

Methods: Major electronic databases (PubMed, Scopus, Web of Science, Embase) were searched for randomized trials comparing long-term outcomes between TEER plus GDMT and GDMT alone in patients with symptomatic moderate-to-severe FMR. The prespecified primary outcome was the composite of all-cause death or hospitalization due to heart failure at 24 months. Secondary outcomes included all-cause death, cardiovascular death, and hospitalization due to heart failure. Summary hazard ratios (HRs) with 95% confidence intervals (CIs) were calculated using random-effects models with inverse-variance weighting and restricted maximum likelihood-based estimation of between-trial heterogeneity. Results were complemented with analyses of reconstructed time-to-first-event individual patient data by one-stage mixed-effects Cox models and multiple sensitivity analyses to assess between-trial heterogeneity.

Results: Three randomized clinical trials (MITRA-FR, COAPT, and RESHAPE-HF2) were identified and included in the meta-analysis for a total of 1422 patients assigned to TEER plus GDMT (n=703) or GDMT alone (n=719). All-cause death or hospitalization due to heart failure at 24 month was significantly lower in the TEER plus GDMT group compared with the GDMT alone group by one-stage analysis (HR 0.72, 95% CI, 0.56-0.92). However, the two-stage analysis did not confirm this result and showed substantial between-trial heterogeneity (I^2=80.2%; p=0.006), essentially attributable to MITRA-FR. Rehospitalization due to heart failure was significantly lower in the TEER plus GDMT. Results by one-stage mixed-effects models were consistent with those by two-stage random-effects models (HR 0.70, 95% CI 0.51-0.97). Hospitalization due to heart failure at 24 months was significantly lower in the TEER plus GDMT group compared with the GDMT alone group both by one-stage (HR 0.65, 95% CI 0.45-0.88) and two-stage analyses (HR 0.70, 95% CI 0.51-0.97). However, heterogeneity was substantial significant (I^2=71.8%; p=0.029), both COAPT and RESHAPE-HF2 trials were required to produce a significant summary estimate when pooling the available evidence, and after conservative 95% CI correction the difference between treatment groups was no longer significant. All-cause (HR 0.76, 95% CI 0.57-1.01) and cardiovascular death (HR 0.77, 95% CI 0.56-1.06) at 24 months were not significantly different between treatment groups.

Conclusion: In patients with symptomatic moderate-to-severe FMR, TEER plus GDMT significantly reduces the risk of all-cause death or hospitalization due to heart failure and hospitalization due to heart failure at 24 months compared to GDMT but heterogeneity between trials is significant.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 1047
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)

CLINICAL OUTCOMES OF PERCUTANEOUS CORONARY INTERVENTIONS AFTER TRANSCATHETER AORTIC VALVE REPLACEMENT

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Background: The number of patients undergoing percutaneous coronary interventions (PCI) after transcatheter aortic valve replacement (TAVR) is expected to increase, but their prognosis remains poorly understood.

Methods: Consecutive PCI patients with prior TAVR were compared to patients without prior TAVR between 2008 and 2023. The Kaplan-Meier method was used to estimate the 1-year incidence of major adverse cardiovascular events (MACE), defined as a composite of cardiovascular death or myocardial infarction. An entropy balance approach was implemented to adjust for imbalances in patient and procedural characteristics. Adjusted hazard ratios (HRs) were estimated using weighted Cox regression models.

Results: Comparing 420 PCI patients with prior TAVR (mean age 80.8 years, 37.1% women) to 1,197 without (mean age 70.4 years, 24.6% women), 1-year MACE was higher in the prior TAVR group (8.7% vs. 3.7%; unadjusted HR 2.35, 95% CI 1.49-3.69; p<0.001). After adjustment for clinical and procedural characteristics, prior TAVR remained associated with an increased risk of MACE (adjusted HR 2.36, 95% CI 1.08-5.16; p=0.032). This was primarily driven by higher cardiovascular death (adjusted HR 3.12, 95% CI 1.10-8.79, p=0.032), while the association with myocardial infarction was attenuated post-adjustment and no longer statistically significant.

Conclusions: Patients undergoing PCI after TAVR experience a higher incidence of MACE compared to those undergoing PCI without prior TAVR, underscoring the importance of accurate patient selection before performing PCI in patients with chronic coronary syndrome and history of TAVR.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 800
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
DIAGNOSTICA INVASIVA INTRAVASCOLARE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INFARTO NSTEMI (CARDIOPATIA ISCHEMICA)

A SCAFFOLD FADES, A VESSEL REMAINS: DRUG-COATED BALLOON RESCUE IN A LEAVE-NOTHING-BEHIND STRATEGY

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(a) UNIVERSITÀ DEGLI STUDI DI VERONA

Magnesium resorbable scaffolds (MRS) provide temporary vascular support after PCI, with the aim of restoring normal vascular function upon resorption, and are particularly appealing in younger patients. Although MRS have shown favorable outcomes, the optimal strategy for managing MRS failure remains undefined. Drug-coated balloons (DCBs) have emerged as a compelling alternative to drug-eluting stents (DES) in the treatment of in-stent restenosis (ISR) and is particularly attractive in younger patients, where long-term vascular integrity is essential, consistent with the "leave-nothing-behind" concept. To date, however, there are no published reports detailing the exclusive use of a DCB-only strategy for the treatment of a failed MRS.

A 48-year-old female with a significant family history of coronary artery disease presented with non-ST-segment elevation myocardial infarction (NSTEMI). Peak troponin T was 112 ng/L. Electrocardiography revealed giant T-wave inversions in the anterior leads, while echocardiography showed apical hypokinesia and a left ventricular ejection fraction (LVEF) of 47%.

Coronary angiography identified a critical focal stenosis in the mid-left anterior descending artery (LAD). A Sion Blue guidewire was used to cross the lesion. Lesion preparation was performed with a 2.5 × 15 mm semi-compliant (SC) balloon (8 atm), followed by a 3.0 × 15 mm non-compliant (NC) balloon (12 atm). A 3.0 × 20 mm magnesium-based resorbable scaffold (Magmaris) was deployed at nominal pressure in the mid-LAD. Following deflation, a significant reduction in coronary flow in the LAD and left circumflex artery (LCx) occurred, attributed to diffuse vasospasm. This was accompanied by profound hypotension, widespread ST-segment elevation, and cardiocirculatory arrest. Cardiopulmonary resuscitation (CPR) was initiated immediately. The patient received colloids, norepinephrine, and non-invasive ventilation. Consciousness was regained after approximately one minute, with subsequent hemodynamic stabilization. A switch to right femoral access was made for control angiography, which confirmed satisfactory scaffold deployment and restored coronary flow. Post-dilation with a 3.5 × 15 mm NC balloon at 12 atm was performed to optimize scaffold expansion.

At 16-month angiography follow-up, in asymptomatic patient revealed in-scaffold restenosis at the proximal edge of the Magmaris device. Optical coherence tomography (OCT) confirmed severe stenosis with a minimum lumen area of 1.8 mm² and area stenosis of 77%.

The LAD was re-crossed using a BMW guidewire, with a second BMW placed in D1 for side branch protection. Pre-dilation was performed using a 2.5 × 20 mm SC balloon (8 atm), followed by a 3.0 × 12 mm NC balloon (12 atm). Despite the presence of a non-flow limiting type C-D dissection, vessel flow remained preserved. PCI using a paclitaxel-coated balloon (Elutax, 3.0 × 30 mm) was performed with 90-second inflation at 6 atm. A satisfactory angiographic result was achieved. At six-month follow-up, angiography confirmed sustained patency of the previously treated segment.

OCT imaging demonstrated complete scaffold resorption, resolution of dissection, and favorable vessel remodeling. This case illustrates the feasibility and effectiveness of a DCB-only strategy for treating restenosis following MRS failure. It underscores the potential of DCBs to provide durable outcomes without reintroducing permanent metallic implants, particularly valuable in younger patients where long-term vessel preservation is a key therapeutic goal.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 615
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INTERVENTISTICA STRUTTURALE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

TAVI E ROTTURA DI ANULUS AORTICO: LA NOSTRA ESPERIENZA

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La stenosi aortica severa rappresenta la più frequente valvulopatia negli anziani ed è caratterizzata da un restringimento progressivo dell'orifizio valvolare, che determina un aumento del gradiente pressorio transvalvolare e una riduzione della portata cardiaca. La prognosi dei pazienti sintomatici non trattati è sfavorevole, con un tasso di mortalità entro i 2 anni dalla comparsa dei sintomi di circa il 50-60%. La TAVI si è affermata come valida alternativa alla chirurgia tradizionale, inizialmente riservata ai pazienti ad alto rischio operatorio ed oggi estesa anche alle categorie a rischio intermedio e basso, dimostrandosi una strategia terapeutica efficace e sicura nella maggior parte dei casi.
La rottura di anulus aortico è una rara complicanza della TAVI, con un'incidenza minore dell'1% dei casi, sebbene sia una delle più fatali a causa del rapido collasso emodinamico cui può portare e della sua difficile gestione. Tale complicanza richiede, nel 15% circa dei casi, intervento cardiochirurgico in bail-out e si associa a tassi di mortalità del 50% nel caso di rottura contenuta e del 75% quando non contenuta. La rottura di anulus include le lesioni che si verificano nelle zone di atterraggio del dispositivo (DLZs), che comprendono anulus aortico, seni aortici, radice aortica e tratto di efflusso ventricolare sinistro (LVOT). Tra i fattori di rischio si annoverano: calcificazione sub-anulare dell'LVOT, sovradimensionamento della protesi pallone espandibile (BEV), post dilatazione aggressiva, valvola aortica bicuspide e anulus aortico di piccole dimensioni.
Questo caso clinico espone il percorso terapeutico di un paziente di 79 anni affetto da stenosi aortica severa sintomatica (NYHA III), sottoposto a TAVI in regime di elezione previa valutazione in Heart-Team.
Per la programmazione dell'intervento, è stata eseguita valutazione mediante cardio-TC optando per l'utilizzo di una bioprotesi pallone espandibile 29 mm. Dopo l'impianto si assisteva a comparsa di stato confusionale ed ipotensione severa, con evidenza al controllo ecocardiografico intraoperatorio di tamponamento cardiaco, per il quale si procedeva a pericardiocentesi per via sub-xifoidea in emergenza. Alla successiva ventricolografia e aortografia si evidenziava rottura non contenuta di anulus aortico dal versante ventricolare. Data l'instabilità emodinamica e l'elevatissimo rischio chirurgico, il team multidisciplinare poneva indicazione a tentativo di riparazione percutanea.
Il caso clinico descrive l'approccio interventistico utilizzato, mediante utilizzo di un dispositivo vascular plug e successiva Valve-in-Valve (Viv) in bail-out con bioprotesi autoespandibile 34 mm.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 843
ELETTROSTIMOLAZIONE (ARITMIE)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
GESTIONE DELLA COMPLICANZE PM / ICD (ARITMIE)

THE NEW WAY: QUANDO L'ANATOMIA CONDIZIONA LA TECNICA DI IMPIANTO DI UN PACEMAKER LEADLESS

Cosimo Daniele Lenoci (a), Vinzenzo Ezio Santobuono (a), Riccardo Memeo (a), Maria Ludovica Naccarati (a), Maria Cristin Carella (a), Alessio Falagario (a), Marco Matteo Ciccone (a), Andrea Igoren Guaricci (a)
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BACKGROUND L'impianto di pacemaker (PM) leadless endocardici è una realtà consolidata nella cardiostimolazione. La classica tecnica di impianto prevede un approccio transvenoso femorale; tuttavia l'adozione di un approccio giugulare ha permesso di facilitare la tecnica di impianto in casi clinici particolari.

CASO CLINICO Paziente maschio, 73 anni, iperteso, dislipidemico, con vasculopatia periferica. Ricoverato per intervento di sostituzione valvolare mitralica con bioprotesi endocardite batterica.
Nel postoperatorio, evidenza all'ECG di ritmo giunzionale, all'ECG Holter delle 24 ore presenza di BAV di III° grado, veniva posta indicazione ad impianto di PM. Stante l'elevato rischio infettivo, si è optato per l'impianto di un pacemaker endocardico leadless atrio-ventricolare. Durante la procedura si eseguiva riscontro angiografico di anomalia anatomica della vena cava inferiore risultante ipoplasica e con sbocco con angolazione a 90° in atrio destro risultava pertanto impossibile ottenere un ingresso stabile dell'introduttore e del sistema di rilascio del PM.
Quindi è stato deciso un cambio di approccio, con accesso transvenoso giugulare destro. L'impianto è stato eseguito agevolmente e privo di complicanze intraprocedurali: i parametri elettrici sono risultati nella norma e il paziente ha potuto proseguire la sua degenza.

CONCLUSIONI In questo caso erano presente un elemento anatomico che ha reso impossibile l'impianto con la metodica convenzionale. Verosimilmente l'utilizzo di tecniche di imaging pre-impianto avrebbe potuto anticipare le difficoltà riscontrate e consentire sin da subito l'impianto per via venosa giugulare. Le evidenze in letteratura ci consentono di eseguire tali procedure con accessi non convenzionali e sarebbe auspicabile che le aziende forniscano kit idonei al fine di poter eseguire tali procedure attraverso questo nuova tecnica di impianto e non come alternativa all'approccio standard.

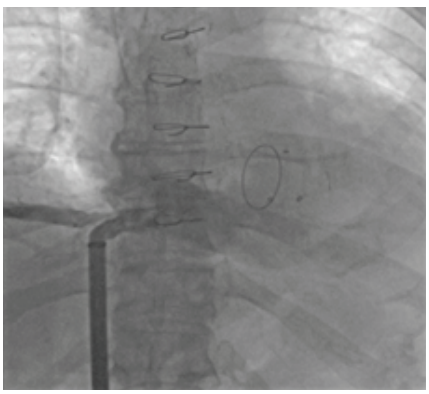


Figura 1



Figura 2

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 998
ELETTROSTIMOLAZIONE (ARITMIE)
GESTIONE DELLA COMPLICANZE PM / ICD (ARITMIE)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

RARO CASO CLINICO DI STIMOLAZIONE DIAFRAMMATICA SECONDARIA A SINDROME DI TWIDDLER

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CASO CLINICO Paziente di 76 anni con diagnosi di cardiomiopatia ipertrofica, sottoposto a impianto di defibrillatore bicamerale in prevenzione primaria. L'impianto si era svolto senza complicanze e il paziente era stato dimesso a domicilio. A pochi giorni dalla dimissione, il paziente si è ripresentato in PS per la comparsa di stimolazioni diaframmatiche e discomfort toracico, suggestive di stimolazione frenica.

Il controllo elettronico del device evidenziava completa assenza di sensing e di cattura dell'elettrocatetere ventricolare destro, il quale risultava retratto fino alla vena cava superiore (VCS) ad un RX torace eseguito in PS. Il paziente riferiva di aver percepito prurito in sede di tasca e di essersi manipolato il generatore nei giorni successivi alla dimissione. Questa condizione è stata interpretata come sindrome di Twiddler, complicanza legata a rotazioni del generatore determinate dalla scorretta manipolazione del paziente, con conseguente trazione e dislocazione degli elettrocateteri. La stimolazione frenica era riconducibile al decorso anatomico del nervo frenico, addossato alla parete della VCS: l'elettrocatetere ventricolare trasmetteva impulsi costanti (data l'assenza di eventi spontanei sentiti) attraverso la parete venosa al nervo, determinando l'attivazione diaframmatica. Il quadro presentava potenziali rischi clinici di notevole gravità, tra cui: tamponamento cardiaco da perforazione; danneggiamento delle strutture valvolari e vascolari per la presenza della vite esposta dell'elettrocatetere dislocato; shock inappropriati per possibili interferenze/rumore su elettrocatetere. Dopo la diagnosi, gli elettrocateteri sono stati riposizionati correttamente in sala di cardiostimolazione, senza ulteriori complicazioni.

Questo caso sottolinea l'importanza di un attento follow-up post-impianto e della consapevolezza dei possibili meccanismi alla base di stimolazioni anomale che possono, in alcuni casi, rappresentare il primo segno di una dislocazione dell'elettrocatetere e precedere manifestazioni e complicanze ben più severe.

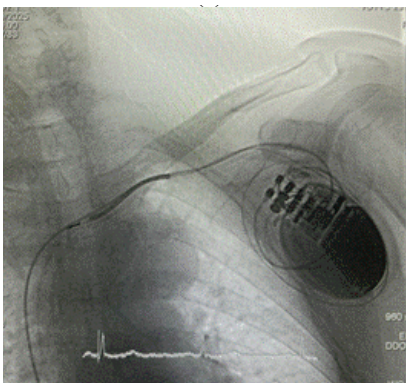


Figura 1

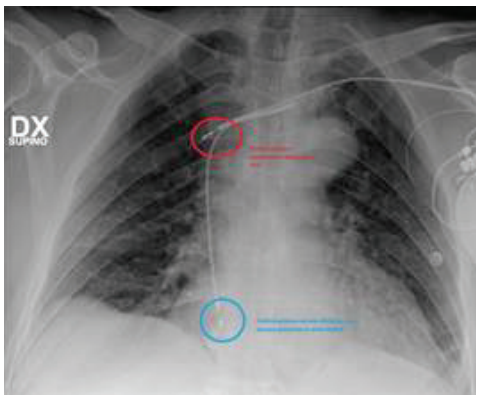


Figura 2

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 63
DIAGNOSTICA INVASIVA INTRAVASCOLARE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
FISIOLOGIA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
MINOCA (MYOCARDIAL INFARCTION WITH NORMAL CORONARY ARTERIES) (CARDIOPATIA ISCHEMICA)

WHEN CHEST PAIN IS NOT WHAT IT SEEMS: TIME FOR RIGHT DIAGNOSIS AND RIGHT TREATMENT - A CASE REPORT

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Background: Chest pain is a common reason for Emergency Department (ED) visits, yet not all cases are attributable to coronary artery disease (CAD). The 2024 European Society of Cardiology (ESC) guidelines emphasize the importance of invasive coronary function testing in patients with angina and non-obstructive coronary arteries (ANOCA). Understanding alternative causes of chest pain is crucial for appropriate diagnosis and management.

Case Summary: A 58-year-old woman with hypertension, prediabetes, and a history of Takotsubo Syndrome presented with recurrent chest pain episodes, prompting multiple ED visits. Initial cardiac evaluations, including electrocardiogram (ECG), troponin levels, and ECG stress testing, were unremarkable. Repeated invasive coronary angiography (ICA) with a full physiological assessment ruled out obstructive CAD, microvascular dysfunction, and coronary vasospasm, suggesting a "sensitive heart syndrome". Further evaluation revealed a spinal schwannoma at the thoracic level, compressing the anterior spinal roots. Neuropathic chest pain was confirmed, and treatment with Pregabalin led to symptom relief.

Discussion: This case highlights the importance of a structured stepwise diagnostic approach to chest pain. When cardiac causes are excluded, alternative diagnoses such as neuropathic pain should be considered.

Keywords: ANOCA; sensitive heart; chest pain; case report.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 497
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INFARTO STEMI (CARDIOPATIA ISCHEMICA)
PIASTRINE E TERAPIA ANTIAGGREGANTE (ATEROTROMBOSI)
FARMACI CARDIOVASCOLARI (FARMACI CARDIOVASCOLARI E NUTRACEUTICI)

RECURRENT EARLY IN-STENT THROMBOSIS OF THE RIGHT CORONARY ARTERY IN A PATIENT WITH ACUTE CORONARY SINDROME AND HIGH THROMBOTIC BURDEN: THE ROLE OF THROMBOASPIRATION AND ANTITRHOMBOTIC STRATEGIES IN A COMPLEX CLINICAL CASE

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Background: Early in-stent thrombosis (ST), occurring within 24 hours of percutaneous coronary intervention (PCI), is a rare (<1%) but life-threatening complication. It is often associated with procedural, anatomical, or thrombotic factors. Management requires rapid intervention combining mechanical and pharmacological strategies, especially in patients with high thrombus burden.

Case Summary: A 63-year-old male with history of paroxysmal atrial fibrillation (post-ablation, 09/2024) and no known coronary artery disease presented to the Emergency Department with typical chest pain radiating to the upper limb. ECG showed T-wave inversions in D1 and aVL; biomarkers confirmed myocardial injury (Troponin T 35 pg/ml); the transthoracic echocardiogram showed a preserved left ventricular ejection fraction (≈50%) with no evident segmental wall motion abnormalities. Urgent coronary angiography revealed proximal thrombotic occlusion of the right coronary artery (RCA). The patient was treated with intravenous Cangrelor and Tirofiban, followed by multiple thromboaspiration attempts, both manual and mechanical using the Penumbra CAT RX system. Initial Penumbra microcatheter advancement was impeded by repeated prolapse within the mid segment of the RCA. To overcome this limitation, a manual thromboaspiration catheter, offering greater axial support and rigidity, was employed, this enabled effective thrombus removal and restoration of patency in the mid-to-distal RCA, ultimately allowing successful advancement of the Penumbra device to the distal vessel and completion of the procedure. Two sirolimus-eluting drug-eluting stents (DES) were implanted in the ostial-proximal and mid-distal RCA segments. Final angiographic result was sub-optimal but with a TIMI Flow grade 2. Approximately 12 hours later, and 30 minutes after discontinuation of the tirofiban infusion, the patient developed recurrent chest pain associated with new electrocardiographic changes: ST-segment elevation in the inferior leads. These findings prompted urgent coronary angiography, which revealed in-stent thrombosis in the mid segment of the RCA. A second PCI was performed with: renewed thromboaspiration (Penumbra+ manual), an additional Tirofiban bolus, and implantation of a third sirolimus-eluting stent. Partial flow restoration (TIMI 2–3) was achieved. At 48-hour echocardiographic follow-up, mild hypokinesia of the basal inferior wall was noted, with preserved global systolic function (EF 55%). The

patient recovered uneventfully and was discharged on triple antithrombotic therapy (Aspirin, Ticagrelor, Edoxaban).

Conclusion: This case shows a rare and severe recurrence of early ST in a patient initially classified as "low-risk," with diffuse coronary arthrosclerosis and massive thrombotic burden. Despite fast-acting antithrombotic agents, recurrent thrombotic occlusion occurred within 12 hours, suggesting either suboptimal pharmacodynamic response or persistent thrombotic activation. The Penumbra CAT RX system was critical in achieving distal flow recovery. Multistenting strategy was required to adequately treat the affected coronary segment and prevent a second potentially fatal event. This clinical scenario underscores the importance of close clinical and instrumental monitoring within the first 24–48 hours post-PCI, aggressive multimodal management, combining interventional techniques, advanced mechanical thromboaspiration devices, pharmacotherapy, imaging, to optimize outcomes in high-risk ST scenarios.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 372
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
PIASTRINE E TERAPIA ANTIAGGREGANTE (ATEROTROMBOSI)
TROMBOSI E COAGULAZIONE (ATEROTROMBOSI)

GESTIONE DELLA FIBRILLAZIONE ATRIALE IN PAZIENTE CON ALTO RISCHIO EMORRAGICO: UN CASE REPORT SULLA CHIUSURA DELL'AURICOLA SINISTRA E TERAPIA OFF-LABEL

Federica Malefora (a), Michela Casella (a), Federico Guerra (a), Antonio Dello Russo (a)
(a) AZIENDA OSPEDALIERA UNIVERSITÀ POLITECNICA DELLE MARCHE

La paziente è una donna di 60 anni affetta da Sindrome di Rendu-Osler-Weber, o Teleangectasia Emorragica Ereditaria (HHT), con elevato rischio emorragico e frequenti anemizzazioni. In anamnesi patologica remota si segnalavano:
- ATC di FA con IVP nel 2023.
- 09/2024 SCASTEMI anteriore Kippil IV per occlusione trombo-embolica di IVA media e CX prossimale.
- 11/2024 Impianto di defibrillatore in prevenzione primaria per FE 30%

Accede al nostro reparto a 03/2025 per scompenso cardiaco acuto in corso di fibrillazione atriale ad elevata risposta ventricolare e concomitante anemia.
All'ingresso venivano condotti i seguenti esami:
- ECG
- Esami ematici: Hb 9,6 g/dl, creatinina 1,45 mg/dl, NT-proBNP 4481 pg/mL, saturazione trasferrina 6%, ferro 25 mcg/dl, TnIhs 10 ng/L
- Ecoscopia: lieve dilatazione Vsx con FE 30% per acinesia dell'apice in toto, della parete anteriore medio-apicale e del SIV medio-apicale. Vdx dilatato e ipocinetico. Atrii dilatati. Iao lieve. IM lieve-moderata. IT moderata con PAPs stimata 40 + 15 mmHg.

La Terapia farmacologica condotta a domicilio prevedeva: Sacubitril/Valsartan 24/26mg, Empaglifozin 10mg, Bisoprololo 1,25 mg, Furosemide 25mg 2cp, Carnenone 50mg, Eparina sodica 6000 UI x 2.
La problematica principale da gestire consisteva nel bilancio tra il rischio trombo-embolico e il rischio emorragico della paziente.
- CHA2DS2-VA score: 4 punti (rischio trombo-embolico alto)
- HAS-BLED score: 3 punti (rischio emorragico alto 5,6%)

La paziente presentava i criteri per assoluta controindicazione alla terapia anticoagulante. Si decideva dunque di sottoporla a chiusura percutanea dell'auricola sinistra.
All'ecografia trans-esofagea lo studio dell'auricola mostrava: Watchman sizing in 2D/3D: landing zone massima pari a 20 mm, profondità 22 mm. Amulet sizing a 45°: landing zone 20 mm, profondità 19 mm.
È stata scelta una protesi Amplatzer Amulet 22 mm.
In considerazione dell'elevato rischio emorragico è stato adottato un approccio terapeutico alternativo, decidendo di trattare la paziente soltanto con lisina acetilsalicilato per un periodo di 6 settimane dall'intervento.

La paziente è stata dunque dimessa confermando la terapia per lo scompenso cardiaco e introducendo Amiodarone 200 mg e Lisina acetilsalicilato al dosaggio di 75 mg.
É stato infine effettuato un controllo con eco trans-e-

sofageo a sei settimane dall'intervento documentando corretto posizionamento del device in auricola sinistra, in assenza di leak peridevice né di masse adese al dispositivo. Si confermava l'indicazione alla sospensione di Lisina acetilsalicilato raggiungendo un completo wash out da anticoagulanti e antiaggreganti.

In conclusione, questo case report descrive un approccio terapeutico non convenzionale, ma efficace, in una paziente affetta da fibrillazione atriale ad alto rischio tromboembolico ed emorragico, a causa della concomitante Sindrome di Rendu-Osler-Weber (HHT).

Nei pazienti con controindicazioni assolute alla terapia anticoagulante ma con CHADS-VA elevato la chiusura dell'auricola sinistra rappresenta una valida alternativa. Nei casi estremi come questo dove il rischio emorragico è così alto il regime terapeutico basato su SAPT per sei settimane può essere una strategia sicura e tollerabile.
Il follow-up ecocardiografico a sei settimane conferma il successo della procedura, documentando il corretto sealing del dispositivo e l'assenza di perdite peridevice o formazioni trombotiche.

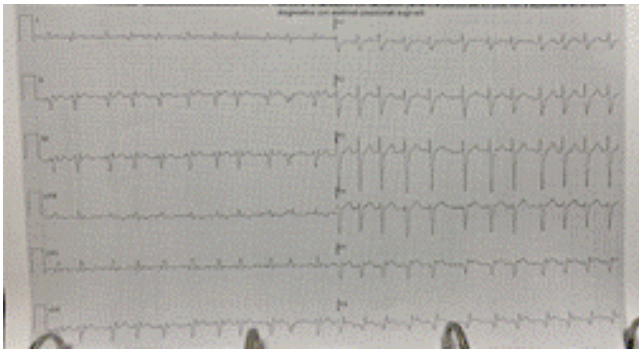


Figura 1

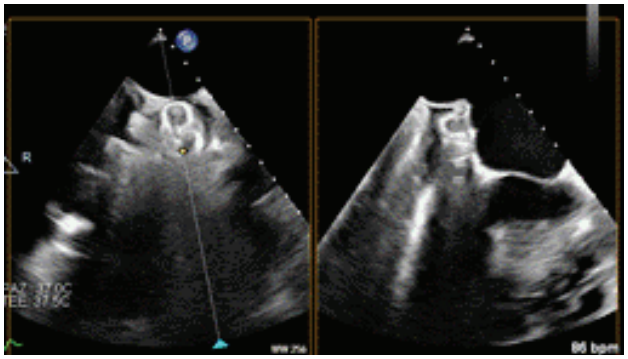


Figura 2

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 825
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)

CLINICAL OUTCOMES OF BAILOUT STENTING AFTER DRUG-COATED BALLOON ANGIOPLASTY: A SYSTEMATIC REVIEW AND SINGLE-ARM META-ANALYSIS

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(a) POLICLINICO TOR VERGATA

Background: Drug-coated balloon (DCB) angioplasty is an established alternative to drug-eluting stents (DES) in selected coronary lesions. However, bailout stenting (BOS) is often necessary after suboptimal DCB results. The safety profile of BOS after DCB angioplasty remains poorly defined.

Methods: We conducted a systematic review and meta-analysis following PRISMA 2020 guidelines. We searched PubMed, Embase, Scopus, and Cochrane CENTRAL up to March 2025. Studies were eligible if they reported clinical outcomes of patients undergoing BOS with DES after suboptimal DCB angioplasty. Studies with overlapping populations, abstract-only publications, or missing outcome data specific to BOS were excluded. Due to the lack of a homogeneous control group across included studies, a single-arm meta-analytic design was adopted. Pooled proportions for cardiac death (CD), myocardial infarction (MI), target lesion revascularization (TLR), and target vessel revascularization (TVR) were calculated using a random-effects model. Heterogeneity was assessed via I^2 and Baujat plots. Pooled incidence estimates were contextualized by descriptive comparison with clinical outcomes reported in contemporary benchmark trials evaluating second- and third-generation drug-eluting stents.

Results: Five studies were included (n = 4,129). The pooled incidence was 2% [95% CI: 1–2%] for CD, 3% [1–5%] for MI, and 5% [4–6%] for TVR, all with low or negligible heterogeneity. TLR incidence was 11% [1–31%], but after excluding an outlier study (Gao et al. 2024), it decreased to 5% [3–7%] with reduced heterogeneity (I^2 = 33.3%). Risk of bias was moderate to serious for most observational studies, while Gao et al. showed low risk except for performance bias (open-label design). No formal tests for publication bias were conducted due to <10 studies per outcome.

Conclusions: In this meta-analysis, BOS after DCB angioplasty showed low rates of cardiac death, MI, and TVR, and an acceptable TLR rate comparable to modern DES trials. These findings support the safety of BOS in selected patients, justify further investigation in randomized controlled settings and may inform future decision-making in settings where DCB angioplasty is preferred but fails to yield optimal results.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 827
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INTERVENTISTICA STRUTTURALE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)

ACUTE ISCHEMIC STROKE DURING TAVI PROMPTLY MANAGED WITH MECHANICAL THROMBECTOMY: THE IMPORTANCE OF PERIPHERAL INTERVENTIONAL SKILLS AND MULTIDISCIPLINARY COLLABORATION

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(a) POLICLINICO TOR VERGATA

Background: Transcatheter aortic valve implantation (TAVI) carries approximately a 3% risk of periprocedural stroke, regardless of the valve type. Prompt recognition and immediate management are crucial to minimizing permanent neurological damage. We report a case of periprocedural ischemic stroke during TAVI, successfully treated with mechanical thrombectomy after rapid diagnosis by the interventional cardiologist, highlighting the importance of peripheral interventional skills and multidisciplinary collaboration.

Case Report: During TAVI for bicuspid aortic stenosis type 1 with a self-expanding valve (Corevalve, Medtronic Santa Rosa, CA), the patient developed sudden left hemibody weakness and aphasia after balloon pre-dilatation VACS III 22 mm (xxxx). The valve was immediately implanted, and after aortic angiography to assess valve performance, the interventional cardiologist promptly performed right carotid angiography using a JR-4 6F diagnostic catheter, revealing occlusion of the right middle cerebral artery (M1 segment). A BMW wire (Abbott Vascular, Santa Clara, CA, USA) was advanced, and the right ophthalmic artery was reopened. Meanwhile, the stroke team was activated, and interventional radiologists performed a mechanical thrombectomy with aspiration (Catalyst 6 catheter, Synchro microguidewire) through a NeuroMax 90 cm guiding catheter. A single aspiration pass successfully restored cerebral blood flow, achieving complete recanalization (TICI 3) within less than 30 minutes of symptom onset. Post-procedure CT confirmed no hemorrhagic complications. Pre- and post-procedure cerebral angiography clearly demonstrated successful recanalization. The retrieved embolus provided direct evidence of the occlusion source.

Conclusion: This case highlights two key points: (1) peripheral interventional skills are crucial for structural cardiologists, enabling rapid recognition and diagnosis of extracardiac complications; (2) multidisciplinary collaboration among cardiologists, neurologists, and interventional radiologists is essential to solve life-threatening complications during structural heart procedures promptly.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 831
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
ARTERIOPATIA ARTI INFERIORI (MALATTIE DEI VASI)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)

NO EASY WAY IN: TAVI IN BICUSPID AORTIC VALVE WITH CHALLENGING ILIOFEMORAL ACCESS AND LOW CORONARY OSTIUM

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(a) POLICLINICO TOR VERGATA

Introduction: Transfemoral transcatheter aortic valve implantation (TAVI) in patients with bicuspid aortic valve anatomy remains technically demanding due to challenging root morphology, potential for asymmetric expansion, and risk of coronary obstruction. When coupled with hostile iliofemoral access and low coronary ostia, the risk of periprocedural complications increases significantly. In such complex anatomical settings, a comprehensive preprocedural assessment and individualized protective strategies become essential to ensure procedural safety and success.

Case presentation: A 69-year-old woman with severe degenerative bicuspid aortic stenosis and preserved left ventricular ejection fraction (62%) presented with progressive dyspnea. Relevant comorbidities included gastrointestinal angiodysplasia (suspected Heyde syndrome) and prior PCI on the right coronary artery. Multimodality imaging revealed both extensive calcific disease of the iliofemoral axis and a low-lying right coronary ostium. After Heart Team discussion, transfemoral TAVI with a balloon-expandable valve was selected. Vascular access optimization involved intravascular lithotripsy (6.0×60 mm Shockwave balloon), sequential predilation with a 7.0 mm Armada balloon, and eSheath pre-expansion. A dottering technique over a Lunderquist buddy wire enabled safe progression of the delivery system. To prevent right coronary obstruction, a balloon chimney technique was employed, with simultaneous inflation of a coronary balloon at the ostium during valve deployment. The procedure resulted in optimal valve expansion and unobstruc ted coronary flow, with no procedural complications.

Discussion: This case highlights the feasibility of transfemoral TAVI in a high-risk anatomical setting by integrating advanced vascular access strategies and coronary protection techniques. The successful outcome reinforces the value of intravascular lithotripsy and buddy-wire-assisted dottering in patients with severe iliofemoral calcification, as well as the importance of preemptive protection of low coronary ostia, especially in bicuspid anatomy.
As TAVI continues to expand to younger and more anatomically complex patients, including those with bicuspid valves, personalized procedural planning becomes paramount. This case supports the integration of lithotripsy-assisted access, dottering maneuvers, and coronary chimney protection as part of the expanding toolkit for high-risk TAVI procedures. Future studies and registries are warranted to better define indications, safety, and long-term outcomes of these advanced techniques in similar challenging anatomical subsets.

CardioSic

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 788
INFARTO STEMI (CARDIOPATIA ISCHEMICA)
FISIOLOGIA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

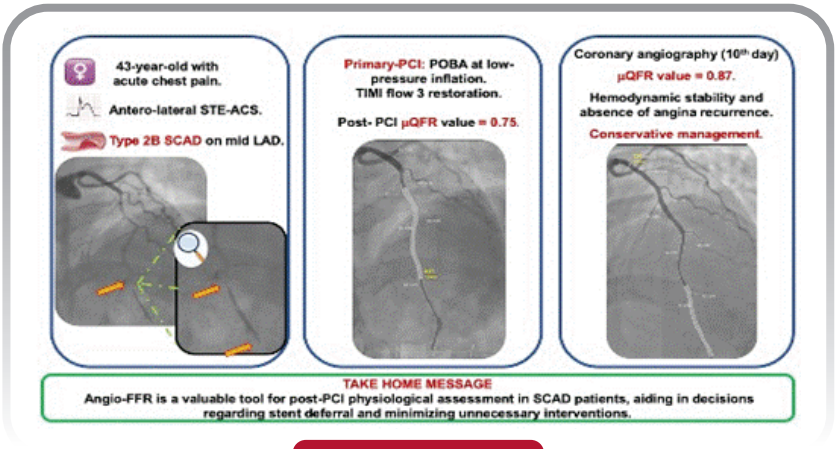
MURRAY LAW-BASED QUANTITATIVE FLOW RATIO FOR OPTIMIZING REVASCULARIZATION IN ANTERIOR STEMI DUE TO SPONTANEOUS CORONARY ARTERY DISSECTION: A CASE REPORT

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(c) DIVISION OF CARDIOLOGY, S.S. ANNUNZIATA HOSPITAL

Background: Spontaneous coronary artery dissection (SCAD) is a rare, nonatherosclerotic cause of acute coronary syndrome (ACS) due to coronary artery compression exerted by a blood-filled false lumen. Conservative management is recommended for most cases, with percutaneous coronary intervention (PCI) reserved to patients with significant ischemia, reduced coronary blood flow, or hemodynamic instability. To date, high complication rate represents a matter of debate for implementing PCI in SCAD.

Case Summary: We describe the case of a 43-year-old woman presenting with acute retrosternal chest pain and ST-segment elevation myocardial infarction. The patient medical history included hypertension, smoking, recent hormonal therapy, and prednisone use. Emergent coronary angiography revealed a type IIb SCAD in the mid-left anterior descending artery with vessel occlusion. Plain balloon angioplasty successfully restored good antegrade flow (TIMI 3), deferring the decision of stent implantation on follow-up coronary angiography. Murray law-based quantitative flow ratio (μQFR) revealed a hemodynamically non-significant lesion at ten days follow-up. The patient remained stable, demonstrating recovery of myocardial function and no recurrent symptoms at 12-months follow-up.

Clinical Implication: The primary goals in acute SCAD are to preserve coronary flow, maintain myocardial perfusion, alleviate symptoms, and prevent complications. Revascularization through different strategies is reserved for rare cases; however, a standardized definition of procedural success in this specific context remains uncertain. PCI outcome can be addressed safely while less invasively by μQFR; such implementation in the lab provides a quantitative evaluation of myocardial perfusion, and avoids the risks of wiring the vessel, as in standard FFR. Previous studies have shown that suboptimal post-PCI FFR values predict adverse outcomes, though this tool is not validated for SCAD. To our knowledge, we report for the first time μQFR in SCAD, supporting its potential role in predicting PCI success.



Figure

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 789
INFARTO STEMI (CARDIOPATIA ISCHEMICA)
FISIOLOGIA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

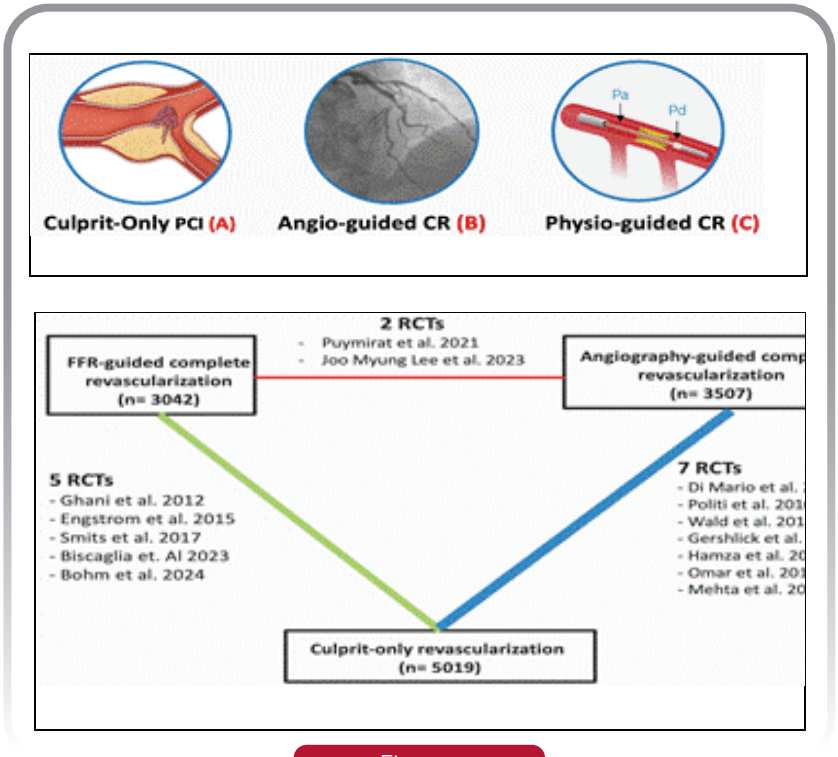
PHYSIOLOGY VERSUS ANGIOGRAPHY GUIDED COMPLETE CORONARY REVASCULARIZATION IN STEMI PATIENTS WITH MULTIVESSEL DISEASE: A NETWORK META-ANALYSIS

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Background: In patients with ST-segment elevation myocardial infarction (STEMI) and multivessel disease (MVD), complete revascularization (CR) is recommended over culprit- only PCI to reduce adverse cardiovascular outcomes. However, the optimal strategy for CR, whether angiography guided, or physiology guided, remains uncertain.

Methods: We performed a network meta-analysis including 14 randomized controlled trials (RCTs) that enrolled 11,568 patients to compare the efficacy of Angiography-guided CR, Physiology-guided CR, and Culprit-only PCI in reducing major adverse cardiovascular events (MACE), all-cause mortality, recurrent myocardial infarction (MI), cardiovascular (CV) death, and unplanned revascularization. The frequentist and Bayesian approaches were applied to assess the effectiveness of each strategy.

Results: The pairwise meta-analysis showed that Angiography-guided CR was superior in reducing MACE (OR = 0.44; 95% CI: 0.37– 0.52), recurrent MI, and unplanned revascularization compared to Culprit-only PCI. Physiology-guided CR also reduced MACE (OR = 0.64, 95% CI: 0.45–0.91) and unplanned revascularization. While Physiology-guided CR did not overcome Angiography-guided CR in most outcomes, the network metanalysis showed a remarkable trend in lowering CV death in the Physiology-guided CR group (OR 0.56; 95% CI 0.25–1.05), thus suggesting a protective effect.



Figures

Conclusions: Angiography-guided CR provides the best overall outcomes for patients with STEMI and MVD, outperforming physiology-guided CR in most endpoints. Further large-scale trials are needed to clarify the relative efficacy of Angiography-guided CR and Physiology-guided CR in this patient population.



Endpoint	Angio-Guided vs. Culprit-only	Physio-Guided vs. Culprit-Only	Angio-Guided vs. Physio-Guided	Rank Probab Best Approach SUCRA
MACE	OR: 0.44 (0.28–0.68)	OR: 0.53 (0.34–0.83)	OR: 0.82 (0.48–1.42)	1st: Angio 2nd: Physi 3rd: Culprit-o
All-Cause Death	OR: 0.80 (0.46–1.26)	OR: 0.82 (0.49–1.36)	OR: 0.97 (0.5–1.73)	1st: Angio 2nd: Physi 3rd: Culprit-o
Cardiovascular Death	OR: 0.72 (0.32–1.34)	OR: 0.56 (0.25–1.05)	OR: 1.3 (0.51–3.22)	1st: Physio 2nd: Angio 3rd: Culprit-
Recurrent MI	OR: 0.6 (0.25–1.3)	OR: 0.83 (0.39–1.98)	OR: 0.72 (0.25–1.75)	1st: Angio 2nd: Physi 3rd: Culprit-o
Unplanned Revascularization	OR: 0.3 (0.19–0.49)	OR: 0.42 (0.26–0.64)	OR: 0.72 (0.43–1.32)	1st: Angio 2nd: Physi 3rd: Culprit-o

Figure

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 1084
INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
FISIOLOGIA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
CARDIOPATIE CONGENITE NELL´ADULTO (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)

ORIGINE E DECORSO ANOMALI DI ARTERIA CORONARICA DI DESTRA TRATTATA CON SUCCESSO MEDIANTE CABG

Claudio Mauro (a), Anna Franzone (a), Carmen Anna Maria Spaccarotella (a), Raffaele Piccolo (a), Luigi Di Serafino (a), Plinio Cirillo (a), Maddalena Immobile Molaro (a), Giovanni Esposito (a)
(a) AOU FEDERICO II

INTRODUZIONE-Il tessuto miocardico risulta irrorato da due principali arterie coronariche, il cui decorso anatomico in condizioni non patologiche inizia dagli osti coronarici presenti nei rispettivi seni coronarici di destra e di sinistra1,2. A seguito della fisiologica variabilità anatomica interindividuale, l'albero coronarico può variare per morfologia e dominanza, senza però rappresentare un fattore di rischio per eventi cardiovascolari maggiori 3,4,5. Esistono però delle varianti patologiche associate ad un sostanziale aumento della mortalità cardiovascolare 2,6.

CASO-Presentiamo il caso clinico di un paziente di 54 anni, affetto da ipertensione arteriosa, obesità, dislipidemia, bicuspidia aortica, FE 53% e una già nota CAD multivessel trattata mediante PCI e impianto di quattro stent nel corso degli anni (1 su IVA prossimale nel 2016- 1 su LCX e 2 su RCA nel 2022). Il paziente durante giugno us eseguiva una coro-TC per peggioramento della dispnea che rivelava pervietà degli stent precedentemente impiantati. Si evidenziava, oltre ad un'aorta bicuspide, una coronaria destra dominante con un'origine anomala a partenza della cuspide di sinistra con high-take off e decorso prossimale tra bulbo aortico e infundibolo dell'arteria polmonare determinante compressione ab-estrinseco del 65 % del lume dell'arteria. Il paziente praticava pertanto SPECT miocardica con evidenza di ischemia inducibile nel territorio della RCA. Eseguiva quindi a luglio us coronarografia con evidenza all'angiografia non selettiva di una stenosi angiograficamente significativa della coronaria di destra compatibile con il decorso interarterioso. Veniva pertanto indirizzato ad eseguire un bypass tramite arteria mammaria interna di destra del tratto soggetto a compressione ab estrinseco. Il paziente veniva dimesso dopo pochi giorni di degenza dal reparto di cardiochirurgia in assenza di complicanze e gode tutt'ora di buona salute.

DISCUSSIONE- Le anomalie del decorso delle arterie coronariche hanno una rilevanza clinica soprattutto quando si tratta di un'origine anomala dal seno opposto, che dovrebbe essere ulteriormente classificata, in ordine di frequenza, come retroaortica, interarteriosa, subpolmonare (intraconale o intrasettale), prepolmonare o retrocardiaca 7,8,9,10. È interessante notare che la variante subpolmonare si riferisce al passaggio tra l'aorta, il tratto di efflusso del ventricolo destro, l'infundibolo polmonare e il setto interventricolare (cioè, al di sotto della valvola polmonare) 7,8,9,10. Mentre i decorsi subpolmonare, prepolmonare, retroaortico e retrocardiaco non sono stati associati a SCD, un decorso interarterioso è considerato maligno ed è spesso associato ad altre caratteristiche anatomiche ad alto rischio

(ostio a fessura, tratto intramurale, high-take off) e a morte cardiaca improvvisa 8,9. Il trattamento di queste varianti patologiche secondo le linee guida ESC 2020 è tramite cardiochirurgia in classe I C nel caso in cui il paziente presenti sintomi anginosi associati ad evidenza di ischemia inducibile e/o caratteristiche ad alto rischio11.

CONCLUSIONI- Sebbene l'anatomia coronarica sia estremamente variabile tra gli individui, esistono delle varianti patologiche che possono sfuggire all'angiografia coronarica che per essere riconosciute devono essere indagate tramite metodiche di imaging come CORO-TC o CMR e il cui unico trattamento è la cardiochirurgia.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 263
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
PATOLOGIA DELL´AORTA (MALATTIE DEI VASI)

PROFILI CLINICI ED OUTCOMES IN PAZIENTI TRATTATI CON TAVI E TAVI VALVE-IN-VALVE

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Scopo dello studio: Caratterizzare e confrontare i profili clinici dei pazienti sottoposti a TAVI su valvola nativa e a TAVI-ViV. Valutare le differenze fra gli esiti clinici e identificare i predittori indipendenti di mortalità nella popolazione globale sottoposta a TAVI.

Materiali e metodi: in questo studio retrospettivo e osservazionale sono stati analizzati i pazienti sottoposti ad intervento di TAVI tra il 2009 e il 2024 presso l'ospedale universitario di Trieste. Per identificare i predittori indipendenti di mortalità sono state utilizzate delle analisi multivariate secondo il modello di regressione di Cox. Si è applicata una tecnica di matching per creare un dataset caso-controllo (rapporto 1:1) tra chi era stato sottoposto a trattamento ViV vs chi non lo aveva ricevuto utilizzando delle variabili di matching.

Risultati: sono stati arruolati 689 pazienti, di cui 30 sottoposti a procedura ViV; I pazienti TAVI ViV erano più giovani (78 anni (d.s. 5) vs 81 (d.s. 7), p=0.022) ma presentavano un rischio operatorio più elevato (8.41% (IQR 6.19-12.16) vs 3.09% (IQR 1.98-5.11), p<0.001, euroSCORE II). Il decesso è stato registrato in 264 pazienti (38.3%) durante un follow up medio 39.4 mesi (d.s. 30.1). La mortalità globale si attesta al 23.3% per i pazienti ViV e al 39.0% per i pazienti TAVI (p=0.084). Nessun paziente ViV è deceduto nei primi 30 giorni dopo la procedura contro gli 11 (1.7%) dei pazienti TAVI (p=0.476). La mortalità a 1 anno risultava del 10.0% per i pazienti ViV e dell'8.8% fra i pazienti TAVI (p=0.821) mentre la mortalità a due anni era rispettivamente del 13.3% e del 14.3% (p=0.887). Non vi sono state differenze in termini di ictus (6.7 % nei pazienti ViV vs 2.6% nei pazienti TAVI, p=0.184). Il gradiente transvalvolare medio risultava 16.5 mmHg (d.s. 8.4) nel gruppo ViV contro i 9.5 mmHg (d.s. 4.7) dei pazienti TAVI (p<0.001). Le analisi condotte sul dataset bilanciato con propensity match (pazienti bilanciati per età, sesso, rischio operatorio (STS-PROM score), frazione d'eiezione, gradiente transvalvolare massimo e medio) confermano i risultati sopra descritti. Nell'analisi di regressione multivariata di Cox lo scompenso cardiaco congestizio (HR 1.461, 95% CI 1.059-2.015, p=0.021) e la storia di FA (HR 1.358, 95% CI 1.035-1.781, p=0.027) sono stati identificati come predittori indipendenti di mortalità per tutte le cause nella popolazione globale. L'insufficienza aortica perivalvolare moderata o severa (HR 2.105, 95% CI 1.242-3.567, p=0.006) è risultata come unico predittore di mortalità a 2 anni.

Conclusioni: i pazienti ViV sono pazienti ad elevato rischio chirurgico, e presentano gradienti residui più elevati rispetto ai pazienti TAVI, ma hanno esiti clinici e mortalità simili, confermando la sicurezza e l'efficacia della procedura di TAVI ViV.
Nella popolazione globale lo scompenso cardiaco congestizio e la storia di fibrillazione atriale sono predittori indipendenti di mortalità a lungo termine, pur essendo difficile predire la mortalità in una popolazione anziana e comorbida, con un rischio competi-

tivo importante di mortalità non cardiovascolare. Gli aspetti procedurali sono fondamentali: l'insufficienza perivalvolare moderata o severa è un esito della TAVI più frequente rispetto alla SVA, e risulta predittore indipendente di mortalità a 2 anni e sottolinea l'importanza di ottenere un risultato procedurale ottimale al fine di migliorare significativamente la prognosi dei pazienti.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 341
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
DIAGNOSTICA INVASIVA INTRAVASCOLARE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

DRUG-ELUTING STENT STRUT THICKNESS IMPACTS CLINICAL OUTCOMES IN CORONARY BIFURCATION PCI: BIFURCAT-ULTRA REGISTRY INSIGHTS

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Background: Strut thickness influences clinical outcomes after percutaneous coronary intervention (PCI) for bifurcation lesions is debated.

Objectives: To compare the efficacy of ultrathin (< 70 µm) drug-eluting stents (DES) with thicker DES in coronary bifurcations.

Methods: We pooled data from the ULTRA and BIFURCAT registries. Stents were classified as ultrathin (< 70 µm), thin (70-100 µm), or thick (> 100 µm). The primary endpoint was target lesion revascularization (TLR). Inverse probability of treatment weighting (IPTW) balanced baseline characteristics overall and within procedural subgroups (provisional vs planned two-stent strategy).

Results: Among 6 753 patients (median follow-up 800 days, IQR 400-900), 514 (8 %) received thick, 5 139 (76 %) thin, and 1 100 (16 %) ultrathin stents. TLR rates were 3.3 %, 2.8 %, and 1.1 % (p = 0.003). After IPTW adjustment, ultrathin DES reduced TLR compared with thick DES (HR 0.38, 95 % CI 0.16-0.89, p = 0.03) and thin DES (HR 0.41, 95 % CI 0.21-0.81, p = 0.01). In provisional stenting cases, TLR risk did not differ (HR 0.53 vs thick, p = 0.27; HR 0.49 vs thin, p = 0.07). Conversely, in planned two-stent procedures ultrathin DES was associated with TLR reduction versus thick DES (HR 0.21, 95 % CI 0.04-0.93, p = 0.04), with a trend for thin DES (HR 0.31, p = 0.07).

Conclusions: In bifurcation PCI, ultrathin DES are associated with a reduction in repeat revascularization compared with thicker strut platforms, a benefit driven by lesions treated with an upfront two-stent approach.

CardioSic

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 803
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INFARTO NSTEMI (CARDIOPATIA ISCHEMICA)

RECOVERY OF LEFT VENTRICULAR FUNCTION AND APICAL THROMBUS RESOLUTION FOLLOWING COMPLEX CHRONIC TOTAL OCCLUSION REVASCULARIZATION IN A HIGH-RISK ISCHEMIC CARDIOMYOPHATY PATIENT: A CASE REPORT

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Background: Chronic total occlusion (CTO) of the coronary arteries—particularly the left anterior descending (LAD) artery—presents a unique challenge in the management of patients with ischemic cardiomyopathy. LAD-CTO is associated with significant ischemic burden, left ventricular (LV) dysfunction, and poor long-term outcomes when left untreated. While optimal medical therapy remains essential, selected patients may benefit from percutaneous coronary intervention (PCI) to restore myocardial perfusion, reduce symptom improve burden quality and may have effects on systolic function. This case report demonstrates the impact of successful LAD-CTO revascularization on functional recovery in a high-risk patient with advanced ischemic heart disease and a left ventricular thrombus in a sub-acute setting.

Case summary: A 57-year-old Caucasian male with hypertension, dyslipidaemia, stage G3b chronic kidney disease, and a history of tobacco use presented in December 2024 with exertional dyspnoea and chest discomfort, eventually diagnosed as a subacute anterior myocardial infarction. Imaging revealed a severely reduced LVEF (27–35%) and a layered apical thrombus (3 × 1.5 cm). Coronary angiography identified a proximal LAD CTO. After initial stabilization with medical therapy and anticoagulation, the patient experienced a recurrent NSTEMI one month later; after being clinical stabilized, he successfully underwent PCI with mechanical support (IABP) and four drug-eluting stents using a complex antegrade and bifurcation technique. Follow-up imaging demonstrated progressive improvement in LVEF (up to 55%) and reduction of the apical thrombus, which became no longer clearly visible at three months. The patient remained asymptomatic and regained satisfactory functional status.

Conclusion: This case emphasizes the role of CTO-PCI in promoting reverse remodelling and symptoms relief in patients with ischemic cardiomyopathy. It underscores the value of a multidisciplinary, imaging-guided approach and structured follow-up in optimizing outcomes. Carefully selected high-risk patients may achieve substantial clinical recovery, with an improved quality of life.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 165
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
TROMBOSI E COAGULAZIONE (ATEROTROMBOSI)

TRATTAMENTI FLEBOLOGICI ED ICTUS ISCHEMICO,QUAL'É IL COLLEGAMENTO CARDIOLOGICO?

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Background. La scleroterapia delle vene varicose è una procedura ampiamente utilizzata e generalmente sicura. Tuttavia, eventi cerebrovascolari rappresentano una rara ma grave complicanza, spesso legata a fenomeni di embolia paradossa in presenza di forame ovale pervio (PFO).

Clincal Case. Una donna di 52 anni, senza fattori di rischio cardiovascolare noti, ha sviluppato cefalea acuta subito dopo una seduta di scleroterapia con polidocanolo. La TC encefalo ha evidenziato una lesione ischemica acuta cortico-subcorticale frontale destra. Dopo avere eseguito una trombectomia, l'esame istologico ha rivelato la presenza di materiale amorfo compatibile con un agente esogeno, la schiuma di polidocanolo, utilizzata per la scleroterapia delle vene della paziente.
L'ecocardiografia transtoracica e transesofagea ha confermato la presenza di un PFO, successivamente chiuso per via percutanea.

Discussion. Il PFO, presente in circa il 25% della popolazione, rappresenta un potenziale canale per l'embolia paradossa, con rischio di ictus ischemico in corso di procedure che comportano iniezione venosa di agenti sclerosanti. La presenza di un trombo arterioso proveniente dalla circolazione venosa è difficile da stabilire, a meno che il trombo non sia visualizzato in transito attraverso un PFO. Questo caso fornisce un'evidenza patologica diretta di passaggio di materiale sclerosante attraverso un PFO con conseguente ischemia cerebrale.

Conclusions. Lo screening sistematico per PFO nei candidati a scleroterapia non è indicato, ma alcune precauzioni (evitare manovre di Valsalva immediatamente dopo la procedura, considerare LMWH periprocedurale e valutazione microbubble-TCD in caso di sospetto clinico) possono ridurre il rischio di complicanze.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 166
INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
TROMBOSI E COAGULAZIONE (ATEROTROMBOSI)
DIAGNOSTICA INVASIVA INTRAVASCOLARE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PIASTRINE E TERAPIA ANTIAGGREGANTE (ATEROTROMBOSI)
INFARTO NSTEMI (CARDIOPATIA ISCHEMICA)

L'ENIGMA DELLA TROMBOSI DELL'ANEURISMA CORONARICO: QUANDO LA TROMBECTOMIA INCONTRA LA TERAPIA FARMACOLOGICA

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Background. L'aneurisma dell'arteria coronaria (CAA) è una condizione rara caratterizzata da dilatazione focale del vaso ≥1,5 volte il diametro del segmento adiacente. Sebbene spesso asintomatico, il CAA può evolvere con complicanze gravi, tra cui trombosi, embolizzazione distale e sindrome coronarica acuta (SCA). La gestione terapeutica, in particolare nei casi di trombosi massiva, rimane controversa e priva di linee guida consolidate.

Clinical Case. Presentiamo il caso di un uomo di 48 anni, fumatore e dislipidemico, ricoverato per dolore toracico persistente con diagnosi di NSTEMI ad alto rischio. L'ecocardiogramma mostrava acinesia/ipopinesia settale e inferiore con frazione di eiezione ridotta (48%). La coronarografia rivelava ectasia diffusa delle coronarie e una trombosi massiva del segmento medio-distale della coronaria destra. In urgenza veniva eseguita aspirazione manuale con parziale ricanalizzazione. Data l'anatomia sfavorevole all'impianto di stent e il carico trombotico residuo, si optava per trattamento farmacologico aggressivo (ASA, Cangrelor, eparina e inibitori GP IIb/IIIa). Al controllo a 24 ore, persisteva trombosi parziale con occlusione distale. Si procedeva a trombectomia meccanica con sistema Penumbra Cat RX, con miglioramento del flusso (TIMI 2-3). Una successiva angiografia confermava la completa risoluzione trombotica, documentata anche mediante OCT intracoronarico. Il paziente veniva dimesso con terapia tripla antitrombotica (ASA, Clopidogrel e LMWH), successivamente de-escalata a doppia terapia (Clopidogrel + NAO) al follow-up di 1 mese.

Discussion. Nei casi di SCA su CAA trombizzato, la rivascolarizzazione coronarica rappresenta una sfida tecnica. L'elevato carico trombotico e l'anatomia aneurismatica riducono l'efficacia e la sicurezza della PCI convenzionale, aumentando il rischio di embolizzazione distale o trombosi da stent. L'approccio combinato con terapia farmacologica intensiva e trombectomia meccanica si è dimostrato sicuro ed efficace nel ristabilire il flusso coronarico, come già suggerito da studi recenti. Rimane tuttavia irrisolta la questione della terapia a lungo termine: antiaggregante doppia o anticoagulazione orale?

Conclusions. La gestione dei CAA complicati da trombosi massiva richiede un approccio individualizzato, che integri terapia farmacologica intensiva e dispositivi di trombectomia meccanica. In assenza di linee guida dedicate, la strategia a lungo termine deve essere personalizzata, bilanciando efficacia antitrombotica e rischio emorragico. Sono necessari ulteriori studi per definire il miglior trattamento cronico in questi pazienti complessi.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 167
DIAGNOSTICA INVASIVA INTRAVASCOLARE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PLACCA VULNERABILE (ATEROTROMBOSI)
RIANIMAZIONE CARDIOPOLMONARE (ASSISTENZA CARDIACA IN ACUTO)
ANGINA INSTABILE (CARDIOPATIA ISCHEMICA)

DAL BISTURI ALLO STENT: RIVASCOLARIZZAZIONE DINAMICA NELLE SINDROMI CORONARICHE ACUTE AD ALTO RISCHIO

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Background: La gestione delle sindromi coronariche acute che coinvolgono una stenosi critica del tronco principale sinistro (LM) rimane una sfida difficile da affrontare nella medicina cardiovascolare. Le linee guida internazionali generalmente favoriscono la rivascolarizzazione chirurgica (CABG) per le malattie multivascolari complesse, in particolare con coinvolgimento dell'ostio o della biforcazione dell'LM. Tuttavia, nella pratica clinica reale, i pazienti spesso presentano un'emodinamica instabile o profili ad alto rischio che richiedono un processo decisionale immediato e flessibile.

Clinical case: Una donna di 68 anni con multipli fattori di rischio cardiovascolare (diabete di tipo II non controllato, sovrappeso, storia familiare positiva, ex fumatrice), ricoverata per angina instabile. L'angiografia coronarica mostrava stenosi critica ostiale del LM, stenosi significativa della Cx e occlusione cronica della coronaria destra.
Data la complessità dell'anatomia e del contesto clinico, è stata richiesta una consulenza urgente di cardiochirurgia. Il paziente è stato considerato candidato all'intervento chirurgico di CABG, in linea con le attuali raccomandazioni. Tuttavia, durante la fase di discussione, il paziente ha subito un improvviso collasso emodinamico e un arresto cardiaco, richiedendo PCI urgente con impianto di DES su LM-LAD e ripristino emodinamico. Nei giorni successivi è stata completata la rivascolarizzazione mediante PCI staged con DES e DCB, guidata da IVUS, ottenendo un risultato ottimale. Dimessa in buone condizioni cliniche, ha proseguito doppia terapia antiaggregante e valutazione funzionale della RCA occlusa.

Discussion: La gestione dei pazienti con sindromi coronariche acute ad alto rischio mette sempre più in crisi la tradizionale contrapposizione tra rivascolarizzazione chirurgica e intervento percutaneo. Se da un lato l'anatomia coronarica rimane un criterio imprescindibile, dall'altro l'instabilità clinica impone decisioni rapide, spesso svincolate dal percorso teoricamente ideale. L'adozione di tecniche avanzate (IVUS, DCB/DEB) e l'impiego precoce di supporti emodinamici meccanici (Impella, ECMO) può consentire un approccio "ibrido temporizzato", in cui la PCI diventa ponte o soluzione definitiva a seconda dell'evoluzione. In questo scenario, la capacità del team di adattarsi in tempo reale e di collaborare oltre le barriere disciplinari emerge come il vero determinante di esito.

Conclusion: Il futuro della rivascolarizzazione non potrà più essere letto come un bivio chirurgia-PCI, ma come un continuum decisionale dinamico, in cui la tempistica dell'intervento, le condizioni del paziente e le risorse disponibili assumono un ruolo centrale quanto, se non superiore all'anatomia stessa. In questo processo è ne-

cessaria una ridefinizione culturale: accettare che l'approccio "guideline-based" rappresenti un riferimento, ma non un vincolo assoluto, e che la flessibilità guidata dall'urgenza clinica sia parte integrante della buona pratica.

Questa prospettiva solleva interrogativi cruciali: fino a che punto la PCI può sostituire o ritardare la chirurgia nei pazienti complessi? Quali criteri dovrebbero guidare l'adozione precoce del supporto meccanico? E, soprattutto, come costruire modelli decisionali condivisi che tengano conto non solo dell'anatomia, ma anche della dimensione temporale ed emergenziale? La risposta a queste domande definirà i confini della cardiologia interventistica nei prossimi anni.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 763
ELETTROSTIMOLAZIONE (ARITMIE)
TERAPIA DI RESINCRONIZZAZIONE (ARITMIE)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)

INTERVENTRICULAR CONDUCTION DELAY PREDICTS CRT RESPONSE: A COMPARATIVE EVALUATION STUDY BETWEEN BIVENTRICULAR PACING AND CONDUCTION SYSTEM PACING

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Background: Cardiac resynchronization therapy(CRT) improves outcomes in heart failure with electrical dyssynchrony, yet non-response remains common.Surface ECG markers such as QRS duration and morphology are imperfect predictors. Direct measurement of interventricular conduction delay (RV–LV) may better guide therapy and inform the choice between biventricular pacing (BiVp) and conduction system pacing (CSP).

Objectives: To compare CSP with BiVp in terms of reverse remodelling and to assess the predictive value of RV–LV delay.

Methods: Data were prospectively collected on 184 consecutive CRT recipients (127 BiVp,57 CSP) between January 2020 and December 2023. This study extends a previously reported cohort of 96 patients by including additional enrolment and new analyses stratified by interventricular delay. Patients were grouped as BiV with RV–LV <100 ms, BiV with RV–LV ≥100 ms, or CSP (bailout only).Co-primary endpoints were change in ejection fraction (ΔEF) and echocardiographic responder rate at 12 months.

Results: CSP was non-inferior to BiVp for ΔEF (mean difference –0.8 pp; lower one-sided 95% CI –3.38). Non-inferiority was not demonstrated for responder rate, despite a numerical advantage for CSP (77.2% vs 66.5%). Patients with BiVp ≥100 ms and those with CSP achieved greater ΔEF (~12%) and higher responder rates(~77%) than BiVp<100 ms(ΔEF 8%, responders 51%).On multivariable analysis, pacing modality and interventricular delay were independent predictors of response, while ischaemic aetiology was negative.

Conclusions: Restoration of physiological activation—either through BiV with adequate RV–LV delay or through CSP—emerges as the main determinant of reverse remodelling.Incorporating direct conduction measures into CRT decision-making may enhance patient selection beyond surface-ECG criteria.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 275
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
FARMACI ANTI-DIABETICI (DIABETE E MALATTIE DEL METABOLISMO)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)

IMPACT OF AGE ON CONTRAST-ASSOCIATED ACUTE KIDNEY INJURY AMONG PATIENTS RECEIVING SODIUM-GLUCOSE COTRANSPORTER-2 INHIBITORS: INSIGHTS FROM THE GLICINE REGISTRY

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Introduction. Sodium-glucose cotransporter-2 inhibitors (SGLT2-Is) have gained a key role in the treatment of patients with diabetes mellitus, heart failure, and chronic kidney disease. A protective effect on the kidney has been suggested in relation to contrast-associated acute kidney injury (CA-AKI) occurring after coronary angiography, with or without percutaneous coronary intervention (PCI). However, whether these benefits are maintained in both younger and elderly patients remains unknown.

Methods. We conducted a sub-analysis of the GLICINE study, a multicenter retrospective registry including patients on chronic SGLT2-I treatment undergoing coronary angiography with or without PCI in four Italian centers. Patients were stratified into tertiles of age. The primary endpoint was the occurrence of CA-AKI, defined according to KDIGO criteria. The secondary endpoint was the change in estimated glomerular filtration rate (eGFR) at 24 and 48 hours.

Results. Overall, 362 patients were included and divided into tertiles of age: 111 subjects <66 years, 117 subjects between 66 and 73 years, and 134 subjects ≥74 years. Baseline differences include male sex(p=0.020), body massi index (p=0.006), chronic kidney disease (p<0.001), family history of coronary artery disease (p=0.005), Mehran risk score (p<0.001), diuretics (p=0.003), hemoglobin and creatinine levels (p<0.001 for both). No significant differences were observed in the incidence of CA-AKI across the three groups: 5.4%, 7.7%, and 6.0%, respectively, from the first to the third tertile (p=0.758). After adjustment for baseline differences, neither the second nor the third

tertile of age emerged as an independent predictor of CA-AKI (aOR [95% CI] = 1.07 [0.33–3.42], p=0.910 for II vs I; aOR [95% CI] = 1.49 [0.38–5.83], p=0.570 for III vs I). Moreover, age group did not influence eGFR variation after the procedure (p for interaction = 0.879).

Conclusion. Age did not predict the occurrence of CA-AKI among patients chronically treated with SGLT2-Is undergoing coronary angiography and/or PCI. Similarly, no significant impact of age was observed on post-procedural eGFR variation.

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INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
ASSISTENZA INTENSIVA CARDIOVASCOLARE IN ACUTO (ASSISTENZA CARDIACA IN ACUTO)

CLINICAL OUTCOMES OF CONTEMPORARY IMPELLA DEVICES IN HIGH-RISK PERCUTANEOUS CORONARY INTERVENTIONS: AN ANALYSIS FROM THE INTERNATIONAL MULTICENTRE &LDQUO; IMMERGE&LDQUO; REGISTRY

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Background: Complex high-risk percutaneous coronary interventions (CHIP) are associated with increased mortality compared with the general PCI population, particularly in patients with severely reduced left ventricular ejection fraction (LVEF). Mechanical circulatory support with Impella may provide hemodynamic stability and enable more complete revascularization, although evidence on its safety and efficacy in this setting remains limited.

Purpose: To evaluate clinical outcomes, safety, and efficacy of Impella-supported CHIP procedures and to identify predictors of mortality in this high-risk population.

Methods: From the IMMERGE registry including 1019 patients supported with Impella for cardiogenic shock or CHIP, we included in the present analysis 570 patients undergoing CHIP with Impella CP or Impella 5.0/5.5 support across 20 centers in 6 countries (Italy, UK, Spain, Poland, USA, Israel) from 2014 to 2024. Median follow-up was 365 days (IQR 239–545). The primary endpoint was the incidence of all-cause mortality at 1 year. Secondary endpoints included the incidence of cardiovascular mortality, myocardial infarction, heart failure hospitalizations, and left ventricular ejection fraction (LVEF) improvement. Additionally, predictors of all-cause and cardiovascular mortality were assessed using Cox regression and Fine-Gray competing risk models.

Results: Among 570 enrolled patients, 469 (82.3%) were male, with a mean age of 71.7 ± 10.0 years. The most frequent presentation was NSTE-ACS (n=269, 47.2%), followed by stable coronary artery disease (n=242, 42.5%). Multivessel disease was present in 401 patients (70.4%); 360 (63.2%) underwent left-main PCI and 89 (15.6%) CTO-PCI. Intracoronary imaging was performed in 296 cases (51.9%), mainly with IVUS (n=275); rotational atherectomy and intravascular lithotripsy were used in 162 (29.1%) and 127 (21.8%) procedures, respectively. Complete revascularization was achieved in 59.7% of patients, with TIMI III final flow in 93.9%. At a mean follow-up of 12 months, all-cause mortality was 19.8% and cardiovascular mortality 6.1%. Myocardial infarction occurred in 4.3%, and HF hospitalization in 11.1%. A significant LVEF improvement was observed after one year (35.9 ± 13.5% vs. 31.6 ± 13.2% at baseline, p=0.002). At Cox regression analysis, independent predictors of all-cause mortality were hemorrhagic stroke (HR 5.2, 95% CI 1.02–26.08, p=0.04), age (HR 1.04, 95% CI 1.01–1.08), and post-PCI renal replacement therapy (HR 2.96, 95% CI 1.12–7.80, p=0.028), whereas TIMI III final flow was protective (HR 0.35, 95% CI 0.13–0.90, p=0.03). Improvement in LVEF less than 5% at one

year independently predicted cardiovascular mortality (HR 1.62, 95% CI 1.04–3.16, p=0.04), while complete revascularization was protective (HR 0.36, 95% CI 0.17–0.78, p=0.02).

Conclusion: Impella-supported CHIP was feasible and improved LVEF at follow-up. Complete revascularization and TIMI III flow improved survival, whereas age, renal replacement therapy, hemorrhagic stroke and an improvement in LVEF <5% were major mortality predictors.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 137
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PATOLOGIA DELLA VALVOLA TRICUSPIDE (VALVULOPATIE)
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE
(IMAGING CARDIOVASCOLARE)

CLINICAL, ECHOCARDIOGRAPHIC OUTCOMES AND COMPLICATIONS AFTER TRANSCATHETER TRICUSPID VALVE REPLACEMENT (TTVR): A SYSTEMATIC REVIEW AND META-ANALYSIS

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Background: Tricuspid regurgitation (TR) is a relatively frequent and under-treated condition, particularly in elderly and high-risk patients, whom this condition significantly decrease life expectancy and QoL on, considering the heavy consequences of surgical treatment and the high rate of procedure-related adverse events. Recently transcatheter tricuspid valve replacement (TTVR) has emerged as a promising alternative for patients unsuitable for traditional surgery or transcatheter edge-to-edge repair (T-TEER) due to high risk of complications. However, comprehensive data on its efficacy and safety remain limited.

Aim: To evaluate the clinical outcomes, echocardiographic impact and complication rates in a large contemporary cohort of patients undergoing orthotopic TTVR.

Searching methods: This meta-analysis was conducted according to Cochrane Collaborations and Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statements. Searches were conducted up to 3 April 2025 in PubMed Central, Ovid EMBASE and Scopus databases, focusing on observational studies and RCTs that evaluated clinical and echocardiography impact on patients undergoing TTVR, as well as incidence of procedure-related adverse events.

Results: 13 studies published between 2020 and 2025 were analysed, including 12 observational study and 1 RCT, encompassing a total number of 827 patients. Primary outcomes included procedural success and incidence of all-cause mortality at the latest follow-up. Secondary outcomes were divided in safety outcomes, focusing on incidence of adverse events selected according to TVARC criteria, and efficacy outcomes, including TR reduction, as long as echocardiographic remodelling, and symptom improvement. Data were pooled using random-effects models.
The average procedural success rate was 92.5%, with an all-cause mortality rate of 13.2% at a median 12-month follow-up (IQR 4.2-12.0). TTVR significantly improved NYHA class (RR 0.38), 6-minute walk distance (MD +99 m), and KCCQ score (MD +24.4). A marked reduction in severe or greater TR, RV dimensions, and pulmonary artery pressure was observed, without impact on LV and RV function but with significative impact on RV dimension. The most common adverse events were permanent pacemaker implantation (14.9%) and major bleeding (13.6%), while stroke, myocardial infarction, and device-related embolism were rare.

Conclusions:
TTVR is a feasible and effective option for symptomatic TR patients at high surgical risk and unsuitable for T-TEER basing on anatomical or imaging limitations. It achieves significant symptomatic and hemodynamic improvement with an acceptable safety profile, being a useful tool to improve QoL and foavouring RV remodelling in a population not eligible for any other effective treatment.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 483
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

REDEFINING TAVI PATHWAYS: THE IMPORTANCE OF EARLY MOBILIZATION AND EARLY DISCHARGE

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Background. Transcatheter aortic valve implantation (TAVI) is the gold-standard therapy for severe aortic stenosis in symptomatic patients at high surgical risk, with expanding indications to lower-risk populations. However, early and late post-procedural complications, such as vascular accessÐrelated events and permanent pacemaker implantation, still contribute to relevant morbidity and readmission rates. In recent years, efforts have been made to shorten post-procedural length of stay (LoS) in order to reduce hospitalization-related complications such as delirium and hospital-acquired infections, while improving cost-effectiveness with low rates of safety events. Early patient mobilization has been shown to play a key role in enabling early discharge, as demonstrated in the FAST-TAVI II trial. Based on this evidence, in November 2023 we implemented an early mobilization program aimed at reducing LoS.

Aim. To evaluate the impact of an early mobilization program based on a simplified patient selection algorithm and nurse-led mobilization. The protocol consisted of a 3-step flowchart considering vascular access complications, delayed awakening after sedation, and new-onset rhythm disturbances. In the absence of these conditions, patients were considered eligible for early mobilization, defined as standing and ambulation within 6 hours post-procedure.

Methods. We retrospectively analyzed 602 consecutive TAVI patients from the regional TAVI registry between December 2022 and April 2025. Patients were stratified into three groups: historic cohort before implementation of the program (Group 1, n=263), non-eligible patients after implementation (Group 2, n=279), and patients undergoing early mobilization (Group 3, n=50). Ten patients were excluded due to missing data on mobilization or in-hospital death. The primary endpoint was post-TAVI hospital LoS. Secondary endpoints were rates of early discharge (LoS ²4 and ²3 days), in-hospital safety outcomes defined by VARC-3 criteria, and 30-day serious adverse events (SAEs).

Results. The primary endpoint analysis showed that mean LoS was significantly lower in the early mobilization group compared with the other groups (5.31 vs 6.31 vs 3.84; p²0.001). Early mobilization was associated with higher rates of discharge within 3 days (27% vs 25% vs 46%; p²0.005) and within 4 days (56% vs 44% vs 64%; p²0.008). Patients in the early mobilization group experienced fewer in-hospital VARC-3 events (7.0% vs 11.0% 2.0%; p²0.05). At 30-day follow-up, SAEs were numerically lower in the early mobilization group, although not statistically significant (21.2% vs 29.9% vs 10.5%; p²0.132).

Conclusions. In our single-center experience, the implementation of a nurse-led early mobilization program based on a structured selection protocol improved the efficiency of the TAVI pathway by reducing LoS without compromising patient safety. Beyond device innovation, organizational strategies

such as early mobilization protocols may play a pivotal role in enhancing quality of care, efficiency, and cost-effectiveness in structural heart interventions.

Keywords. TAVI; structural heart intervention; aortic valve; early mobilization; early discharge

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 631
INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
DIAGNOSTICA INVASIVA INTRAVASCOLARE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
ISCHEMIA, STUDI SPERIMENTALI (CARDIOPATIA ISCHEMICA)

IMPATTO DEL BMI SUGLI ESITI DELLA LITOTRISSIA INTRAVASCOLARE NELLE LESIONI CALCIFICHE CORONARICHE: EVIDENZE DAL REGISTRO BENELUX-IVL

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Background: La litotrissia intravascolare (IVL) si è affermata come trattamento efficace per le lesioni coronariche calcifiche attraversabili con pallone. Tuttavia, le evidenze relative alla sicurezza e all'efficacia dell' IVL nei pazienti in sovrappeso o obesi rimangono limitate.

Metodi: Dal registro prospettico e multicentrico BENELUX-IVL (NCT06577038), condotto in nove ospedali di quattro Paesi europei, sono stati selezionati pazienti sottoposti a PCI con IVL. I pazienti sono stati stratificati retrospettivamente in tre gruppi in base al BMI: normopeso (<25 kg/m²), sovrappeso (25–30 kg/m²) e obesi (≥30 kg/m²).
L'endpoint primario di efficacia era il successo procedurale, definito come superamento efficace della lesione target con somministrazione degli impulsi (shock waves), stenosi residua <30% (valutata con QCA), flusso finale TIMI 3 e assenza di MACE intraospedalieri.
L'endpoint primario di sicurezza era rappresentato dai MACE intraospedalieri, comprendenti morte cardiaca, infarto miocardico non fatale o rivascolarizzazione del vaso target.

Risultati: Su 514 pazienti (584 lesioni), 36.2% erano normopeso (n=186), 41.8% sovrappeso (n=215), e 22.0% obesi (n=113). Le caratteristiche cliniche e coronarografiche di base (età, sesso, punteggio SYNTAX, presentazione clinica, severità dell'angina) erano sovrapponibili tra i gruppi. Le complicanze intraprocedurali sono risultate basse e simili tra i gruppi (7.5%, 5.6% e 4.4%, rispettivamente; p = 0.93), sebbene si sia osservato un tasso significativamente più alto di instabilita' emodinamica nel gruppo normopeso (2.1% vs. 0% vs. 0%, p = 0.03). Il tasso di successo procedurale è stato elevato e comparabile: 88.7% nei normopeso, 88.8% nei sovrappeso e 88.5% negli obesi (p = 0.99). L'incidenza di MACE intraospedalieri è risultata bassa e simile tra i gruppi (1.6%, 2.3% e 1.8%, rispettivamente; p = 0.84). Al follow-up a un anno, i MACE si sono verificati nel 9.1%, 6.5% e 6.2% dei pazienti (p = 0.48).

Conclusioni: Nei pazienti sovrappeso e obesi, l' uso di IVL nelle lesioni coronariche calcifiche si è confermata una strategia sicura ed efficace, con un alto tasso di successo procedurale e una bassa incidenza di eventi avversi correlati al dispositivo. Sono necessari studi su casistiche più ampie e con follow-up prolungato per confermare questi risultati.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 632 TROMBOSI E COAGULAZIONE (ATEROTROMBOSI) COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE) INFARTO STEMI (CARDIOPATIA ISCHEMICA)

INTRACORONARY VASCOACTIVE THERAPY FOR NO-REFLOW DURING PRIMARY PCI: A NETWORK META-ANALYSIS OF RANDOMIZED CLINICAL TRIALS

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BACKGROUND: The no-reflow phenomenon frequently complicates primary percutaneous coronary intervention (PCI) and is linked to adverse outcomes. However, evidence supporting a specific pharmacological treatment is still limited.

METHOD: We performed a systematic review and frequentist network meta-analysis of randomized controlled trials comparing intracoronary adenosine, epinephrine, nitroprusside, and verapamil administered during primary PCI for the treatment of the no-reflow phenomenon. The primary efficacy endpoint was restoration of Thrombolysis in Myocardial Infarction (TIMI) grade 3 flow at the end of the procedure. Secondary endpoints included ST-segment resolution (STR), major adverse cardiovascular events (MACE), and all-cause mortality. Bayesian analysis, quality-based sensitivity analyses, and meta-regression to assess potential confounders were also conducted.

RESULTS: A total of 1,674 patients were included in the analysis. Both epinephrine (OR 2.81; 95% CI, 1.72–4.58) and verapamil (OR 2.84; 95% CI, 1.63–4.95) were associated with significantly higher odds of achieving final TIMI 3 flow compared with control, findings consistent with the Bayesian analysis. In sensitivity analyses, adenosine was also associated with improved TIMI 3 flow (OR 1.53; 95% CI, 1.12–2.10). Meta-regression found no confounding effect from intraprocedural glycoprotein IIb/IIIa inhibitors or mechanical thrombectomy. For STR, significant benefits were observed with epinephrine (OR 4.30; 95% CI, 2.19–8.45), verapamil (OR 2.85; 95% CI, 1.64–4.96), and adenosine (OR 1.38; 95% CI, 1.04–1.84), compared with control. None of the therapies significantly reduced MACE or mortality, although the analysis was underpowered for these outcomes.

CONCLUSION: Intracoronary verapamil and epinephrine are associated with consistent improvements in final TIMI 3 flow compared with control.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 934
DIAGNOSTICA INVASIVA INTRAVASCOLARE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INTERVENTISTICA STRUTTURALE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

FLOW-ASSISTED DUAL-ACCESS TRANSCATHETER REPAIR OF COMPLEX MITRAL PARAVALVULAR LEAKS (DASH CLOSURE): A CASE REPORT

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Background. Mitral paravalvular leaks (PVLs) can lead to heart failure and hemolysis. The presence of multiple defects is linked to decreased procedural success rates.

Technique. Introducing DASH (Dual Access Strategy for Hemodynamic Closure), which combines transseptal antegrade and retrograde arterial access. This technique utilizes the regurgitant flow (Venturi effect) to assist in crossing the defect and deploying the device under transesophageal echocardiography (TEE) and fluoroscopic guidance.

Case. A 78-year-old man with a mechanical mitral prosthesis and two paravalvular leaks (PVLs) (anterior and posterolateral) presented with transfusion-dependent hemolysis and heart failure. Surgical risk was high (STS 5.98%; EuroSCORE II 13.13%) and the regurgitant jet was leveraged (Venturi "flow-assisted" crossing) to facilitate guidewire passage and device delivery under TEE and fluoroscopy. The anterior PVL was closed antegrade with an Occlutech PDL Square 10.5x12 mm; the posterolateral PVL, which was unstable with the antegrade route, was crossed retrograde using a modified pigtail and closed with an Occlutech PDL Rectangular 19x11 mm.

Results. Technical al procedural success were achived without any interference from the prosthetic valve; there was no significant residual regurgitation on transesophageal echocardiogram (TEE). Recovery was uneventful, with discharge on day 7. At the 1-month follow up, clinical, laboratory and echocardiographic parameters had improved.

Conclusions. In cases of complex or multiple mitral paravalvular leaks (PVLs), a dual-access, hemodynamics-guided strategy enables real-time costumization of the approach facilities flow-assisted crossing. This approach may be recommended as an initial option for certain anatomies. Larger prospective series are needed to validate the safety and efficacy of this approach.

Keywords: Paravalvular leak; Mitral valve; Percutaneous closure; Venturi effect; TEE.

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CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 470
ARTERIOPATIA ARTI INFERIORI (MALATTIE DEI VASI)
PLACCA VULNERABILE (ATEROTROMBOSI)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INFARTO STEMI (CARDIOPATIA ISCHEMICA)

NO ROOM FOR MECHANICAL CIRCULATORY SUPPORT IN CARDIOGENIC SHOCK? PAVE THE WAY

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Background: Mechanical circulatory support (MCS) with Impella CP can stabilize high-risk PCI, but severe iliofemoral disease may preclude femoral access. We report a strategy of staged peripheral revascularization to enable Impella-protected complete revascularization in cardiogenic shock.

Case: A 62-year-old man presented with anterior STEMI and cardiogenic shock. Urgent angiography revealed critical left-main culprit disease with multivessel involvement. Because of prohibitive access—left common iliac chronic total occlusion and severe right external iliac stenosis—MCS was initially not feasible; emergency PCI with a 3.5×22 mm DES to the left main achieved initial stabilization under pharmacologic support (inotropes/vasopressors).

Intervention: After hemodynamic improvement with medical therapy and Heart Team discussion, the right iliofemoral axis was prepared using intravascular lithotripsy and three overlapping self-expanding stents, restoring vessel caliber and permitting large-bore access. An Impella CP was then inserted transfemorally and used to support complex PCI of the proximal–mid LAD with two overlapping DES extending to the prior left-main stent; the LAD/diagonal bifurcation was optimized using a provisional strategy with final kissing, and the distal LAD was treated with a drug-coated balloon.

Outcomes: With Impella support, the procedure remained hemodynamically stable and achieved an excellent angiographic result (TIMI 3 flow). Femoral access closure required bailout MANTA vascular closure after ProGlide failure under combined ultrasound and angiographic guidance; the patient was transferred to intensive care for monitoring with sustained clinical improvement.

Conclusion: In cardiogenic shock with prohibitive iliofemoral anatomy, staged peripheral PTA can "open the door" to Impella CP, enabling safe completion of complex left-main/LAD revascularization that would otherwise be too unstable. This approach broadens eligibility for protected PCI and offers a practical pathway when MCS is indicated but femoral access is not initially possible

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 732
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

IMPACT OF VALVE FRAME HEIGHT ON PCI OUTCOMES AFTER TAVI

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Aims: Coronary artery disease (CAD) and aortic stenosis (AS) frequently coexist, and percutaneous coronary intervention (PCI) after transcatheter aortic valve implantation (TAVI) may be influenced by valve design. While short-frame valves (SFV) offer more favourable coronary reaccess, tall-frame valves (TFV) may increase procedural complexity and potentially affect outcomes. We sought to evaluate the long-term clinical impact of valve frame height in patients undergoing PCI after TAVI.

Methods and Results: The multicentre REVIVAL-PCI registry included 441 patients undergoing PCI following TAVI at 21 European centres between 2008-2023 (230 SFV, 211 TFV). The primary endpoint was major adverse cardiovascular events (MACE: cardiovascular death, myocardial infarction [MI], or stroke) at 4 years. Covariate balance was achieved using entropy balancing. Median follow-up was 908 days. Crude 4-year MACE incidence was 38.1% with SFV and 31.9% with TFV (HR 1.04, 95% CI 0.71–1.52, p=0.846). After adjustment, MACE rates remained similar (40.3% vs 34.1%; HR 1.13, 95% CI 0.64–2.00, p=0.674). No significant differences were observed in all-cause mortality (46.3% vs 38.5%; HR 1.28, p=0.336), cardiovascular death (28.4% vs 19.5%; HR 1.45, p=0.258), MI (6.1% vs 15.1%; HR 0.43, p=0.201), or stroke (12.6% vs 6.1%; HR 1.65, p=0.482). The unadjusted lower target vessel revascularization (12.0% vs 19.6%, HR 0.54, p=0.046) was nullified after adjustment. Results were consistent across subgroup analyses (age, sex, presentation) and sensitivity analyses including competing risk models.

Conclusions: In this large, multicentre registry, PCI after TAVI was feasible irrespective of valve frame height, and no significant differences in 4-year MACE or other major outcomes were observed after rigorous adjustment for confounders. Despite greater procedural challenges with TFV, long-term risks did not differ from SFV. This offers important reassurance on the long-term outcomes in patients with TFV, even though PCI in this setting may be more challenging.

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DIAGNOSTICA INVASIVA INTRAVASCOLARE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
FISIOLOGIA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
DISFUNZIONE DEL MICROCIRCOLO (CARDIOPATIA ISCHEMICA)

ACCURACY OF CONTRAST MEDIUM'S TRANSIT TIME AS SURROGATE FOR FLOW VELOCITY: COMPARISON WITH MEAN TRANSIT TIME DERIVED FROM BOLUS THERMODILUTION

Ciro Pollio Benvenuto (a, b), Domenico Galante (c), Andrea Viceré (b), Vincenzo Viccaro (b), Chiara Giuliana (b), Simona Todisco (b), Antonio Maria Leone (b, c)
(a) ST ANTONIUS ZIEKENHUIS; (b) CATHOLIC UNIVERSITY OF SACRED HEART;
(c) OSPEDALE ISOLA TIBERINA - GEMELLI ISOLA

Background: In patients with angina, a comprehensive assessment of the entire coronary circulation is crucial. This is typically performed using thermistor-equipped pressure wires and vasodilator agents - both of which limit its routine implementation in clinical practice. Wire-free alternatives have been developed to simplify this assessment with the aid of computational fluid dynamics.

Aims: To evaluate the accuracy of contrast medium's transit time as surrogate for flow velocity.

Methods: We prospectively enrolled consecutive patients with chronic coronary syndrome undergoing invasive functional assessment according to the #FullPhysiology protocol. Contrast medium's transit time (cTt) was derived from TIMI Frame Counting (TFC) analysis. Then, a contrast-derived Index of Microcirculatory Resistance (cIMR) was computed from invasively recorded distal pressure and cTt. Correlation between cTt and the mean transit time (Tmn) derived from bolus thermodilution - both at rest and during hyperaemia - and between cIMR and thermodilution-derived IMR were tested and compared each other.

Results: A total of 95 coronary vessels from 94 patients were analysed. A modest linear correlation was observed for cTt with Tmn, both at rest ($R = 0.48$; $p < 0.001$) and during hyperaemia ($R = 0.68$; $p < 0.001$), with a better correlation between cTt and hyperaemic Tmn [Tmn(hyp)]. Conversely, a much stronger correlation was found between cIMR and IMR ($R = 0.87$; $p < 0.001$). Although a correction formula can be derived to estimate Tmn(hyp) from cTt [$Tmn(hyp) = 0.88 \times cTt$], the predictive strength of this model was limited, with only 46% of the variance explained by cTt.

Conclusion: Even if a correction coefficient can be derived to compute hyperaemic mean transit time from contrast medium's transit time, the latter still remains a weak surrogate for flow velocity. Accounting for perfusion pressure improves the computational model when measuring microvascular resistance.

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INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT)
(IMAGING CARDIOVASCOLARE)

CT SCAN PREDICTORS AND PROGNOSTIC IMPACT OF COMBINED PH IN AS UNDERGOING TAVI

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Precapillary (PrPH) and combined pre and postcapillary pulmonary hypertension (CoPH) increase all-cause and cardiovascular mortality risk in patients undergoing TAVI for severe symptomatic aortic stenosis. Since pulmonary artery (PA) diameter adapts to increased pulmonary artery pressure, this study evaluates the correlation between CT-derived main PA (MPA), right PA (RPA), left PA (LPA) diameters, and the MPA/ascending aorta (AA) ratio with PH subtypes defined by right heart catheterization (RHC), as well as their prognostic impact. This retrospective study includes all consecutive patients undergoing TAVR between June 2007 to December 2022 with pre-TAVI RHC and ECG-gated CT scans.

The primary endpoint was all-cause mortality. Mean follow-up time was 5 years. Among 638 consecutive patients, 329 (51%) had normal mPAP, while 309 (49%) had PH. Of these, 143 (46%) had isolated postcapillary PH (IpcPH), and 166 (54%) had CoPH. Patients with PrPH were excluded. CoPH patients had higher PAP than both IpcPH and no-PH groups.

In univariable and multivariable analysis, MPA, MPA index (MPAi), RPA, RPA index (RPAi), MPA/AA, MPAi/AA, and RPA/LPA correlated with PH, while MPA, MPAi, RPA, RPAi, MPA/AA, and MPAi/AA were associated with CoPH. The best AUC for PH discrimination was MPAi (AUC = 0.71, cutoff = 16 mm/m², sensitivity = 66%, specificity = 72%), while MPA/AA best discriminated CoPH (AUC = 0.73, cutoff = 0.88, sensitivity = 67%, specificity = 72%). Patients with PA/AA <0.88 had significantly lower 5-year mortality after TAVI than those with PA/AA ≥0.88 (log-rank p = 0.046, HR 1.39).

In conclusion, Increase in MPA/AA CT-derived ratio is predictive of Combined PH, highlighting patients who could benefit from a RHC in term of CV stratification before TAVI.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 710
FISIOLOGIA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
DIAGNOSTICA INVASIVA INTRAVASCOLARE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

DISCREPANCY BETWEEN HYPEREMIC INDICES IN THE ASSESSMENT OF NON-CULPRIT LESION IN PATIENTS WITH STEMI: THE ROLE OF MICROVASCULAR DYSFUNCTION

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Background: Multivessel disease occurs in approximately half of the patients presenting with STEMI, and the best management of non-culprit lesions is still unclear. We report on a patient with inferior STEMI in which the non-culprit lesion has been evaluated using a "full-physiology" approach with a pressure wire.

Case Description: A 52-year-old woman with a history of hypertension and diabetes was admitted to our academic hospital, diagnosed with inferior STEMI. Coronary angiography showed thrombotic occlusion (TIMI 0) of the right coronary artery (the culprit lesion) and intermediate stenosis of the proximal left anterior descending (LAD) artery. Primary PCI (p-PCI) of the right coronary artery was performed. After 4 days, a stepwise complete physiological approach to the LAD artery was performed. The physiological study showed a negative discrepancy between fractional flow reserve (FFR) - and resting flow ratio (RFR) + with an increased index of microvascular resistance (IMR).

Discussion: FFR represents the best-known invasive method for the functional evaluation of intermediate coronary stenosis. Unlike FFR, the RFR is a non-hyperemic index that does not require the administration of a vasodilator such as adenosine, as is required for iwFR (Instantaneous Wave-free Ratio). There are many factors that can lead to a negative discrepancy between hyperemic and non-hyperemic indices. In the presented case, the functional values found were as indicated: FFR: 0.90, RFR: 0.86, IMR: 76, CFR: 1.0. The FFR-/RFR+ disagreement may reflect the attenuating influence of microvascular disease on adenosine-mediated vasodilation.



Figure 1

Therefore, we decided to treat the LAD lesion based on the RFR value by implanting a drug eluting stent 3.0×33 mm.

Conclusion: Myocardial infarction can result in altered microvascular and endothelial dysfunction, even in the non-culprit territory. The FFR-/RFR+ disagreement may reflect the attenuating influence of microvascular disease on adenosine-mediated vasodilation.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 648
INTERVENTISTICA STRUTTURALE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
CARDIOPATIE CONGENITE NELL´ADULTO (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
DIAGNOSTICA INVASIVA INTRAVASCOLARE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

PREVALENCE AND PREDICTORS OF RESIDUAL SHUNT IN PATIENT UNDERGOING PATENT FORAMEN OVALE CLOSURE

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Introduction: Percutaneous closure of patent foramen ovale (PFO) aims at eliminating the chance of paradoxical embolism. However, a certain number of patients maintain a right-to-left shunt over time after the procedure. The proportion of patients undergoing PFO closure who remain with residual shunt is unknown, and the reasons for this finding are uncertain. We aimed to determine the prevalence of residual shunts in PFO patients within 6 and 12 months after the procedure, and to investigate predictors of residual shunt.

Methods: We included patients undergoing PFO closure with any commercially available devices and with guidance by intracardiac echocardiography from October 2011 to March 2018, enrolled in single centre. Patients were followed up with transcranial doppler echocardiography at 6 months and at 12 months to assess the presence of residual shunt: grade 1 if 1-10 Micro-Embolic Signals (MES), grade 2 if 11-25 MES, grade 3 if > 25 MES. Predictors of any residual shunt were explored with multivariate regression analysis. Candidate predictors were those variables that were significant at a p value level of 0.10 at univariate analysis.

Results: A total of 303 patients were included. Residual shunt at 6 months was detected in 176 patients (58%), in particular 87.5% grade 1, 6.25% grade 2 and 6.25% grade 3.
Patients with residual shunt were more likely to present with coagulation disorders (36.6% vs 25.0%, p = 0.04) and long tunnels defined as tunnels ≥ 10 mm (80% vs 65.4%) compared with patients without residual shunts. At multivariate analysis, including univariate predictors of residual shunt (i.e., body mass index, diabetes mellitus, coagulation disorders, left ventricular ejection fraction and long tunnels), the presence of a long tunnel emerged as the only independent predictor (odds ratio 1.90, 95% confidence interval 1.10 to 3.28; p = 0.022). Only 42 patients (24.4%) were still positive for shunt at 12 months, in particular 78.6% grade 1, 9.5% grade 2 and 11.9% grade 3. In this case, the multivariate analysis, which included univariate predictors of residual shunt (body mass index, smoke, migraine, dyslipidemia, and septal aneurysm), showed that septal aneurism, defined as a protrusion of interatrial septum ≥ 15 mm, resulted as the only independent predictor (odds ratio 4.43, 95% confidence interval 1.97 to 9.98; p < 0.001).

Conclusions: More than half of patients undergoing PFO closure presents a residual shunt at 6-month transcranial doppler echocardiography, even if most is grade 1. Patients with long tunnels are more likely to present with residual shunt. Moreover, only 24.4% of these patients still have a residual shunt at 12-month follow-up, and mostly of mild severity. In this case, the presence of a septal aneurysm appears to be a predictive factor for slow endothelialization.
Extending dual antiplatelet therapy in these categories of patients might be considered.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 321
INFARTO STEMI (CARDIOPATIA ISCHEMICA)
TROMBOSI E COAGULAZIONE (ATEROTROMBOSI)
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

EMBOLIA CORONARICA PARADOSSA: LA VIA INSOLITA DI UN TROMBO

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Background: L'embolia coronarica è una causa non trascurabile di infarto miocardico (IMA), rappresentando fra il 3 e il 13% dei casi. Fra questi l'embolia paradossa (EP) rappresenta una condizione rara (<1% dei casi), talvolta associata a embolia polmonare, stroke o stati trombofilici. Rispetto allo stroke nell'embolia sistemica vi sono minori evidenze sull'efficacia della chiusura percutanea della pervietà del forame ovale (PFO) e l'indicazione va valutata caso per caso, dopo esclusione di altre possibili cause di tromboembolia.

Caso clinico: Paziente di 35 anni, fumatore, senza precedenti anamnestici di rilievo. Ricoverato per IMA con sopraslivellamento del tratto ST in sede inferiore e T iperacute nelle derivazioni precordiali (fig.1). All'ecocardiogramma in urgenza alterazioni della cinetica in sede infero-posteriore ed antero-laterale medio-apicale e frazione di eiezione (FE) lievemente ridotta. Alla coronarografia riscontro di trombosi sub-occlusiva (TIMI 2) del tronco comune (TC) in assenza di coronaropatia e occlusioni emboliche di ramo marginale (MO), secondo ramo diagonale (D2) e ramo ricorrente apicale (RA) (fig.2). Dopo tromboaspirazione manuale con completa risoluzione della trombosi su TC, trattato con PTCA su MO e D2 e successiva infusione di tirofiban per 24 ore. Alla coronarografia di controllo a 48 ore residuava minima quota di materiale trombotico su MO e RA.
All'ecocardiogramma di controllo risultava normalizzata la cinetica in sede anterolaterale mentre erano confermate le alterazioni in sede infero-posteriore medio-apicale con FE 52%; a livello atriale riscontro di lassità della fossa ovale sospetta per PFO che veniva confermata dopo bubble-test (shunt destro-sinistro di base che aumenta dopo Valsalva) (fig. 3) e successivamente con esame transesofageo (PFO con diametro longitudinale 1.5 cm e trasverso 0.6 cm).
L'ecocolorDoppler escludeva la presenza di trombosi venose agli arti inferiori e i test per trombofilia risultavano negativi; al monitoraggio non venivano documentati fibrillazione atriale o altri eventi aritmici. In 13° giornata il paziente è stato sottoposto a chiusura percutanea di PFO con dispositivo Amplatzer Talisman 25 mm senza complicanze e con ottimo risultato ecocardiografico.
Alla dimissione veniva prescritta terapia


Fig.1

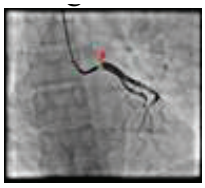

Fig.2


Fig.3

Figures

con duplice antiaggregazione per 3 mesi, associata a warfarin per 1 mese. A distanza di 4 mesi il paziente rimane asintomatico con normalizzazione della FE all'ecocardiogramma di controllo.

Conclusioni: L'EP rappresenta una rara causa di IMA che tuttavia dovrebbe essere sospettata in pazienti giovani, in assenza di coronaropatia strutturale ed in presenza di PFO. La chiusura percutanea del PFO può rappresentare una soluzione terapeutica in casi selezionati e quando tutte le altre possibili cause di tromboembolia sono state ragionevolmente escluse.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 833
DIAGNOSTICA INVASIVA INTRAVASCOLARE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
FISIOLOGIA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
DISFUNZIONE DEL MICROCIRCOLO (CARDIOPATIA ISCHEMICA)

SAFETY OF INTRACORONARY ACETYLCHOLINE TEST AND ITS ROLE IN DETECTING VASOSPASTIC ANGINA IN PATIENTS WITH MYOCARDIAL BRIDGE: AN OBSERVATIONAL MULTICENTER REGISTRY

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(a) UNIVERSITÀ DEL PIEMONTE ORIENTALE; OSPEDALE MAGGIORE DELLA CARITÀ, NOVARA; (b) UNIVERSITÀ CATTOLICA DEL SACRO CUORE; (c) UNIVERSITÀ DI FERRARA; (d) DIPARTIMENTO DI CARDIOLOGIA E ANGIOLOGIA, ROBERT-BOSCH HOSPITAL; STUTTGART, GERMANIA

Aims: The present work evaluated the safety of intracoronary acetylcholine test and the prevalence of induced coronary spasm in a large multicentre cohort of patients undergoing coronary angiography, stratified by the presence of myocardial bridge (MB).

Methods: Consecutive patients from three European tertiary-referral hospitals undergoing intra-coronary acetylcholine testing were included in the analysis and stratified according to the presence of MB. Primary endpoints were: a) the incidence of complications during the test, categorised as major (i.e., death, iatrogenic coronary artery dissection, sustained ventricular tachycardia/ventricular fibrillation, and permanent pacing) and minor (i.e., transient symptomatic bradyarrhythmia and atrial fibrillation/flutter); b) the incidence of vasospastic angina, defined according to the COVADIS criteria and categorised according to the site of the spasm (i.e. epicardial vs. microvascular).

Results: 954 patients were included, of whom 148 (i.e., 15%) presented MB. Mean age was 63 years old, 45% were male, and 34% were tested for suspected acute coronary syndrome. Overall, the test was safe with a negligible incidence of complications (4% of overall tests), mainly minor (95% of overall complications), regardless of clinical presentation. At multivariable analysis, MB was the only independent predictor for the occurrence of minor complications (OR 2.9; 95% CI: 1.4-6.2; $p < 0.01$). 569 (i.e., 60%) patients were diagnosed with vasospastic angina (62% epicardial spasm vs 38% microvascular spasm). In the MB-group epicardial spasm was more common (52% vs. 34%. $p < 0.001$), with the tunnelled tract as the most common site of spasm (60% vs 40%, $p < 0.001$) and the dose of acetylcholine for a positive response was significantly lower (93 vs 121 µg, $p < 0.001$). Conversely, no difference was found in the incidence of microvascular spasm between MB- and control-group (20% vs. 24%; $p = 0.1$). At multivariable analysis, MB remained an independent predictor for the occurrence of epicardial coronary spasm (OR 1.7; 95% CI: 1.1-2.5; $p = 0.02$). The association between MB with the occurrence of both minor complications and epicardial spasm was also confirmed after propensity-score matching.

Conclusions: Vasospastic angina due to both epicardial and microvascular spasms emerged as one of the main mechanisms of myocardial ischaemia, especially in patients with MB. The safety of this test, even in patients with MB and in the acute setting, supports its extensive use in daily clinical practice. The use of tailored protocols with lower doses of acetylcholine could be further evaluated in the subgroup of patients with MB, to minimise the risk of minor complications.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 981 EMBOLIA POLMONARE (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE) TROMBOSI E COAGULAZIONE (ATEROTROMBOSI) DIAGNOSTICA INVASIVA INTRAVASCOLARE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE) SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO) VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)

TROMBOASPIRAZIONE MECCANICA COME OPZIONE TERAPEUTICA NELL'EMBOLIA POLMONARE AD ALTRO RISCHIO: ESPERIENZA SU DUE CASI CLINICI

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Background: L'embolia polmonare acuta rappresenta una delle principali cause di mortalità cardiovascolare, con un'ampia variabilità di presentazione clinica che va dalla dispnea aspecifica allo shock ostruttivo. Nei pazienti ad alto rischio, la trombolisi sistemica è il trattamento di riferimento, ma non sempre risulta efficace e può essere controindicato in condizioni di elevato rischio emorragico. In questo contesto, le procedure di tromboaspirazione si stanno affermando come opzioni terapeutiche promettenti per il rapido ripristino del flusso polmonare e la stabilizzazione emodinamica.

Casi clinici: Riportiamo l'esperienza su due pazienti con embolia polmonare acuta ad alto rischio.
Il primo, un uomo di 44 anni senza comorbidità note, accedeva in Pronto Soccorso per l'insorgenza improvvisa di dolore toracico trafittivo, dispnea e successivo episodio sincopale. L'angio-TC del torace documentava una massiva embolia polmonare bilaterale e la presenza di una formazione trombotica in atrio destro, confermata anche all'ecocardiogramma che documentava, inoltre, segni di sovraccarico ventricolare destro. Nonostante terapia anticoagulante con UFH e trombolisi sistemica con Alteplase, il quadro clinico e radiologico risultava invariato, con persistenza di trombosi massiva estesa anche alla vena cava inferiore e ai distretti iliaco-femorali. Il secondo caso riguardava una paziente di 40 anni affetta da melanoma metastatico giunta in Pronto Soccorso per dispnea ingravescente ed instabilità emodinamica. L'imaging documentava un'ampia ostruzione tromboembolica delle arterie polmonari principali con dilatazione e disfunzione del ventricolo destro all'ecocardiogramma. In considerazione delle controindicazioni alla trombolisi sistemica per la presenza di metastasi cerebrali, si optava per un approccio interventistico.

Trattamento: Entrambi i pazienti sono stati sottoposti a tromboaspirazione meccanica mediante sistema FlowSaver. Nel primo caso, sono stati rimossi trombi multipli dall'atrio destro e dall'arteria polmonare sinistra, mentre nel secondo la procedura ha permesso una significativa riduzione del carico trombotico a livello delle arterie polmonari principali. L'intervento è stato eseguito con accesso transfemorale, senza complicanze peri-operatorie.

Evoluzione: In entrambi i casi si osservava un rapido miglioramento clinico con stabilizzazione emodinamica, risoluzione della disfunzione ventricolare de-

stra all'ecocardiogramma e completa sospensione sia dell'ossigenoterapia sia del supporto vasopressorio entro 48 ore dalla procedura.

Conclusioni: L'esperienza descritta conferma il ruolo crescente della tromboaspirazione meccanica nel trattamento dell'EP ad alto rischio, in particolare nei casi refrattari alla trombolisi sistemica o in presenza di controindicazioni alla stessa. L'utilizzo del sistema FlowSaver ha consentito, nei due casi riportati, una rapida riduzione del carico trombotico e un significativo beneficio clinico senza complicanze maggiori. Questi dati preliminari, seppur limitati a singoli casi, rafforzano la necessità di ulteriori studi prospettici per definire meglio le indicazioni e gli outcome a lungo termine di questa tecnica innovativa.

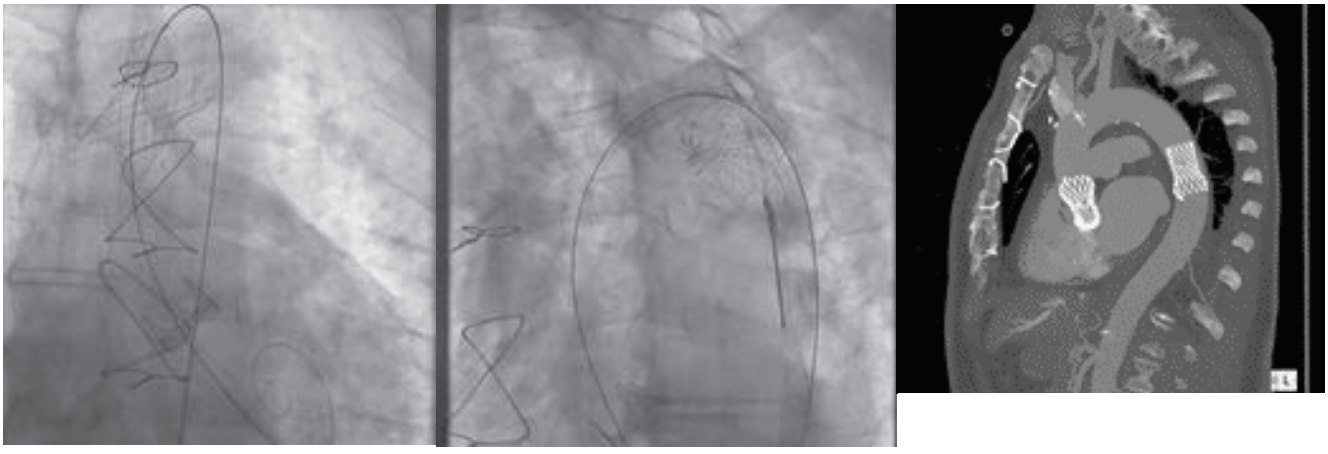
CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 770
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)

UNEXPECTED EMBOLIZATION OF A SELF-EXPANDABLE PROSTHESIS DURING A VALVE-IN-VALVE TAVI PROCEDURE: A CASE REPORT

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(b) S.C CARDIOLOGIA INTERVENTISTICA - ARNAS G. BROTZU, CAGLIARI

Introduction: Transcatheter aortic valve implantation (TAVI) has become a standard therapeutic option for patients with severe aortic stenosis, both in native valves and in valve-in-valve procedures. Despite its efficacy and expanding use across different surgical risk profiles, the procedure is associated with specific complications. Rare but potentially life-threatening events include coronary obstruction, valve malposition, and prosthesis embolization. We report a case of valve embolization during a valve-in-valve TAVI.

Clinical Case: An 81-year-old patient was referred to our institution for evaluation of a degenerated CE Perimount 2800 (Edwards Lifesciences) implanted in 2011. He'd been symptomatic since June 2025 with progressive dyspnea (NYHA II). TTE demonstrated severe combined stenosis and regurgitation of the aortic bioprosthesis, with preserved LV systolic function. A transfemoral transcatheter valve-in-valve TAVI was planned with a 26 mm Evolut Pro + (Medtronic) valve. Pre-procedural planning was performed with CT scan to assess the iliofemoral axes, aortic root, and coronary ostia. After crossing the degenerated valve with an angiographic guide and advancing a Safari wire into the left ventricle, the TAVI bioprosthesis was deployed under ventricular pacing. Post-deployment hemodynamic assessment revealed elevated (> 20 mmHg) transvalvular gradients. Balloon post-dilatation with VACS II 24 mm (Osypka) was then performed under rapid ventricular pacing. Soon after dilatation, during



Figures

balloon retrieval from the left ventricle, TAVI prosthetic valve embolized in aortic arch, due to the unexpected entrapment of the distal tip of the balloon in a distal strut of the prosthesis. Following its embolization into the aortic arch, the prosthesis remained freely floating without obstructing coronary or supra-aortic branches. The patient remained hemodynamically stable. Several retrieval attempts were made, and eventually the valve was successfully snared with an En Snare 7 F catheter (Merit Medical) and stabilized in the descending thoracic aorta. Subsequently, a second 26 mm Evolut Pro +(Medtronic) valve was implanted in the intended aortic position. Post-procedural angiography confirmed correct positioning of the new prosthesis, preserved coronary perfusion, and satisfactory hemodynamics.
Before discharge, a thoracic CT scan was performed, confirming a stable position of the embolized valve in the descending thoracic aorta, without evidence of wall injury or vessel obstruction. The patient's clinical course was uneventful, and he was discharged in good condition on post-procedure day 3.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 689
INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

EXCIMER LASER CORONARY ANGIOPLASTY FOR CALCIFIED CORONARY DISEASE: TREATMENT OF A CALCIFIED NODULE COMPLICATED BY ELLIS TYPE II PERFORATION

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Introduction The treatment of calcific coronary atherosclerotic disease represents a major challenge for interventional cardiologists, particularly in the presence of calcified nodules, which are considered markers of vulnerable plaque and are strongly associated with an increased risk of target lesion or vessel revascularization (TLR/TVR).

Case summary A 53-year-old Caucasian man with hypertension, dyslipidemia, smoking history, and diffuse atherosclerotic disease (carotid and peripheral), referred for peripheral surgery, underwent coronary angiography. The exam revealed separate ostia of the left anterior descending artery (LAD) and the circumflex branch, with a critical, severely calcified stenosis of the proximal LAD. Intravascular ultrasound (IVUS) confirmed the presence of a calcific nodule. Given the lesion morphology, percutaneous revascularization with plaque-modification techniques was required.
The procedure was performed via right radial access using a 6 Fr introducer and a JL 3.5 6 Fr guiding catheter. Following predilatation with a non-compliant balloon, excimer laser coronary angioplasty (ELCA, TurboElite 0.9 mm) was employed for lesion debulking, which led to perivascular contrast extravasation, indicative of a type II perforation according to the Ellis classification. The complication was promptly managed by implanting a 4.0 × 20 mm Papyrus covered stent, followed by high-pressure post-dilatations with progressively larger non-compliant balloons up to 4.5 mm, ultimately yielding an excellent final angiographic outcome (TIMI flow grade 3).
The patient was discharged on day four in good clinical condition and asymptomatic, with anti-ischemic therapy (bisoprolol, ramipril, amlodipine), dual antiplatelet therapy (ticagrelor 90 mg b.i.d. and acetylsalicylic acid 100 mg o.d.), and lipid-lowering therapy (rosuvastatin 20 mg/ezetimibe 10 mg o.d.). At the 45-day outpatient follow-up, he remained asymptomatic and in good condition, although blood pressure levels were persistently elevated, prompting optimization of his antihypertensive regimen. In April 2025, a tumor involving the floor of the mouth and the left hemitongue, associated with laterocervical lymphadenopathy, was detected, and he is currently undergoing multidisciplinary oncologic treatment

Conclusions Calcific nodules represent an advanced stage of coronary calcification and are considered markers of plaque vulnerability. Conventional balloons are frequently insufficient for adequate lesion preparation prior to stent implantation. In contrast, the use of debulking strategies, such as intracoronary lithotripsy, rotational atherectomy, or orbital atherectomy, has demonstrated that the presence of calcific nodules is the factor most strongly associated with an increased need for clinically driven target lesion revascularization. The role of excimer laser coronary

angioplasty (ELCA) in calcified coronary artery disease remains limited.
This case describes the application of ELCA in the treatment of a calcific nodule, along with the successful handling of an uncommon complication.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 796
MINOCA (MYOCARDIAL INFARCTION WITH NORMAL CORONARY ARTERIES) (CARDIOPATIA ISCHEMICA)
INFARTO NSTEMI (CARDIOPATIA ISCHEMICA)
DIAGNOSTICA INVASIVA INTRAVASCOLARE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

A RARE CASE OF PROMINENT THEBESIAN VEINS NETWORK ASSOCIATED WITH MYOCARDIAL INFARCTION WITH NON-OBSTRUCTIVE CORONARY ARTERIES (MINOCA)

Giuseppe Fabrizio Saccinto (a, b), Filippo Dossi (b), Roberta Giani (b), Michele Occhipinti (b), Stefano Provasoli (b), Claudio Tamborini (b), Stefania Falcone (b), Battistina Castiglioni (b), Roberto De Ponti (a, b)
(a) UNIVERSITÀ DEGLI STUDI DELL'INSUBRIA, VARESE; (b) DIPARTIMENTO CARDIO-TORACO-VASCOLARE, U.O. DI CARDIOLOGIA, OSPEDALE DI CIRCOLO DI VARESE FONDAZIONE MACCHI

Background: Thebesian veins (ThV) that usually supply nutrients for the embryonic heart may be responsible for coronary-to-ventricular shunts in adulthood. Fistulous communication may be due to a failure of these intertrabecular spaces to fuse that may cause steal phenomenon that can lead to myocardial ischaemia. We report a case of a Thebesian vein (ThV) network detected on coronary angiography, presenting as multiple intramyocardial coronary-to-ventricular cavity microfistulas with a prominent myocardial blush draining into the left ventricle. This condition appeared to be responsible for a coronary steal phenomenon, ultimately leading to myocardial infarction with non-obstructive coronary arteries (MINOCA).

Case description: A 63-year-old woman with a history of systemic sclerosis complicated by pulmonary hypertension presented to emergency department (ED) with fever, dyspnea, chest discomfort, generalized malaise and palpitations after recent gastroenteritis. ECG revealed atrial fibrillation with rapid ventricular response, successfully treated with external electrical cardioversion. Sinus rhythm was restored with diffuse, aspecific repolarization abnormalities. Thoracic Chest CT revealed bilateral pneumonia. Blood tests showed leukocytosis (31390 /µL), elevated high-sensitivity troponin T (3064 ng/L), and NT-proBNP (9370 ng/L). Transthoracic echocardiography demonstrated preserved ejection fraction with anteroseptal wall motion abnormalities. After stabilization of the infectious condition, coronary angiography showed marked capillary blush draining into the left ventricular cavity due to extensive multiple microfistulas arising from the left anterior descending artery and left circumflex artery producing a left ventriculography (figure 1), consistent with persistent ThV.

Conclusion: This case illustrates a rare form of MINOCA caused by a coronary steal phenomenon associated with persistent ThV, exacerbated by tachyarrhythmia and infection. Following cardioversion and infection resolution, troponin levels reduced and anginal symptoms improved. Beta-blocker therapy further stabilized the patient by reducing myocardial oxygen demand and improving systemic perfusion. Identifying such uncommon mechanisms is crucial for proper management in patients with myocardial injury and non-obstructive coronary artery disease.

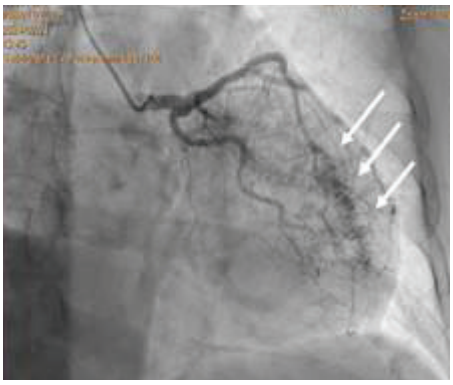


Figure 1

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 429
TERAPIA DI RESINCRONIZZAZIONE (ARITMIE)
ELETTROSTIMOLAZIONE (ARITMIE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INTERVENTISTICA STRUTTURALE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

IMPACT OF LEFT BUNDLE BRANCH AREA PACING ON OUTCOMES IN TAVI PATIENTS WITH PERSISTENT LEFT BUNDLE BRANCH BLOCK REQUIRING PACEMAKER IMPLANTATION

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(a) IRCCS POLICLINICO SAN DONATO, SAN DONATO MILANESE, MILANO, ITALIA; (b) UNIVERSITÀ VITA-SALUTE SAN RAFFAELE, MILANO, ITALIA

Background: Permanent pacemaker (PPM) implantation is frequent after transcatheter aortic valve implantation (TAVI) due to post-procedural conduction disturbances. Among these, persistent left bundle branch block (LBBB) is common and contributes to ventricular dyssynchrony and worse outcomes. Conventional right ventricular pacing (RVP) may exacerbate these effects, whereas left bundle branch area pacing (LBBAP) offers a more physiological alternative by preserving ventricular synchrony.

Objectives: To compare clinical outcomes of LBBAP versus RVP in post-TAVI patients who developed persistent LBBB requiring PPM implantation.

Methods: This was a single-center, retrospective analysis of patients undergoing TAVI between January 2019 and December 2024. Among all patients who required PPM implantation after the procedure, we selected those with persistent left bundle branch block (LBBB). Thirty patients treated with LBBAP were propensity score–matched to 30 patients treated with RVP. The primary endpoint was a composite of all-cause mortality, cardiovascular mortality, and cardiovascular hospitalizations at 12 months. Secondary endpoints included left ventricular ejection fraction (LVEF), paced QRS duration, and New York Heart Association (NYHA) class.

Results: At 12 months, the primary composite endpoint occurred in 2/30 (6.7%) patients with LBBAP versus 11/30 (36.7%) with RVP ($p = 0.010$). LVEF improved from 56.5 ± 11.8% to 62.1 ± 8.7% in the LBBAP group, while it remained unchanged in the RVP group (57.3 ± 12.4% to 58.0 ± 9.6%; $p = 0.020$ between groups). Paced QRS duration was significantly shorter with LBBAP (124 ± 13 ms vs 152 ± 17 ms; $p < 0.001$). Functional improvement (NYHA class I–II) was observed in 77% of LBBAP versus 53% of RVP patients ($p = 0.050$).

Conclusions: In this propensity-matched cohort of TAVI patients requiring PPM for persistent LBBB, LBBAP was associated with a substantial reduction in the composite of mortality and cardiovascular hospitalizations, along with superior preservation of systolic function and ventricular synchrony compared with RVP. These findings support LBBAP as a more physiological and advantageous pacing strategy in this high-risk post-TAVI population.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 973
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

ASSESSMENT OF TAVI FUTILITY: INSIGHTS FROM THE TRITAVI REGISTRY

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Introduction. Patients with Aortic Stenosis (AS) undergoing Transcatheter Aortic Valve Implantation (TAVI) are still exposed to a not negligible risk of death during the first year after the procedure, despite a not-complicated procedure. However, few data are still available about timing and kind of death after the procedure.

Methods. Transfusion Requirements in Transcatheter Aortic Valve Implantation (TRITAVI; NCT03740425) is an international, investigator-initiated registry designed to collect data on patients with symptomatic severe aortic stenosis undergoing TAVI at 18 European sites. The primary end point of the study was all-cause death occurring in patients between 30 days and 1 year without major peri-procedural complications (major vascular complications, stage 2 to 3 acute kidney injury (AKI) and transfusions) during the procedure.

Results. 11246 patients were recruited. 454 (4%) of the patients died between 1 and 12 months without any major complications. 78 (0.7%) died for CV reasons, while 376 (3.3%) for non CV. COPD (HR: 1.3, 95% CI: 1.0 – 1.7, p = 0.023), Atrial Fibrillation (HR: 1.4, 95% CI: 1.1 – 1.8, p = 0.002) and baseline creatinine (HR: 1.2, 95% CI: 1.0 – 1.3, p = 0.003), increased the risk of the primary end point, while baseline EF (HR: 0.98, 95% CI: 0.96 – 0.99, p < 0.001) resulted protective. At competitive risk analysis, risk of non CV death appeared to be more relevant and to steadily increase across the year, while risk of CV death was lower. Consistently, baseline creatinine (HR: 1.2, 95% CI: 1.1 – 1.4, p = 0.002) and AF (HR: 1.4, 95% CI: 1.1 – 1.8, p = 0.008) related to increased risk of non CV death, while EF resulted protective (HR: 0.9, 95% CI: 0.8 – 0.99, p <0.001).

Conclusion. Risk of death after the first year of not complicated TAVI is not negligible even for patients without major peri-procedural complications. It appears mainly driven by non-CV reasons and predicted by baseline renal function, ejection fraction and atrial fibrillation.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 907
INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
DIAGNOSTICA INVASIVA INTRAVASCOLARE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
FISIOLOGIA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INFARTO NSTEMI (CARDIOPATIA ISCHEMICA)

CALCIFIED NODULE: IS THE ERUPTION THE LIMIT?

Simone Fezzi (a), Alessandro Sarai (a), Gabriele Pesarini (a), Roberto Scarsini (a), Domenico Tavella (a), Verdiana Galli (a), Flavio Luciano Ribichini (a)
(a) AZIENDA OSPEDALIERA UNIVERSITARIA INTEGRATA VERONA

Razionale. Uomo di 78 anni giunge in Pronto Soccorso per presincope. Anamnesi: sostituzione valvolare aortica chirurgica (SAVR) e multiple PCI per malattia coronarica multivasale (CAD); stent su discendente anteriore sinistra (LAD) e circonflessa sinistra (LCx); occlusione cronica (CTO) della coronaria destra (RCA). All'ingresso, ECG con nuovo blocco di branca sinistra (LBBB) ed ecocardiogramma con disfunzione sistolica moderata del ventricolo sinistro. La coronarografia documenta malattia multivasale gravemente calcifica, con stenosi eccentrica subcritica del tronco comune sinistro distale (LM) con coinvolgimento dell'ostio LCx, malattia diffusa della LAD e CTO di RCA (collaterali dalla coronaria sinistra, Rentrop II), senza chiara identificazione della lesione responsabile. Si adotta quindi una strategia multimodale integrando imaging intravascolare e fisiologia coronarica per localizzare la lesione culprit e pianificare la rivascolarizzazione.

Risoluzione tecnica. L'IVUS evidenzia sotto-espansione di uno stent a rilascio di farmaco (DES) nel tratto medio-distale della LAD, calcificazioni diffuse con noduli eruttivi nel segmento medio e buona espansione dello stent prossimale. Il LM distale mostra calcificazione nodulare senza riduzione critica dell'area (minimal lumen area, MLA 12 mm²), mentre l'ostio LCx presenta MLA <5 mm². La fisiologia invasiva risulta chiaramente positiva sulla LAD (iFR 0,74; FFR 0,71) con significativo drop pressorio attraverso il segmento inter-stent; negativa sulla LCx (iFR 0,99; FFR 0,94). La preparazione della lesione sulla LAD media richiede palloni non-complianti e litotrissia intravascolare (IVL); l'adeguata preparazione consente l'impiego di pallone a rilascio di paclitaxel (DCB). La rivalutazione funzionale finale conferma un buon risultato (FFR 0,88).

Implicazioni cliniche. L'approccio integrato imaging-fisiologia consente l'identificazione precisa della lesione responsabile, evitando PCI su lesioni non critiche (LM–LCx). L'evidenza di calcificazioni severe con noduli eruttivi orienta verso tecniche di modifica di placca per una preparazione ottimale; il monitoraggio IVUS sequenziale guida e ottimizza la strategia di PCI. Le misurazioni funzionali finali confermano l'esito favorevole.

Prospettive. Nella CAD multivasale complessa, la strategia multimodale supera i limiti dell'angiografia, permettendo identificazione accurata della lesione responsabile, pianificazione procedurale, riesame passo-per-passo con eventuale rimodulazione della strategia e ottimizzazione dell'outcome.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 516
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
DIAGNOSTICA INVASIVA INTRAVASCOLARE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INFARTO STEMI (CARDIOPATIA ISCHEMICA)

HEATSTROKE-INDUCED THROMBOTIC MYOCARDIAL INFARCTION: INSIGHTS INTO A CHALLENGING CASE

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A 43 year old man presented to the emergency department with chest pain during an intense cycling session during high temperatures. The episode was associated with acute confusion and somnolence. His medical history included chronic ischemic heart disease with prior PCI-DES on the LAD. At examination, his temperature was 38 °C, no focal neurological or cardiac abnormalities. ECG showed sinus bradycardia with mild concave ST-segment elevation in leads V4–V6 and inferior leads. Echocardiography revealed preserved left ventricular systolic function with apical inferior akinesia.

Laboratory testing showed neutrophilic leukocytosis, INR 0.8 s, aPTT 21 s and D-dimer 1.1 pg/mL, with normal electrolytes and hs-troponin values; moreover, toxicology screening and non-contrast brain CT were negative. Coronary angiography documented thrombotic occlusion of distal stent edge and at the ostium of the first diagonal branch. Recanalization was achieved with guidewire passage, UHF, and Cangrelor. IVUS revealed thrombus within a well-apposed, fully expanded stent, and additional thrombus at the diagonal ostium without underlying atherosclerotic plaque. PCI with a drug-coated balloon and final kissing balloon



Figure 1

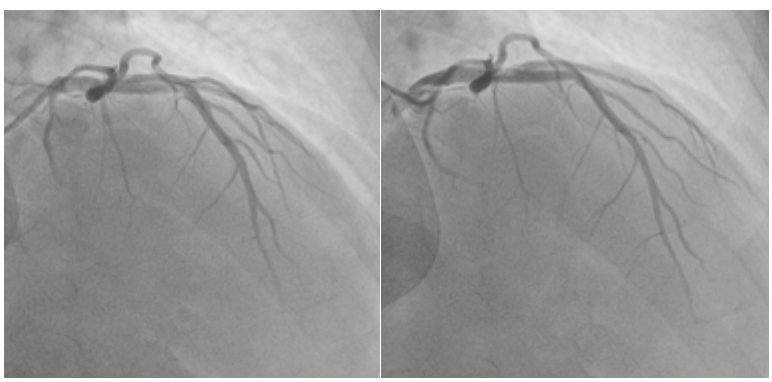


Figure 2

inflation resulted in an optimal angiographic outcome. The patient recovered uneventfully and was discharged on day five after a negative thrombophilia screen.

Thrombotic myocardial infarction occurring in the context of heatstroke is exceedingly rare. Heat-induced systemic inflammation and activation of coagulation are key drivers. Thermal injury promotes release of danger-associated molecular patterns (DAMPs) and so pro-inflammatory cytokine production (e.g., IL-6), which upregulate tissue factor expression and trigger the coagulation cascade. Neutrophil activation with NETosis further amplifies thrombus formation. Endothelial injury impairs fibrinolysis (PAI-1), reduces natural anticoagulants (antithrombin, protein C), and enhances platelet aggregation via von Willebrand factor, ultimately predisposing to disseminated intravascular coagulation. This case underscores the potential for heatstroke to precipitate severe cardiovascular complications, including myocardial infarction, and highlights the importance of early recognition and timely management.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 25
INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INTERVENTISTICA STRUTTURALE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT) (IMAGING CARDIOVASCOLARE)

GESTIONE DEL PAZIENTE CARDIOLOGICO COMPLESSO: L'IMPORTANZA DELL'IMAGING NEL PLANNING PROCEDURALE

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(a) UNIVERSITÀ DEGLI STUDI DI MILANO; (b) IRCCS OSPEDALE GALEAZZI - SANT'AMBROGIO

Introduzione: Sempre più spesso il "paziente cardiologico" è un paziente complesso, anziano, con plurime comorbidità, cardiologiche e non. In questo scenario, risulta fondamentale la scelta del corretto iter diagnostico per poter pianificare correttamente il successivo percorso terapeutico.

Caso clinico: Uomo di 79 anni, noto per plurimi fattori di rischio cardiovascolari e insufficienza renale cronica. Giunge in visita ambulatoriale portando in visione un ecocardiogramma di 5 anni prima, sostanzialmente nei limiti di norma. Veniva segnalata un'ipertrabecolatura del ventricolo sinistro per la quale il paziente ha eseguito una RMN cardiaca risultata nei limiti di norma. Torna lamentando precordialgia da sforzo, ingravescente, descritta come gravativa. All'ECG si rileva un BBS non precedentemente noto. Viene ripetuto un ecocardiogramma che mostra una moderata dilatazione ventricolare sinistra con diffusa ipocinesia e severa riduzione della funzione sistolica (FE 23%), associata a marcata degenerazione calcifica della valvola aortica in assenza di aumentate velocità e gradienti transvalvolari, configurando un quadro di stenosi aortica a fenotipo emodinamico low-flow low-gradient. Altri reperti segnalati erano un'insufficienza mitralica e tricuspidale di grado moderato, una lieve dilatazione e disfunzione ventricolare destra e un'elevata probabilità di ipertensione polmonare. A questo punto si è deciso di procedere con esami di II livello: è stata eseguita una TAC coronarica e cardiaca per la valutazione del calcium score valvolare aortico, che è risultato 2135 AU, valore indicativo di severità della stenosi. Dal punto di vista coronarico evidenza di severa coronaropatia trivasale con stenosi significativa (>50%) del TC, plurime stenosi moderate (50%) dell'IVA ai tratti prossimale e medio, due stenosi significative (75%) al tratto prossimale e medio di Cx e stenosi verosimilmente significativa (>70%) di Cdx ostio-prossimale. Dopo discussione collegiale del caso, è stata eseguita una coronarografia con protezione renale mediante RenalGuard: confermata la severa coronaropatia trivasale coinvolgente il TC, in considerazione della funzione ventricolare severamente depressa, è stato posizionato Impella CP ed è stata eseguita una rivascolarizzazione completa per via percutanea (PCI + 4 DES di TC-IVA media, PCI + 3 DES di CFx prossimale-media e PCI + 2 DES di CDx).
Il paziente veniva dimesso con terapia medica ottimizzata per lo scompenso cardiaco. A seguire, a distanza di 2 mesi, il paziente è stato sottoposto a un impianto transcatetere di bioprotesi aortica Edwards Sapien Ultra 26mm. All'attuale follow-up a 6 mesi è stato documentato un netto incremento della funzione sistoli-

ca globale (FE 45%) associato a miglioramento delle valvulopatie atrioventricolare e normalizzazione delle pressioni polmonari. Il paziente riferisce benessere clinico.

Conclusione: Questo caso mostra come la scelta del corretto iter diagnostico sia fondamentale sia per fare diagnosi sia per pianificare l'intervento terapeutico: nello specifico, la TC cardiaca permette di fornire molte informazioni con un unico esame. Questo ha permesso sia di fare diagnosi di stenosi aortica severa tramite l'utilizzo del calcium score, sia di valutare il circolo coronarico che si è rivelato diffusamente e severamente malato. Così facendo è stato possibile prepararsi e pianificare il successivo studio coronarografico.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 1008
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
ELETTROSTIMOLAZIONE (ARITMIE)
INTERVENTISTICA STRUTTURALE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

A RARE COMPLICATION: ATRIOVENTRICULAR DISSOCIATION DURING CORONARY SINUS REDUCER IMPLANTATION

Francesco Sbarra (a), Gianluca Pagnoni (a), Marco Loffi (b), Daniela Aschieri (a), Luca Rossi (a), Alberto Monello (a)
(a) AUSL PIACENZA; (b) ASST CREMONA

The Coronary Sinus Reducer (CSR) is a percutaneous option for refractory angina in patients unsuitable for revascularization, with an overall favorable safety profile.

We reported a 71-year-old man with multivessel coronary disease, previously treated with coronary artery bypass, baseline right bundle branch block and left bundle branch hemiblock at the EKG (figure 1), undergoing CSR implantation by right jugular vein access (figure 2). During coronary sinus cannulation we reported a transient complete atrioventricular block (figure 3), likely due to mechanical irritation of the atrio-ventricular node/His bundle. A temporary transvenous pacemaker was placed by femoral vein and device deployment was completed uneventfully. At three-month follow-up, the patient reported significant improvement in angina symptoms.

This case highlights the need to minimize manipulation and to consider prophylactic temporary pacing when pre-existing conduction disease at the EKG and challenging coronary sinus anatomy were present.



Figure 1

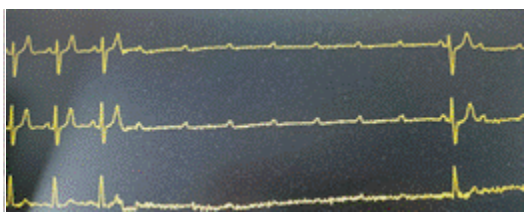


Figure 2

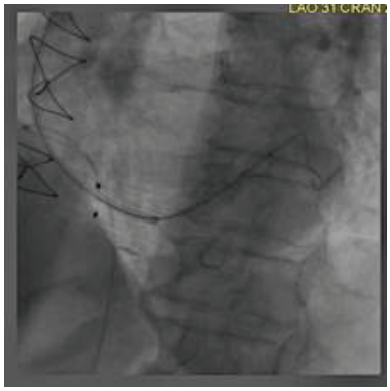


Figure 3

CardioSic

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 1072
PATOLOGIA DELLA VALVOLA TRICUSPIDE (VALVULOPATIE)
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE)
(IMAGING CARDIOVASCOLARE)

FACING THE CHALLENG OF SEVERE RECURRENT TRICUSPID REGURGITATION AFTER SURGICAL REPAIR: A CASE OF VALVE-IN-RING IMPLANTATION

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Background: Residual or recurrent tricuspid regurgitation (TR) develops in up to 14–30% of patients early after surgical annuloplasty. Although frequently symptomatic, most patients are not referred for redo surgery because reoperation carries prohibitive risk in this frail population. In the setting of prior ring annuloplasty, transcatheter valve-in-ring (ViR) implantation may represent a valuable alternative to transcatheter edge-to-edge repair (TEER). ViR is particularly attractive when tissue tear or ring dehiscence makes TEER unfeasible, when imaging quality is suboptimal, or when the risk of functional tricuspid stenosis potentially exacerbated by TEER is high.

Case Presentation: We report the case of a 51-year-old woman with rheumatic heart disease, prior double mechanical valve replacement (aortic and mitral), and tricuspid annuloplasty with an Edwards Physio 24 mm ring. She was admitted with severe symptoms and newly diagnosed recurrent severe tricuspid regurgitation with right ventricular dysfunction. Multimodality imaging, including echocardiography, cardiac CT, and right heart catheterization, confirmed severe ring dysfunction with steno-regurgitant physiology. Importantly, pre-procedural imaging demonstrated unsuitability for TEER, narrowing the therapeutic options. Given her prohibitive surgical risk, the Heart Team opted for a transcatheter valve-in-ring implantation.

Intervention: A transcatheter valve-in-ring implantation was successfully performed through transfemoral venous access, with deployment of a 26 mm Edwards Sapien 3 Ultra prosthesis. The valve was positioned under combined transesophageal echocardiographic and fluoroscopic guidance, without complications. Post-procedural echocardiography confirmed optimal prosthesis expansion, trivial regurgitation, and a mean transvalvular gradient of 4 mmHg

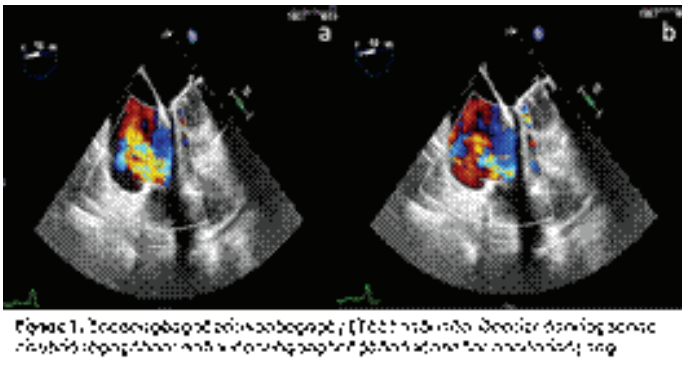


Figure 1

Outcome: The patient's clinical course was uneventful, post-procedural transthoracic echocardiography confirmed optimal prosthesis expansion with no evidence of intra- or paravalvular regurgitation. The patient was discharged in stable condition, and an outpatient follow-up was scheduled at 3–4 months.

Conclusion: This case highlights the feasibility and safety of transcatheter valve-in-ring implantation with a balloon expandable valve as a novel and feasible alternative to redo surgery in high-risk symptomatic patients with failed tricuspid repair and limited options.

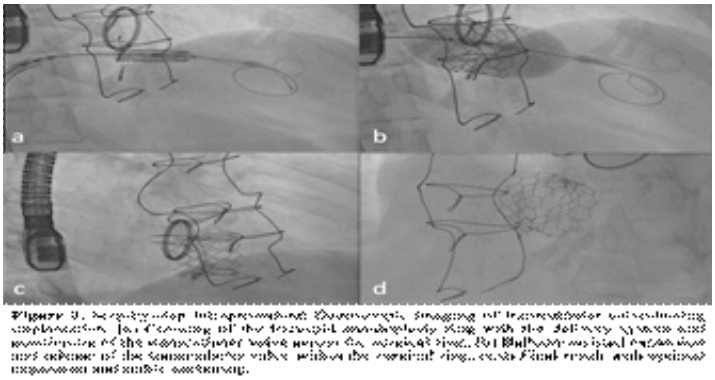


Figure 2

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 392
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)

USE OF CANGRELOR IN THE CONTEXT OF CONCOMITANT TRANSCATHETER AORTIC VALVE REPLACEMENT AND COMPLEX-HIGH RISK PCI

Tommaso Simone (a), Alice Centola (b), Gaspare Cannone (b), Andrea Raffaele Munafò (a), Giuseppe Esposito (a), Ketina Arslani (c, d), Stephanie Brunner (e), Sarah Verhemel (f), Alice Annalisa Cerutti (a), Pablo Antileo (a), Antonio Mangieri (g), Andrea Buono (h), Stefano Nava (a), José Luis Díez-gil (i), Andrea Scotti (j), Alessandro Mandurino-mirizzi (k), David Bauer (l), Pablo Codner (m), Kerstin Piayda (n), Italo Porto (o), Horst Sievert (n), Ran Kornowski (m), Petr Toušek (l), Dionigi Fischetti (k), Azeem Latib (j), Jorge Sanz Sanchez (i), Diego Maffeo (h), Francesco Bedogni (b), Bernhard Reimers (g), Damiano Regazzoli (g), Nicholas Van Mieghem (f), Francesco Saia (p), Stefan Toggweiler (e), Jacopo A. Oreglia (a), Ole De Backer (d), Francesco Soriano (a), Claudio Montalto (a, q)
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Background: Severe aortic stenosis often coexists with obstructive coronary artery disease and a growing number of candidates for transcatheter aortic valve implantation (TAVI) might require complex percutaneous coronary intervention (PCI) during the same session. In this context, the timing of periprocedural antiplatelet administration is challenging given the need to balance ischemic/thrombotic complications against the risk of large-bore access–related bleeding.

Objectives: To compare the outcomes of patients undergoing same stage TAVI and complex/high risk PCI, with or without the use of cangrelor periprocedurally.

Methods: Multicenter, retrospective cohort including 98 consecutive patients (PCI without cangrelor n=81; with cangrelor n=17).
The primary endpoint was all cause death. The secondary endpoint was a composite of all cause death, stroke/transient ischemic attack, bleeding and vascular access complications.
Events were analyzed using the Kaplan–Meier method. We also performed a propensity-match score analysis to adjust for clinical difference at baseline.

Results: 30 day mortality was similar between groups (7.7% with cangrelor vs 4.1% with oral P2Y12, p=0.48). The 30 day key secondary composite endpoint was higher with cangrelor (64.3% vs 27.6%, p=0.012), mainly driven by increased incidence of bleedings. Any bleeding events were more common with cangrelor both in hospital (53.3% vs 17.2%, p=0.006) and at 30 days (57.1% vs 17.2%, p= 0.003), mainly due to a higher rate of in-hospital minor bleedings (33.3% vs 1.6%, p=0.001) while in-hospital major bleedings were similar between groups (20.0% vs 15.6%, p=0.468). Vascular access complications at 30-days were comparable (25.0% vs 22.5%, p=0.75). After applying inverse probability weighting, the estimates were comparable to the unadjusted results, with the same pattern of significance (30-day mortality 7.5% vs 3.7%, p=0.27; 30-day secondary endpoint 42.0% vs 27.3%, p=0.035; in-hospital bleedings any: 53.3% vs 17.2% p =0.006, minor: 35.7% vs 1.6% p=0.0005; 30-day bleedings any 34.8% vs 17.0%, p=0.01; 30- day vascular complications 22.0% vs 19.0%, p=0.60).
Conclusions: In patients undergoing same-stage TAVI and complex PCI, cangrelor administration was associated with similar 30 day mortality vs standard oral P2Y12 therapy and with a higher risk of a safety endpoint, mainly driven by minor bleedings, while major bleedings and vascular complications were comparable.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 709
INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
ANGINA INSTABILE (CARDIOPATIA ISCHEMICA)

SPONTENEOUS CORONARY ARTERY DISSECTION: CONSERVATIVE STRATEGY OR INTERVENTIONAL TREATMENT?

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Donna, 56 anni, senza noti fattori di rischio cardiovascolari, giungeva in pronto soccorso per dolore toracico da sforzo presente da circa 15 giorni, a soglia ingravescente. In anamnesi un ricovero nel 2019 per miocardite subacuta, per cui aveva eseguito una RMN cardiaca intraricovero con riscontro di edema/flogosi subepicardica con consensuale early gadolinium enhancement (EGE)/late gadolinium enhancement (LGE), più evidente in sede inferiore/inferolaterale basale. L'elettrocardiogramma in pronto soccorso mostrava un ritmo sinusale, normocardico, con onde T invertite in sede antero-laterale. Agli esami ematochimici basali un lieve aumento dei valori di troponina I (TnI) 20-32 ng/L (URL: 8-18 ng/L) su due prelievi. All'ecocardiografia si evidenziava una frazione di eiezione conservata in presenza di sfumata ipocinesia del segmento distale della parete anteriore. Nel sospetto di sindrome coronarica acuta (SCA) la paziente veniva condotta in sala emodinamica per esecuzione di coronarografia urgente. Veniva evidenziato un circolo coronarico a dominanza destra, con evidenza di stenosi subocclusiva dell'arteria interventricolare anteriore (IVA) ostio-prossimale sospetta per dissezione coronarica spontanea (SCAD), in assenza di aterosclerosi significativa. Si optava per una strategia conservativa con stretto monitoraggio clinico. Veniva prescritta singola terapia antiaggregante con ASA 100 mg, si impostava monitoraggio telemetrico e si richiedeva TC coronarica a completamento diagnostico. Questa evidenziava un diffuso restringimento di calibro di IVA ostio-prossimale in corrispondenza di un ispessimento ipodenso di parete [con iniziale estensione al TC distale con spessore massimo di circa 3 mm ed un'estensione longitudinale di 11 mm] determinante stenosi di grado severo. Quadro riferibile a SCAD persistente di tipo 3 (classificazione secondo Saw). Si confermava, vista la stabilità del quadro clinico, un approccio di sorveglianza attiva. Eseguiva una nuova TC di controllo in decima giornata, che evidenziava una ulteriore progressione dell'ematoma di parete su IVA ostio-prossimale con coinvolgimento del ramo intermedio. Dopo valutazione collegiale del caso, alla luce del peggioramento del quadro coronarico, si decideva di procedere con un trattamento invasivo. La paziente veniva pertanto sottoposta a procedura di angioplastica IVUS-guidata di TC-IVA prossimale-media con impianto di uno stent medicato 3.5x38 mm, con buon risultato angiografico finale. Venivano somministrate 5000 UI di Eparina e Cangrelor (bolo+infusione). Al termine si somministrava carico di Clopidogrel 600 mg per iniziare un regime di duplice terapia antiaggregante con indicazione a proseguirla per 12 mesi.

Data l'associazione frequente tra SCAD e displasia fibromuscolare (FMD) con una prevalenza stimata attorno al 45%, si decideva di proseguire con un approfondimento diagnostico dei distretti arteriosi non coronarici. Veniva eseguita una angio-RMN dei vasi intra-cranici e una angio-TC dell'aorta addominale, dei vasi splancnici e degli arti inferiori, che risultavano negative. Il restante ricovero trascorreva in assenza di complicanze e la paziente veniva dimessa in ventesima giornata. Alla visita di follow-up a 1 mese, la paziente si presentava asintomatica per angor e/o

equivalenti per cui proseguiva la terapia impostata durante il ricovero, con indicazione ad effettuare il follow-up clinico a 12 mesi.
Questo caso clinico rappresenta un esempio concreto di quanto possa essere complessa la decisione della strategia di trattamento nei pazienti con SCAD, sottolineando l'importanza del follow-up clinico/strumentale stretto, che può consentire di individuare la migliore finestra temporale per passare da una strategia conservativa a un trattamento interventistico sicuro ed efficace.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 848
DIAGNOSTICA INVASIVA INTRAVASCOLARE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

INTRAVASCULAR IMAGING-GUIDED PERCUTANEOUS CORONARY INTERVENTION FOR CALCIFIED CORONARY LESIONS: A NETWORK META-ANALYSIS

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Background. Calcified coronary lesions represent a particular subset of coronary artery disease (CAD). Intravascular imaging strategies, intravascular ultrasound (IVUS) and optical coherence tomography (OCT), represent a fundamental tool in achieving procedural success and optimizing percutaneous coronary interventions (PCI), particularly in complex lesions. However, there is lack of evidence on the impact of intravascular imaging in calcified coronary lesions.

Methods. We performed the first network meta-analysis comparing angiography-guided, IVUS-guided, and OCT guided PCI in calcified coronary lesions. Random-effects frequentist models estimated odds ratios (ORs) for clinical outcomes and mean differences (MDs) for procedural outcomes. The primary procedural endpoint was minimal stent area (MSA), while the primary clinical endpoint was the incidence of major adverse cardiac events (MACE). Study inclusion criteria were CAD scenarios in which calcified lesions were observed; intravascular imaging (IVUS or OCT) was performed; only comparative studies entered the network, while single-arm reports were not included in effect estimates.

Results. A total of seven studies were included in this network meta-analysis analysis. The primary procedural outcome showed that OCT achieved the larger post-PCI MSA than angiography alone (MD +0.87; 95% CI 0.02-1.87), with the IVUS guidance ranking second (MD vs angiography + 0.78: 95 % CI -0.27-1.82); no significant differences were also observed between OCT and IVUS (MD -0.09; 95% CI -0.71; 0.53). In the primary clinical endpoint analysis, both intravascular imaging strategies were associated with lower MACE incidence than angiography alone: OCT vs angiography OR 0.68 (95% CI 0.45-0.99) and IVUS vs angiography OR 0.55 (95% CI 0-33-0.90). The comparison of IVUS vs OCT did not show any significant differences in the primary clinical outcome (OR 0.82, 95% CI 0.45-1.52). Ranking analyses placed IVUS as the most likely best strategy for reducing MACE, followed by OCT.

Conclusions. This is the first network meta-analysis where the two available intravascular imaging strategies, OCT and IVUS, are compared in calcified coronary lesions. In this particular CAD scenario, both intravascular imaging–guidance strategies led to a greater stent expansion and to a significant reduction in MACE compared to angiography-guidance alone. These findings support the routine use of intravascular imaging in calcified lesions, with modality choice tailored to local expertise, device availability and specific lesions characteristics.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 1068
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
PLACCA VULNERABILE (ATEROTROMBOSI)

REAL-WORLD OUTCOMES OF DRUG-COATED BALLOON ANGIOPLASTY IN CRITICAL CORONARY STENOSIS: A SINGLE-CENTER REGISTRY

Laura Turano (a), Andrea Carbone (a), Martina Sportelli (a), Federica Bruno (a), Giuseppe Panuccio (a), Alessandro Caracciolo (a), Sabato Sorrentino (a), Giuseppe Mazza (a), Federica Maruca (a), Luana Caruso (a), Mariangela Vigna (a), Antonio Mandolfo (a), Nadia Salerno (a), Jolanda Sabatino (a), Daniele Torella (a), Salvatore De Rosa (a)
(a) MAGNA GRAECIA UNIVERSITY OF CATANZARO, ITALY

Background: Drug-coated balloons (DCB) provide effective local antiproliferative drug delivery without the drawbacks of permanent metallic scaffolds, potentially reducing long-term risks such as in-stent restenosis and thrombosis. Yet, real-world data on their performance in acute settings are limited. Hence, our aim was to evaluate procedural success, acute safety, and mid-term outcomes of DCB angioplasty in patients with critical coronary stenosis.

Methods: This prospective, single-center registry was conducted at the Magna Graecia University of Catanzaro. A total of 93 patients scheduled for PCI were screened; 42 (mean age 82.1 ± 5.3 years, 19% women) with completed follow-up at 6 and 12 months were analyzed. Patients with de novo lesions or in-stent restenosis were treated with paclitaxel- or sirolimus-coated balloons. Radial access was used in all cases. Bailout stenting was permitted at operator's discretion. Acute endpoints included technical success, periprocedural complications, and in-hospital events; clinical endpoints were major adverse cardiovascular events (MACE), target lesion revascularization (TLR), myocardial infarction (MI), and cardiovascular death.

Results: Technical success was achieved in 95% of cases, with bailout DES implantation required in 7% due to significant dissection or residual stenosis. Most target lesions were de novo stenoses, while a minority represented in-stent restenosis (ISR).

The majority of treated vessels involved the left

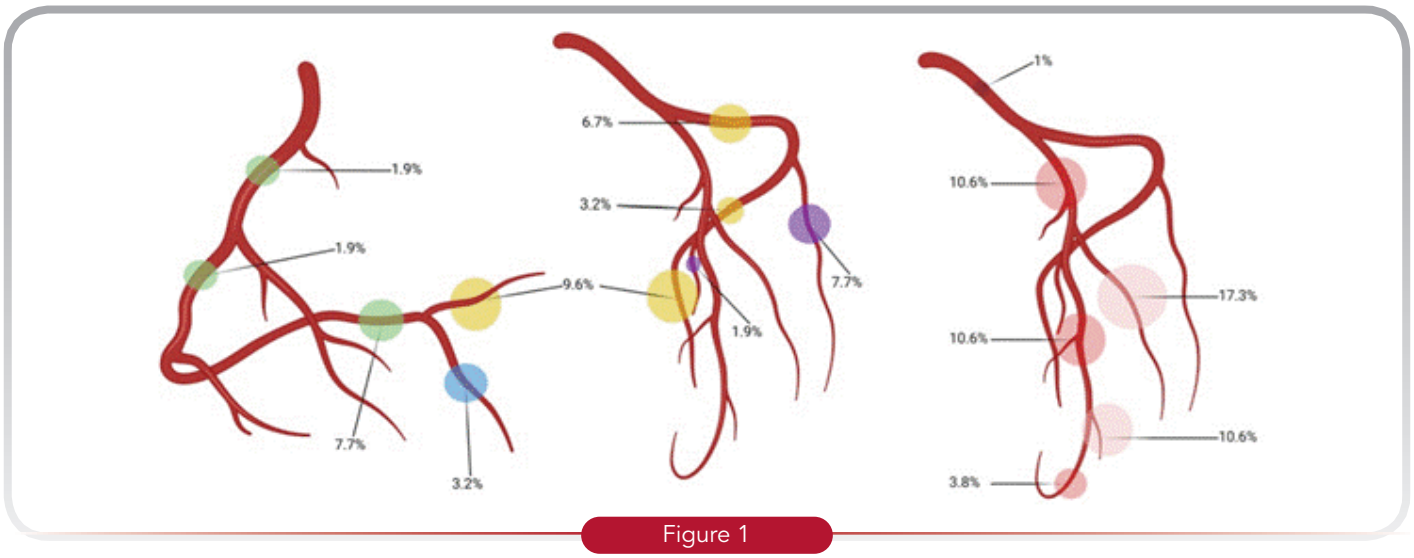


Figure 1

anterior descending artery (see figure below). No acute vessel closure, periprocedural MI, or in-hospital death occurred. Access-site complications were absent, and procedural radial success was 100%. At 6 and 12 months, the cumulative incidence of MACE and TLR remained low, with no documented stent thrombosis. Outcomes were comparable between paclitaxel- and sirolimus-based DCBs.

Discussion: In this real-world monocentric registry, DCB angioplasty demonstrated high procedural success and reassuring acute safety, with favorable mid-term outcomes in both de novo and restenotic coronary lesions. Larger studies with extended follow-up are needed to validate the role of DCB-only PCI in broader clinical practice.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 768
DIAGNOSTICA INVASIVA INTRAVASCOLARE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
FISIOLOGIA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

LONG-TERM PROGNOSTIC IMPLICATIONS OF ANGIOGRAPHICALLY DERIVED RADIAL WALL STRAIN IN PHYSIOLOGICALLY DEFERRED NON-FLOW-LIMITING LESIONS

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Background: Physiology-guided lesion deferral relies on invasive assessment of ischemia but may overlook residual plaque vulnerability. Angiography-derived radial wall strain (RWS), a surrogate of biomechanical stress, has emerged as a potential marker for identifying high-risk coronary plaques.

Objective: To evaluate the prognostic value of RWS in predicting long-term vessel-oriented composite endpoints (VOCE) in lesions deferred from PCI based on non-ischemic fractional flow reserve (FFR) values.

Methods: In this retrospective, blinded preliminary analysis including 213/799 [SF1] vessels (163/637 patients) from the Functional Angiography Interventional Registry (FAIR), RWS was assessed offline and classified as high strain if RWSmax ≥13%. The primary endpoint was VOCE, comprising cardiac death, target vessel myocardial infarction, or target vessel revascularization, adjudicated by an independent clinical events committee. Median follow-up was 5 years.

Results: VOCE occurred in 25 vessels (11.7%), with a significantly higher incidence in high-RWS vessels

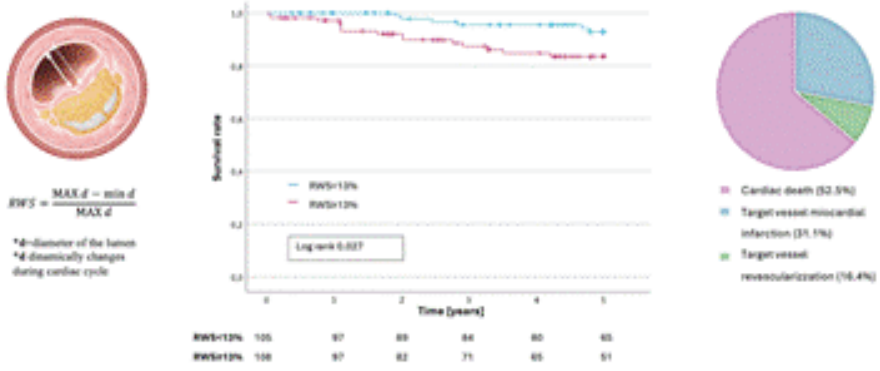


Figure 1

(RWSmax ≥13%) compared to low-RWS vessels (16.7% vs. 6.7%, p=0.02). In multivariable analysis adjusted for age, high RWS remained an independent predictor of VOCE (HR 3.11; 95% CI: 1.27–7.60; p=0.01).

Conclusions: Elevated RWS was independently associated with adverse long-term outcomes in FFR-deferred lesions, suggesting that RWS may uncover residual biomechanical vulnerability not captured by physiology alone. These findings support the potential role of RWS in refining deferral strategies and improving risk stratification.
The results from the full FAIR study analysis will be presented in detail upon acceptance.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 626
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

CROSSOVER BALLOON OCCLUSION TECHNIQUE FOR ACCESS CLOSURE DURING TRANSCATHETER AORTIC VALVE IMPLANTATION: A MULTICENTER OBSERVATIONAL STUDY

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(a) DIVISION OF CARDIOLOGY, "VILLA VERDE" CLINIC, TARANTO, ITALY; (b) DIVISION OF CARDIOLOGY, "MATER DEI" HOSPITAL, BARI, ITALY; (c) DIVISION OF CARDIOLOGY, DEPARTMENT OF INTERDISCIPLINARY MEDICINE (D.I.M.), UNIVERSITY OF BARI ALDO MORO, BARI, ITALY; (d) CARDIOVASCULAR INTERVENTIONS UNIT, PINETA GRANDE HOSPITAL, CASTEL VOLTURNO, ITALY; (e) DEPARTMENT OF MEDICAL AND SURGICAL SCIENCES, DIVISION OF CARDIOLOGY, "MAGNA GRECIA" UNIVERSITY, CATANZARO, ITALY; (f) LUM UNIVERSITY, HEART CENTER MATER DEI HOSPITAL, BARI, ITALY

Introduction: The ProGlide system represents the most common approach to closing the main access site during transcatheter aortic valve implantation (TAVI). A crossover balloon occlusion technique (CBOT) has been reported in small case series to possibly provide a controlled, safe, and successful haemostasis during TAVI. We sought to investigate the comparative performance of a combined (CBOT+ProGlide) compared with a ProGlide suture-only approach in terms of bleeding, vascular complications, acute kidney injury (AKI), and length of hospital stay (LOS).

Methods: Our study retrospectively enrolled 229 consecutive patients admitted to the "Villa Verde" Clinic (Taranto, Italy) and the "Mater Dei" Hospital (Bari, Italy) and treated with TAVI. The study population was divided into two groups based on the access closure strategy: the combined group and the ProGlide only group.

Results: The CBOT+ProGlide group presented a lower incidence of minor vascular complications, red blood cell transfusions, Valve Academic Research Consortium-3 (VARC-3) type ≥2 bleeding, post-operative AKI stages ≥2, and reduced LOS. After propensity-score matching, the CBOT+ProGlide group confirmed a lower incidence of VARC-3 type ≥2 bleeding (2.4% vs 11.9%, p= 0.016), AKI stage ≥2 (0% vs 6%, p=0.029), and shorter LOS (6.9±4.0 vs 8.9±6.1, p=0.015).

Conclusions: Data from this multicentre comparative study highlight that routine percutaneous closure of the main TAVI access with ProGlide coupled with CBOT, is possible and safe. Moreover, this combined approach appears promising in terms of reducing bleeding, RBC transfusions, AKI incidence, and shortening hospitalisations.

CardioSic

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 628
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
TELEMEDICINA IN CARDIOLOGIA (TELECARDIOLOGIA ED E-HEALTH)
INFARTO STEMI (CARDIOPATIA ISCHEMICA)
INFARTO NSTEMI (CARDIOPATIA ISCHEMICA)

COMPARATIVE PERFORMANCE OF SPOKE CENTRES VERSUS TELEMEDICINE SERVICE IN THE EMERGENCY ACTIVATION OF THE STEMI NETWORK: INSIGHTS FROM THE &LDQUO;DETECTIVE&LDQUO; REGISTRY

Martino Pepe (a), Rocco Tritto (a), Eduardo Urgesi (a), Carlo D´agostino (b), Gianluigi Napoli (c), Davide Rodio (a), Maria Ludovica Naccarati (a), Anna Maria Natola (d), Salvatore Giordano (e), Pasquale Caldarola (f), Vincenzo Pestrichella (g), Plinio Cirillo (h), Arturo Giordano (i), Giuseppe Biondi Zoccai (j, k), Sabino Iliceto (l), Marco Matteo Ciccone (a)

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Introduction: Telemedicine has been integrated into regional networks linking 24/7 catheterisation laboratories at "Hub" hospitals with the Territorial Emergency Medical Service (TEMS), with the aim of reducing time to diagnosis and treatment in patients with ST-elevation myocardial infarction (STEMI). However, concerns have been raised that telemedicine may increase the rate of false-positive diagnoses; a direct comparison with the traditional diagnostic process at non-Percutaneous Coronary Intervention-capable ("Spoke") hospitals are still lacking.

Methods: This multicentre, case-control study retrospectively included 1,001 consecutive patients with an initial diagnosis of ST-elevation myocardial infarction (STEMI) or very high-risk (VHR) non-ST-elevation acute coronary syndrome (NSTE-ACS), referred to the Apulian STEMI network between January 2018 and December 2021. Patients had undergone either an in-person clinical evaluation at a Spoke centre or a remote telemedicine-supported



Figure 1

assessment. The diagnostic performance of these two approaches was compared by analysing concordance between the initial working diagnosis and the final discharge diagnosis.

Results: TEMS and Spoke groups included 470 and 531 patients, respectively. False-positive diagnoses occurred in 21.3% and 35.8% of the TEMS and Spoke patients, respectively (p<0.001); moreover, the first medical contact at a spoke center was the main predictor of false positive diagnosis. The Spoke group showed a higher number of discharge diagnoses of NSTEMI without VHR features (p<0.001), myocardial infarction with no obstruction of coronary arteries (MINOCA) (p=0.033), and myocarditis (p=0.007).

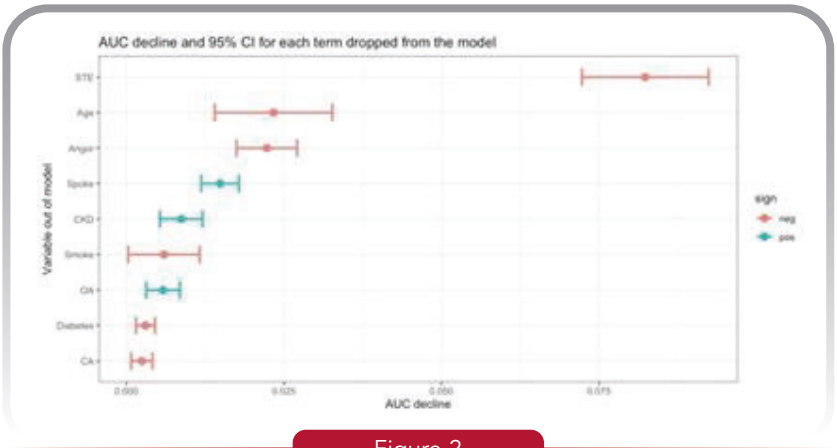


Figure 2

Conclusions: Telemedicine was associated with a lower false-positive rate than on-site cardiology assessments. This seemingly paradoxical finding challenges the notion that overdiagnosis is the main limitation of telemedicine and, instead, supports its role in reducing time to diagnosis and healthcare costs.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 629
PIASTRINE E TERAPIA ANTIAGGREGANTE (ATEROTROMBOSI)
INFARTO STEMI (CARDIOPATIA ISCHEMICA)
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

DIFFERENTIAL AND PHENOTYPE-SPECIFIC BENEFIT OF ORAL P2Y12 INHIBITOR PRETREATMENT IN STEMI PATIENTS: A RETROSPECTIVE MULTICENTRE IPTW CLUSTER ANALYSIS

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Introduction: The role of pretreatment with oral P2Y12 inhibitors (P2Y12I) in ST-elevation myocardial infarction (STEMI) patients remains debated. No-reflow in the culprit vessel during percutaneous coronary intervention (PCI) is associated with larger infarct size, impaired left ventricular recovery, and adverse clinical outcomes. Prior studies have examined the impact of other pharmacological pretreatments on no-reflow, yet evidence regarding P2Y12I remains limited. This study sought to investigate whether pretreatment with oral P2Y12I reduces the risk of no-reflow in STEMI patients undergoing primary PCI.

Methods: We conducted a multicentre study using the DETECTIVE registry, which retrospectively included consecutive patients with a running diagnosis of STEMI or very high-risk NSTE-acute coronary syndrome referred for urgent coronary angiography to three tertiary centres in Puglia, Italy, between January 2018 and December 2021. No-reflow was defined as post-PCI TIMI flow ≤2 in the absence of spasm, dissection, thrombus, or residual stenosis. We applied latent class analysis (LCA) to identify clinically distinct patient subgroups based on baseline characteristics and comorbidities. Within each class, we controlled for treatment allocation biases using inverse probability of treatment weighting (IPTW). Covariate balance was assessed using standardised mean differences, and average treatment effects were estimated through weighted absolute risk reduction with 95% confidence intervals (CI).

Results: Of 870 patients undergoing coronary angiography, 623 (72%) presented with STEMI, of whom 464 (75%) received pretreatment with a P2Y12I. Median age was 66 years (IQR 57–76), 77% were male. Hypertension, smoking, and dyslipidaemia were present in 67%, 44%, and 46%, respectively. Sixteen percent were

Killip class ≥2 and 12% had LVEF ≤35%. LCA identified three subgroups: Class I, younger low-risk males with preserved haemodynamics; Class II, older patients with moderate comorbidity and renal impairment but stable haemodynamics; and Class III, the oldest and highest-risk group with extensive cardiometabolic burden and haemodynamic compromise. Pretreatment was associated with a reduction in no-reflow across all classes before adjustment. After IPTW adjustment, baseline covariates were balanced across groups, and the effect of P2Y12I attenuated in Class I (ARR 7.0%, 95% CI –1.1 to 17.7; NNT 14.2) but persisted in Class II (ARR 11.9%, 95% CI 2.7–25.5; NNT 8.4) and Class III (ARR 19.9%, 95% CI 6.5–40.3; NNT 5.0).

Conclusions: STEMI patients admitted to our centres could be stratified into three clinically distinct subgroups based on comorbid burden and haemodynamic status. Pretreatment with oral P2Y12 inhibitors was associated with a reduction in the risk of no-reflow at the overall population level, with an increasing magnitude of benefit with greater comorbidity and haemodynamic compromise. These findings suggest that patient phenotype may be a key determinant of pretreatment efficacy, supporting a more tailored approach to pretreatment strategies with P2Y12i in STEMI patients.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 108
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)
PATOLOGIA DELLA VALVOLA TRICUSPIDE (VALVULOPATIE)

THE HIDDEN BURDEN OF IATROGENIC ATRIAL SHUNTING IN SEVERE TRICUSPID REGURGITATION

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Background: Iatrogenic atrial septal defects (ASDs) following transseptal catheterization for atrial fibrillation ablation are typically benign. However, in the context of severe tricuspid regurgitation (TR), even small interatrial shunts may become hemodynamically significant, leading to hypoxemia and worsening right heart failure.

Case Summary: We present the case of an 82-year-old woman with a complex cardiac history, including severe tricuspid regurgitation (TR) and a persistent iatrogenic atrial septal defect (ASD) with bidirectional shunting.
She presented with exertional desaturation that progressed to resting hypoxemia. Transcatheter caval valve implantation (TricValve) was performed to address right heart failure; however, this procedure paradoxically worsened the hypoxemia due to increased right-to-left interatrial shunting.
Subsequent percutaneous closure of the ASD resulted in an immediate

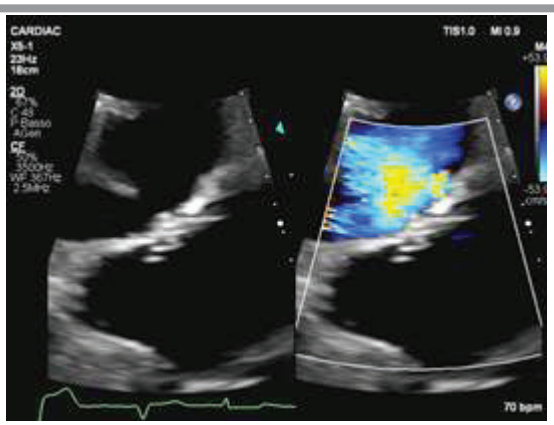


Figure 1



Figure 2

normalization of oxygen saturation and clinical improvement.

Discussion: This case highlights the potential for paradoxical hypoxemia following heterotopic valve therapy in patients with interatrial defects and right-sided volume overload. It emphasizes the importance of comprehensive hemodynamic assessment and a stepwise, individualized approach to management. In certain patients, ASD closure can restore normal systemic oxygenation.

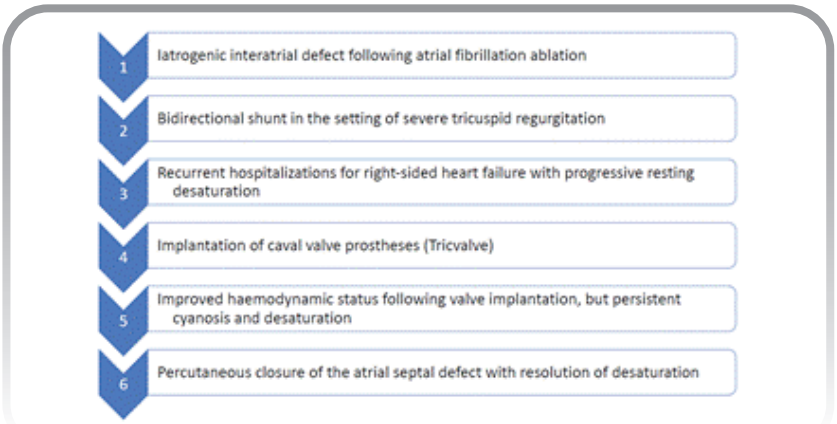


Figure 3

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 186
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
FARMACI ANTI-DIABETICI (DIABETE E MALATTIE DEL METABOLISMO)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO

IMPACT OF SGLT2-INHIBITORS ON ACUTE KIDNEY INJURY IN DIABETIC PATIENTS WITH SEVERE AORTIC STENOSIS UNDERGOING TRANSCATHETER AORTIC VALVE IMPLANTATION (TAVI)

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Background. Contrast-induced acute kidney injury (CI-AKI) in patients undergoing TAVI has been shown to significantly worsen outcomes, increasing both short- and long-term mortality rates. Currently, the impact of SGLT2i on CI-AKI occurrence in diabetic patients with severe AS undergoing TAVI is still largely unknown, especially in patients with CKD.

Aims. To evaluate the risk of contrast-induced acute kidney injury (CI-AKI) in patients with type 2 diabetes mellitus (T2DM) and severe aortic stenosis (AS) undergoing transcatheter aortic valve implantation (TAVI), comparing those treated with SGLT2 inhibitors (SGLT2i users) to those receiving other antidiabetic agents (no-SGLT2i users), stratified by the presence of chronic kidney disease (CKD).

Methods. Multicenter international registry of consecutive T2DM patients with severe AS undergoing TAVI between 2021-2024. The study population was stratified by the presence of CKD and anti-diabetic therapy at hospital admission (SGLT2i versus no-SGLT2i users).

Results. The study population consisted of 514 patients, stratified into those without CKD (n=226, 44%), of whom 43 (19%) were treated with SGLT2i, and 288 (56%) with CKD, of whom 71 (24.7%) were SGLT2i users. The median age was 81 [77-84] years and 60.1% were males. SGLT2i use did not impact renal function in non-CKD patients, with CI-AKI occurring in 7.1% of the cases, independently of SGLT2i use. Among CKD patients, CI-AKI occurred more frequently in no-SGLT2i users compared to those receiving SGLT2i (19.8% versus 8.5%, p=0.027), with a significant rise in post-TAVI and discharge serum creatinine values for non-SGLT2i users (p=0.001 after TAVI and p<0.001 at hospital discharge). Only in the CKD group, the use of SGLT2i was identified as an independent predictor of lower rate of CI-AKI occurrence (OR 0.66, 95%CI 0.37-0.88, p=0.006). Patients who developed CI-AKI had a higher incidence of major adverse cardiovascular events (MACE) during follow-up, independently of CKD (p<0.025 for both).

Conclusion. In diabetic patients with CKD undergoing TAVI, SGLT2i therapy was associated with lower occurrence of CI-AKI compared to those not treated with SGLT2i, suggesting a potential nephroprotective effect in this population.

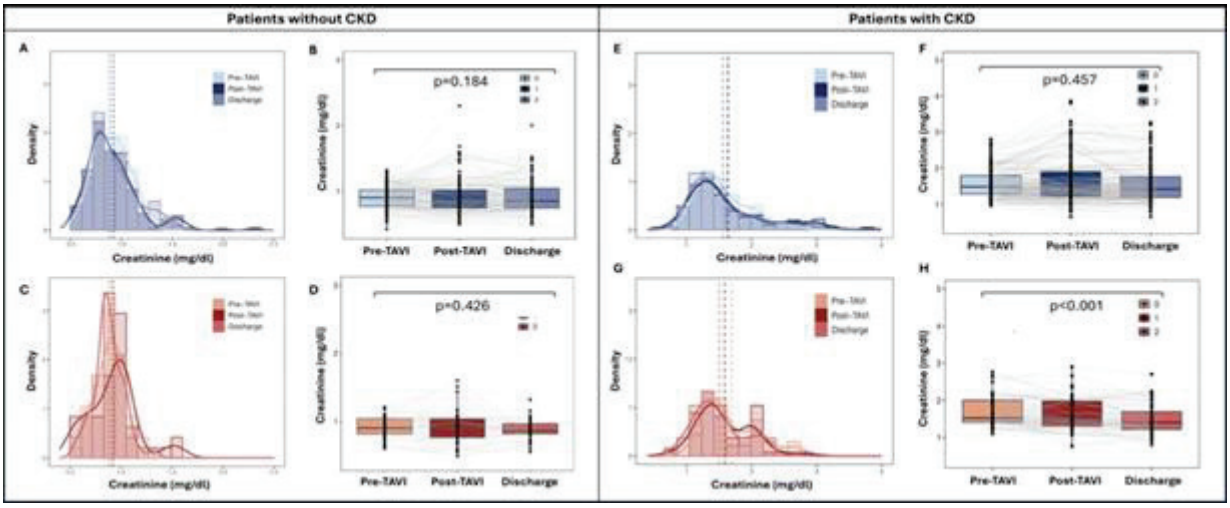

Patients without CKD
Patients with CKD
A
B
C
D
E
F
G
H
Density
Creatinine (mg/dl)
p=0.184
p=0.426
p=0.457
p<0.001
Pre-TAVI
Post-TAVI
Discharge

Figure 1

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 1095
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PIASTRINE E TERAPIA ANTIAGGREGANTE (ATEROTROMBOSI)
ANGINA INSTABILE (CARDIOPATIA ISCHEMICA)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)

BLACK SWAN IN CONTEMPORARY INTERVENTIONAL CARDIOLOGY: A CASE OF FATAL EARLY SUBACUTE IN-STENT THROMBOSIS AFTER MULTIVESSEL PCI

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(a) AZIENDA OSPEDALIERA UNIVERSITARIA SANT'ANDREA

Abstract: An 85-year-old man with complex multivessel CAD and multiple comorbidities underwent staged PCI with multiple DES followed by TAT. Despite guideline-based management and successful procedures, he developed fatal subacute in-stent thrombosis 10 days post-discharge. This case highlights the persistent thrombotic risk in high-risk patients despite optimal care, underscoring the need for individualized multidisciplinary management

Clinical Case: An 85-year-old male, former smoker, with a history of IHD, presented to the ED with chest pain radiating to the neck and left arm, associated with dyspnea. Medical history included previous STEMI treated with PCI with implantation of 1 DES on the RCA, paroxysmal AF, PAD, AHT, dyslipidemia, COPD, bilateral maculopathy, and stage IIIa CKD. Serial hs troponin I levels were negative. ECG showed SR, normal AV and IV conduction, and nonspecific repolarization abnormalities. TTE revealed a preserved LVEF (55%) with infero-posterior hypokinesia, consistent with previous findings. Coronary angiography revealed significant ostial and moderate distal stenosis of the LM, significant mid-segment stenosis of the LAD and LCx arteries, and diffuse disease of the RCA with multiple significant lesions. The case was discussed collegially. Initial PCI was performed on the RCA, with implantation of two DES in the proximal-mid segment and two DES distally. After clinical stabilization and optimization of MT, the patient was discharged on TAT (aspirin, clopidogrel, apixaban), with planned de-escalation to DAT after one week. One month later, the patient was electively readmitted for staged PCI. Via right femoral access and under IVUS guidance, PCI was performed with implantation of two DES on LCx-OM, two DES on the LM, and two DES on the LAD, with good angiographic result. IVUS confirmed adequate stent expansion and apposition. He was again discharged on TAT, with a plan to de-escalate after seven days. Antithrombotic management was tailored to balance the elevated ischemic risk, mostly due to the complexity of CAD, and the bleeding risk, driven by advanced age, CKD, chronic anemia (hemoglobin <11 g/dL) and the need for long-term anticoagulation. Ten days post-discharge, the patient returned to the ED with recurrent angina. ECG showed ST-elevation in the anterolateral leads with a "tombstone" pattern. Echocardiography revealed severe systolic dysfunction (LVEF 25–30%) with akinesia of the anterior wall, septum, and apex. Emergent coronary angiography showed acute in-stent thrombosis of the proximal LAD and mid-LCx. Revascularization attempts were unsuccessful. The patient died due to Type IVb MI despite resuscitation efforts.

Conclusion: This case underscores the potential for catastrophic thrombotic complications, even in patients managed with full adherence to contemporary guideline-directed therapy and optimal interventional strategies. It exemplifies the persistence of residual risk in high-complexity CAD, particularly in the context of advanced age, comorbidities, and competing ischemic and bleeding risks. Rare but fatal events, so-called "black swans", should inform clinical vigilance, risk stratification, and decision-making, reinforcing the importance of individualized, multidisciplinary care in modern cardiology.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 39
ARITMIE VENTRICOLARI (ARITMIE)
ECMO (ASSISTENZA CARDIACA IN ACUTO)
DIAGNOSTICA INVASIVA INTRAVASCOLARE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
MECCANISMI DELLE ARITMIE (ARITMIE)
INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

FROM ANGINA TO ECMO: THE HIDDEN DANGER OF VASOSPAM

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Background: Life-threatening arrhythmias can occur not only in patients with organic coronary stenotic lesions but also in those with angiographically normal coronary arteries, particularly in the context of coronary occlusion or reperfusion. Reperfusion arrythmias also appear to be correlated with the duration of ischemia. Coronary artery vasospasm is characterized by transient total or
subtotal coronary artery obstruction, typically presenting with angina and ischemic ECG changes.
While its pathophysiology remains incompletely understood, cigarette smoking is a known risk factor. Proposed mechanisms include vascular smooth muscle hyperreactivity via calcium-mediated myosin light chain phosphorylation, endothelial dysfunction with nitric oxide deficiency, and oxidative stress. Although calcium channel blockers (CCBs) reduce the frequency of episodes, they do not fully prevent malignant arrhythmias. No randomized controlled trials have yet evaluated the role of implantable cardioverter-defibrillators (ICDs) in survivors of vasospasm-related sudden cardiac arrest.

Case Presentation: A 65-year-old man was diagnosed with coronary vasospasm in March 2024 after presenting with infero-lateral ST-segment elevation on ECG. He was discharged on long-acting nitrates and calcium channel blockers. However, his endocrinologist discontinued the vasodilator therapy due to episodes of hypotension.In June 2025, the patient experienced an out-of-hospital cardiac arrest. The initial rhythm was refractory ventricular fibrillation (VF), with an estimated no-flow time of 5 to 10 minutes. Basic life support (BLS) was initiated, followed by advanced cardiac life support (ACLS), during which four defibrillation shocks at 200J were administered. Subsequent asystole prompted administration of intravenous epinephrine. Upon arrival at the emergency department, ECG confirmed asystole. There were no signs of aortic pathology. Veno-arterial extracorporeal membrane oxygenation (ECMO) support was promptly initiated. Emergent coronary angiography revealed severe diffuse coronary vasospasm involving both coronary arteries, accompanied by atrioventricular block with elevation of ST in inferiors leads on ECG. Following the administration of intracoronary nitrates, the patient developed VF, which was successfully terminated with a 200J defibrillation shock. Repeat angiography demonstrated complete resolution of the vasospasm, absence of fixed obstructive lesions, and restoration of sinus rhythm.The patient was transferred to the intensive care unit under ECMO support. Despite the presumed vasospastic etiology, his neurological prognosis remained poor due to uncertain low-flow

time and severely depressed cerebral activity.

Discussion: Coronary artery vasospasm, while traditionally associated with transient anginal symptoms, can result in severe and potentially fatal events. Although frequently underdiagnosed, it is increasingly recognized as a reversible cause of life-threatening arrhythmias and sudden cardiac arrest, even in patients without significant coronary artery disease. Our case highlights the diagnostic challenges posed by the absence of fixed coronary lesions and reinforces the importance of considering vasospasm in the differential diagnosis of idiopathic ventricular fibrillation.

Conclusion: Coronary vasospasm should not be underestimated as a benign condition. While Ca2+ channel blockers are effective in reducing recurrence, they do not guarantee protection against ventricular fibrillation. In patients with prior cardiac arrest attributed to vasospasm, ICD implantation should be considered as part of a comprehensive preventive strategy.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 40
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
ABLAZIONE TRANSCATETERE (ARITMIE)

PREVENTING ISCHEMIC STROKE DURING HIGH RISK PROCEDURES: CLINICAL EXPERIENCE WITH SENTINEL CEREBRAL EMBOLIC PROTECTION DEVICE

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(a) DIPARTIMENTO CARDIO-VASCOLARE E TORACICIO ASST- SETTE LAGHI; OSPEDALE DI CIRCOLO E FONDAZIONE MACCHI

Background/Aim: Ischemic cerebral events remain a significant and potentially devastating complication following Transcatheter Aortic Valve Replacement (TAVR). Peri-procedural embolism, often associated with predilatation and valve implantation, can lead to the dislodgement of cerebral debris. Recent large-scale studies report stroke rates of approximately 5.5% at 30 days and 8.3% at 1 year post-TAVR. To mitigate these risks, cerebral embolic protection devices (CEPDs) have been developed to reduce embolic burden and subsequent neurological complications. While primarily used in TAVR, CEPDs are also being applied in other high-risk procedures, such as left atrial appendage occlusion (LAAO). We present our clinical experience using the Sentinel CEPD during both TAVR and LAAO procedures.

Case description: In our practice, we employed the Sentinel CEPD in an 81-year-old female patient undergoing TAVR with heavily calcified arterial access and a severely calcified aortic arch. Due to the anatomical complexity, predilatation was performed prior to valve implantation. Post-procedure, the Sentinel system successfully captured calcified particles. No ischemic cerebral events were observed in the >72-hour postoperative period.
In another case involving LAAO in a 55 yo female, the decision to use the Sentinel device was based on the presence of a thrombus identified on transesophageal echocardiography (TEE), despite ongoing anticoagulant therapy in a Patient with typical atrial flutter with HFrEF. The patient was scheduled for arrhythmia ablation following the appendage closure. After successful LAA closure no embolic events occurred during or after the procedure. And Sentinel System was captured without any complication.

Conclusions: Although preliminary data suggest that the Sentinel system may reduce the risk of cerebrovascular events and major adverse cardiovascular events (MACE), statistically significant long-term benefits have yet to be established. In our experience, the device effectively captured embolic debris during the TAVR procedure. While no debris was retrieved in the LAAO case, both patients experienced uneventful recoveries without neurological complications.
Larger randomized controlled trials are required to confirm the long-term clinical benefits of cerebral embolic protection during high-risk cardiovascular procedures. Current evidence indicates a more consistent benefit during TAVR compared to other percutaneous interventions. Furthermore, the development of validated risk prediction models could improve patient selection and guide individualized stroke prevention strategies.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 41
DIAGNOSTICA INVASIVA INTRAVASCOLARE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
FISIOLOGIA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INFARTO STEMI (CARDIOPATIA ISCHEMICA)
TRATTAMENTO POST-INFARTO (CARDIOPATIA ISCHEMICA)

USE OF THE PENUMBRA SYSTEM IN AN EVOLVED ST-ELEVATION MYOCARDIAL INFARCTION REFRACTORY TO CONVENTIONAL THROMBOASPIRATION: A CASE REPORT

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Background/Aim: The PENUMBRA system, initially designed for neurovascular thrombectomy, has been adapted for peripheral, pulmonary and coronary treatment in patients with high thrombus burden. While routine thrombus aspiration is not currently recommended in STEMI, selected cases especially late presenters may benefit from its use.

Materials/Methods: We present the case of a 77-year-old male with an evolved anterior STEMI who had not received pharmacological reperfusion therapy prior to catheterization. Coronary angiography revealed total occlusion of the LAD due to a large thrombus burden. Initial attempts with mechanical thrombectomy, angioplasty, and 24 hours of intravenous tirofiban were unsuccessful in restoring flow.

Results: Mechanical aspiration using the PENUMBRA system was then performed. Multiple aspiration passes led to successful thrombus removal and restoration of TIMI 3 flow. The patient showed immediate clinical improvement, with resolution of chest pain and stabilization of blood pressure. Post-procedural echocardiography revealed an LVEF of 40% with anterior wall hypokinesia. No periprocedural complications. occurred, and the patient was discharged after six days on optimal medical therapy.

Conclusions: The PENUMBRA aspiration system appears to be a promising adjunct in the management of high thrombus burden coronary lesions, when conventional strategies fail. Further studies are needed to define its role and safety in late-presenting STEMI.

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CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 354
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
INFARTO STEMI (CARDIOPATIA ISCHEMICA)

CLINICAL OUTCOMES ASSOCIATED WITH COMPLEX- VS NON- COMPLEX PCI: A BAYESIAN META-ANALYSIS

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Background

- Complex PCI refers to a broad spectrum of interventions having in common challenging anatomic features, severe calcification, chronic total occlusion, bifurcation lesion, or multivessel treatment.
- While data from several studies indicate a higher baseline risk profile of patients undergoing complex PCI, whether complex PCI is associated with increased risk of ischemic and bleeding events remain uncertain.
- This aspect is of clinical reward because it is expected to influence decision making of procedural strategies as well as antithrombotic therapies.

Methods

- Systematic review and meta-analysis of observational and randomized studies.
- Embase and MEDLINE databases were screened from inception through December 2024.
- To improve interpretation of the meta-analysis results and evaluation of between study heterogeneity, the primary analysis was conducted using a random-effects model within a Bayesian framework.
- All principal analyses were based on adjusted risk estimates, with hazard ratios (HR) adjusted at least for sex and age. Secondary analysis included, separately, studies providing unadjusted risk estimates.
- The primary outcomes were myocardial infarction and major bleeding. Additional outcomes of interest were: all-cause death, stent thrombosis, cardiovascular death, target-vessel (or target-lesion) revascularization and stroke.
- This work is supported by research grant from by Italian Ministry of Education
(PRIN PNRR 2022497RZ4)

Results. A total of 222,001 participants, of whom 78,520 (35%) met complex-PCI criteria, was included. Patients undergoing complex vs. non-complex PCI had an increased risk of myocardial infarction (HR, 1.70, 95% credible intervals, CrI, 1.49 to 1.96) and major bleeding (HR 1.24, 95%CrI 1.14 to 1.35). Compared with patients undergoing non-complex PCI, those treated with complex PCI had a higher risk of all-cause death (HR 1.21, 95%CrI 1.12 to 1.32), cardiovascular death (HR to 1.29, 95%CrI 1.15 to 1.46), stent thrombosis (HR 1.76, 95%CrI 1.49 to 2.14), target-vessel or target-lesion revascularization (HR 1.99, 95%CrI 1.29 to 2.50) and stroke (HR 1.21, 95%CrI 1.03 to 1.42). The posterior probability that complex PCI was associated a higher risk than non-complex PCI was >99% for all outcomes. Results were consistent in studies reporting unadjusted risk estimates

Conclusion. Complex PCI is associated with a higher risk of both ischemic and bleeding events with a very high degree of certainty.

CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE 324
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
FARMACI ANTI-DIABETICI (DIABETE E MALATTIE DEL METABOLISMO)

IMPACT OF GENDER IN CONTRAST-ASSOCIATED ACUTE KIDNEY INJURY AMONG PATIENTS ON SODIUM-GLUCOSE COTRANSPORTER-2 INHIBITORS: INSIGHTS FROM THE GLICINE REGISTRY

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Introduction: Sodium-glucose cotransporter-2 inhibitors (SGLT2-Is) have gained a key role in the treatment of patients with diabetes mellitus, heart failure, and chronic kidney disease. A protective effect on the kidney has been suggested in relation to contrast-associated acute kidney injury (CA-AKI) occurring after coronary angiography, with or without percutaneous coronary intervention (PCI). However, whether these benefits are maintained in both male and female patients remains unknown.

Methods: We conducted a sub-analysis of the GLICINE study, a multicenter retrospective registry including patients on chronic SGLT2-I treatment undergoing coronary angiography with or without PCI in four Italian centers. Patients were divided in two groups according to gender. The primary endpoint was the occurrence of CA-AKI, defined according to KDIGO criteria. The secondary endpoint was the change in estimated glomerular filtration rate (eGFR) at 24 and 48 hours.

Results: Overall, 362 patients were included and divided according to gender (295 male, 67 female). Female patients were older (71.9±8.9 vs 69.0±9.2 years) than men, with less frequent smoking habit (p=0.11) and less previous history of PCI (p=0.010), while total (p=0.001) and LDL-cholesterol (p=0.034) were higher in women. Of note, history of chronic kidney disease (CKD) was more common in women (41.8% vs 29.3%, p=0.046), but women underwent to less PCIs (35.8% vs 53.9%, p=0.008) and received less contrast volume (61 [IQR 30-135] ml vs 100 [IQR 46-169] ml, p=0.037). No significant differences were observed in the incidence of CA-AKI between male (5.8%) and female (9.0%), (p=0.333). After adjustment for baseline differences, gender did not emerge as an independent

predictor of CA-AKI (aOR [95% CI] = 0.91 [0.29–2.80], p=0.863). Moreover, gender did not influence eGFR variation either 24 hours (p=0.182) or 48 hours after the procedure (p = 0.133).

Conclusion: In a population of patients chronically treated with SGLT2-Is undergoing coronary angiography and/or PCI, gender did not predict the occurrence of CA-AKI, although female patients were older and were more frequently affected by CKD. However, this result could be impacted by a lower contrast volume exposure in female patients.

CardioSic

86° CONGRESSO NAZIONALE SIC
Roma, 4-7 dicembre 2025

CARDIOPATIA ISCHEMICA

CARDIOPATIA ISCHEMICA 30
COAGULAZIONE E COVID-19 (COVID-19)
ECOSTRESS (IMAGING CARDIOVASCOLARE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

P OXIGEN PULSE PLATEAU AS A PREDICTOR OF REDUCED CORONARY RESERVE

Davide Girola (c), Flavio Acquistapace (b), J Vitale (c), M. Moccetti (c), V. Paiocchi (c)
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Introduction: Assessment of oxygen pulse by pulmonary grade test represents an independent predictor of stress-related myocardial ischemia, with a higher sensitivity specificity than conventional electrocardiographic criteria (1,2,3)

Anamnestic synthesis and instrumental evaluation: R.M. Sixty-year-old male kg 80 H 170, comes to the outpatient evaluation for dyspnea and reduced tolerance to moderate mild exertion (5-6 METs).
Ex-smoker, dyslipidemia (C Tot 4.8 mmol/L, C.LDL 2.9 mmol/L, TRG 1.1 mmol/L).
On echocardiocolorDoppler: Left ventricle of cavitary size within normal limits, wall thicknesses at the upper limits, global systolic preserved, diastolic pattern due to altered relaxation, mild mitral regurgitation, right section atrial chambers right sections hepericardium normal.
The submaximal cardiopulmonary test (RQ = 0.88) interrupted due to generalized fatigue and dyspnea characterized by ECG in limirs with peak V02 21.6 ml/min/kg (at 86% of the predicted), reduced ventilatory efficiency (slope VE/VC02 41 (v.n < 34), plateau of the oxygen pulse near maximum effort, second threshold ("respiratory compensation") not reached. In consideration of the trend of the oxygen pulse (fig 1) and the dyspnea confirmed by the pathological slope VE/VC02 (Fig 2) the patient underwent level III investigations. Coronary CT angiography showed a soft plaque with 70% stenosis at the proximal RIVA and additional plaque less than 50% at the level of the ostium, while coronary angiography confirmed the critical stenosis of the RIVA treated with PTCA/DES.

Conclusions: The case report highlights the independent predictive value of the oxygen pulse trend and the importance of cardiopulmonary testing in increasing the sensitivity and specificity of outpatient diagnostics.

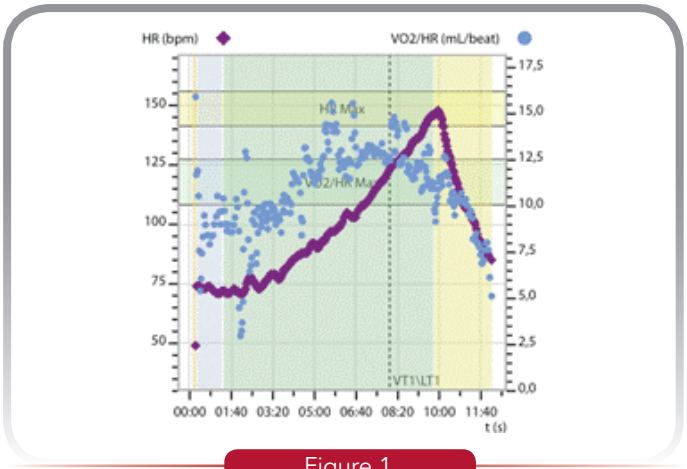


Figure 1

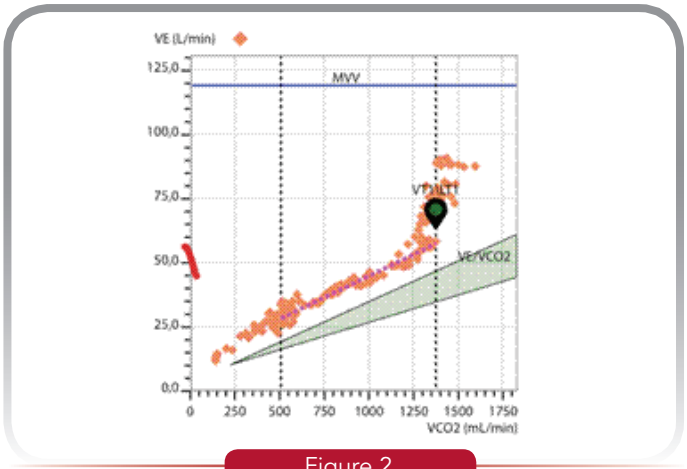


Figure 2

CARDIOPATIA ISCHEMICA 933
MINOCA (MYOCARDIAL INFARCTION WITH NORMAL CORONARY ARTERIES) (CARDIOPATIA ISCHEMICA) RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE) CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

HOW LATE IS TOO LATE? INFLUENCE OF SCAN TIMING ON CMR'S DIAGNOSTIC YIELD IN SUSPECTED MINOCA

Giandomenico Bisaccia (a), Ana-maria Poenar (a), Mgl Williams (b), A Dastidar (b), Eva Sammut (b), Tom Johnson (b), Iwan Harries (b), Joyce Wong (a), Chiara Bucciarelli-ducci (a)
(a) ROYAL BROMPTON AND HAREFIELD HOSPITALS, GUYS' & ST THOMAS NHS TRUST, LONDRA, REGNO UNITO;
(b) BRISTOL HEART INSTITUTE, UNIVERSITY HOSPITALS BRISTOL NHS TRUST, BRISTOL, REGNO UNITO

Introduction: Cardiovascular magnetic resonance imaging (CMR) is a Class 1 diagnostic tool for suspected myocardial infarction with no obstructive coronary artery disease (MINOCA). However, time-sensitive conditions like myocarditis or Takotsubo syndrome,may become undetacable if imaging is delayed. Thus, scan timimg is crucial for optimizing diagnostic yield and clinical value. We evaluated the impact of scan timing on the diagnostic performance of cardiac magnetic resonance (CMR) in patients presenting with acute coronary syndrome (ACS) and nonobstructed coronary arteries.

Materials and Methods: Patients enrolled in the Bristol MINOCA CMR Registry were identified and included. All participants underwent a 1.5-T CMR examination using a comprehensive protocol incorporating cine imaging, T2-weighted, and late gadolinium enhancement sequences. Based on CMR findings, patients were categorized into five diagnostic groups: MINOCA (embolic/spontaneous recanalization, coronary artery dissection), myocarditis, Takotsubo syndrome, cardiomyopathy, and unremarkable or normal CMR. The diagnostic rate was calculated as the proportion of non-normal CMR studies out of all CMR studies performed. Logistic regression analysis was conducted to assess the relationship between the probability of diagnosis and time to CMR. To account for potential non-linearity in the effect of scan timing, restricted cubic splines with four knots were employed.

Results: A total of 888 consecutive patients presenting with ACS and nonobstructed coronary arteries were included in the study (51% females). CMR identified an underlying cause in 672 (75.68%). The diagnostic yield was highest when CMR was performed within 7 days following acute presentation, subsequently declining at an average rate of 1% per day up to 15 days. Notably, while the detection rate of myocardial infarction remained relatively stable over time, the diagnosis of Takotsubo syndrome decreased from 24% within the first week to only 6% beyond 3 months post presentation.

Conclusion: CMR should be performed within 15 days of acute presentation to optimize diagnostic yield, as delayed imaging may miss up to 20% of cases. Conditions like Takotsubo syndrome are particularly time-sensitive, and CMR availability must be considered when interpreting results in suspected MINOCA.

Rate of diagnostic CMR by time to scan

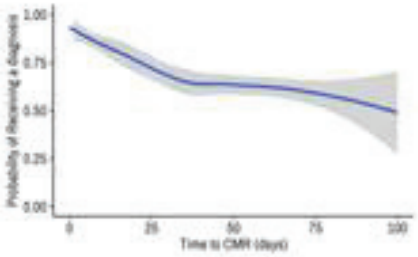


Figure 1

CARDIOPATIA ISCHEMICA 1021
DISFUNZIONE DEL MICROCIRCOLO (CARDIOPATIA ISCHEMICA)
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
FISIOLOGIA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

LESION PREPARATION MATTERS: PROGNOSTIC VALUE OF PREDILATION IN DRUG-COATED BALLOON TRATMENT OF DE NOVO CORONARY LESIONS

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Introduction: Optimal lesion predilation is considered a fundamental step in drug-coated balloon (DCB)-based percutaneous coronary intervention (PCI). Although published data exist evaluating the clinical impact of optimal predilation in the setting of in-stent restenosis treatment, there is a lack of evidence in the context of de novo lesion treatment. We aimed to evaluate the prognostic value of optimal vessel preparation in de novo coronary lesions treated with DCB.

Methods: We performed a retrospective study including de novo lesions treated with a DCB-only strategy at a single high volume center from February 2019 to January 2025. We excluded lesions that required bailout stenting. Lesions were dichotomized into two groups according to quantitative angiography after predilation: optimal predilation group with ≤30% residual stenosis or suboptimal predilation group with >30% residual stenosis and/or presence of coronary dissection. Clinical follow up was performed by outpatient visits, telephone interviews and from hospital records of any readmission. The primary endpoint was the composite of major adverse cardiovascular events (MACE), combining death, myocardial infarction (MI), target lesion failure (TLF) and target vessel revascularization (TVR). Survival analysis was conducted to assess differences between the two groups.

Results: A total of 250 lesions were included in the study, of which 89 (35.6%) were classified into the optimal predilation group and the remaining 161 (64.4%) in the suboptimal predilation group. We found a significant higher frequency of acute coronary syndrome as indication for the procedure in the suboptimal group (23.6% vs 13%, p=0.039), while in the optimal group the prevalence of hypertension and history of prior PCI were significantly higher (57.3% vs 68.3%, p=0.041 and 32.6% vs 44.1%, p=0.049 respectively). In the suboptimal group lesions were significantly longer (22.84 ± 7.57 vs 19.63 ± 5.95 mm, p=0.0009) and with higher degree of stenosis (54.64% ± 11.93 vs 49.02% ± 13.09, p=0.0001). The suboptimal group showed lower final minimal lumen diameter and higher degree of residual stenosis (1.73 ± 0.35 vs 1.89 ± 0.40 mm, p=0.0017 and 27.82% ± 9.46 vs 18.6% ± 9.28, p=0.0001 respectively). The median follow-up period was 371 days (interquartile range 260 – 631 days). The cumulative TLF and TVR rates, MI and MACE were numerically higher in the suboptimal group, but these differences did not reach statistical significance (6.7% vs 2.5%, 6.7% vs 3,7%, 4.5% vs 1.2%, 15.7% vs 9.3%, respectively). At Kaplan-Meier survival analysis the incidence of MACE was significantly higher in the suboptimal predilation group (p=0.0007). Multivariate Cox proportional hazard analysis, adjusting for several confounding variables, showed that a suboptimal result after predilation was an independent predictor of MACE (HR 3.91 CI 1.68-9.10, p=0.002).

Conclusions: Our study demonstrated that optimal

lesion predilation improves clinical outcomes in de novo coronary lesions treated with DCB-based PCI and that suboptimal predilation is an independent predictor of adverse outcomes. Particular attention has to be given to patients with long, high degree stenosis and in the setting of acute coronary syndrome, in whom there is higher risk of suboptimal lesion preparation.

CARDIOPATIA ISCHEMICA 136
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

ACCURATEZZA PREDITTIVA DEL MODELLO RISK FACTOR-WEIGHTED CLINICAL LIKELIHOOD (RF-CL) IN PAZIENTI REAL-WORD SOTTOPOSTI A CORONAROGRAFIA ELETTIVA

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Background: Le Linee Guida ESC 2024 per la gestione dei pazienti con sindrome coronarica cronica raccomandano il modello Risk Factor-Weighted Clinical Likelihood (RF-CL) per stimare la probabilità pre-test (PTP) di malattia coronarica (CAD) ostruttiva, integrando età, sesso, tipo di sintomi e fattori di rischio cardiovascolare. Tale modello, può essere ulteriormente modulato ("adjusted") utilizzando dei modificatori di rischio quali ECG, ecocardiogramma, TC coronarica, arteriopatia periferica. Tuttavia, ad oggi mancano studi di valutazione del RF-CL e della sua versione adjusted in pratica clinica.

Obiettivi: Confrontare la performance predittiva del modello RF-CL con una PTP clinicamente aggiustata (adjusted PTP) per valutare la presenza di CAD ostruttiva in pazienti sottoposti a coronarografia elettiva.

Metodi: Studio monocentrico, retrospettivo, che he incluso 106 pazienti consecutivi ricoverati presso l'AORN Sant'Anna e San Sebastiano di Caserta per coronarografia elettiva tra novembre 2024 e maggio 2025. Per ciascun paziente è stata calcolata la PTP secondo il modello RF-CL; quattro cardiologi, in cieco rispetto ai risultati angiografici, hanno rivalutato la PTP integrando modificatori di rischio (ECG a riposo/da sforzo, ecocardiogramma, ECG Holter delle 24 h, arteriopatia periferica). La presenza di CAD ostruttiva è stata considerata quando vi era una stenosi alla coronarografia ≥50%.

Risultati: La prevalenza complessiva di CAD ostruttiva è stata del 43%. Il modello RF-CL ha classificato il 6% dei pazienti come a rischio molto basso (<5%), il 28% a rischio basso (5–15%) e il 61% a rischio moderato (15–50%). La prevalenza di CAD nelle categorie RF-CL è stata 0%, 13% e 63%, rispettivamente. L'adjusted PTP ha mostrato ampia variabilità tra osservatori, con redistribuzione dei pazienti e tendenza all'upgrading fino al 59% dei casi (tre osservatori su quattro). Nelle categorie di pazienti a rischio alto/molto alto di adjusted PTP, la prevalenza di CAD ha raggiunto il 69%.

Conclusioni: Nel nostro studio retrospettivo su pazienti real-world sottoposti a coronarografia elettiva presso l'AORN Sant'Anna e San Sebastiano di Caserta, il modello RF-CL ha confermato un'elevata capacità predittiva negativa per la CAD nei soggetti a rischio molto basso. Tuttavia, tale modello non ha consentito di classificare alcun paziente nelle fasce ad alto rischio di PTP, con conseguente rischio di sottostima. L'utilizzo di modificatori di rischio ha determinato un tasso di

upgrading della probabilità pre-test del 59%, associato a una maggiore prevalenza di CAD proprio in queste categorie alte/molto alte. Questi risultati suggeriscono che l'integrazione di tali modificatori clinici possa migliorare la predizione del rischio. Ulteriori studi per confermare questi dati e per costruire un modello da integrare nelle linee guide sono necessari.

CardioSic

CARDIOPATIA ISCHEMICA 492
TRATTAMENTO POST-INFARTO (CARDIOPATIA ISCHEMICA)
INFARTO STEMI (CARDIOPATIA ISCHEMICA)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI
(PREVENZIONE E RIABILITAZIONE)

REAL-WORD IMPACT ON MORTALITY OF DRUG ADHERENCE TO STATIN, BETA-BLOCKER AND ACEI/ ARB THERAPY IN POST-STEMI PATIENTS WITH PRESERVED EJECTION FRACTION: RESULTS FROM THE FASTSTEMI REGISTRY

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Background: The role of long-term adherence to secondary prevention medications following ST elevation myocardial infarction (STEMI) in patients with preserved left ventricular ejection fraction (LVEF) remains insufficiently characterized in real-world settings, despite guideline recommendations.

Objectives: To evaluate the association between long-term adherence to statins, beta-blockers, and angiotensin-converting enzyme inhibitors (ACEi) or angiotensin receptor blockers (ARBs) and 5-year outcomes in STEMI survivors with preserved LVEF.

Methods: This retrospective cohort study analysed 3,109 STEMI patients with LVEF >50% enrolled in the multicentre FAST-STEMI registry between 2012 and 2017, with follow-up through 2019. Drug adherence was assessed using the medication possession ratio (MPR), with good adherence defined as MPR >80%. The primary outcomes were all cause and cardiovascular mortality at 5 years; secondary outcomes included recurrent myocardial infarction, ischemic stroke, worsening heart failure, and major bleeding. Associations were evaluated using multivariable Cox proportional hazards models.

Results: At 5 years, 10.4% of patients had died, with 2.5% from cardiovascular causes. High adherence to ACEi/ARB therapy was independently associated with lower all-cause mortality (HR 0.62, 95% CI 0.44Ð0.87, p=0.006). Conversely, beta-blocker adherence >80% was linked to increased all-cause mortality (HR 1.62, 95% CI 1.18Ð2.21, p=0.003). Statin adherence did not independently affect mortality (HR 1.09, 95% CI 0.79Ð1.50, p=0.58). Independent predictors of mortality included age >75, atrial fibrillation, chronic kidney disease, and prior ischemic stroke.

Conclusions: In STEMI patients with preserved LVEF, sustained adherence to ACEi/ARBs was associated with improved survival, while high adherence to beta-blockers was unexpectedly linked to higher

mortality. These findings underscore the importance of individualized secondary prevention strategies based on functional recovery and patient risk profiles, and call for reappraisal of routine beta-blocker use in this population.

CARDIOPATIA ISCHEMICA 797
INFIAMMAZIONE E IMMUNITÀ (ATEROTROMBOSI)
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INFARTO STEMI (CARDIOPATIA ISCHEMICA)
INFARTO NSTEMI (CARDIOPATIA ISCHEMICA)
DIAGNOSTICA INVASIVA INTRAVASCOLARE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

QUANDO I DES FALLISCONO: UN CASO DI SOSPETTA IPERSENSIBILITA'

Andrea Carl (a), Silvio Romano (a), Giuseppe Colonna (b), Erika Pedio (b), Francesco Rizzo (b)
(a) UNIVERSITA' DEGLI STUDI DELL'AQUILA; (b) UOC CARDIOLOGIA E UTIC - OSPEDALE VITO FAZZI LECCE

Le complicanze tardive dopo impianto di stent medicati (DES) di nuova generazione sono rare, ma la restenosi e la trombosi intrastent possono verificarsi nonostante la terapia farmacologica ottimale. Meccanismi immuno-infiammatori e di ipersensibilità al metallo o al polimero dello stent sono stati descritti, sebbene poco caratterizzati in casistiche ampie.

Il caso clinico proposto vede protagonista una donna di 70 anni con ipertensione, diabete mellito tipo 2 e dislipidemia. Dal novembre 2022 al dicembre 2023 ha presentato numerosi eventi coronarici acuti (4 NSTEMI/ 3 STEMI), con ripetuti interventi di PTCA e posizionamento di DES di nuova generazione Ð Resolute Onyx (zotarolimus-eluting), Synergy (everolimus-eluting), Orsiro (sirolimus-eluting) Ð unitamente a stent ricoperto PK Papyrus. Nonostante DAPT, modifiche terapeutiche e successivo bypass arterioso su IVA, la paziente ha sviluppato recidive multiple di trombosi e restenosi intrastent, con documentazione OCT e IVUS di rimodellamento positivo extrastent e aneurismi a margini irregolari. L'unico vaso trattato esclusivamente con angioplastica con pallone medicato (DCB su ramo marginale) non ha presentato target lesion failure. L'evoluzione clinica ha condotto a grave disfunzione ventricolare sinistra. Valutata presso centro dedicato e giudicata non candidabile a trapianto cardiaco, la paziente è stata sottoposta a impianto di LVAD e S-ICD. Il decorso suggerisce un ruolo di ipersensibilità a polimero e/o metallo degli stent, ipotesi rafforzata dall'assenza di complicanze nel segmento trattato con sola PTCA/DEB. La letteratura riporta infiltrati eosinofili e reazioni linfocitarie in casi di restenosi/trombosi intrastent, ma si tratta per lo più di case report e piccoli studi. Non esistono strategie consolidate di prevenzione nè test diagnostici routinari.

Questo caso sottolinea come anche i DES di nuova

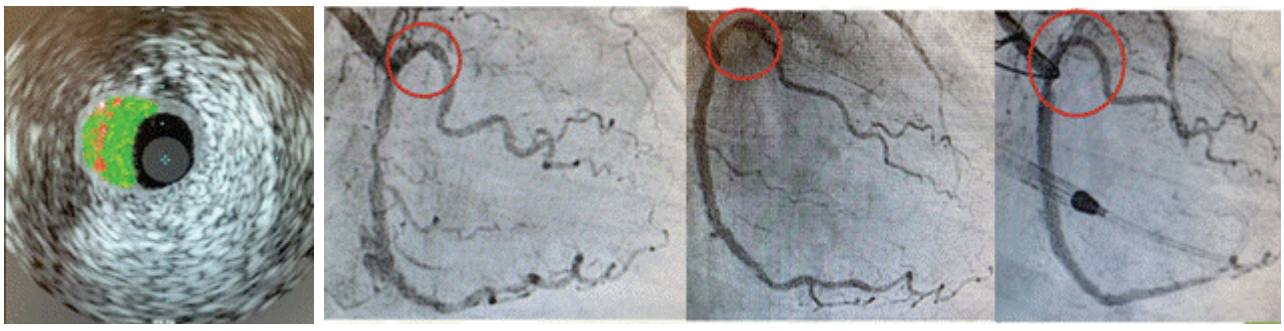


Figura 1

generazione possano andare incontro a fallimento ripetuto in presenza di possibili meccanismi immuno-allergici. sono necessari studi prospettici su larga scala per chiarire l'incidenza di tali fenomeni, identificare biomarcatori di rischio e valutare nuove strategie terapeutiche e device innovativi, tra cui scaffold coronarici riassorbibili di nuova generazione, stent in leghe di magnesio e rivestimenti anti-infiammatori/anti-allergici.

CARDIOPATIA ISCHEMICA 185
MINOCA (MYOCARDIAL INFARCTION WITH NORMAL CORONARY ARTERIES) (CARDIOPATIA ISCHEMICA)
DISFUNZIONE DEL MICROCIRCOLO (CARDIOPATIA ISCHEMICA)
FISIOLOGIA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
DIAGNOSTICA INVASIVA INTRAVASCOLARE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

PREDICTIVE ROLE OF NON-HYPEREMIC ANGIOGRAPHY-DERIVED INDEX OF MICROCIRCULATORY RESISTANCE IN PATIENTS WITH MYOCARDIAL INFARCTION WITH NON-OBSTRUCTIVE CORONARY ARTERY DISEASE

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Background: Myocardial infarction with non-obstructive coronary artery disease (MINOCA) is a heterogeneous condition requiring cardiac magnetic resonance (CMR) to confirm its ischemic etiology. The coronary angiography-derived non-hyperemic index of microcirculatory resistance (NH-IMR$_{angio}$) has shown strong correlation with invasive IMR and carries prognostic value in patients with acute coronary syndromes. This study aimed to evaluate the relationship between coronary microvascular dysfunction (CMD), assessed by NH-IMR$_{angio}$, and the presence of an ischemic pattern on CMR in patients with MINOCA.

Methods: This multicenter, prospective study included 68 MINOCA patients who underwent CMR within 7 days from hospital admission (early CMR). NH-IMR$_{angio}$ was analyzed in the left anterior descending artery by an independent core laboratory. Using the Youden index, the optimal NH-IMR$_{angio}$ cut-off to predict an ischemic pattern on CMR was determined, dividing patients into low [32 (47%)] and high [36 (53%)] NH-IMR$_{angio}$ groups. Logistic regression was used to identify predictors of ischemic patterns on CMR.

Results: The study cohort (n=68) had a median age of 60 years [51–72], with 60.3% being female. ROC analysis showed NH-IMR$_{angio}$ was a predictor of ischemic patterns on CMR (AUC 0.68, 95% CI 0.55–0.81, p=0.007), with an optimal cut-off of NH-IMR$_{angio}$ >90 U. Patients with high NH-IMR$_{angio}$ more frequently presented with typical angina at admission, higher peak troponin levels, and regional wall motion abnormalities on echocardiography. On CMR, high NH-IMR$_{angio}$ was associated with a greater prevalence of ischemic late gadolinium enhancement (LGE) patterns (69% vs. 31%, p=0.002), particularly with subendocardial distribution in the anterior region (p=0.020), corresponding to the analyzed vessel. Furthermore, microvascular obstruction was more common in the high NH-IMR$_{angio}$ group. Conversely, patients with low NH-IMR$_{angio}$ more often exhibited normal CMR findings (p=0.033)

or pathological findings suggestive of myocarditis (p=0.031). After adjusting for confounding factors, NH-IMRangio emerged as an independent predictor of ischemic pattern on CMR.

Conclusions: NH-IMR$_{angio}$ may serve as a predictor of ischemic pattern on CMR in MINOCA patients. These findings highlight its potential clinical utility in identifying coronary microvascular dysfunction in this patient population, aiding the selection of patients eligible to undergo an early CMR and/or invasive functional assessment.

CARDIOPATIA ISCHEMICA 397
INTELLIGENZA ARTIFICIALE (TELECARDIOLOGIA ED E-HEALTH)
BIG DATA (TELECARDIOLOGIA ED E-HEALTH)
INFARTO STEMI (CARDIOPATIA ISCHEMICA)
INFARTO NSTEMI (CARDIOPATIA ISCHEMICA)

DIAGNOSTIC ACCURACY OF ARTIFICIAL INTELLIGENCE (AI)-BASED MODELS FOR ACUTE MYOCARDIAL INFARCTION:A SYSTEMATIC REVIEW AND META-ANALYSIS

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Background: Despite continuous improvements in diagnostic tools, the diagnosis of acute myocardial infarction (AMI) is still based on electrocardiogram (ECG) and cardiac biomarkers supported by other non-invasive imaging techniques. These diagnostic tests have limitations that can be addressed through automated computer-based diagnostic systems using Artificial Intelligence (AI). Several studies in the literature have presented machine learning (ML) or deep learning (DL) models to quickly and accurately assess the diagnosis of AMI to optimise treatment.

Methods: The aim of our analysis was to evaluate the performance of AI-based models for the diagnosis of AMI using data from all validation and test cohorts available in literature. Sensitivity and specificity for all MIs, and for STEMI and NSTEMI separately, were analysed for different types of AI (ML or DL) and for different data sources (ECG or troponin-based). Hierarchical models were used to estimate the summary receiver operating characteristic curve, sensitivity and specificity.

Results: A total of 24 studies evaluating 27 AI-based diagnostic algorithms were included encompassing 166.052 patients, of which 18.850 (11.3%) had a final diagnosis of AMI. Patients were predominantly male (61.8%) with a median age of 60.7 (IQR 59.0-64.1) years. Discrimination of AI-based algorithms for the diagnosis of AMI was high with an AUC of 0.97 (sensitivity 0.93, specificity 0.92). This result remained consistent when considering the ability to diagnose STEMI (AUC 0.96, sensitivity 0.91, specificity 0.94) or NSTEMI (AUC 0.97, sensitivity 0.95, specificity 0.90) separately. No significant difference was found regarding type of AI, though DL models showed better performances in terms of accuracy and sensitivity. ECG and troponin-based models were both extremely accurate, with the first ones being less sensitive and the latter less specific.

Conclusions: AI-based diagnostic algorithms for AMI diagnosis were associated with particularly efficient performance. These results were consistent for both STEMI and NSTEMI considered separately. AI did not lose accuracy depending on the data source or the type of AI applied.

CARDIOPATIA ISCHEMICA 339
INFARTO STEMI (CARDIOPATIA ISCHEMICA)
INFARTO NSTEMI (CARDIOPATIA ISCHEMICA)
INFIAMMAZIONE E IMMUNITÀ (ATEROTROMBOSI)
PIASTRINE E TERAPIA ANTIAGGREGANTE (ATEROTROMBOSI)
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

STANDARD VS LOW-INTENSITY ANTIPLATELET THERAPY IN CONSERVATIVELY MANAGED SCAD: A SUBANALYSIS OF THE INSIDE-SCAD STUDY

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Background: The optimal antiplatelet strategy after spontaneous coronary artery dissection (SCAD) remains debated. While prolonged and potent antiplatelet therapy reduces ischemic risk following acute coronary syndrome (ACS), the unique pathophysiological substrate of SCAD raises concerns that aggressive regimens may delay healing or even propagate the disease, particularly in conservatively managed patients. This analysis aimed to evaluate the efficacy of a low-intensity antiplatelet strategy in conservatively treated SCAD.

Methods: This study represents a subanalysis of the INSIDE-SCAD study, an ongoing multicenter observational study enrolling consecutive SCAD patients since 2013. For the present analysis, only conservatively treated patients were included. Participants were stratified according to antiplatelet therapy regimen into a standard DAPT (dual antiplatelet therapy) group and a low-intensity antiplatelet therapy (APT) group, which comprised both short-DAPT (<6 months) and SAPT (single antiplatelet therapy) strategies. The primary endpoint was the incidence of net adverse clinical events (NACE), defined as all-cause death, non-fatal myocardial infarction, or BARC 3–5 bleeding.

Results: The study population included 122 conservatively treated SCAD patients (mean age 55 ± 11 years, 87.7% female). Non-ST-elevation myocardial infarction (NSTEMI) was the most common presentation (77.9%). A total of 75 patients (61.5%) received standard DAPT, while 47 (38.5%) received a low-intensity APT strategy. Median follow-up was 979 days. The overall incidence of NACE was 14.8%, with a significantly higher rate in the standard DAPT group compared to the low-intensity APT group (21.3% vs. 4.3%, p = 0.020). In multivariate Cox regression, both standard DAPT (HR 4.46, 95% CI 1.02–19.54, p = 0.048) and multivessel SCAD (HR 6.62, 95% CI 1.88–23.32, p = 0.003) were independent predictors of NACE.

Conclusions: In this cohort of conservatively treated SCAD patients, a low-intensity antiplatelet strategy was associated with a lower risk of NACE compared with standard DAPT. Moreover, standard DAPT emerged as an independent predictor of adverse outcomes. These findings support the potential safety of shortened or simplified antiplatelet regimens in conservatively managed SCAD and warrant confirmation in larger randomized studies.

CARDIOPATIA ISCHEMICA 538
INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INFIAMMAZIONE E IMMUNITÀ (ATEROTROMBOSI)
PLACCA VULNERABILE (ATEROTROMBOSI)
INFARTO NSTEMI (CARDIOPATIA ISCHEMICA)
INFARTO STEMI (CARDIOPATIA ISCHEMICA)

PERICORONARY ADIPOSE TISSUE ATTENUATION IN PATIENTS WITH SPONTANEOUS CORONARY ARTERY DISSECTION ACCORDING TO EMOTIONAL OR PHYSICAL TRIGGERS: INSIGHTS FROM THE INSIGHT-SCAD STUDY

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Introduction: The pathophysiological mechanisms underlying spontaneous coronary artery dissection (SCAD) remain incompletely understood. Inflammation may play a pivotal role by promoting vascular susceptibility to SCAD. This study aimed to evaluate pericoronary adipose tissue (PCAT) attenuation, a recognized imaging marker of vascular inflammation, in patients with SCAD.

Methods: This analysis is a sub-study of the INSIDE-SCAD study, an ongoing multicenter observational study enrolling consecutive SCAD patients since 2013. For the present analysis, only patients with SCAD who underwent coronary computed tomography angiography (CCTA) within 24 hours of the index event and with an identifiable trigger were included. Patients were classified according to the trigger preceding the event (emotional vs. physical). PCAT attenuation was measured in culprit and non-culprit vessels in all patients.

Results: A total of 25 SCAD patients were included (mean age 55 ± 11 years, 80.0% female). Emotional triggers were reported in 17 patients (68.0%), while 8 (32.0%) experienced a physical trigger. The prevalence of at least one non-traditional cardiovascular risk factor was higher in patients with emotional triggers (58.8% vs. 37.5%), although not statistically significant, whereas obesity was more frequent in those with physical triggers (62.5% vs. 5.9%, p = 0.010). Type 2 dissections were more common in the emotional trigger group (64.7% vs. 25.0%, p = 0.040). Patients with emotional triggers exhibited higher PCAT attenuation compared with those with physical triggers in the culprit vessel (−61.6 ± 5.9 vs. −70.9 ± 8.4 HU; p = 0.019), in the LAD (−59.7 ± 7.8 vs. −70.0 ± 9.7 HU; p = 0.023), and in the RCA (−66.7 ± 6.2 vs. −75.4 ± 6.0 HU; p = 0.005).

Conclusions: Patients with SCAD demonstrated elevated PCAT attenuation, particularly in those with emotional triggers. These findings suggest that vascular inflammation may represent a predisposing factor for SCAD and that dysregulation of the autonomic nervous system may contribute to the promotion of vascular inflammation.

CARDIOPATIA ISCHEMICA 557
TRATTAMENTO POST-INFARTO (CARDIOPATIA ISCHEMICA)
DIABETE E MALATTIE CARDIOVASCOLARI (DIABETE E MALATTIE DEL METABOLISMO)
DISLIPIDEMIE (DIABETE E MALATTIE DEL METABOLISMO)

GESTIONE CLINICA DEL DIABETE MELLITO E DELLE DISLIPIDEMIE NEI PAZIENTI CON SINDROME CORONARICA ACUTA

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INTRODUZIONE: Le sindromi coronariche acute (SCA) costituiscono una delle principali cause di morbilità e mortalità cardiovascolare a livello globale. Nei pazienti affetti da diabete mellito (DM), l'incidenza di eventi ischemici acuti è significativamente più elevata, così come la loro severità. Questa condizione si traduce in una gestione ospedaliera più complessa e in un decorso clinico generalmente più lungo e gravato da maggiori complicanze.

OBIETTIVO DELLO STUDIO: l'obiettivo principale del presente studio è stato quello di valutare la prevalenza di diabete noto e mi sconosciuto e l'impatto del diabete mellito nei pazienti ricoverati per SCA, analizzando le differenze nei parametri clinici, biochimici, funzionali ed ecocardiografici rispetto ai pazienti non diabetici. Lo studio, inoltre, si proponeva di esaminare l'associazione tra DM2 e maggiore intensità terapeutica, durata della degenza e utilizzo di farmaci cardiovascolari.

MATERIALI E METODI: Lo studio ha valutato una popolazione di pazienti ricoverati per SCA. I pazienti sono stati suddivisi in due gruppi, rispettivamente pazienti con diabete mellito e paziento senza diabete mellito (DM+ e DM-) e sottoposti a valutazione clinica, ematochimica, ecocardiografica e terapeutica. Sono stati confrontati i principali parametri di distribuzione delle forme di SCA, fattori di rischio cardiovascolare, funzione sistolica e diastolica, profilo metabolico, utilizzo dei farmaci e durata della degenza.

RISULTATI: Sono stati arruolati 159 pazienti, di cui 123 senza diabete mellito (DM–) e 36 con diabete mellito (DM+). I pazienti DM+ presentavano un'età media significativamente maggiore rispetto ai non diabetici (73,8 ± 12,2 anni contro 68,9 ± 13,9; p = 0,041). La sindrome metabolica era più frequente nei diabetici [65,7% contro 32,34%; IC95%: (14,5; 50,3%) p = 0,001], così come la cardiopatia ischemica pregressa [55,6% contro 22,8%; IC95%: (14,5% - 50,8); p = 0,001]. La funzione sistolica risultava compromessa nei DM+, con una frazione di eiezione inferiore (43,75% contro 50,02%; p = 0,005) e una disfunzione diastolica più marcata (E/e': 12,65 contro 9,98; p = 0,025). I DM+ mostravano livelli significativamente più elevati di glicemia (162,6 contro 116,7 mg/dL; p = 0,0003), HbA1c (7,52% contro 5,57%; p < 0,001) e trigliceridi (161,5 contro 126,8 mg/dL; p = 0,045). La localizzazione delle stenosi a livello del tronco comune risultava statisticamente significativa nei DM+ (23,6% vs 6,1%, OR: 4,75; IC95%: 1,58-14,3; p=0,007). La degenza ospedaliera risultava significativamente più lunga nei diabetici sia in UTIC (5,11 vs 3,76 giorni; p = 0,045) sia complessivamente (12,51 vs 8,80 giorni; p = 0,004).

CONCLUSIONI: Il presente studio evidenzia come il diabete mellito influenzi in modo sostanziale la presentazione clinica e la gestione ospedaliera dei pazienti con sindrome coronarica acuta. I pazienti diabetici mo-

strano un profilo clinico e metabolico più compromesso, con maggior prevalenza di comorbidità, disfunzione sisto-diastolica e fragilità emodinamica. Nonostante l'impiego più frequente di statine, emerge una sottoutilizzazione di terapie cardioprotettive raccomandate, come gli SGLT2-inibitori e gli agonisti GLP-1. Questi risultati sottolineano l'urgenza di un approccio terapeutico integrato e precoce, orientato non solo al controllo glicemico ma anche alla riduzione del rischio cardiovascolare secondo le evidenze attuali.

CARDIOPATIA ISCHEMICA 657
INFIAMMAZIONE E IMMUNITÀ (ATEROTROMBOSI)
PLACCA VULNERABILE (ATEROTROMBOSI)
DISFUNZIONE DEL MICROCIRCOLO (CARDIOPATIA ISCHEMICA)

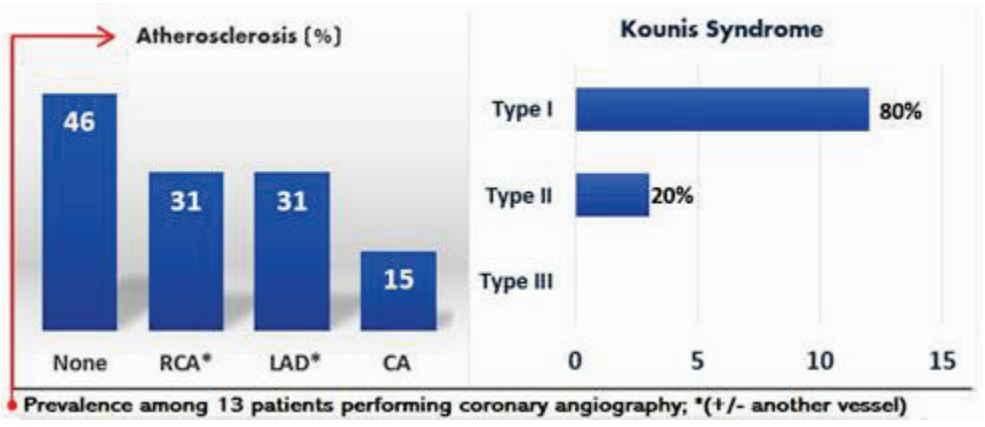
KOUNIS SYNDROME AFTER CEFTRIAXONE ADMINISTRATION: A NARRATIVE REVIEW OF CURRENT LITERATURE

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BACKGROUND. Chemical agents, beauty essences, excipients, additives, contrast agents, wasp stings, some fish species, drugs, and other agents can be associated to anaphylactic or anaphylactoid insults, at times involving the cardiovascular system. Lymphocytes, macrophages and mast cells are mainly involved in such reactions. Histamine and other cytokines are the key mediators of Kounis syndrome (KS), that consists of an acute coronary syndrome (ACS) in the setting of an allergic reaction. Among pharmaceuticals, cephalosporins, and ceftriaxone (CFT) in particular, have been reported as a cause of KS.

METHODS. We recently treated a 78-years-old female patient with ACS after inadvertent twice CFT administration, receiving diagnosis of CFTKS. Afterward, we performed a systematic literature search of similar cases published as by September 2025 to shed lights on this rare syndrome.

RESULTS. A total of 15 CFTKS patients, included ours, were included in this narrative review. Mean age was 55.5±23.4 (range 4–85) years and 53% were women. Only in 4 cases (26.7%) there was a history of previous drug allergy. Anaphylactic manifestation(s) started soon (2 to 30 min) after CFT administration, together with hypotension, chest pain and/or dyspnea in most cases. Urgent ECG revealed ST-T changes suggestive of ACS, with troponin elevation in someone. 8 in 13 patients who underwent coronary angiography showed atherosclerotic lesions (Figure), but only 3 had plaque thrombosis/disruption with myocardial infarction (type-



*(**RCA**: right coronary artery; **LAD**: left anterior descending artery; **CA**: circumflex artery)*

Figure 1

II KS). Type-I KS (coronary vasospasm, with/without trivial atherosclerosis) was the most common variant, being observed in 10 and supposed in 2 more patients (80 %). Although transient hemodynamic instability and/or arrhythmias were observed on admission in some cases, prognosis was rather good, except for a 4-year-old baby, whose poor outcome was likely related to her underlying severe infective disease.

CONCLUSIONS. CFTKS is a rare, perhaps underrecognized, clinical condition that may occur regardless of gender, age, history of allergy or preexisting coronary artery disease. Even though type-II variant (acute myocardial infarction) can occur in 20% of patients, the prognosis was favorable in almost all patients with type-I KS, usually due to transient coronary vasospasm.

CARDIOPATIA ISCHEMICA 485
TRATTAMENTO POST-INFARTO (CARDIOPATIA ISCHEMICA)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
INFARTO NSTEMI (CARDIOPATIA ISCHEMICA)
INFARTO STEMI (CARDIOPATIA ISCHEMICA)

TREATMENT WITH BETA-BLOCKERS AFTER FIRST HOSPITALIZATION FOR ACUTE CORONARY SYNDROME IN PATIENTS WITHOUT HEART FAILURE OR REDUCED EJECTION FRACTION: DATA FROM THE START-ANTIPLATELET REGISTRY

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Background and aim: The clinical benefits of β-blockers in patients with acute coronary syndromes (ACS) and reduced left ventricular ejection fraction (LVEF) is demonstrated in numerous studies. However, their role in patients without chronic heart failure or reduced LVEF remains unclear, with recent studies and meta-analyses providing controversial results. In the present study, we evaluated the benefit of β-blocker therapy in a large, multicenter, contemporary ACS registry.

Methods: In the START-ANTIPLATELET registry (NCT02219984), patients were stratified according to use versus non-use of β-blockers after their first ACS. Patients were excluded if they had a specific indication to β-blockers therapy, including a history of myocardial infarction (MI), CABG, PCI, atrial fibrillation, chronic heart failure, or a LVEF <40%. The primary endpoint was a composite of all-cause death and non-fatal MI (2-point [2-P] endpoint). Key secondary endpoints include major adverse clinical events (MACE, defined as a composite of all-cause death, MI, target vessel revascularization, or stroke) and net adverse clinical events (NACE, a composite of all-cause death, MI, stroke, or major bleeding). All endpoints were assessed at 1-year follow-up. Pre-specified subgroups analysis was performed with interaction analysis for 2-P endpoint.

Results: A total of 3,087 patients with ACS were considered for the analysis, and 1,772 patients were excluded because of a specific indication to β-blockers therapy. Patients were stratified according to discharge therapy, with 949 patients (72.2%) treated with β-blocker therapy (β-blocker group), and 366 patients (27.8%) not receiving β-blocker therapy (no β-blocker group). The median follow-up was 366 days (IQR, 365 to 379 days). At 1-year follow-up, the 2-P endpoint occurred in 22 patients (2.2%) of the β-blocker group vs. 13 patients (3.6%) of the no β-blocker group [unadjHR, 0.65; 95% CI, 0.35-1.24; p=0.191]. The incidence of MACE was 3.5% in β-blocker group vs. 5.2% in no β-blocker group [unadjHR, 0.75; 95% CI, 0.45-1.27; p=0.291]. No statistically significant differences were observed for secondary endpoints, except for NACE which showed

a trend in favour of the no β-blocker group (3.0% vs. 5.5%; p=0.05). The subgroup analysis showed no significant interaction, although some trends were observed for sex, diabetic status, age, and LVEF.

Conclusions: In a contemporary real-world cohort of ACS patients without heart failure or reduced LVEF (<40%), β-blocker therapy was prescribed in 72.2% of patients. The use of β-blocker was not associated to a reduced risk of the 2-P primary endpoint (composite of all-cause death or new MI), MACE, or all-cause death.

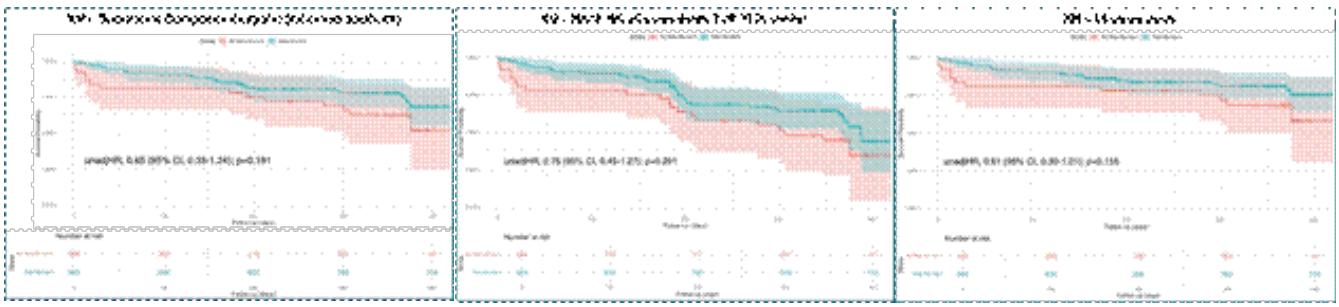


Figure 1

CARDIOPATIA ISCHEMICA 622
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
INFARTO NSTEMI (CARDIOPATIA ISCHEMICA)
INFARTO STEMI (CARDIOPATIA ISCHEMICA)
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PIASTRINE E TERAPIA ANTIAGGREGANTE (ATEROTROMBOSI)

SAFETY AND EFFICACY OF CANGRELOR IN PATIENTS WITH ACUTE AND CHRONIC CORONARY SYNDROME UNDERGOING PERCUTANEOUS CORONARY INTERVENTION: INSIGHTS FROM THE ICARUS REGISTRY

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Background. The use of cangrelor is advocated (class II) for the management of acute coronary syndromes (ACS), though it remains a subject of debate in the context of chronic coronary syndromes (CCS). While cangrelor is licensed by the European Medicines Agency (EMA) for use in patients with CCS, latest European guidelines on CCS do not provide recommendations. This gap underscores the necessity for additional evidence concerning the safety and efficacy of cangrelor across different clinical settings.

Aims. To evaluate the epidemiology, procedural management, and safety/efficacy profile of cangrelor in real-world ACS and CCS patients undergoing PCI.
Methods. The ICARUS registry (Intravenous CAngrelor in high-bleeding Risk patients Undergoing percutaneouS coronary intervention; NCT05505591) is an Italian, multicenter, prospective registry. Consecutive patients undergoing PCI with cangrelor were enrolled and stratified by clinical presentation (ACS vs CCS). The primary safety endpoints were Bleeding Academic Research Consortium (BARC) type 2, 3, and 5, as well as BARC 2–5 and BARC 3–5, within 48 hours post-PCI. The primary efficacy endpoints included major adverse cardiovascular events (MACE) and its individual components at 48 hours. Net adverse clinical events (NACE) at 48 hours were assessed as a composite outcome.

Results. A total of 1,076 patients were included. Most cases (72%) were ACS, while 28% of patients had CCS. A high percentage of patients were identified as being at high risk of bleeding, and complex PCIs were frequently performed, with no differences related to clinical presentation. Patients with CCS had more comorbidities than ACS patients. At 48 hours, BARC

2-5 bleeding rates were low (<4%), with a higher prevalence in ACS patients (6.5% vs. 1.4%; OR: 5.03 [2.03-16.77]; p-value <0.001). The rates of BARC 3-5 and TIMI major bleeding were low in both subgroups. The incidence of MACE was low (<2%) in both subgroups, mainly driven by periprocedural myocardial infarction; stent thrombosis and cardiovascular death were rare. The NACE composite endpoint occurred in <6% of patients, with a higher prevalence in the ACS group (7.7% vs. 2.7%; OR 3.02 [1.43-6.40]; p-value 0.004).

Conclusions. This real-world analysis highlights the current use of cangrelor in both ACS and CCS settings, and the clinical complexity of patients undergoing PCI with cangrelor (including a high prevalence of HBR status and complex PCI). The results provide novel evidence on the early safety and efficacy of cangrelor across the spectrum of ACS and CCS patients, potentially informing future recommendations, and addressing the current gap in guideline-based management of CCS.

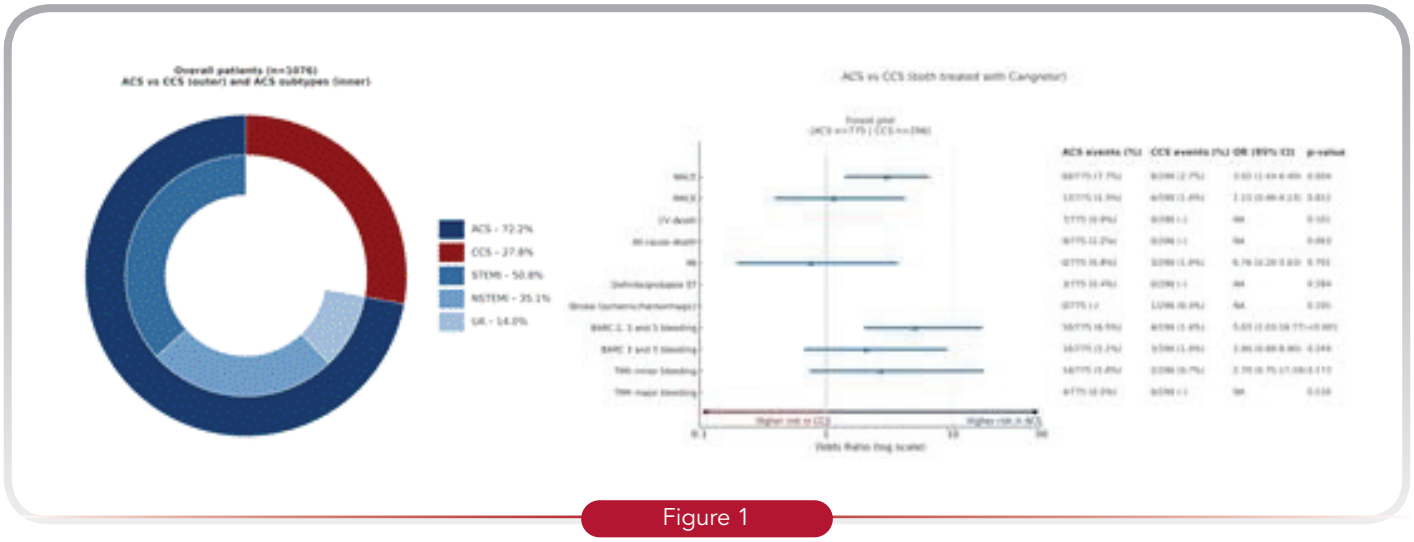


Figure 1

CARDIOPATIA ISCHEMICA 1050
PATOLOGIA DELL´AORTA (MALATTIE DEI VASI)
PLACCA VULNERABILE (ATEROTROMBOSI)
FISIOLOGIA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

CLINICAL CASE OF A TYPE B AORTIC DISSECTION ASSOCIATED WITH TRANSIENT ST-SEGMENT ELEVATION

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A 51-year-old man presented to the ER with right lower limb pain and was initially diagnosed with lumbosciatica. Three days later, he returned with anteriorly radiating lumbar pain, right leg weakness, and hypertension. Laboratory tests showed neutrophilia, thrombocytopenia, and elevated C-reactive protein, with negative cardiac enzymes. Thoracoabdominal CT angiography (Fig.1) revealed a Stanford type B aortic dissection, originating distal to the left subclavian artery and extending to the right common and external iliac arteries, with thrombotic apposition in the aortic arch but no involvement of the ascending aorta.
The patient was admitted to the cardiothoracic ICU for strict blood pressure control and clinical observation. Medical therapy included beta-blockers, dihydropyridine calcium channel blockers, Angiotensin II receptor blockers (ARB) and diuretics.

During hospitalization, the patient developed episodes of dyspnea, diaphoresis and subjective sensation of thoracic pressure. ECG showed intermittent ST-segment elevation in anterolateral and inferior leads, with junctional bradycardia (Fig.2). Suspecting coronary involvement, urgent CT angiography ruled out progression of the dissection to the coronary ostia, while coronary angiography revealed a critical stenosis of the mid-LAD (Fig.3), successfully treated with PTCA/stenting.

Within a few hours following revascularization, the patient experienced a recurrence of the same clinical symptoms, and the electrocardiogram showed the same ST-segment abnormalities. A diagnosis of possible vasospastic angina was considered. Serum markers of myocardial injury were only mildly elevated. Beta-blockers were withdrawn and therapy was modified with non-dihydropyridine calcium channel blockers and nitrates, resulting in resolution of symptoms and ST changes.

This case underscores the diagnostic challenge and the complexity of managing type B aortic dissection,

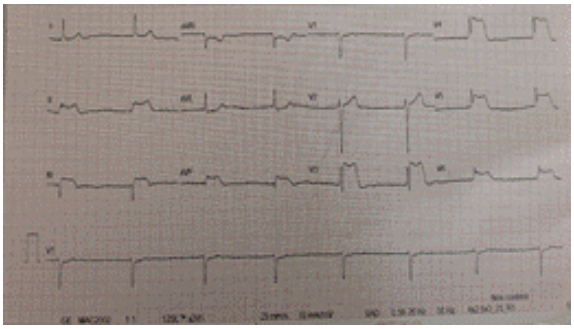


Figure 1



Figure 2

particularly when associated with concomitant coronary artery disease.

The coexistence of coronary atherosclerotic disease and coronary vasospasm should be considered in patients presenting with persistent ischemic symptoms despite revascularization. Atherosclerosis and vulnerable plaques are frequently found in patients affected by coronary vasospasm.

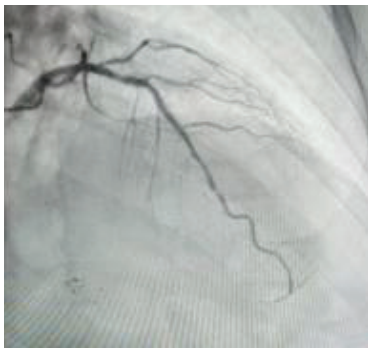


Figure 3

CARDIOPATIA ISCHEMICA 1086
PIASTRINE E TERAPIA ANTIAGGREGANTE (ATEROTROMBOSI)
TRATTAMENTO POST-INFARTO (CARDIOPATIA ISCHEMICA)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

VARIAZIONE INTRA-OSPEDALIERA DEL PRECISE-DAPT SCORE IN PAZIENTI CON SINDROME CORONARICA ACUTA SOTTOPOSTI A PCI

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Background: L'incidenza di recidive ischemiche post-angioplastica coronarica percutanea (PCI) si è ridotta negli ultimi anni grazie, soprattutto, all'utilizzo di stent medicati (DES) e all'introduzione della doppia terapia antiaggregante (DAPT) con inibitori del recettore P2Y12. Tuttavia, la DAPT si associa a un aumentato rischio emorragico, rendendo necessaria una valutazione individuale del bilancio rischio ischemico/emorragico, come raccomandato dalle linee guida. Il PRECISE-DAPT score, basato su cinque variabili cliniche (età, emoglobina, clearence della creatinina, conta leucocitaria e pregressi episodi di sanguinamento spontaneo), consente una stratificazione predittiva del rischio emorragico e può supportare decisioni sulla durata della DAPT.

Obiettivi: Scopo dello studio è valutare la variazione del rischio emorragico, stimato mediante il PRECISE-DAPT score, in pazienti con sindrome coronarica acuta (SCA) sottoposti a PCI, confrontando i valori calcolati al baseline con quelli ottenuti durante il ricovero (worst-case scenario, inteso per valori nadir di emoglobina e clearence della creatinina e valore più alto dei leucociti, valutati durante il ricovero). In particolare, si intende: determinare la proporzione di pazienti riclassificati da basso ad alto rischio emorragico; quantificare l'entità della variazione dello score tra le due fasi; esplorare l'implicazione clinica di una rivalutazione dinamica del rischio nella gestione della durata della DAPT.

Metodi: Abbiamo analizzato retrospettivamente una coorte di 1163 pazienti sottoposti a PCI. Per ognuno, è stato calcolato il PRECISE-DAPT score al baseline, utilizzando dati clinici ottenuti al primo contatto col paziente, e al worst-case scenario, ovvero, al nadir dei valori di emoglobina e clearence della creatinina e al picco dei valori dei leucociti.

Risultati: Abbiamo selezionato, dalla coorte iniziale, 741 pazienti che presentavano sindrome coronarica acuta (SCA): 49 angina instabile (6,61%), 165 NSTEMI (22,27%) e 527 STEMI (71,12%). Questi sono stati stratificati in due gruppi: high-bleeding risk (score ≥25; n=223, 30.09%) e non high-bleeding risk (score <25; n=518, 69.91%). L'età media era di 64 ± 11,6 anni (range 30–95), con prevalenza maschile (77,06%). Tra i pazienti inizialmente classificati come non high-bleeding risk, 118 (22,78%) sono stati riclassificati nel gruppo ad alto rischio emorragico. Nessun paziente del gruppo ad alto rischio è stato riclassificato in senso opposto. Il valore medio dello score è stato pari a 20.5 (DS ±13, 95%CI 19.6;21.4) al baseline e di 26.6 (DS ±15.5, 95%CI 25.4;27.7) nel worst-case scenario. La variazione media dello score è risultata, dunque, pari a 6 punti

(DS ±6, 95%CI -6.5;-5.6), con significatività statistica ($p < 0.001$)

Conclusioni: Lo studio evidenzia come il rischio emorragico nei pazienti con SCA sottoposti a PCI non sia statico, ma possa subire variazioni significative durante il ricovero ospedaliero. La riclassificazione di oltre un quinto dei pazienti da rischio non elevato a elevato, secondo il PRECISE-DAPT score, suggerisce che una singola valutazione al baseline possa risultare insufficiente per guidare in modo appropriato la durata della DAPT. Una rivalutazione dinamica del rischio, basata sull'evoluzione clinico-laboratoristica del paziente, potrebbe migliorare la personalizzazione della terapia e ridurre il rischio di eventi emorragici maggiori. Questi risultati supportano l'integrazione del monitoraggio continuo del rischio emorragico nella pratica clinica.

CARDIOPATIA ISCHEMICA 949
INFARTO NSTEMI (CARDIOPATIA ISCHEMICA)
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
PATOLOGIA DELL´AORTA (MALATTIE DEI VASI)

DIAGNOSTIC CHALLENGE OF A PERFECT STORM: AN AORTIC INTRAMURAL HEMATOMA CAUSING ACUTE CORONARY SYNDROME

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(a) UNIVERSITÀ DEGLI STUDI MAGNA GRAECIA DI CATANZARO - GRANDE OSPEDALE METROPOLITANO DI REGGIO CALABRIA; (b) GRANDE OSPEDALE METROPOLITANO DI REGGIO CALABRIA; (c) UNIVERSITÀ DEGLI STUDI MAGNA GRAECIA DI CATANZARO

Introduction: A 50-year-old woman with a history of SCAD presented for a NSTEMI. Coronary angiography revealed critical stenosis of the ostial left main, which was later found to be caused by an intramural aortic hematoma surrounding the left main ostium.

Case presentation: A 50-year-old overweight woman, affected by hypertension and dyslipidemia, presented to the ED of Locri Hospital for acute chest pain radiating to the left arm. Cardiovascular examination was normal. The ECG showed negative T waves from V4 to V6, while transthoracic echocardiography revealed a restricted akinesia of the apical cap of the left ventricle with normal global systolic function. Hs Troponin levels were elevated (982 ng/L). The patient also reported effort angina over the preceding month. A diagnosis of NSTEMI was made, and the patient was transferred to the "G.O.M." of Reggio Calabria for urgent coronary angiography. Patient's past medical history was notable for two similar events. In 2018, for NSTEMI coronary angiography demonstrated a SCAD occluding the distal part of the left anterior descending artery (type 4), which was managed conservatively with medical therapy. Upon arrival at the our UTIC, a TTE was performed and it confirmed the previously described wall motion abnormalities but, additionally, showed moderate aortic regurgitation. Urgent coronary angiography revealed a critical stenosis of the ostial left main coronary artery, which didn't regress after intracoronary nitrate administration, with no other significant coronary stenoses. Since at the moment of coronary angiography the patient was asymptomatic and hemodynamicallystable, the case was discussed in Heart Team with cardiac surgeons. Considering the unfavorable coronary anatomy (ostial stenosis in a very short left main), the patient's young age and the absence of significant comorbidities, the decision was to proceed with CABG. A TEE performed for a more accurate evaluation of the aortic regurgitation, was the game-changer. It demonstrated severe aortic regurgitation and an image suggestive of an aortich ematoma. Consequently CTA was performed, confirming the presence of an IMH estending from the valve plane and wrapping the origin of the left main coronarya artery. The patient subsequently underwent double CABG (LIMAàLAD; GSVàOM) and replacement of the ascending aorta with a valved conduit (Bentall procedure).

Take home messages: Connettive tissue disorders (CTDs) are a common risk factor between IMH and SCAD. Although the patient doesn't have any phenotypic traits attributable to CTDs, genetic analyses are underway to investigate for possible mutations. Three main lessons can be learned from

this experience: (1) the need to maintain a high index of suspicion for alternative or concomitant diagnoses in patients presenting with chest pain and a history of spontaneous coronary artery dissection; (2) the significant importance of multimodal imaging for precise and differential diagnosis; (3) the essential contribution of a multidisciplinary approach in tailoring the most appropriate treatment plan, avoiding potentially inappropriate or risky interventions.

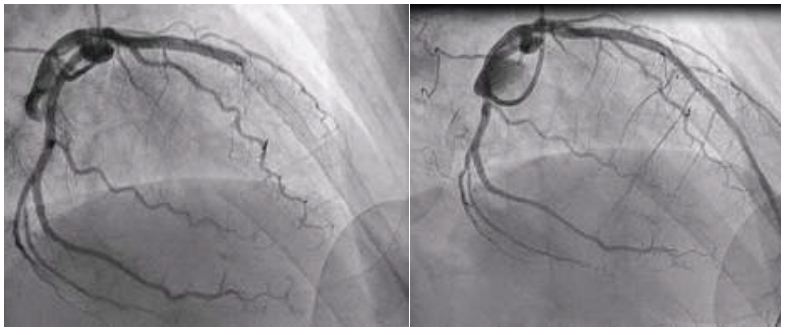
CARDIOPATIA ISCHEMICA 1067
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
PIASTRINE E TERAPIA ANTIAGGREGANTE (ATEROTROMBOSI)
TRATTAMENTO POST-INFARTO (CARDIOPATIA ISCHEMICA)

CASE OF EARLY STENT THROMBOSIS IN PATIENT WITH LONG TERM OAC INDICATION

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A 76-year-old patient was transported to the hospital by ambulance and admitted to the catheterization laboratory for an anterior STEMI complicated by out-of-hospital cardiac arrest, successfully resuscitated. Past medical history included paroxysmal atrial fibrillation, chronic kidney disease (eGFR 42 ml/min/m²), and arterial hypertension. Coronary angiography was performed, followed by PCI with implantation of three drug-eluting stents in the left anterior descending artery (LAD), which showed a mid-segment occlusion and a proximal subocclusion. An additional stent was deployed in the circumflex artery for a severe stenosis. The patient was admitted to the CCU and started on oxygen therapy and triple antithrombotic therapy with clopidogrel, aspirin, and edoxaban. Echocardiography showed mildly reduced systolic function (LVEF 42%) with akinesia of the apex and interventricular septum. During hospitalization, the patient experienced two episodes of atrial fibrillation, both effectively treated with pharmacological cardioversion. After 10 days, aspirin was discontinued; however, the following day, the patient developed persistent chest pain with new ST elevation in leads V2–V4. New coronary angiography revealed in-stent thrombosis of the left anterior descending artery, which was treated with disobstruction using drug-eluting balloons.

Given the suspicion of clopidogrel resistance (reduced platelet inhibition of clopidogrel was reported in subjects who are poor metabolizers of the drug, due to 2 loss-of-function alleles of the CYP2C19 gene), the case was discussed collegially, and therapy was modified to aspirin, ticagrelor, and edoxaban (dose adjusted for renal function). This type of therapy was tested in only a small proportion of patients (5.4%) in the ENTRUST-AF PCI trial, and for a duration of 5 days post-PCI.



Figures: stent thrombosis of LAD artery (on the left), angiographic result after treatment with drug-eluting baloons (on the right).

Figure 1

Conclusions: Subacute stent thrombosis incidence is 1.0 to 1.3%. Triple antithrombotic therapy with ticagrelor, aspirin, and edoxaban is contraindicated due to the lack of supporting evidence. However, considering the need for stronger platelet inhibition, a CHA_2DS_2-VA score of 4, and the predominance of ischemic over bleeding risk, this therapeutic choice was made in our case, followed by anticoagulation plus single antiplatelet therapy after one month.

CARDIOPATIA ISCHEMICA 588
INFARTO STEMI (CARDIOPATIA ISCHEMICA)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
TRATTAMENTO POST-INFARTO (CARDIOPATIA ISCHEMICA)

TROMBOSI VENTRICOLARE SINISTRA POST-STEMI ANTERIORE: GESTIONE CHIRURGICA CON APPROCCIO TRANSMITRALICO. UN CASE REPORT

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Background: Lo sviluppo di trombosi ventricolare sinistra (TVS) è una complicanza non rara dell'infarto miocardico acuto (IMA), specie se a sede anteriore, ed è associato ad elevato rischio di embolizzazione sistemica. La gestione ottimale rimane controversa: la terapia anticoagulante è il trattamento di prima linea, ma talvolta nei casi di trombosi endoventricolare voluminosa e mobile può rendersi necessaria la chirurgia. Tale approccio non è così frequente né frequentemente riportato in letteratura. Di seguito se ne discute l'indicazione.

Caso clinico: Paziente di 66 anni, di sesso maschile, affetto da STEMI anteriore trattato con angioplastica primaria e stenting su arteria discendente anteriore prossimale. Al follow-up ecocardiografico seriato in UTIC si evidenziava estesa trombosi ventricolare sinistra, inizialmente sessile ma successivamente peduncolata, dopo l'introduzione di terapia anticoagulante, e marcatamente fluttuante in ventricolo sinistro. Discusso e stabilito l'elevato rischio cardioembolico del paziente in Heart Team, anche in presenza dei neurologi vascolari della Stroke Unit, dopo ampia discussione collegiale del caso, veniva posta indicazione a trombectomia chirurgica mediante approccio transmitralico. Tale procedura veniva eseguita mediante atriotomia sinistra parasettale in ipotermia moderata con protezione cardioplegica e supporto cardio-polmonare, con visualizzazione del trombo ventricolare sinistro tramite fibroscopio sterile introdotto attraverso la valvola mitrale. Dopo vari infruttuosi tentativi con strumenti chirurgici convenzionali, l'asportazione completa del trombo veniva ottenuta mediante aspiratore senza protezione, sempre sotto guida fibroscopica. Il decorso postoperatorio risultava complicato da emopericardio (in paziente operato in corso di duplice terapia antiaggregante con Acido Acetilsalicilico e Ticagrelor) trattato con revisione chirurgica dell'emostasi, con successiva evoluzione favorevole.



Figura 1



Figura 2

Discussione: L'incidenza di TVS nei pazienti con STEMI anteriore varia dal 2,7% al 15%. La presenza di trombi mobili e peduncolati comporta un rischio embolico elevato, fino al 15% nei primi tre mesi dall'evento acuto. In tali situazioni, l'indicazione a chirurgia cardiaca può rappresentare un'opzione terapeutica efficace, sebbene gravata da rischio operatorio.
Conclusioni: Il nostro caso clinico evidenzia l'importanza del monitoraggio ecocardiografico precoce nei pazienti con STEMI anteriore e della valutazione multidisciplinare per la gestione delle complicanze trombotiche ad alto rischio.

CardioSic

CARDIOPATIA ISCHEMICA 858
INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
DIAGNOSTICA INVASIVA INTRAVASCOLARE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

COMPARATIVE PROGNOSTIC VALUE OF DIAMETER STENOSIS, MURRAY LAW-BASED QUANTITATIVE FLOW RATIO AND RADIAL WALL STRAIN AFTER DRUG-COATED BALLOON IN DE NOVO CORONARY LESIONS

Edoardo Oscar Genta (a), Ettore Ventura (a), Enrico Canese (a), Matteo Ferrari (a), Bianca Ada Magnanini (a), Stefano De Martini (a), Chiara Morocutti (a), Alice Bonomi (a), Piero Montorsi (a), Stefano Galli (a)
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Background. Drug-coated balloon (DCB) represents a valid alternative to drug-eluting stents for the treatment of de novo coronary lesions. However, procedural results are routinely limited to a subjective visual estimation of residual stenosis and dissection grade. New computational angiography-derived analyses offer integrated anatomical, functional, and biomechanical information. We aim to evaluate the predictive value of percent diameter stenosis (%DS), Murray's law-based flow ratio (μFR), and maximum radial wall strain (RWSmax).

Methods. De novo lesions treated with DCB-only strategy were retrospectively analyzed. Clinical outcome was MACEs, including target vessel revascularization, myocardial infarction, and all-cause death. Receiver operating characteristic curves identified the best predictors among baseline, post-predilation, post-DCB, and delta values of %DS, μFR, and RWSmax. Survival analyses tested predictive ability using a first quartile-based dichotomization. A propensity score matched (PSM) subgroup minimized clinical confounders.

Results. A total of 264 lesions were included. During a median follow-up of 312 [203–545] days, 28 MACEs occurred. Post-DCB %DS and μFR, and post-predilation RWSmax were selected as MACE predictors. MACE-free survival differed significantly for post-DCB %DS >29% vs ≤29% (log-rank = 0.018, HR = 2.46, 95% CI: 1.14 - 5.36) and μFR ≤0.90 vs >0.90 (log-rank = 0.003, HR = 3.68, 95% CI: 1.71 - 7.87). These findings remained significant in the PSM cohort. No significant differences emerged for post-predilation RWSmax ≥20.2% vs <20.2%.

Conclusion. Post-DCB %DS and μFR predict clinical outcomes after DCB in de novo lesions. The role of RWSmax warrants further investigation, particularly in drug-specific subgroups.

CARDIOPATIA ISCHEMICA 96
ANGINA INSTABILE (CARDIOPATIA ISCHEMICA)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
INFARTO NSTEMI (CARDIOPATIA ISCHEMICA)
INFARTO STEMI (CARDIOPATIA ISCHEMICA)
DIABETE E MALATTIE CARDIOVASCOLARI
(DIABETE E MALATTIE DEL METABOLISMO)

SIXTEEN-YEAR SINGLE-CENTRE EXPERIENCE OF CORONARY ARTERY BYPASS GRAFTING IN PATIENTS WITH REDUCED EJECTION FRACTION: OUTCOMES AND PREDICTIVE FACTORS

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Background: Coronary artery disease (CAD) is a leading cause of morbidity and mortality worldwide. Coronary artery bypass grafting (CABG) improves survival in patients with complex CAD, particularly those with left ventricular dysfunction (LVEF ≤ 40%). However, despite established survival benefits, real-world data on long-term outcomes and predictive factors in this high-risk population remain limited.

Methods: A retrospective, observational study was conducted, including consecutive adults with CAD and preoperative LVEF ≤ 40% who underwent isolated or combined CABG at our University Hospital between 2008 and 2023. Patient data were retrieved from electronic medical and operative records. Baseline demographic and clinical variables, preoperative parameters, laboratory values and surgical details were collected. Survival was estimated using the Kaplan-Meier method, and differences between groups were assessed with the log rank test. Predictors of all cause mortality were explored using univariate and multivariate Cox proportional hazards models.

Results: The study included a total of 486 patients, mostly male (85%) and with a median age of 69 years. Almost half of the population were diabetic (47%). The mean overall survival was 114 months. Survival rates at 30 days, 2 years, 5 years and 10 years were 98%, 90%, 75% and 47%, respectively. Independent predictors of mortality were found to be older age (HR 1.031, p = 0.003), peripheral artery disease (PAD, HR 1.620, p = 0.009), and an off pump surgical technique (HR 2.634, p = 0.002). Higher preoperative haemoglobin levels were protective (HR 0.864, p = 0.002). Diabetes with PAD was associated with the worst outcomes (p < 0.001). Bilateral internal mammary artery (BIMA) grafting conferred a survival benefit (p = 0.032), especially in diabetic patients (p = 0.011).

Conclusions: CABG in patients with reduced LVEF is

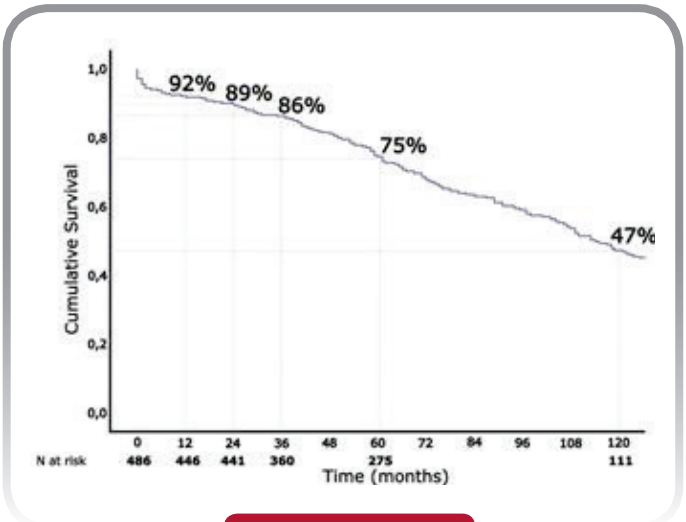


Figure 1

associated with favourable early, mid- and long-term survival. Overall survival was significantly influenced by age, PAD, off-pump technique and perioperative haemoglobin levels. Use of BIMA grafts provided a survival advantage, particularly among diabetic patients.

CARDIOPATIA ISCHEMICA 968
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INFARTO STEMI (CARDIOPATIA ISCHEMICA)
INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PIASTRINE E TERAPIA ANTIAGGREGANTE (ATEROTROMBOSI)
TROMBOSI E COAGULAZIONE (ATEROTROMBOSI)

RECURRENT IN-STENT THROMBOSIS AND LUPUS SYNDROME: DIAGNOSTIC AND THERAPEUTIC CHALLENGES

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Background: In-stent thrombosis is a rare but severe complication of percutaneous coronary intervention (PCI). Recurrent events despite adequate stent deployment and antithrombotic therapy suggest the presence of systemic pro-thrombotic conditions.

Case Report: A 79-year-old woman was admitted with anterior ST- elevation myocardial infarction (STEMI). Coronary angiography revealed acute left anterior descending (LAD) artery occlusion and critical LCx stenosis. Primary PCI with DES was performed on the LAD, followed by staged PCI on the LCx with DK-crush technique. The patient, who was on oral anticoagulation for prior thromboembolic events, received DAPT with aspirin and clopidogrel. Within days, she developed a new STEMI due to acute LCx in-stent thrombosis, treated with thromboaspiration, balloon dilatation, and tirofiban.
During hospitalization, the patient experienced two additional episodes of STEMI, attributed to recurrent, massive in-stent thrombosis involving both the LAD and LCx arteries.
IVUS confirmed optimal stent expansion without malposition. Antithrombotic therapy was intensified including the addition of warfarin and switching from clopidogrel to ticagrelor. Thromboelastography (TEG) showed adequate platelet inhibition. A rheumatology evaluation revealed lupus syndrome, and so steroid-based immunosuppressive therapy was initiated.

Results: Following tailored antithrombotic therapy and immunosuppression, the patient showed clinical stability. At five-month follow-up, no recurrent ischemic or bleeding events were observed. events. A downgrading from ticagrelor to clopidogrel was done and the TEG evaluation confirmed adequate platelet inhibition.

Conclusions: This case illustrates the challenges of recurrent in-stent thrombosis in the setting of autoimmune disease. Intravascular imaging was crucial to exclude mechanical factors, while aspiration thrombectomy allowed management of high thrombotic burden. Platelet function testing guided therapeutic adjustments. Early recognition of lupus as an underlying pro-thrombotic condition significantly influenced clinical outcome.

CARDIOPATIA ISCHEMICA 402
INFIAMMAZIONE E IMMUNITÀ (ATEROTROMBOSI)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
TRATTAMENTO POST-INFARTO (CARDIOPATIA ISCHEMICA)

COLCHICINE ACROSS THE SPECTRUM OF CORONARY ARTERY DISEASE: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Background: Colchicine is the only anti-inflammatory drug approved for the treatment of coronary artery disease (CAD). However, recent large-scale studies have questioned the efficacy of colchicine in patients with acute coronary syndrome.

Objectives: To explore the overall benefits of colchicine across the spectrum of CAD and the possible influence of clinical presentation (i.e., chronic coronary or acute coronary syndrome).

Methods: Randomized trials of colchicine in patients with CAD were eligible. The primary endpoints were trial-defined major adverse cardiovascular events (MACE) and serious adverse events (SAEs). Secondary endpoints included all-cause death, measures of ischemia (cardiovascular death, myocardial infarction [MI], any revascularization, stroke) and measures of safety (serious infections or sepsis and gastrointestinal adverse events). All analyses included an interaction term for the clinical presentation. Sensitivity analyses were performed to explore sources of heterogeneity.

Results: 20 trials encompassing a total of 21,486 patients (34.6% CCS) were included. Colchicine significantly reduced MACE (incidence rate ratio [IRR]: 0.70; 95% CI 0.55-0.87) without increasing risk for SAEs. Colchicine also reduced MI (IRR 0.81; 95% CI 0.70-0.94) and any revascularization (IRR 0.71; 95% CI 0.51-0.99), while increasing the risk of gastrointestinal adverse events (IRR 1.68; 95% CI 1.23-2.28). No statistically significant interaction was noted for clinical presentation for any endpoint. The effects of colchicine were mitigated in patients with STEMI.

Conclusions: In patients with CAD, the use of colchicine reduces MACE without significantly increasing SAEs compared to control. These beneficial effects were mitigated in patients with STEMI and came at the expense of higher gastrointestinal adverse events.

CARDIOPATIA ISCHEMICA 404
PIASTRINE E TERAPIA ANTIAGGREGANTE (ATEROTROMBOSI)
TROMBOSI E COAGULAZIONE (ATEROTROMBOSI)
INFARTO STEMI (CARDIOPATIA ISCHEMICA)

DUAL ANTIPLATELET THERAPY DE-ESCALATION BY DISCONTINUATION IN PATIENTS WITH ST-SEGMENT ELEVATION MYOCARDIAL INFARCTION: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Background: De-escalation of dual antiplatelet therapy (DAPT) by early discontinuation of one antiplatelet agent has been proposed as an alternative to 12-month DAPT to balance ischemic and bleeding risks in patients with acute coronary syndrome (ACS). However, the efficacy and safety of abbreviated DAPT regimens in ST-elevation myocardial infarction (STEMI) – a subset of ACS with distinct clinical and risk profiles – remain uncertain.

Methods: Randomized trials and sub-analyses of randomized trials comparing DAPT de-escalation by early discontinuation versus 12-month DAPT in patients with STEMI treated with primary angioplasty were included. Co-primary endpoints were major bleeding and major adverse cardiovascular events (MACE). Secondary endpoints included net adverse clinical events (NACE), individual ischemic outcomes, and clinically relevant bleeding. Trial sequential analysis (TSA) and sensitivity analyses were prespecified (CRD42024608709).

Results: Eight randomized trials encompassing 10,216 patients were included. Short DAPT regimens significantly reduced major bleeding [hazard ratio, 0.50; 95% confidence interval (CI), 0.30–0.85; P = 0.011] compared with standard DAPT. No significant differences were observed in MACE (hazard ratio, 1.21; 95% CI, 0.91–1.64; P = 0.193) or NACE (hazard ratio, 0.94; 95% CI, 0.80–1.10; P = 0.427). The results of TSA reinforced these findings. Other secondary outcomes showed no significant differences, but interpretation was limited by the small number of studies reporting these events.

Conclusion: Abbreviated DAPT significantly reduces major bleeding risk in patients with STEMI compared with standard 12-month DAPT, without apparently compromising ischemic protection. However, further research is needed to clarify net clinical outcomes in this high-risk ACS subset.

CARDIOPATIA ISCHEMICA 432
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
TRATTAMENTO POST-INFARTO (CARDIOPATIA ISCHEMICA)
DIABETE E MALATTIE CARDIOVASCOLARI (DIABETE E MALATTIE DEL METABOLISMO)
FARMACI ANTI-DIABETICI (DIABETE E MALATTIE DEL METABOLISMO)
SCINTIGRAFIA MIOCARDICA (IMAGING CARDIOVASCOLARE)

UNA TERAPIA, MILLE BENEFICI: VALUTAZIONE DELL'ISCHEMIA RESIDUA IN UN PAZIENTE DIABETICO

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GR, classe 1953, diagnosi di diabete mellito di tipo 2 nel 1993 in un contesto di sedentarietà e sovrappeso, trattato con associazione di clorpropamide e fenformina, poi rimodulato dopo il ritiro della fenformina per l'incrementata incidenza di acidosi lattica con l'introduzione di schema basal bolus e metformina. Alla nuova terapia si associavano però nel corso degli anni un progressivo incremento ponderale e frequenti episodi di ipoglicemia per carente aderenza della modulazione della quota glucidica da assumere con i pasti. Nel 2015 evento di SCA NSTEMI a clinica di angor tipico con PCI/stent di culprit lesion su Cx con stenosi residua su IVA del 50% e su I ramo diagonale del 60%; al ricovero non si associava ottimizzazione della terapia ipoglicemizzante, con persistenza in quello che era divenuto un paziente a rischio CV molto elevato di episodi ipoglicemici e elevata variabilità glicemica, con una tendenza all'inerzia terapeutica. A SPECT miocardica di perfusione evidenza di minimo grado di ischemia inducibile a 6 mesi in sede posterolaterale, in assenza di deficit della funzione sistolica focale o sistemica, per cui si proseguiva con terapia per sindrome coronarica cronica ottimizzata secondo LG dell'epoca; il dato era confermato a SPECT di controllo del 2017, con trattamento invariato. Negli anni successivi comparsa di dispnea da sforzo con modica elevazione dei valori di NT-proBNP nel 2020, per cui si poneva diagnosi di HFpEF, procedendo ad introduzione di Empagliflozin; la scelta, motivata già da un livello di evidenza IA per le linee guida ESC, era rafforzata dalla scadente QoL derivante dalla terapia ipoglicemizzante basata solo su insulina e biguanide. A 12 mesi di terapia con SGLT2i veniva effettuata nuova SPECT miocardica, che mostrava un quadro nettamente in miglioramento, con forte regressione delle aree di ischemia inducibile, non spiegabile, constatata la sovrapponibilità dei profili di diffusione del tracciante a 24 mesi dall'evento acuto e dalla rivascolarizzazione, da un fisiologico recupero del miocardio stordito. Sperry et al. hanno evidenziato in uno studio retrospettivo su una popolazione di pazienti sottoposti a FDG – PET per valutazioni oncologiche una riduzione dell'utilizzo di glucosio da parte del miocardio (che sfrutta in condizioni fisiologiche come substrato catabolico gli acidi grassi e i corpi chetonici) con capacità di contrastare l'effetto opposto indotto dall'insulina; questi dati suggerirebbero un effetto migliorativo degli SGLT2i, e di Empagliflozin nel nostro caso, addizionale rispetto al beneficio offerto dalle comprovate modifiche emodinamiche (riduzione di pre e post-carico per azione diuretica e natriuretica) e dall'effetto antinfiammatorio associato a miglioramento della funzione endoteliale. È notevole comunque osservare come Idowu et al. abbiano evidenziato nell'introduzione post-acuzie di

SCA degli SGLT2i una riduzione del tasso di ospedalizzazione successiva per HF (ma non mortalità CV) in una popolazione non affetta da diabete mellito di tipo 2 o scompenso cardiaco. Addizionalmente, Scardini et al. in una metanalisi hanno riscontrato benefici in termini di riduzione di tassi di ospedalizzazione per HF e di MACE dopo introduzione di SGLT2i sia in popolazione con SCA a meno di 8 settimane dal reclutamento che in soggetti con acuzie più distante nel tempo (con significatività del dato "trascinata" dalla popolazione affetta da diabete mellito di tipo 2). Questi dati, in ogni caso richiedenti conferma attraverso studi mirati, sembrerebbero suggerire la possibilità di valutare l'introduzione precoce di SGLT2i nel post infarto, soprattutto nel paziente diabetico, e in particolare nella popolazione con lesioni residue o con INOCA e interessamento del microcircolo.

CARDIOPATIA ISCHEMICA 1075
INFARTO STEMI (CARDIOPATIA ISCHEMICA)
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PIASTRINE E TERAPIA ANTIAGGREGANTE (ATEROTROMBOSI)

INFERIOR STEMI AND ACUTE SUBDURAL HAEMATOMA: A THERAPEUTIC CHALLENGE

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The simultaneous occurrence of ST-elevation myocardial infarction (STEMI) and acute subdural haematoma (SDH) is uncommon and presents a clinical challenge due to the opposite treatment strategies. The management of STEMI requires coronary reperfusion with dual antiplatelet therapy (DAPT), which is contraindicated in cases of SDH because of high bleeding risk. Moreover, current literature lacks specific guidelines on such cases.

Case presentation: A 76-year-old male was admitted for acute bilateral SDH secondary to hypertensive crisis and subsequently developed an inferior STEMI complicated by complete atrioventricular (AV) block. Coronary angiography revealed total occlusion of proximal right coronary (RCA) – identified as the culprit lesion – and critical stenosis of left anterior descending artery (LAD). To restore coronary flow while limiting the risk of exacerbating the SDH, thrombus aspiration and balloon angioplasty were performed without stent placement. A loading dose of aspirin was administered prior to the procedure and 3000 IU of unfractionated heparin (UFH) was administered during the procedure. Temporary transcutaneous pacing was initiated. On day 5 post-procedure, a permanent pacemaker was implanted due to persistent complete AV block. Daily brain CT scans showed stabilization of SDH. On day 6, clopidogrel was initiated with a 300 mg loading dose. On day 8, drug-eluting stents were deployed in both the RCA and LAD. Maintenance doses of aspirin and clopidogrel, along with 10000 IU of UFH, were administered. On day 9, brain CT was performed showing no significant progression in SDH. A short-term DAPT strategy with aspirin and clopidogrel will be continued for at least one month, with scheduled brain CT surveillance.

Date	Event
Day 1 (Admission)	Thrombus aspiration and balloon angioplasty. TIMI III flow restored without stent placement. Aspirin 250 mg iv; UFH 3000 IU iv
Day 2-4	Brain CT scans showed SDH stability
Day 5	PM implantation
Day 6	Clopidogrel 300 mg po
Day 8	Drug-eluting stents deployment in RCA and LAD. TIMI III flow restored.
Day 9	Brain CT scans showed SDH stability.

Table 1

Conclusions: The use of deferred revascularization – with initial thrombectomy and balloon angioplasty without stent placement – restored coronary flow allowing stabilisation of SDH before stent implantation and introduction of DAPT. This strategy effectively balances ischaemic and haemorrhagic risks in patients presenting with concurrent STEMI and SDH.

CardioSic

CARDIOPATIA ISCHEMICA 1100
INFARTO STEMI (CARDIOPATIA ISCHEMICA)
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
TRATTAMENTO POST-INFARTO (CARDIOPATIA ISCHEMICA)

STEMI ED ANEURISMA VENTRICOLARE

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Le complicanze meccaniche dell'infarto miocardico acuto grazie alla tempestività delle procedure di rivascolarizzazione risultano essere sempre meno frequenti rispetto al passato anche se gravate tuttora da elevata mortalità.

Alla nostra attenzione è giunto il caso di una paziente di 76 anni forte fumatrice recatasi al PS per dispnea ingravescente. All'Ecg di ingresso ritmo sinusale a 75 bpm con ripolarizzazione ventricolare nella norma. Per il riscontro all'RX torace di un addensamento polmonare con minimo rialzo della TpnI (76 ng/ml) la paziente è stata inizialmente ricoverata in ambiente internistico con diagnosi di riacutizzazione di insufficienza respiratoria da probabile polmonite. Dopo 48 ore dal ricovero la paziente, trattata con antibiotici e cortisonici, giunge nell'ambulatorio di Ecocardiografia per una valutazione di "routine". All'Ecocardiogramma evidenza di un ampio aneurisma della porzione basale della parete inferiore e di insufficienza mitralica ischemica da tethering di lembo posteriore. Si è pensato all'esito di un pregresso infarto miocardico ma ripetendo l'ECG (che risultava perfettamente nella norma all'ingresso) si apprezzato un sopraslivellamento del tratto ST in sede inferiore associato all'evidenza di piccole onde Q. La TpnI non era stata monitorata durante il ricovero. Alla luce del quadro clinico la paziente viene trasferita in Sala di Emodinamica. Alla coronarografia la coronaria destra risulta occlusa "cronicamente" ma data l'evidenza del sopraslivellamento in sede inferiore si procede a trattarla con PTCA+DES programmando una PTCA staged su interventricolare anteriore. Al raggiungimento di stabilità clinica la paziente viene dimessa ma dopo 2 settimane accede nuovamente al PS per dispnea ingravescente ma in condizioni di stabilità emodinamica. All'ecocardiogramma ingravescenza del grading dell'insufficienza mitralica ed ulteriore espansione dell'area aneurismatica con pareti assottigliate.

Si trasferisce la paziente in cardiochirurgia dove è stata sottoposta a sostituzione valvolare mitralica con protesi biologica mentre si è soprasseduto alla ventricoloplastica per evitare di danneggiare ulteriormente la giunzione atrioventricolare posteriore.

Conclusioni: Con molta probabilità nel caso di questa paziente ripetuti insulti ischemici nel territorio della coronaria destra, nel tempo, avevano condizionato lo sviluppo di un aneurisma della porzione postero-basale e dell'insufficienza mitralica che è stato però possibile intercettare solo in fase tardiva con un ulteriore colpevole ritardo probabilmente nell'indirizzarla al trattamento cardiochirugico.

CARDIOPATIA ISCHEMICA 741
MINOCA (MYOCARDIAL INFARCTION WITH NORMAL CORONARY ARTERIES) (CARDIOPATIA ISCHEMICA)
INFARTO NSTEMI (CARDIOPATIA ISCHEMICA)
ISCHEMIA, STUDI SPERIMENTALI (CARDIOPATIA ISCHEMICA)

THE HEART UNDER STRESS: CO-EXISTENCE OF TAKOTSUBO SYNDROME AND SCAD IN AN ONCOLOGIC PATIENT

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A 60-year-old woman, recently diagnosed with invasive lobular breast carcinoma, presented with oppressive chest pain radiating to the left shoulder, lasting 15–30 minutes and resolving spontaneously.

The electrocardiogram (ECG) demonstrated sinus tachycardia, ventricular ectopy, including couplets, and a left bundle branch block, in the absence of ST-T segment abnormalities.

The troponin levels were elevated, rising from 1,442 to 13,396 ng/L in 1 hour.

Transthoracic echocardiography revealed dyssynchrony of the interventricular septum with marked apical hypokinesia and basal segment hypercontractility.

Based on the clinical presentation, characteristic wall motion abnormalities and elevated troponin levels in the absence of ischemic ECG changes, a preliminary diagnosis of Takotsubo syndrome (TTS) was made. Recent huge emotional distress related to the diagnosis of a breast lesion, further supported this diagnosis.

To exclude obstructive coronary artery disease, coronary angiography was performed which revealed no critical stenoses in the epicardial coronary arteries but demonstrated a spontaneous coronary artery dissection (SCAD) in a distal coronary branch.

To further investigate a cardiac magnetic resonance (CMR) was performed and revealed a dilated left ventricle with globally reduced systolic function (LVEF 44%) and regional wall motion abnormalities, including akinesia of the apical anterior wall and hypokinesia of the mid-ventricular anterior and inferolateral walls, associated with septal dyssynchrony. Furthermore, CMR demonstrated regional wall motion abnormalities with myocardial edema and tissue characterization (LGE) consistent with subacute infarction, together with evidence of prior ischemic injury.

The prevalence of Takotsubo syndrome (TTS) is around 1-2% of all acute coronary syndromes, while SCAD accounts for approximately 1-4% of all acute myocardial infarctions. This case illustrates the concomitant occurrence of Takotsubo syndrome and spontaneous coronary artery dissection in a patient with newly diagnosed breast cancer. Both conditions are uncommon, and their association is exceedingly rare, particularly in cardio-oncology. The overlap between these entities highlights the importance of systematic multimodal assessment to avoid misdiagnosis and to guide optimal management. Increased awareness of this association may contribute to improved risk stratification and tailored treatment in oncologic patients presenting with acute chest pain.

CARDIOPATIA ISCHEMICA 547
INFIAMMAZIONE E IMMUNITÀ (ATEROTROMBOSI)
INFARTO NSTEMI (CARDIOPATIA ISCHEMICA)
INFARTO STEMI (CARDIOPATIA ISCHEMICA)

THE ROLE OF CHRONIC PSYCHO-SOCIAL STRESS AND ITS LINK WITH INNFLAMMATION IN ATHEROSCLREOTIC DISEASE DESTABILIZATION: THE STRESS MI ACTION STUDY

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Background: A growing body of evidences identify chronic stress as a new cardiovascular (CV) risk factor and recently a clinical consensus statement on mental health and cardiovascular disease has been endorsed by the European Society of Cardiology. However, methods for accurate chronic stress assessment are lacking as well as the precise characterization of mechanisms relating stress with CV disease acute destabilization.

Purpose: To quantify stress, using hair cortisol concentration (HCC), an emerging biomarker of chronic stress, in a real-word cohort of patients, presenting with different clinical severity: acute coronary syndrome (ACS), chronic coronary syndrome (CCS) or CV risk factors only (CRF). To investigate whether HCC correlates with inflammation primarily assessed by interleukin (IL)-6 serum concentration.

Methods: Among patients enrolled into the STRESS-MI-ACTION, a multicenter observational case-control study, hair samples to assess HCC were collected from the posterior scalp. HCC was analyzed by a centralized laboratory using a high-performance liquid chromatography-mass spectrometer. IL-6 was measured by an automated ELISA workflow. A correlation analysis was performed to assess relationship between HCC and IL-6.

Results: A total of 275 subject were included in the study: 140 with ACS (70 with and 70 without ST-elevation myocardial infarction, 70 with CCS and 70 with CRF. The mean HCC (Q1-Q3) was 3.91(2.99-5.86) pg/mg in the ACS group, 2.89 (2.30-2.46) pg/mg in the CCS group, 0.45 (0.30-0.76) pg/mg in the CRF group. After adjusting for age, sex, and traditional CV risk factors, HCC was progressively increased with the worsening of the clinical presentation (p for trend < 0.01 across the three groups). A positive significant correlation was found between HCC and serum IL-6 (Spearman Rho = 0.40, p=0.001).

Conclusion: HCC, expression of chronic stress in the previous months, is associated with acute CV disease destabilization due to ACS possibly mediated by inflammation as suggested by the linear correlation between HCC and IL-6 serum levels. Quantitative stress measurement may be helpful in tailoring CV preventive strategies.

CARDIOPATIA ISCHEMICA 892
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA) DIAGNOSTICA INVASIVA INTRAVASCOLARE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE) TROMBOSI E COAGULAZIONE (ATEROTROMBOSI)

SPONTANEOUS CORONARY ARTERY DISSECTION:CLINICAL COURSE AND OUTCOMES FROM A SINGLE-CENTER COHORT

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Introduction. Spontaneous coronary artery dissection (SCAD) is a non-atherosclerotic, non-iatrogenic cause of acute coronary syndrome (ACS), resulting from intramural hematoma or intimal tear leading to coronary luminal narrowing or complete occlusion. It predominantly affects young and middle-aged women without conventional cardiovascular risk factors, accounting for 1–4% of all ACS cases and up to 35% of acute myocardial infarctions in women under 50 years. Growing clinical awareness and advances in intracoronary imaging have improved recognition, yet therapeutic strategies remain controversial and are currently guided by observational data and expert consensus rather than randomized trial evidence.

Materials and Methods. We conducted a retrospective, single-center observational study of 26 patients with angiographically confirmed SCAD admitted between June 2019 and April 2025 to the Cardiology and Coronary Care Unit of the University Hospital of Cagliari. Demographic, clinical, laboratory, echocardiographic, and angiographic characteristics were systematically collected, along with in-hospital management, discharge therapy, and follow-up outcomes.

Results. The mean age was 55.7±8.6 years, with 23 patients (88.5%) being female. Mean body mass index was 24.3±4.4 kg/m². The most prevalent cardiovascular risk factors were hypertension (53.8%), smoking (50%), and dyslipidemia (34.6%), whereas type 2 diabetes (7.7%) and obesity (11.5%) were less frequent. Among women, 63.6% were peri-menopausal and 90.9% reported oral contraceptive use. Autoimmune disorders were present in 15.4% of cases, and two patients (7.7%) carried the heterozygous MTHFR mutation. Chest pain was the predominant presenting symptom (96%), accompanied by dyspnea in 11.5%. Half of the cohort presented with ST-elevation myocardial infarction (STEMI), and the remainder with non-ST-elevation myocardial infarction (NSTEMI). Two patients (7.7%) experienced in-hospital ventricular fibrillation with successful resuscitation. No cases of cardiogenic shock were observed; most patients (80%) were Killip class I. Coronary angiography demonstrated type 2b dissections in 46.2%, type 2a in 23.1%, type 1 in 15.4%, type 4 in 11.5%, and type 3 in 3.8%. The left anterior descending artery was most frequently involved (50%), followed by the circumflex (23%), left main (11.5%), right coronary artery (7.7%), and intermediate branch (7.7%). One patient exhibited anomalous origin of the left coronary artery. Laboratory findings showed mean high-sensitivity troponin I 14.096 ng/L (IQR 4.289–22.517), NT-proBNP 492 pg/ml (IQR 247–684.7), and CRP 9.6±12.1 mg/L. Echocardiography revealed preserved left ventricular ejection fraction (59.2±7.5%), mild regional wall motion abnormalities (mean WMSI 1.37), normal LV volumes (EDVi 48.7±7 ml/m²), and normal right ventricular function (TAPSE 21.8±3 mm). Management was predominantly conservative (73%),

while five patients (19.2%) underwent percutaneous coronary intervention with drug-eluting stents, three of them guided by intravascular ultrasound. One patient (3.8%) required emergency coronary artery bypass grafting for distal left main hematoma extending into the ostia of the left anterior descending and circumflex arteries. At discharge, 84.6% received single antiplatelet therapy (aspirin in 95.5%), 26.9% dual antiplatelet therapy, and 19.2% oral anticoagulation for atrial fibrillation or left ventricular thrombus. Beta-blockers were prescribed in 92.3% of patients, ACE inhibitors in 69.2%, ARBs in 15.4%, and statins in 76.9%. At a median follow-up of 26 months (23 patients), no recurrent SCAD events occurred. Three patients (12.5%) were re-hospitalized for recurrent chest pain, with imaging excluding new dissections. Significant reductions were observed in total and LDL cholesterol compared with admission (198.8±47.8 vs 151.3±40.6 mg/dl and 118.9±38.8 vs 81.5±32.3 mg/dl, respectively; p<0.001). Left ventricular function improved significantly (EF 63±3.5% vs 59.2±7.5%, p=0.032), with normalization of WMSI (1.06 vs 1.37, p<0.0001). No patient developed right ventricular dysfunction or pulmonary hypertension. Long-term adherence was high: 79.1% remained on beta-blockers, while 50.8% continued RAAS inhibitors, frequently discontinued due to symptomatic hypotension.

Conclusions. This single-center series confirms that SCAD predominantly affects middle-aged women without conventional coronary risk factors. The clinical presentation is typically ACS, with STEMI in half of the cases. Conservative management was safe and effective in the majority, with no recurrences and significant improvement in left ventricular function at follow-up. Revascularization was required only in selected cases with hemodynamic instability or left main involvement. SCAD is associated with a generally favorable prognosis when managed conservatively with careful clinical and imaging follow-up.

CARDIOPATIA ISCHEMICA 914
MINOCA (MYOCARDIAL INFARCTION WITH NORMAL CORONARY ARTERIES) (CARDIOPATIA ISCHEMICA)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
TRATTAMENTO POST-INFARTO (CARDIOPATIA ISCHEMICA)

IMPACT OF SPONTANEOUS CORONARY ARTERY DISSECTION ON QUALITY OF LIFE

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Introduction. Spontaneous coronary artery dissection (SCAD) represents a non-atherosclerotic cause of acute coronary syndrome (ACS), typically affecting young to middle-aged women without conventional cardiovascular risk factors. Its recognition has increased over the past decade due to improved clinical awareness and the widespread use of advanced intracoronary imaging techniques. While acute management is usually conservative and associated with favorable short- to mid-term clinical outcomes, the long-term psychological and functional consequences remain poorly defined. A sudden and unexpected coronary event in otherwise healthy and active individuals may exert a profound and lasting impact on quality of life (QoL), particularly on emotional and mental health domains. This study aimed to prospectively assess QoL in patients with SCAD and to compare it with both the general population and cohorts with major chronic illnesses.

Material and methods. Between June 2019 and April 2025, 26 patients with angiographically confirmed SCAD were enrolled at the Division of Cardiology and Coronary Care Unit, AOU Cagliari. Median follow-up duration was 792 ± 510 days. Of these, 23 patients (88%; 20 women and 3 men) completed a standardized QoL assessment using two validated instruments: the Short Form-12 Health Survey (SF-12), evaluating physical and mental health domains, and the EuroQol-5 Dimensions 5 Levels (EQ-5D-5L), which assesses mobility, self-care, daily activities, pain/discomfort, and anxiety/depression, in addition to a visual analogue scale (VAS) ranging from 0 (worst imaginable health) to 100 (best imaginable health). The SF-12 composite scores were compared with those of 92 age- and sex-matched controls from the general population (4:1 ratio) and with previously published cohorts of patients affected by chronic diseases.

Results. Mean SF-12 scores in the SCAD cohort were 12.3 ± 1.5 for the physical component (range 6-20) and 18.3 ± 1.7 for the mental component (range 6-27), yielding a total mean score of 30.65 ± 1.94. Although these values fall within the theoretical reference range (12–47), they were significantly lower than those of the matched controls (39.58 ± 5.87), with a mean difference of 9.23 ± 5.95 points ($p < 0.0001$). These findings highlight a substantial impairment in perceived health and functionality, despite objective recovery of cardiac function. When compared with other chronic conditions, SCAD patients exhibited worse QoL scores than those with major depressive disorder (33.8 ± 9.2, p=0.002), Wilson's disease (33.8 ± 9.0, p=0.001), carotid atherosclerosis (30.6 ± 8.1, p=0.029), solid tumors (32.3 ± 6.7, p=0.001), and systemic lupus erythematosus (33.0 ± 7.1, p=0.010). Only post-COVID fatigue syndrome was associated with lower QoL (24.0 ± 4.5, p=0.033), underscoring the magnitude of SCAD's psychosocial burden relative to other disabling chronic illnesses. Analysis of individual SF-12 domains confirmed that impairment extended beyond physical limitations, with disproportionately greater compromise in the mental health component. This suggests that even in the absence of recurrent

events or overt functional disability, patient-perceived health remains deeply influenced by fear of recurrence and the psychological weight of living with a rare and poorly understood condition. The EQ-5D-5L provided additional significant impact. The mean VAS score was 76 ± 14.9, reflecting a moderate yet suboptimal perception of health. Regarding domain-specific outcomes, 78.3% of patients reported no mobility problems, while 21.7% experienced mild difficulties. For self-care, 95.7% of patients reported no or minimal limitations. Daily activities were preserved in 47.8%, with 43.5% reporting mild difficulties and 8.7% moderate restrictions. Concerning pain/discomfort, 47.8% of patients reported no pain, 43.5% reported mild discomfort, and the remainder experienced moderate symptoms; no cases of severe or extreme pain were recorded. The most striking impairment was observed in the anxiety/depression domain: 52.2% reported no symptoms, 30.4% reported mild symptoms, 13.0% reported moderate symptoms, and 4.3% (one patient) described extreme psychological distress.

Conclusions. This prospective observational study demonstrates that SCAD is associated with a persistent and clinically meaningful reduction in quality of life, surpassing that observed in several chronic diseases of established disabling potential. The emotional and psychological domains are disproportionately affected, with a significant proportion of patients experiencing anxiety and depressive symptoms despite favorable clinical outcomes and absence of recurrence. These findings underscore the need for a holistic approach to SCAD management, integrating not only optimized medical therapy but also structured psychological support, patient counseling, and tailored rehabilitation programs. Addressing the psychosocial dimension of SCAD is essential to improve long-term outcomes and overall well-being in this vulnerable patient population.

CARDIOPATIA ISCHEMICA 264
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)

LONG-TERM OUTCOMES AND PREDICTORS OF MORTALITY IN PATIENTS WITH CHRONIC ISCHEMIC LEFT VENTRICULAR DYSFUNCTION UNDERGOING PCI: A MULTICENTER STUDY

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Background: Patients with ischemic LV dysfunction represent a high-risk population, with increased morbidity and mortality despite contemporary treatment strategies. While PCI is commonly performed in this setting, data on long-term outcomes and predictors of adverse events remain limited.

Objective: To analyze a well-characterized population of patients with ischemic LV disfunction who underwent PCI and to evaluate the predictors of all-cause mortality and myocardial infarction (MI).

Methods: We conducted a retrospective, multicentric, observational study. Consecutive patients from 2016 to 2022 who underwent PCI for LVEF <50% due to chronic ischemic disease were included from 3 hub Italian Hospitals.

Results: 279 patients were included, median age was 71 (IQR 64-78) years, 76.7% were male, 46.2% were diabetic, 26.2% had CKD and 33.0% had a history of previous MI. The median LVEF was 35 (28-40)%. Over a median follow-up of 53 (36-73) months, death and MI occurred in 33.7% of the patients, and 28.1% died. Baseline NYHA [HR: 1.48; CI (95%) 1.11-1.98; p=0.008], CKD [HR: 1.95; CI (95%) 1.27-3.00; p=0.002], PCI of the LAD (HR: 0.44; 95% CI: 0.29-0.69; p<0.001), were independent predictor of all-cause mortality and MI. Complete revascularization (HR: 0.42; 95% CI: 0.18-0.97; p=0.044) was an independent predictor of survival.

Conclusions: In patients with ischemic chronic LV dysfunction undergoing PCI, heart failure severity and comorbidities impacted clinical outcomes, while PCI of the LAD and complete revascularization were associated with improved survival. These findings underscore the importance of careful patient profiling and achieving complete revascularization to optimize prognosis in this high-risk population.

CARDIOPATIA ISCHEMICA 969
INFARTO NSTEMI (CARDIOPATIA ISCHEMICA)
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)

MANAGMENT OF CORONARY ECTASIA, A CLINICAL CASE

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Clinical Case: A 45-year-old male with hypercholesterolemia, family history of ischemic heart disease and known post-infarction ischemic cardiomyopathy with preserved biventricular systolic function. History of an inferior STEMI in 2022, with coronary angiography showing a tortuous and diffusely ectatic right coronary artery (RCA) with slow flow and distal thrombotic occlusion in the absence of underlying plaque. Thrombophilia screening was negative. He was discharged on warfarin and aspirin (ASA).
In 2024, following discontinuation of warfarin, he experienced a recurrence of inferior STEMI, treated with percutaneous balloon angioplasty (PTCA) and thromboaspiration of the distal RCA. He was discharged on warfarin and clopidogrel.
Subsequently, based on hematologic recommendation, warfarin was discontinued and replaced with low-dose rivaroxaban. This was followed by a further recurrence of inferior NSTEMI. Coronary angiography revealed an aneurysmal RCA with slow flow and critical proximal stenosis. PTCA and stenting were not performed due to the lack of adequately sized devices and a high risk of in-stent restenosis owing to slow coronary flow. The patient was discharged with a lifelong indication for warfarin therapy.

Discussion: Coronary ectasia is defined as a dilatation of the coronary arteries greater than 1.5 times the diameter of the adjacent normal vessel segment. It is a rare condition, observed in 0.3–5% of patients undergoing coronary angiography. In adults, the most common cause is atherosclerosis, followed by connective tissue diseases, rheumatologic conditions, and infections. In children, Kawasaki disease is the leading cause.
Angiography remains the gold standard for assessing the location, size, and morphology of the aneurysm. Coronary CT angiography (CCTA) can be a valid non-invasive alternative.
Interventional treatment options vary widely and may include balloon angioplasty, implantation of covered stents, coil embolization for peripheral saccular aneurysms, or, in rare cases, surgical resection of the aneurysm.
Medical therapy lacks support from randomized controlled trials and is based on expert consensus. It generally includes the use of antiplatelet agents and anticoagulants.

CARDIOPATIA ISCHEMICA 1091
INFIAMMAZIONE E IMMUNITÀ (ATEROTROMBOSI)
PLACCA VULNERABILE (ATEROTROMBOSI)
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

RARO CASO DI SCAD E SCA

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Background. Il lupus eritematoso sistemico (LES) è una malattia autoimmune cronica del tessuto connettivo in cui il sistema immunitario attacca le proprie cellule, causando infiammazione e danni a diversi organi, colpisce 1 persona su 1000 con prevalenza maggiore nel sesso femminile di circa 9 volte. Il picco di incidenza è tra i 20 e i 35 anni, con un andamento cronico-recidivante. L'eziologia è sconosciuta e multifattoriale. Caso clinico. Una donna di 37 anni con storia di ipertensione arteriosa e dislipidemia, la diagnosi di LES è stata formulata all'età di 20 anni secondo i criteri formulati della Società Europea di Reumatologia ed era in trattamento con Azatioprina, Idrossiclorochina e Belmumab. La paziente giungeva in Pronto Soccorso per dolore toracico oppressivo in sede retrosternale, non irradiato, non associato a variazioni posizionali o respiratorie.
All'esame obiettivo cardiovascolare, non si riscontrano toni aggiuntivi né soffi cardiaci. I suoni respiratori erano normali, la pressione arteriosa era 120/90 mmHg, la frequenza cardiaca era 75 battiti/minuto I livelli sierici della troponina T in Pronto Soccorso erano lievemente aumentati nel tempo: 18 ng/L, 55,6 ng/L, 41 ng/L L'ECG mostrava onda T negativa in sede antero-laterale.
L'ecocardiografia Doppler mostrava un ventricolo sinistro di normali dimensioni con ipocinesia dei segmenti medi del setto interventricolare anteriore e funzione sistolica conservata. La paziente è stata sottoposta ad esame coronarografico che ha rivelato una subocclusione del 70% dell' arteria interventricolare anteriore alla fine del I tratto (LAD), un primo ramo diagonale subocculso al 70% al tratto medio, un ramo intermedio con una stenosi del 70% al terzo medio ed una coronaria destra subocclusa al 70% tratto medio. E' stata sottoposta a rivascolarizzazione con impianto di stents su primo diagonale ed interventricolare anteriore. Dopo 2 giorni la paziente la paziente ha ripresentato costrizione toracica e rialzo enzimatico per cui è stata sottoposta in urgenza ad esame coronarografico che ha documentato una dissezione su coronaria destra e poiché il flusso distale era scomparso e l'emodinamica della paziente peggiorata, si è deciso di intervenire con urgenza con angioplastica coronarica. L'ecocardiografia Doppler mostrava un ventricolo sinistro di normali dimensioni con ipocinesia dei segmenti medi del setto interventricolare anteriore e della perete inferiore medio-basale con funzione sistolica conservata. La paziente è stato dimesso dall'ospedale in nona giornata, con trattamento medico a base di inibitore della pompa protonica, acido acetilsalicilico, ticagrelor, beta-bloccante, inibitore dell'enzima di conversione dell'angiotensina, statina, ezetimibe, inibitore PCSK9, cortisonico, Idrossiclorochina e Belmumab.

Conclusioni. Il nostro caso era insolito per la presenza di dissezione coronarica spontanea e aterosclerosi coronarica. Quando si ha a che fare con pazienti con LES, è necessario prestare attenzione alle complicanze cardiovascolari, sebbene la malattia possa non esordire come malattia aterosclerotica e l'incidenza della SCAD è rara ma rappresenta una possibilità e pertanto i medici dovrebbero considerarla in presenza di giovani pazienti con dolore toracico senza precedenti patologie cardiovascolari e fattori di rischio cardiovascolare.

CARDIOPATIA ISCHEMICA 633
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
ISCHEMIA, STUDI SPERIMENTALI (CARDIOPATIA ISCHEMICA)

INTRAVASCULAR LITHOTRIPSY IN CALCIFIED CORONARY LESIONS: 2 YEARS RESULTS FROM THE BENELUX-IVL REGISTRY

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Background/introduction: Intravascular lithotripsy (IVL) has emerged as percutaneous treatment option for coronary artery calcification (CAC). However, data on long-term outcomes remain limited.

Purpose: To evaluate the utilization patterns, safety, efficacy and two-year outcomes of IVL for CAC in an all-comers, real-world patient cohort.

Methods: Patients undergoing percutaneous coronary intervention (PCI) with IVL between May 2019 and September 2024 across nine centers in Belgium, Italy and the Netherlands were included. Demographic, clinical, procedural and follow-up data were collected. Efficacy endpoints were device success (IVL balloon delivery and pulses administration without complications), technical success (residual stenosis <30% with final TIMI 3 flow) and procedural success (technical success without in-hospital major adverse cardiovascular events [MACE: cardiac death, non-fatal myocardial infarction, or clinically driven target vessel revascularization (TVR)]). Safety endpoints included procedural complications and MACE up to two-year follow-up.

RESULTS: A total of 583 patients (mean age 73±9 years, 74% male) underwent IVL for 612 calcified lesions. The median IVL balloon size was 3.5mm (IQR: 3.0–4.0) with 80 (IQR: 60-80) pulses delivered. Clinical presentations included chronic coronary syndrome (n= 336, 58%) and acute coronary syndrome (n=247, 42%).
Treated lesions included bifurcations (n=135, 22%), aorto-ostial lesions (n=148, 24%), in-stent lesions (n=185, 30%) and chronic total occlusions (45, 7%). Additional calcium modification techniques were used in 91 cases (15%), mostly pre-IVL (n=82, 13%), with rotational atherectomy performed in 75 (12%). Pre- and post-dilatation were performed in 82% of procedures. Intracoronary imaging was used in in 294 (48%) procedures. Stenting was performed in 476 (78%) and drug eluting balloons were used in 46 (8%) cases.
Device, technical, and procedural success rates were 97%, 90%, and 89%, respectively. Complications occurred in 35 patients (6%), of which 7 (1%) were IVL-related. The median follow-up was 377 days (159–730), contributing to 695 patient-years of follow-up. Complete one-year follow-up data were available for 416 patients (71%), with MACE observed in 44 patients (11%). Two-year follow-up was available for 290 patients (50%), with an additional 9 events (3%) recorded. The cumulative incidence of MACE at two years was 53 events (8% per patient-year).

CONCLUSION: In this real-world cohort of patients treated with IVL, high success rates and low complication rates were observed. Importantly, these favorable outcomes were sustained over two years, with a cumulative MACE rate of 8% per patient-year.

CARDIOPATIA ISCHEMICA 696
INFARTO STEMI (CARDIOPATIA ISCHEMICA)
TRATTAMENTO POST-INFARTO (CARDIOPATIA ISCHEMICA)
ASSISTENZA INTENSIVA CARDIOVASCOLARE IN ACUTO (ASSISTENZA CARDIACA IN ACUTO)
SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO)

OUTCOMES A BREVE E LUNGO TERMINE NEI PAZIENTI LATE E VERY-LATE COMERS CON INFARTO MIOCARDICO ACUTO CON SOPRASLIVELLAMENTO PERSISTENTE DEL TRATTO-ST

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Introduzione: L'obiettivo di questo studio è stato quello di valutare le caratteristiche e la prognosi dei pazienti con infarto miocardico acuto con sopraslivellamento del tratto ST (STEMI) a presentazione tardiva (12-48 ore dall'insorgenza dei sintomi) e molto tardiva (≥48 ore), la cui gestione è ancora controversa.

Metodi: Abbiamo arruolato dal registro AMIPE 2206 pazienti con diagnosi di STEMI, da gennaio 2017 a dicembre 2023. La popolazione è stata poi suddivisa, in base all'intervallo onset dei sintomi-primo contatto medico, in STEMI "tardivi" (12-48 ore; n=279), "molto tardivi" (≥48 ore; n=209) o "precoci" (<12 ore; n=1720). Gli endpoint principali dello studio sono stati la mortalità intraospedaliera e la mortalità a lungo termine per tutte le cause.

Risultati: I pazienti "tardivi" e "molto tardivi" hanno mostrato un tasso più elevato di mortalità intraospedaliera (p<0.001) e di mortalità per tutte le cause durante un follow-up mediano di 32 mesi (p<0.001), mentre la presentazione ≥12 ore non è risultata associata in modo indipendente a un aumento della mortalità intraospedaliera o a lungo termine. Tra i gruppi è stata evidenziato un consistente calo nell'esecuzione della coronarografia (p<0.001), e la presentazione ≥12 ore è stata identificata come un forte predittore indipendente di "strategia non invasiva" (OR 21.39; CI 9.19-49.7; p<0.001). All'analisi multivariata, la rivascolarizzazione dei pazienti con presentazione ≥12 ore è risultata associata in modo indipendente a una significativa riduzione della mortalità intraospedaliera (OR: 0.47; CI 0.24-0.94; p=0.03) e della mortalità a lungo termine durante il follow-up (HR: 0.56; CI 0.34-0.91; p=0.02).

Conclusioni: I pazienti con STEMI "tardivo" o "molto tardivo" hanno mostrato una prognosi peggiore a breve e a lungo termine, ma la presentazione ≥12 ore non è risultata associata in modo indipendente a un aumento della mortalità. Tuttavia, la rivascolarizzazione della lesione responsabile dell'infarto, in tutti i pazienti a presentazione tardiva, è risultata indipendentemente associata a una riduzione della mortalità intraospedaliera e a lungo termine. Questo dato sottolinea l'importanza di una strategia invasiva in questa popolazione che necessita di un approccio integrato, che prescinda dalla semplice categorizzazione temporale.

CardioSic

CARDIOPATIA ISCHEMICA 716
INFARTO STEMI (CARDIOPATIA ISCHEMICA)
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
TRATTAMENTO POST-INFARTO (CARDIOPATIA ISCHEMICA)
DIAGNOSTICA INVASIVA INTRAVASCOLARE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)

IMPATTO PROGNOSTICO DELLA RIVASCOLARIZZAZIONE COMPLETA NELL'INFARTO MIOCARDICO SUBACUTO

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Background: L'infarto miocardico subacuto (IMS) rappresenta il 10-12% degli infarti miocardici con sopraslivellamento del tratto ST (STEMI) e si associa a una prognosi sfavorevole a breve e a lungo termine. Il ruolo della rivascolarizzazione completa, ampiamente studiato nella popolazione STEMI, rimane poco esplorato nel setting specifico dei "latecomers".

Obiettivi: Valutare l'impatto prognostico della rivascolarizzazione completa nei pazienti con IMS.

Metodi: Su 5350 pazienti con sospetta sindrome coronarica acuta sottoposti a coronarografia, sono stati selezionati 2206 STEMI. Di questi, 1158 con malattia multivasale e rivascolarizzazione della lesione culprit sono stati suddivisi in base alla tempistica d'arrivo (<12h "earlycomers" o >12h "latecomers") e alla strategia di rivascolarizzazione ("culprit-only" vs rivascolarizzazione completa). Gli endpoint principali sono stati la mortalità a lungo termine e i MACE.

Risultati: Tra i 965 "earlycomers" con malattia multivasale, il 46,9% ha ricevuto rivascolarizzazione completa, mentre tra i 193 "latecomers", il 39,9%. A un follow-up mediano di 32 mesi, la rivascolarizzazione completa si e associata a una riduzione della mortalità e MACE in entrambi i sottogruppi. All'analisi multivariata, la strategia di rivascolarizzazione completa si e confermata un predittore indipendente di riduzione della mortalità (HR 0,51; p=0,003) e dei MACE (HR 0,70; p<0,001), indipendentemente dalla tempistica di arrivo.

Conclusioni: La rivascolarizzazione completa si conferma una strategia efficace nel migliorare la prognosi dei pazienti STEMI, indipendentemente dalla tempistica di presentazione. Anche i pazienti con IMS traggono beneficio da un approccio di rivascolarizzazione completa, con una significativa riduzione degli eventi cardiovascolari a lungo termine. Sono necessari ulteriori studi per validare questi dati e definire percorsi terapeutici più strutturati per una popolazione ad alto rischio di eventi e spesso esclusa da strategie interventistiche aggressive.

CARDIOPATIA ISCHEMICA 773
INFARTO NSTEMI (CARDIOPATIA ISCHEMICA)
PIASTRINE E TERAPIA ANTIAGGREGANTE (ATEROTROMBOSI)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

IMPATTO PROGNOSTICO DEL PRETRATTAMENTO CON INIBITORI DEL RECETTORE P2Y12 SULL'INCIDENZA DI INFARTO MIOCARDICO PERIPROCEDURALE E SANGUINAMENTO IN PAZIENTI CON INFARTO MIOCARDICO ACUTO SENZA SOPRASLIVELLAMENTO DEL TRATTO ST

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Introduzione: la duplice terapia antiaggregante (DAPT) con acido acetilsalicilico (ASA) e un inibitore del recettore P2Y12 è lo standard of care per i pazienti con infarto miocardico senza sopraslivellamento del tratto ST (NSTEMI). Per molti anni nel trattamento delle sindromi coronariche acute (ACS) si è utilizzato il pretrattamento con antagonisti dei recettori P2Y12; tuttavia, sulla base delle evidenze provenienti da studi clinici randomizzati, le linee guida europee (ESC) 2020 sconsigliano il pretrattamento di routine nei pazienti NSTEMI sottoposti a PCI precoce (entro 24 ore) fino alla conferma dell'anatomia coronarica. Nonostante ciò, l'impatto del pretrattamento sull'infarto miocardico di tipo 4a (MI) rimane ancora poco chiaro.

Metodi: abbiamo arruolato pazienti ricoverati per NSTEMI sottoposti a PCI tra gennaio 2017 e Aprile 2023, utilizzando i dati presenti del registro AMIPE. I pazienti sono stati suddivisi in due coorti in base alle raccomandazioni istituzionali: la coorte 1 (gennaio 2017-agosto 2020) ha ricevuto il pretrattamento immediato con P2Y12, mentre la coorte 2 (settembre 2020-aprile 2023) ha ricevuto il trattamento solo dopo la conferma dell'anatomia coronarica. Sono stati inclusi pazienti con livelli di troponina cardiaca (cTn) stabili o in diminuzione, mentre sono stati esclusi quelli con cTn instabile, non conformi alle linee guida, di età <18 anni o senza consenso informato. L'endpoint primario dello studio era rappresentato dal beneficio clinico netto (NCB) intraospedaliero, che comprendeva l'infarto miocardico di tipo 4a (MI) e i sanguinamenti di tipo 2, 3 o 5 secondo la classificazione BARC. Gli endpoint secondari, invece, includevano gli eventi cardiovascolari avversi maggiori a 30 giorni (MACE), comprendenti mortalità per tutte le cause, reinfarto non fatale, ictus ischemico non fatale e ricovero per insufficienza cardiaca, e il tasso di eventi clinici avversi netti (NACE) a 30 giorni, che includeva i MACE, i sanguinamenti BARC di tipo 2, 3 o 5 in ospedale e l'infarto miocardico di tipo 4a. Il propensity-score matching (PSM) è stato utilizzato per confrontare i pazienti pretrattati e non pretrattati, dimostrando un bilanciamento delle caratteristiche cliniche di base tra i gruppi abbinati.

Risultati: dopo l'esclusione dei pazienti in base ai criteri predefiniti, 1254 pazienti sono stati divisi in due coorti: quelli pretrattati correttamente prima di settembre 2020 (coorte 1) e quelli trattati al momento del PCI dopo settembre 2020 (coorte 2). Il propensity score matching ha dato luogo a due coorti perfettamente bilanciate, di 502 pazienti ciascuna. Il pretrattamento non ha ridotto l'incidenza di MI periprocedurale ma è stato associato a un aumento dei sanguinamenti intraospedalieri. La regressione logistica ha confermato

che il pretrattamento era associato a un aumento del rischio di sanguinamento e a un rischio clinico netto più elevato sia nella popolazione totale che in quella dopo matching [OR: 1,34 (95% CI: 1,01–1,79), p = 0,042; OR: 1,45 (95% CI: 1,06–1,97), p = 0,019]. Questo aumento degli eventi avversi era principalmente dovuto ai sanguinamenti intraospedalieri, mentre i tassi di MACE a 30 giorni erano comparabili tra le coorti.

Conclusioni: il pretrattamento con inibitori del P2Y12 nei pazienti con NSTEMI sottoposti a trattamento invasivo e con livelli di cTn stabili o in diminuzione non ha ridotto il rischio di infarto periprocedurale ma è stato associato ad un aumenta del rischio di sanguinamenti intraospedalieri, superando qualsiasi potenziale beneficio.

CARDIOPATIA ISCHEMICA 774
INFARTO STEMI (CARDIOPATIA ISCHEMICA)
INFARTO NSTEMI (CARDIOPATIA ISCHEMICA)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
PROGNOSI (SCOMPENSO CARDIACO)
MINOCA (MYOCARDIAL INFARCTION WITH NORMAL CORONARY ARTERIES) (CARDIOPATIA ISCHEMICA)

RUOLO PROGNOSTICO DELL'ACCOPPIAMENTO VENTRICOLO DESTRO-ARTERIA POLMONARE NELL'INFARTO MIOCARDICO ACUTO

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Introduzione: Il rapporto TAPSE/PASP (Tricuspid Annular Plane Systolic Excursion, Pulmonary Artery Systolic Pressure) è un indicatore dell'accoppiamento tra il ventricolo destro (VD) e l'arteria polmonare (AP) e ha mostrato di essere un marker prognostico significativo in quadri di sovraccarico ventricolare destro cronico come lo scompenso cardiaco, l'insufficienza mitralica e tricuspidale e l'ipertensione arteriosa polmonare; tuttavia, il suo ruolo nel contesto dell'infarto miocardico acuto (IMA) rimane poco esplorato.

Obiettivi: Indagare il valore prognostico dell'accoppiamento tra ventricolo destro e arteria polmonare, misurato come rapporto TAPSE/PASP, nei pazienti con infarto miocardico acuto.

Metodi: Sono stati arruolati consecutivamente pazienti ricoverati in ospedale da gennaio 2017 a gennaio 2024 con una diagnosi di IMA. L'ecocardiogramma transtoracico è stato eseguito entro 24 ore dall'ingresso in terapia intensiva cardiologica. L'accoppiamento VD-AP è stato misurato attraverso il calcolo del rapporto TAPSE/PASP. È stata eseguita un'analisi delle curve Receiver Operating Characteristic (ROC) per determinare il cut-off di rapporto TAPSE/PASP ottimale nel predire la mortalità intraospedaliera. È stato quindi costruito un modello di rischi proporzionali di Cox per valutare il ruolo prognostico del rapporto TAPSE/PASP nel predire la mortalità a un anno dall'evento.

Risultati: In 1157 pazienti è stato calcolato il rapporto TAPSE/PASP, con un valore medio di 0.77 ± 0.31 mm/mmHg. I pazienti andati incontro a decesso intraospedaliero presentavano un rapporto TAPSE/PASP significativamente inferiore ($p < 0.001$). All'analisi delle curve ROC mediante l'indice di Youden è stato individuato un cut-off ottimale per predire la mortalità intraospedaliera pari 0.46 mm/mmHg (AUC = 0.794). Al confronto tra le curve di sopravvivenza di Kaplan-Meier, il gruppo di pazienti con un rapporto TAPSE/PASP < 0.46 mm/mmHg presentava una prognosi significativamente peggiore e all'analisi multivariata di Cox, un rapporto TAPSE/PASP < 0.46 mm/mmHg è risultato associato in modo indipendente con la mortalità a un anno (HR 2.2 [1.3-3.9], p=0.004) insieme alla frazione d'eiezione del ventricolo sinistro (p=0.05), alla creatininemia (p=0.04), alla concentrazione di emoglobina (p=0.003) e all'età (p<0.001).

Conclusioni: Nei pazienti con IMA, il disaccoppiamento VD-AP - definito da un rapporto TAPSE/PASP < 0.46 mm/mmHg - è associato a una maggiore mortalità intraospedaliera e a un anno. Questi risultati mettono in evidenza il ruolo prognostico aggiuntivo di questo parametro, che riflette non soltanto la funzione sistolica del ventricolo destro ma anche il suo post-carico, consentendo una valutazione più completa della funzione ventricolare destra.

CARDIOPATIA ISCHEMICA 784
INFARTO NSTEMI (CARDIOPATIA ISCHEMICA)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
MINOCA (MYOCARDIAL INFARCTION WITH NORMAL CORONARY ARTERIES) (CARDIOPATIA ISCHEMICA)

IDENTIFICAZIONE DI FENOTIPI CLINICI NELL'INFARTO MIOCARDICO DI TIPO 2: CARATTERISTICHE, PROGNOSI E STRATEGIE TERAPEUTICHE

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Introduzione: Nonostante la sua elevata incidenza e l'associazione con outcome non favorevoli, la diagnosi e gestione dell'infarto di tipo 2 (IMT2) rimangono difficili, in considerazione della sua presentazione clinica eterogenea e dei diversi profili clinici sottesi a questa condizione.

Obiettivi: Identificare differenze chiave e fenotipi clinici distinti in un'ampia popolazione affetta da IMT2.

Metodi: Sono stati analizzati tutti i pazienti consecutivi con NSTEMI sottoposti a coronarografia e con diagnosi confermata di IMT2 tra gennaio 2017 e marzo 2023. Per identificare fenotipi clinici e stata impiegata la latent class analysis, mentre le analisi multivariate sono state utilizzate per determinare fattori prognostici. Durante il follow-up e stato valutato un composito di eventi cardiovascolari avversi maggiori (MACE), insieme ad altri outcome.

Risultati: Tra 774 pazienti con IMT2, sono stati identificati due fenotipi. Il fenotipo 1 (F1, 31.5%) era piu giovane e con una maggior prevalenza di cause coronariche non aterosclerotiche e di eziologie non note. Il fenotipo (F2, 68.5%) esibiva piu comorbidita e un maggior carico aterosclerotico, ed era maggiormente associato a fattori precipitanti come sepsi, anemia e insufficienza respiratoria. Nel corso di un follow-up mediano di 53 mesi si sono avuti MACE nel 49.1% of patients. Fattori prognostici indipendenti erano il picco di valore di troponina in F1, mentre erano eta, malattia cardiovascolare nota, broncopneumopatia cronica ostruttiva, picco di valore di troponina e Gensini score in F2.

Conclusioni: Nell'IMT2 possono essere rintracciati due fenotipi diversi, ognuno con peculiari caratteristiche cliniche, fattori precipitanti, outcome e fattori prognostici. Questi risultati evidenziano il potenziale del processo di fenotipizzazione per sviluppare strategie diagnostiche e terapeutiche personalizzate per l'IMT2.

CARDIOPATIA ISCHEMICA 801
INFARTO STEMI (CARDIOPATIA ISCHEMICA)
ARITMIE VENTRICOLARI (ARITMIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
TRATTAMENTO POST-INFARTO (CARDIOPATIA ISCHEMICA)
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)

EPIDEMIOLOGIA E SIGNIFICATO PROGNOSTICO DELLE ARITMIE NELL'INFARTO MIOCARDICO ACUTO CON SOPRASLIVELLAMENTO DEL TRATTO ST

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Obiettivi
Il nostro lavoro aveva due scopi principali:
1. Individuare i fattori clinici e strumentali che predicono l'insorgenza di aritmie durante lo STEMI.
2. Valutare come queste aritmie influenzino la mortalità, sia intraospedaliera sia a lungo termine.

Metodi
Abbiamo analizzato 2.206 pazienti STEMI del registro AMIPE, arruolati tra il 2017 e il 2023, monitorando tre categorie di aritmie:
- Bradiaritmie: blocco AV o del nodo del seno di alto grado.
- Fibrillazione atriale: parossistica o persistente/permanente.
- Aritmie ventricolari: tachicardia ventricolare sostenuta e fibrillazione ventricolare.

Risultati principali
- Bradiaritmie: presenti nel 6% dei casi, predette da età avanzata, sesso femminile e lesione culprit nell'arteria coronaria destra.
- Fibrillazione atriale: quasi nel 10% dei pazienti, associata ad età avanzata, uso di beta-bloccanti, frazione di eiezione ridotta e presentazione oltre 12 ore.
- Aritmie ventricolari: circa nel 7% dei pazienti, correlate anch'esse a frazione di eiezione più bassa.

Outcome
La mortalità intraospedaliera complessiva è stata del 6,4%.
- Le aritmie ventricolari sono risultate l'unico predittore indipendente di mortalità ospedaliera.
- Bradiaritmie e fibrillazione atriale mostravano un'associazione solo nelle analisi univariate, verosimilmente riflettendo comorbilità sottostanti.
- A lungo termine, invece, la fibrillazione atriale è rimasta l'unica aritmia associata in modo indipendente alla mortalità, anche dopo correzione per altri fattori di rischio.

Messaggio chiave
Le aritmie ventricolari rappresentano un rischio acuto durante il ricovero, ma è la fibrillazione atriale ad avere un impatto prognostico duraturo: non va trascurata, anche se non aumenta la mortalità precoce.

Conclusione
Riconoscere e gestire le aritmie nei pazienti con STEMI è cruciale non solo nella fase acuta ma anche per gli esiti a lungo termine. In particolare, la fibrillazione atriale merita un'attenzione speciale per il suo peso prognostico ben oltre la durata della degenza.

CARDIOPATIA ISCHEMICA 832
INFARTO STEMI (CARDIOPATIA ISCHEMICA)
SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO)
FISIOLOGIA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

MECHANICAL COMPLICATIONS IN ST-ELEVATION MYOCARDIAL INFARCTION: PREDICTORS, IN-HOSPITAL MORTALITY AND THE ROLE OF TIME

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Background: mechanical complications are a significant cause of morbidity and mortality in patients hospitalised for myocardial infarction.

Purpose: to identify independent predictors of mechanical complications in patients with ST-elevation myocardial infarction (STEMI) and assess their impact on in-hospital mortality.

Methods: consecutive patients with myocardial infarction were enrolled from 2017 to 2024. STEMI was defined according to European Guidelines. Patients who developed mechanical complications were stratified based on the time delay between symptom onset and first medical contact (FMC): earlycomers (<12 hours) and latecomers (>12 hours). Using receiver operating characteristic (ROC) curves, we determined the optimal cutoff time from symptom onset to FMC for predicting mechanical complications, based on the Youden index. Univariate and multivariate logistic regression analyses were performed to identify independent predictors of mechanical complications. Additionally, univariate regression analysis was conducted to evaluate the association between each mechanical complication and in-hospital mortality.

Results: a total of 2207 patients were admitted for STEMI, of whom 53 (2.4%) experienced mechanical complications. Among these patients, 17 (30.3%) were earlycomers, while 39 (69.7%) were latecomers (p<0.001). The most common mechanical complications were ventricular free wall rupture (41.1%) and ventricular septal rupture (44.6%). The ROC analysis showed that the time delay from symptom onset to FMC is highly capable of identify patients who developed mechanical

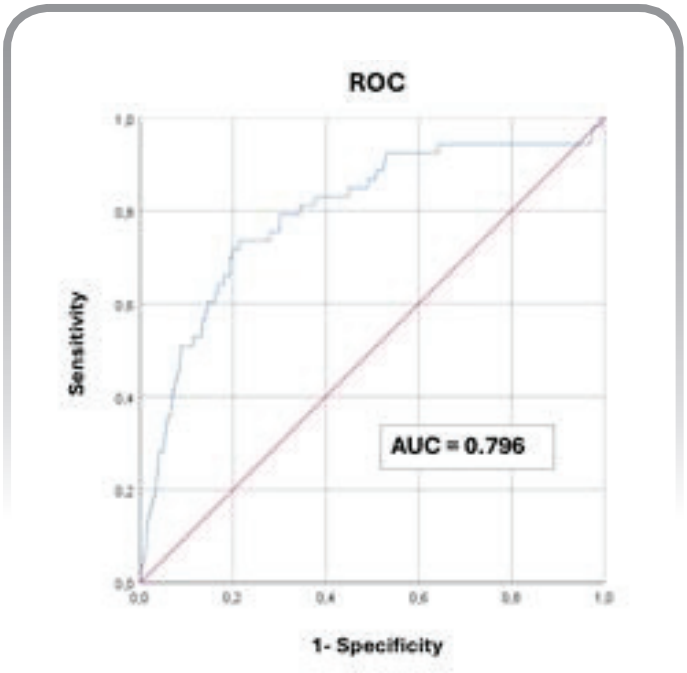


Figure 1

complications with an area under the curve (AUC) of 0.796 (95% CI: 0.728-0.863) and an optimal cutoff value of 11 hours was identified. In multivariable analysis, the strongest predictor of mechanical complications was a delay of >11 hours from symptom onset (OR: 5.51, 95% CI: 2.72-11.15, p<0.001), together with male sex (OR: 2.37, 95% CI: 1.26-4.44, p=0.007) and high Killip class (OR: 2.10, 95% CI: 1.64-2.7, p<0.001). Conversely, percutaneous revascularization had a protective effect (OR: 0.44, 95% CI: 0.23-0.86, p=0.016). Among the 53 patients with mechanical complications, 34 died during hospitalisation. Patients with mechanical complications had a significantly higher in-hospital mortality risk (OR: 28.3, 95% CI: 15.8-50.7, p<0.001). The highest mortality was observed in those with ventricular free wall rupture, which was associated with an OR of 79.6 (95% CI: 26.7-237.4, p<0.001).

Conclusions: in STEMI patients, mechanical complications are a major determinant of in-hospital mortality. In our study, a delayed presentation further confirms its role as a significant predictor of mechanical complications. Specifically, a delay of more than 11 hours from symptom onset to FMC was the strongest independent predictor of mechanical complications.

CARDIOPATIA ISCHEMICA 3
FISIOLOGIA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
DISFUNZIONE DEL MICROCIRCOLO (CARDIOPATIA ISCHEMICA)
INFARTO STEMI (CARDIOPATIA ISCHEMICA)
TRATTAMENTO POST-INFARTO (CARDIOPATIA ISCHEMICA)

ANGIOGRAPHY-DERIVED INDEX OF MICROVASCULAR RESISTANCE TO PREDICT EVENTS AFTER PRIMARY PERCUTANEOUS CORONARY INTERVENTION IN PATIENTS WITH MYOCARDIAL INFARCTION

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Introduction: Microvascular dysfunction following primary percutaneous coronary intervention (pPCI) is a well-established determinant of adverse outcomes in ST-segment elevation myocardial infarction (STEMI) patients. Although the invasive Index of Microcirculatory Resistance (IMR) has demonstrated prognostic value, its reliance on thermodilution limits its routine applicability. Angiography-derived functional indices, already validated in the epicardial domain, may offer a simplified, non-invasive alternative for microvascular assessment.

Aim: To evaluate the feasibility and prognostic performance of the angiography-derived Index of Microcirculatory Resistance (AngioIMR) computed using quantitative flow ratio (QFR).

Methods: We retrospectively analyzed consecutive patients who underwent pPCI for anterior STEMI at Fondazione Poliambulanza, Brescia, between January 1, 2016, and February 1, 2024. AngioIMR was calculated using the formula: AngioIMR = MAP × QFR × (N°Frames / FPS), where MAP represents mean aortic pressure and (N°Frames / FPS) is the ratio between the number of frames required for contrast dye to travel from the coronary ostium to the distal reference point and the acquisition frame rate [Frames Per Second (FPS) = 15]. This latter parameter was automatically derived using the QFR software. Only patients with final TIMI 3 flow and a QFR value >0.80 were included, provided that technical requirements for QFR computation were met. Exclusion criteria were: coronary anatomies unsuitable for qFR analysis; cardiac arrest, cardiogenic shock and/or the need for mechanical circulatory support; prior anterior myocardial infarction. The primary endpoint was a composite of all-cause death, target vessel myocardial infarction, or hospitalization for heart failure. The secondary endpoint additionally included hospitalization for angina.

Results: After screening 440 potentially eligible patients, a total of 180 individuals with anterior STEMI treated with successful pPCI were included. Over a 5-year follow-up, primary and secondary endpoints occurred in 16 (8.9%) and 23 (13%) patients, respectively. The optimal AngioIMR cut-off was 43 (AUC 0.800; 95% CI: 0.714–0.887; $p < 0.001$), with sensitivity 87.5%, specificity 63.4%, positive predictive value 18.9%, and negative predictive value 98.1%. The incidence of both the primary and secondary endpoints was significantly higher among patients with AngioIMR ≥ 43 compared to those with AngioIMR < 43: 18.9% vs. 1.9% ($p < 0.001$) and 28.4% vs. 1.9% ($p < 0.001$), respectively. Furthermore, AngioIMR ≥ 43 was associated with a markedly increased risk of adverse outcomes (HR: 9.5; 95% CI: 2.2–42.0; $p < 0.001$). When considered as a continuous variable, AngioIMR demonstrated a linear association with event risk, with a 6% increase in hazard

for each unit increase in AngioIMR (HR: 1.060; 95% CI: 1.026–1.096; p < 0.001). Finally, AngioIMR remained an independent predictor of the primary endpoint in multivariable analysis.

Conclusions: AngioIMR is a feasible, non-invasive tool for risk stratification following pPCI in anterior STEMI, able to carry a prognostic value in this specific population.

CARDIOPATIA ISCHEMICA 4
FISIOLOGIA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
DISFUNZIONE DEL MICROCIRCOLO (CARDIOPATIA ISCHEMICA)
DIAGNOSTICA INVASIVA INTRAVASCOLARE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

CONTRAST-DERIVED INDEX OF MICROVASCULAR RESISTANCE: A NOVEL TOOL TO ASSESS CORONARY MICROCIRCULATION

Ciro Pollio Benvenuto (a, b), Domenico Galante (c), Andrea Viceré (b), Vincenzo Viccaro (b), Chiara Giuliana (b), Simona Todisco (b), Antonio Maria Leone (b, c)
(a) ST ANTONIUS ZIEKENHUIS; (b) DIPARTIMENTO DI SCIENZE CARDIOVASCOLARI - POLICLINICO GEMELLI; (c) OSPEDALE ISOLA TIBERINA - GEMELLI ISOLA

Background: Thermodilution-derived Index of Microcirculatory Resistance (thermo-IMR) is a pivotal metric for assessing microvascular resistance. However, it requires specialized thermistor-equipped pressure wires and the use of a vasodilator to induce hyperemia.

Aims: To evaluate the feasibility and the diagnostic accuracy of a novel index, "contrast-derived.
Index of Microcirculatory Resistance" (cIMR), in assessing microvascular resistance.

Methods: We prospectively enrolled consecutive patients with chronic coronary syndrome undergoing invasive functional assessment according to the #FullPhysiology protocol. Fractional.
Flow Reserve (FFR) and thermo-IMR served as the reference standard. cIMR was calculated using the following formula: contrast-derived distal Pressure (cPd) * Transit time (Tt). cPd was the lowest distal pressure value within 10 seconds post-contrast injection; Tt was estimated from the same angiogram as the ratio between the number of frames (N°Frames) necessary for contrast dye to travel from the guiding catheter to the tip of the wire and the acquisition rate. cIMR and Thermo-IMR were estimated and correlated each other.

Results: Analysis included 94 patients, accounting for 100 lesions. The majority (87%) exhibited no significant epicardial stenosis (FFR>0.80), with the left anterior descending artery being the most frequently assessed vessel (98%). Median thermo-IMR and cIMR values were 22.0 (14.0-31.0) and 37.0 (31.7-45.4) units, respectively. cIMR demonstrated a strong correlation (r=0.87; p<0.001) and excellent discriminatory power [AUC 0.92; 95%CI (0.87-0.97)] compared to thermo-IMR. The optimal cut-off value of cIMR was 38, showing an accuracy of 85% in detecting high resistance compared to thermo-IMR (≥25 U).

Conclusion: cIMR is a safe, feasible, and accurate method for assessing microvascular resistance. It provides a valid surrogate for thermo-IMR, that can be calculated with any commercially available pressure wires without the need of a vasodilator drug.

CARDIOPATIA ISCHEMICA 964
MINOCA (MYOCARDIAL INFARCTION WITH NORMAL CORONARY ARTERIES) (CARDIOPATIA ISCHEMICA)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)

FOCAL TAKOTSUBO: A RARE AND DECEPTIVE SEGMENTAL PATTERN

Valentina Abis (a), Marco Medda (a), Davide Angelantoni (a), Oscar Saba (a), Carolina Pitzalis (a), Maria Francesca Marchetti (a), Mattia Biddau (a), Riccardo Cau (b), Roberta Montisci (a)
(a) SC CARDIOLOGIA-UTIC, AOU CAGLIARI, UNIVERSITÀ DEGLI STUDI DI CAGLIARI;
(b) S.C. RADIOLOGIA, AOU CAGLIARI, UNIVERSITÀ DEGLI STUDI DI CAGLIARI

Introduction: Takotsubo syndrome (TTS) is an acute, transient, and reversible cardiomyopathy that can closely mimic acute myocardial infarction (AMI). The focal variant, although uncommon, represents a diagnostically challenging entity, characterized by localized wall motion abnormalities and significant elevation of myocardial injury biomarkers. This phenotype is the most difficult to distinguish from true AMI. Reported prevalence ranges between 1.5% and 6.9%, with a marked female predominance (80% of cases) and a mean age at presentation of 58 years. Compared with the classical apical ballooning pattern, the focal variant is generally associated with less severe left ventricular (LV) systolic dysfunction and a more favorable clinical course, with negligible mortality. Electrocardiographic findings often demonstrate localized ischemic changes, which typically correlate with the affected myocardial region, in contrast with the diffuse abnormalities usually observed in classical TTS.

Case Report: We report the case of a 60-year-old woman who developed a rare focal form of TTS, presenting with mid-apical anterolateral ballooning. Her past medical history included paroxysmal atrial fibrillation treated with radiofrequency catheter ablation, dyslipidemia, and celiac disease. Shortly after an air flight, she presented to our Emergency Department with acute-onset typical chest pain accompanied by profuse sweating.
Electrocardiography revealed sinus rhythm with subendocardial ischemia in inferior and anterior leads. High-sensitivity troponin I levels were markedly elevated (2234 ng/L). Transthoracic echocardiography showed a mildly reduced LV ejection fraction (46%) with mid-apical akinesia involving the anterolateral and inferolateral walls.
Because of persistent chest pain despite nitrate therapy, urgent coronary angiography was performed, revealing angiographically normal coronary arteries. Left ventriculography demonstrated mildly impaired systolic function with anterolateral akinesia and apical hypokinesia. Intravascular optical coherence tomography (OCT) of the left anterior descending artery excluded plaque rupture or dissection.
On day 3 of hospitalization, cardiac magnetic resonance imaging demonstrated intramyocardial edema and subtle late gadolinium enhancement (LGE) in the mid-apical anterior segment, findings consistent with focal TTS.
During the hospital stay, serial measurements showed progressive normalization of cardiac biomarkers. Serial ECGs revealed transient QTc prolongation, which normalized before discharge. Follow-up echocardiography prior to discharge documented full recovery of global LV systolic function and partial improvement in regional wall motion. The patient was discharged on day 6 in good clinical condition,

asymptomatic, and hemodynamically stable.

Conclusions:
Focal TTS is a true "great mimicker" of AMI, given its overlapping clinical, electrocardiographic, and biomarker features. However, its prognosis is usually favorable, with rapid and often complete recovery of LV function and an extremely low mortality rate.

This case underscores the pivotal role of a multimodality diagnostic approach, including echocardiography, coronary angiography, and cardiac magnetic resonance imaging for accurate and timely identification of this rare entity. Such an approach avoids misdiagnosis as obstructive acute coronary syndrome and prevents unnecessary or potentially inappropriate interventions.

CARDIOPATIA ISCHEMICA 1071
MINOCA (MYOCARDIAL INFARCTION WITH NORMAL CORONARY ARTERIES) (CARDIOPATIA ISCHEMICA)
DISFUNZIONE DEL MICROCIRCOLO (CARDIOPATIA ISCHEMICA)
BIOMARCATORI DELLO SCOMPENSO (SCOMPENSO CARDIACO)

SUDDEN ONSET OF LEFT VENTRICULAR DYSFUNCTION AND NORMAL EPICARDIAL CORONARY ARTERY, IS IT TAKOTSUBO SYNDROME OR SOMETHING ELSE?

Flavia Santini (a), Luigi De Masellis (a), Maria Cristina Aloini (a), Andrea Segreti (a), Francesco Grigioni (a), Gian Paolo Ussia (a)
(a) CAMPUS BIO-MEDICO DI ROMA

69-year-old female patient, with hypertension, dyslipidemia, and overweight, recently implanted with a dual-chamber pacemaker (Biotronik) due to complete atrioventricular block. She presented to the Emergency Department for sudden onset of objective vertigo and blurred vision during a hypertensive crisis (BP 160/110 mmHg). She denied any recent flu-like illness nor significant emotional or physical stress. She was emodynamically stable, with no symptoms of angina, dyspnea, or palpitations. The ECG showed an electrostimulated rhythm from the pacemaker, with atrial and ventricular pacing at 90 bpm. Blood tests revealed elevated high-sensitivity troponin I and increased NT-proBNP. Echocardiogram documented akinesia of the apex and para-apical segments with marked interventricular septal dyssynchrony. The global systolic function was reduced (LVEF 35%). No significant valvular disease was found. On the same day, coronary angiography was performed and showed epicardial coronary arteries without any angiographically significant stenosis. A chest X-ray showed signs of mild central pulmonary congestion. As a result, heart failure with reduced ejection fraction therapy was initiated and tailored to the patient (valsartan, empagliflozin, bisoprolol, eplerenone, and furosemide). Based on clinical, instrumental, and laboratory findings, the condition was hypothesized to be due to myocarditis or sarcoidosis or pacemaker-induced dysfunction, or Takotsubo syndrome. Thus, serological tests for infectious and immune-mediated myocarditis were requested, which showed no active infections. Serum protein electrophoresis with immunofixation revealed a monoclonal IgM lambda component. Chest CT scan, performed to exclude suspected sarcoidosis, displayed no significant abnormalities. Pacemaker interrogation documented a full battery, normal electrical parameters, and no stored arrhythmic events. Cardiac MRI revealed dyskinesia of the mid-ventricular and apical segments of the left ventricle, with reduced global systolic function (LVEF = 44%), in the absence of evident areas of myocardial fibrosis. The findings were consistent with resolving Takotsubo syndrome.

Takotsubo syndrome typically presents with chest pain, diffuse T-wave inversion on ECG, sometimes preceded by transient ST-segment elevation, moderate troponin elevation, increased NT-proBNP, and segmental left ventricular wall motion abnormalities that generally resolve completely (restitutio ad integrum) within days to weeks. Its incidence is higher in postmenopausal women, especially those with multiple cardiovascular risk factors or comorbidities associated with endothelial dysfunction. This predisposes to ischemic heart disease, due to an imbalance between vasoconstrictor and vasodilator factors, leading to increased sympathetic tone and overstimulation of α-adrenergic receptors, which mediate arteriolar vasoconstriction. This is accompanied by a reduction in β2-adrenergic receptors, which mediate arteriolar vasodilation. The pathophysiological rationale of Takotsubo syndrome involves a triggering event, usually an intense emotional or physical stress, that leads to a surge in catecholamines. It causes overstimulation of

α-adrenergic receptors, leading to vasoconstriction and microvascular dysfunction. This condition, combined with an increased cardiac workload, creates a supply-demand mismatch, resulting in myocardial ischemia. Nevertheless, this is a reversible condition, as cardiac MRI studies have shown that the acute phase is characterized only by myocardial edema, without the presence of fibrotic areas.

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CARDIOPATIA ISCHEMICA 559
INFARTO NSTEMI (CARDIOPATIA ISCHEMICA)
FISIOLOGIA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
ISCHEMIA, STUDI SPERIMENTALI (CARDIOPATIA ISCHEMICA)

A NOVEL CLINICAL SCORE FOR PREDICTING TYPE 2 MYOCARDIAL INFARCTION

Silvio Saraullo (a), Rosangela Lomastro (a), Alessandro Meola (a), Andrea Palermi (a), Fabrizio Ricci (a, b, c), Sabina Gallina (a, b), Giulia Renda (a, b)

(a) DIPARTIMENTO DI NEUROSCIENZE, IMAGING E SCIENZE CLINICHE (DNISC) - UNIVERSITA' DEGLI STUDI G. D'ANNUNZIO CHIETI-PESCARA; (b) DIPARTIMENTO CUORE - POLICLINICO SS ANNUNZIATA CHIETI; (c) DIPARTIMENTO DI SCIENZE CLINICHE - UNIVERSITA' DI LUND MALMO

Background: The 4th Universal Definition of Myocardial Infarction (MI) differentiates type 1 MI (T1MI), due to atherothrombosis, from type 2 MI (T2MI), caused by an imbalance between oxygen supply and demand. Yet, the absence of standardized diagnostic criteria frequently results in misclassification. Early and precise distinction is difficult but crucial, since T1MI typically requires invasive strategies, while T2MI management focuses on treating the precipitating condition.

Methods and results: We prospectively enrolled 142 patients with a confirmed diagnosis of T1MI or T2MI admitted to Policlinico SS. Annunziata (Chieti), all of whom underwent coronary imaging. The primary objective was to identify clinical differences and develop a pre-test prediction score for T2MI. T2MI represented 40.8% of cases and was associated with older age, female sex, and a higher burden of comorbidities, including arterial hypertension, chronic kidney disease, atrial fibrillation, and pulmonary hypertension. Compared with T1MI, T2MI patients showed lower pre-imaging troponin peaks (3190 vs 13,343 ng/mL, p=0.01), higher heart rate (98.2 vs 78.8 bpm, p<0.001), prolonged TpTe (101.6 vs 85.7 ms, p<0.001), longer QTc (456.8 vs 434.5 ms, p<0.001), and more frequent VEXUS >1 (36.8% vs 19.7%, p=0.04). Obstructive CAD was observed in 63.2% of T2MI versus 97% of T1MI (p<0.001), while a culprit lesion was identified in only 25% compared with 92% of T1MI (p<0.001). For the primary endpoint, five variables identified through univariate ROC analysis (AUC >0.6)—age >65, QTc >445 ms, TpTe >120 ms, TnI0 <1500 pg/mL, TAPSE/PASP <0.55—were included into a multivariate logistic regression model (AUC 0.81). A weighted diagnostic score was derived from beta coefficients. A score ≥6 achieved 96% specificity, 88% PPV, and a 76% probability of T2MI, whereas a score ≤2 had 100% NPV, effectively ruling it out.

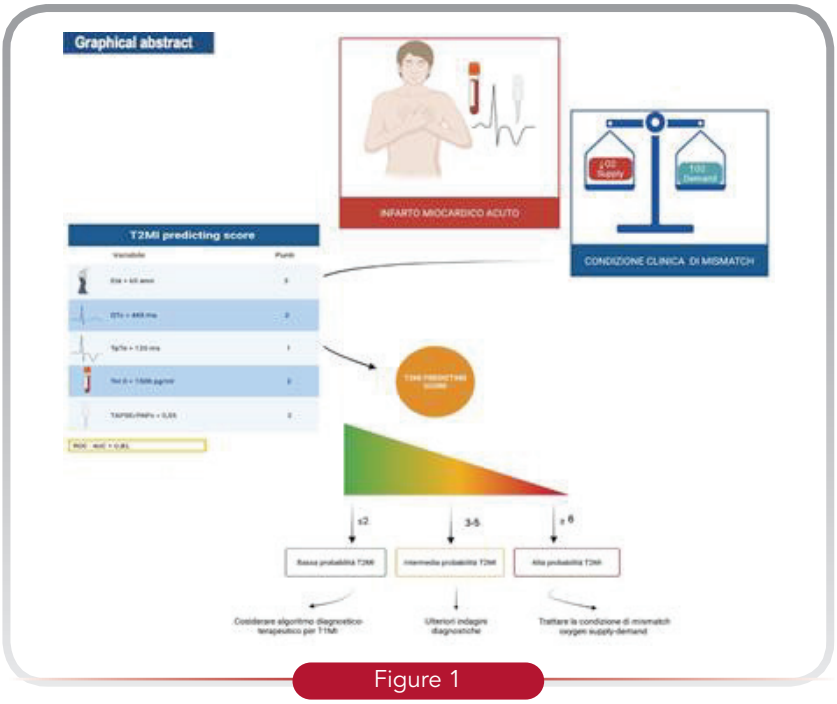


Figure 1

Conclusion: In suspected T2MI, a cut-off ≥6 of our multiparametric score reliably ruled in T2MI with high specificity, while a score ≤2 showed 100% negative predictive value, excluding the diagnosis. This tool may support clinical decision-making by distinguishing T2MI and avoiding unnecessary invasive strategies, as management should focus on the underlying trigger. Although CAD is frequently observed in T2MI and contributes to its pathophysiology, its therapeutic implications remain to be clarified.

CARDIOPATIA ISCHEMICA 570
TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT)
(IMAGING CARDIOVASCOLARE)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
ANGINA INSTABILE (CARDIOPATIA ISCHEMICA)

RUOLO PROGNOSTICO DELLA TC CORONARICA NEI PAZIENTI CON MALATTIA CORONARICA NON OSTRUTTIVA

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(a) SAPIENZA UNIVERSITA DI ROMA; (b) UOC DI CARDIOLOGIA/UTIC, OSPEDALE ICOT, LATINA; (c) UOC DI CARDIOLOGIA, OSPEDALE SANTA MARIA GORETTI, LATINA; (d) UOC DI RADIOLOGIA UNIVERSITARIA, OSPEDALE ICOT, LATINA

Introduzione: La cardiopatia ischemica (CAD) continua a rappresentare la principale causa di mortalità cardiovascolare, nonostante i progressi diagnostici e terapeutici. La tomografia computerizzata coronarica (CCTA) ha assunto un ruolo centrale non solo nella definizione anatomica della malattia coronarica, ma anche nella stratificazione prognostica. Evidenze recenti hanno mostrato che la sola gravità della stenosi non è sufficiente a definire il rischio clinico, poiché anche placche non critiche possono essere responsabili di eventi cardiovascolari maggiori. Rimane tuttavia da chiarire in che misura questi dati si riflettano nella pratica clinica e quali parametri derivati dalla CCTA possano migliorare la stratificazione del rischio.

Metodi: Abbiamo condotto uno studio osservazionale retrospettivo su tutti i pazienti sottoposti a CCTA presso il nostro centro tra gennaio e dicembre 2021. Sono stati inclusi 239 pazienti (età media 68±12 anni; 59,8% maschi), stratificati in tre gruppi: assenza di CAD, CAD non ostruttiva (<70%) e CAD ostruttiva (>70%). Il follow-up mediano è stato di 4 anni, ottenuto mediante contatto telefonico o visite ambulatoriali. Le analisi statistiche hanno incluso t-test per campioni indipendenti, curve di Kaplan–Meier, Long-Rank analysis e modelli di regressione di Cox.

Risultati: Dei 239 pazienti, 71 erano esenti da CAD, 119 presentavano CAD non ostruttiva e 49 CAD ostruttiva. I pazienti senza CAD erano significativamente più giovani (61,7±10,6 vs 74,3±14,4 anni; t(121)=–5,58; p<0,001) e con una minore prevalenza del sesso maschile rispetto a quelli con CAD ostruttiva (maschi 54% vs 80%; t(116)= 3,10; p=0,002). Durante il follow-up si sono verificati 24 decessi (10%). La sopravvivenza è risultata significativamente migliore nei pazienti senza CAD rispetto a quelli con CAD ostruttiva (p=0,008) e non ostruttiva (p=0,042), senza differenze però tra CAD ostruttiva e non ostruttiva (p=0,338). Nel gruppo CAD, solo età (74,3±14,4 vs 66,1±11,2 anni; t=–3,12; p=0,002) e il coinvolgimento del ramo interventricolare posteriore (IVP) (80% vs 55%; t=–2,19; p=0,030) risultavano associati alla mortalità. L'analisi di Kaplan–Meier ha confermato l'impatto prognostico negativo dell'IVP (Log-Rank χ^2=5,84; p=0,016). Inoltre alla regressione di Cox, l'IVP si confermava predittore indipendente di mortalità (HR: 186,6; IC95% 4,14–8404,9; p=0,007), indipendentemente da età, BMI, diabete mellito tipo 2, stenosi ≥70% del tronco comune, della coronaria discendente anteriore, circonflessa e coronaria destra.

Conclusioni: La sola severità della stenosi coronarica alla CCTA non rappresenta un criterio prognostico sufficiente. Parametri morfologici e topografici possono contribuire a una stratificazione più accurata del rischio; in questo studio, il coinvolgimento del ramo interventricolare posteriore è risultato associato a prognosi sfavorevole, suggerendo la necessità di ulteriori indagini per confermarne il ruolo clinico.

CARDIOPATIA ISCHEMICA 512
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
BIOMARCATORI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
ISCHEMIA, STUDI SPERIMENTALI (CARDIOPATIA ISCHEMICA)

ASSOCIATION OF N-TERMINAL PRO-BRAIN NATRIURETIC PEPTIDE LEVELS WITH PROGNOSTIC STABLE CORONARY ARTERY DISEASE

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(a) UNIVERSITÀ VITA-SALUTE SAN RAFFAELE; (b) OSPEDALE SAN RAFFAELE

Background: The relationship between plasma N-terminal pro-brain natriuretic peptide (NT-proBNP) levels and the severity of stable coronary artery disease (CAD) remains uncertain.

Objective: To investigate the association between plasma NT-proBNP levels and the presence of prognostic stable CAD, defined as involvement of the left main or proximal left anterior descending artery, in patients with suspected CAD.

Methods: We prospectively measured plasma NT-proBNP levels in 904 consecutive patients referred for elective diagnostic coronary angiography due to symptoms or positive anatomic/functional testing for CAD over a two-year period. Patients with conditions known to elevate NT-proBNP levels (heart failure, severe valvular disease, atrial fibrillation, severe chronic kidney disease [eGFR <30 mL/min], prior coronary artery bypass grafting, or age >80 years) were excluded.

Results: A total of 481 patients were included (mean age 65 ± 8 years; 22% women). Prognostic CAD was identified in 167 patients (35%). NT-proBNP levels were significantly higher in patients with prognostic CAD compared with those without (162 vs. 132 pg/mL; p=0.003). Age and NT-proBNP were the only independent predictors of prognostic CAD (age: OR 1.03 per year increase, 95% CI 1.00–1.06, p=0.048; NT-proBNP: OR 1.02 per 10 ng/L increase, 95% CI 1.00–1.04, p=0.024). In receiver operating characteristic analysis, NT-proBNP yielded an area under the curve (AUC) of 0.58 (95% CI 0.53–0.64; p=0.003).

Conclusion: Plasma NT-proBNP levels are independently associated with the presence of prognostic CAD. However, their discriminatory ability for identifying such disease is limited.

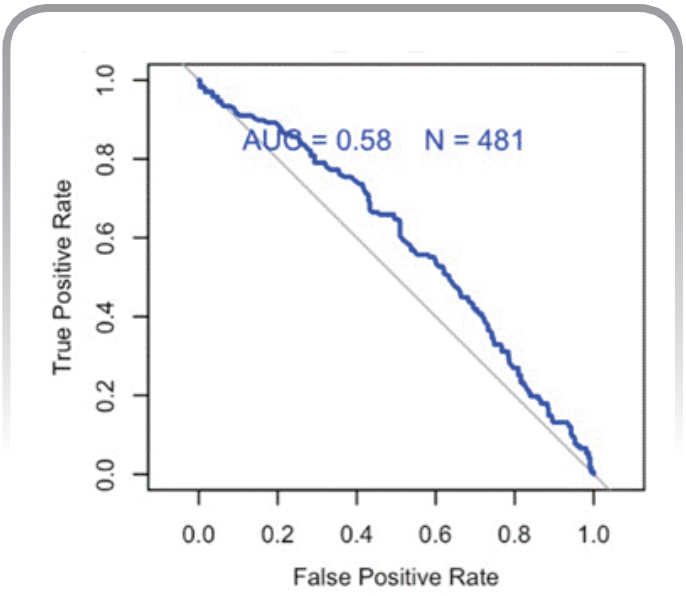


Figure 1

CARDIOPATIA ISCHEMICA 1088
PIASTRINE E TERAPIA ANTIAGGREGANTE (ATEROTROMBOSI)
TRATTAMENTO POST-INFARTO (CARDIOPATIA ISCHEMICA)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

VARIAZIONI INTRA-OSPEDALIERE DEL PRECISE-DAPT SCORE NEI PAZIENTI SOTTOPOSTI A PCI: STUDIO OSSERVAZIONALE, PROSPETTICO

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(a) FEDERICO II UNIVERSITY NAPLES; (b) FEDERICO II UNIVERSITY HOSPITAL NAPLES

Background: L'utilizzo di stent medicati di nuova generazione ha ridotto significativamente le recidive ischemiche nei pazienti sottoposti a PCI.
Tuttavia, l'impiego di potenti inibitori del recettore P2Y12 nella doppia terapia antiaggregante (DAPT) ha spostato l'attenzione sul rischio emorragico, ad oggi la principale complicanza in questi pazienti. Le linee guida raccomandano, quindi, una valutazione individuale del rischio emorragico, nonostante manchino evidenze sufficienti per guidare sistematicamente la durata della DAPT. In questo contesto è stato introdotto il PRECISE-DAPT score, uno strumento predittivo basato su cinque parametri (età, emoglobina, clearance della creatinina, conta leucocitaria e precedenti sanguinamenti spontanei), utile per identificare i pazienti ad alto rischio emorragico, definito da un punteggio ≥25.

Obiettivi: Lo scopo del nostro studio è stato analizzare la variazione del rischio emorragico nei pazienti sottoposti ad angioplastica coronarica percutanea, confrontando i valori del PRECISE-DAPT score al baseline e nel worse-case scenario durante la degenza ospedaliera. Nello specifico, abbiamo determinato la percentuale di pazienti riclassificati da basso ad alto rischio emorragico; quantificato la variazione del PRECISE-DAPT score nei due momenti, al fine di esplorare le possibili implicazioni cliniche di una rivalutazione dinamica del rischio nella definizione della durata ottimale della DAPT.

Metodi: Abbiamo analizzato retrospettivamente una coorte di 1163 pazienti sottoposti a PCI. Per ognuno, è stato calcolato il PRECISE-DAPT score al baseline, prima della procedura di PCI e al worst-case scenario, ovvero, al nadir dei valori di emoglobina e clearence della creatinina e al picco dei valori dei leucociti.

Risultati: Abbiamo selezionato 1163 pazienti sottoposti a PCI, di cui 741 (63,71%) presentavano sindrome coronarica acuta (SCA). Questi sono stati stratificati in due gruppi: high-bleeding risk (score ≥25; n=369, 31,8%) e non high-bleeding risk (score <25; n=794, 68,2%). L'età media era di 65,52 ± 11,1 anni (range 30–95), con prevalenza maschile (78,25%).
Tra i pazienti inizialmente classificati come non high-bleeding risk, 185 (23,3%) sono stati riclassificati nel gruppo ad alto rischio emorragico. Nessun paziente del gruppo ad alto rischio è stato riclassificato in senso opposto. Il valore medio dello score è stato pari a 20.5 (DS ±12.4, 95%CI 19.8;21.2) al baseline e di 26.4 (DS ±15.1, 95%CI 25.5;27.3) nel worst-case scenario.
La variazione media dello score è risultata, dunque,

pari a 5.9 punti (DS ±6, 95%CI -6.3;-5.5), con significatività statistica ($p < 0.001$).

Conclusioni: Lo studio sottolinea come la classe di rischio non sia statica, bensì subisca importanti variazioni nel corso della degenza ospedaliera. Circa 1 paziente su 5 della popolazione, non classificato come ad alto rischio emorragico al baseline, sviluppa caratteristiche di alto rischio di sanguinamento durante l'ospedalizzazione. Tale riclassificazione del rischio ha potenziali ricadute nelle scelte terapeutiche e nella valutazione prognostica dei pazienti sottoposti a PCI.

CARDIOPATIA ISCHEMICA 902
INFARTO STEMI (CARDIOPATIA ISCHEMICA)
PROGNOSI (SCOMPENSO CARDIACO)
FISIOLOGIA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
BIOLOGIA MOLECOLARE CARDIOVASCOLARE
(GENETICA E BIOLOGIA MOLECOLARE)

COMPARATIVE PREDICTIVE ROLE OF SOLUBLE SUPPRESSION OF TUMORIGENICITY 2 AND ANGIOGRAPHIC MICROCIRCULATORY RESISTANCE FOR LONG TERM OUTCOME AFTER ST ELEVATION MYOCARDIAL INFARCTION TREATED WITH PPCI

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Introduzione. L'angioplastica primaria (pPCI) ha migliorato la prognosi a breve termine nei pazienti con infarto miocardico con sopraslivellamento del tratto ST (STEMI) ma il rischio di eventi avversi a lungo termine, come il rimodellamento ventricolare sfavorevole o il reinfarto, rimane rilevante. Per questo motivo, l'identificazione di fattori prognostici in grado di predire l'outcome clinico a distanza risulta essenziale. In questo contesto, Soluble suppression of tumorigenicity 2 (sST2), un biomarcatore dello stress miocardico e dell'infiammazione, e la angiographic microcirculatory resistance (AMR), un indice angiografico della funzione microvascolare, sono emersi come potenziali predittori dell'evoluzione clinica e del rimodellamento ventricolare. Tuttavia, il loro valore prognostico combinato non è stato ancora adeguatamente esplorato.

Metodi. Questo studio retrospettivo monocentrico ha incluso consecutivamente pazienti con STEMI o NSTEMI ad alto rischio sottoposti a pPCI con successo. I livelli di sST2 sono stati misurati entro 2 ore dopo la procedura, e l'AMR è stato derivato dalle angiografie post-pPCI utilizzando un'analisi computazionale validata del flusso. I pazienti sono stati stratificati in base ai valori mediani di sST2 e AMR. L'endpoint clinico primario è stato il verificarsi di eventi cardiovascolari avversi maggiori (MACE) durante il follow-up, inclusi la mortalità per tutte le cause, reinfarti e ricoveri per insufficienza cardiaca.

Risultati. Un totale di 535 patients sono stati inclusi (maschi 88.7%, età media 64,9 (±12,7), diabetici 13%). Durante un follow-up mediano di 459 [IQR 186-880] giorni, 93 pazienti (17%) hanno sperimentato MACEs. Le analisi ROC hanno permesso di selezionare i cut off migliori e di dicotomizzare la popolazione in sST2 alto (>38.7 ng/mL) e sST2 basso (≤38.7 ng/mL) e in AMR alto (>2.6 mm Hg·s/cm) e AMR basso (≤2.6 mm Hg·s/cm). La sopravvivenza libera da MACE variava significativamente per pazienti con sST2 alto vs sST2 basso (HR=3.94, 95% CI:2.21-7.01); mentre non c'erano differenze per AMR alto vs AMR basso (HR=1.41 95% CI:0.79-2.53). Un modello multivariato che comprendeva i principali fattori clinici e laboratoristici con noto potere predittivo ha permesso di confermare l'indipendenza del potere predittivo di sST2 (vedi tabella).

Conclusioni. sST2 è un parametro promettente per stratificare il rischio dei pazienti con infarto miocardico sottoposto a pPCI. Diversamente l'IMR non ha mostrato utilità in questo setting.

Parametro	Analisi univariata		Analisi multivariata	
	HR (95% CI)	*p*-value	HR (95% CI)	*p*-value
sST2 alto	3.94 (2.21-7.01)	<0.001	2.73 (1.46-5.13)	0.002
AMR alto	1.41 (0.79-2.53)	0.249	1.89 (0.95-3.78)	0.070
Età, per anno	1.04 (1.01-1.06)	0.002	1.01 (0.98-1.04)	0.415
Diabete	1.03 (0.37-2.88)	0.961	0.90 (0.31-2.60)	0.848
Pregressa PCI	1.85 (0.99-3.46)	0.052	1.49 (0.75-2.95)	0.253
LDL, per 10 mg/dL	0.96 (0.90-1.03)	0.257	0.97 (0.90-1.04)	0.409
BNP, per 100 ng/L	1.17 (1.10-1.24)	<0.001	1.09 (1.01-1.18)	0.027
TnI (picco), per 100 ng/L	1.00 (1.00-1.00)	0.001	1.00 (1.00-1.00)	0.160

Tabella 1

CardioSic

CARDIOPATIA ISCHEMICA 996
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
ANGINA INSTABILE (CARDIOPATIA ISCHEMICA)
INFARTO NSTEMI (CARDIOPATIA ISCHEMICA)
INFARTO STEMI (CARDIOPATIA ISCHEMICA)

PREDICTORS OF OUTCOMES AFTER UNPROTECTED LEFT MAIN CORONARY ARTERY PCI

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Background: The management of unprotected left main coronary artery (ULMCA) disease is a complex clinical issue, and the most appropriate revascularization strategy is still highly debated. In patients non-suitable for cardiac surgery, percutaneous coronary intervention (PCI) is a feasible and safe approach.

Methods: The Lucania PCI is a prospective, all-comer registry that enrolled patients with ULMCA. Patients were eligible for inclusion in the trial if they had ULMCA disease and were non-suitable for surgery but eligible for percutaneous revascularization. Exclusion criteria were previously surgical coronary revascularizations. The primary endpoint were major adverse cardiac or cerebrovascular events (MACCE), a composite of all-cause mortality, non-fatal myocardial infarction, and stroke. Secondary outcomes were cardiovascular death, clinically driven target vessel revascularization (TVR), and major bleeding. We compared four subgroups of patients: elderly (age ≥75 years), complete revascularization, clinical presentation (acute coronary syndrome) and severe renal insufficiency.

Results: Between Aug 1, 2021, and Jun 31, 2024, 139 patients were enrolled. During a median follow-up of 276 days, the primary combined endpoint occurred in 42 (30.2%) patients of these all-cause death occurred in 29 (20.9%), non-fatal myocardial infarction in 10 (7.2%), and stroke in only 3 (2.2%). Secondary endpoint occurred in 47 (33.8%) patients, of these, cardiovascular death occurred in 21 (15.1%), major bleeding in 20 (14.3%), and clinically TVR in 8 (5.8%). No difference occurred between elderly vs younger patients and between complete revascularization vs incomplete revascularization (respectively p=0.287, and p=0.229). Acute coronary setting and chronic kidney disease were associated with increased primary composite endpoints (respectively p=0.002, and p=0.024).

Conclusions: Percutaneous coronary intervention of ULMCA remains a high-risk procedure. Completeness of revascularization was not associated with improved outcomes. Age was not related to an increased risk of MACE. Subgroups of severe CKD and ACS seemed to be associated with a higher risk of all-cause death and cardiovascular death.

CARDIOPATIA ISCHEMICA 750
MINOCA (MYOCARDIAL INFARCTION WITH NORMAL CORONARY ARTERIES) (CARDIOPATIA ISCHEMICA)
ARITMIE VENTRICOLARI (ARITMIE)
DISFUNZIONE DEL MICROCIRCOLO (CARDIOPATIA ISCHEMICA)
ELETTROSTIMOLAZIONE (ARITMIE)

SINDROME DI TAKOTSUBO E BLOCCHI ATRIOVENTRICOLARI: QUALE È LA CAUSA E QUALE LA CONSEGUENZA?

Simona Tassinari (a), Letizia Riva (b)
(a) UNIVERSITÀ DI FERRARA; (b) OSPEDALE MAGGIORE BOLOGNA

Caso clinico: Paziente di 82 anni, ipertesa e in follow-up per il riscontro casuale di fasi di BAV II grado (Mobitz 1 e Mobitz 2) in completa asintomaticità. Al controllo periodico con ECGHolter 24 ore documentate sempre in assenza di sintomi fasi di BAV III grado per cui la paziente veniva ricoverata in Cardiologia. ECG all'ingresso: ritmo sinusale, BAV di II grado con fasi di conduzione 2:1 e 3:1 con BEV, onde T negative antero-laterali e QTc allungato. Durante la notte alla telemetria episodi di TVNS con morfologia a torsione di punta su BAV totale. Paziente asintomatica e in compenso, non diselettrolitismi. Intrapresa terapia endovenosa con isoproterenolo in assenza di recidive. La mattina seguente effettuato impianto di PM DDD in assenza di complicanze. ECG post-procedura: ritmo da PMD ventricolare atrio-guidato, persistenza di T negative antero-laterali e QTc allungato. Nello stesso giorno all'ecocardiogramma riscontro di ventricolo sinistro moderatamente dilatato con acinesia di tutti i segmenti apicali e del segmento medio della parete anteriore con ridotta funzione sistolica globale (FE 43%) che, unitamente alle alterazioni ECG, poneva il sospetto di sindrome di Takotsubo. Agli esami ematici documentato rialzo della troponina (TnI 210>147 ng/l). La successiva coronarografia documentava coronarie epicardiche indenni da lesioni angiograficamente significative a conferma della diagnosi di sindrome di Takotsubo.

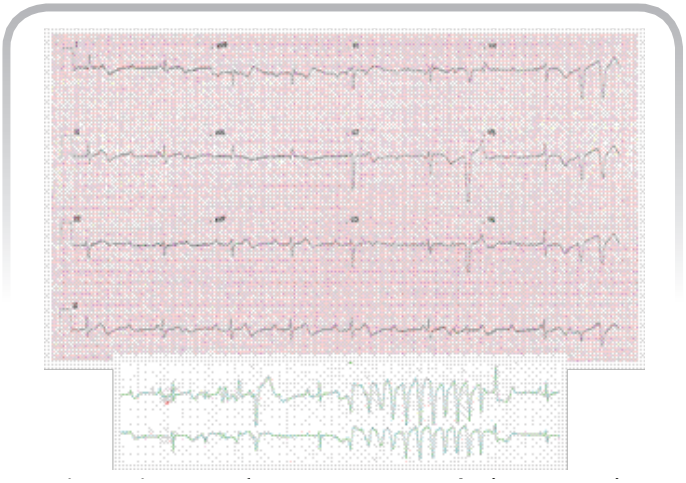


Figura 1

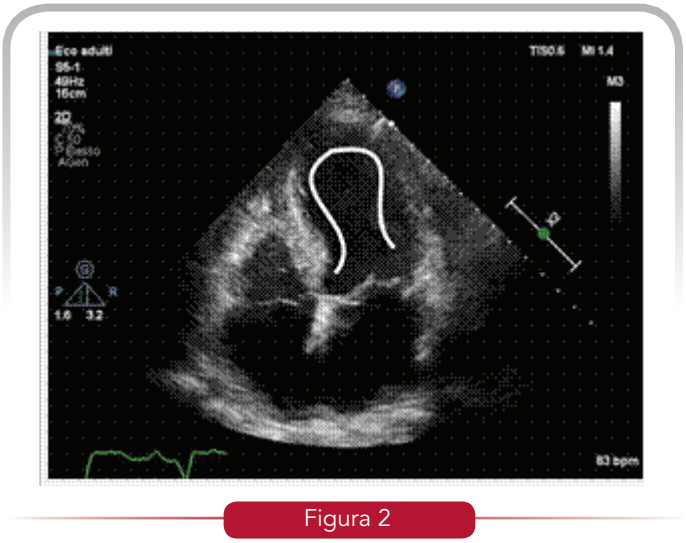


Figura 2

Discussione: In letteratura non c'è risposta univoca su quale sia la causa e quale la conseguenza nell'as-

sociazione tra i blocchi atrioventricolari avanzati e la sindrome di Takotsubo. Sono descritti casi di disturbi di conduzione insorti dopo il riscontro di sindrome di Takotsubo e completamente regrediti a distanza dopo la normalizzazione del quadro ecocardiografico. D'altra parte appare ragionevole ritenere che il blocco atrioventricolare avanzato sia il trigger per l'insorgenza dello stress catecolaminergico alla base della cardiomiopatia, anche in considerazione dell'epidemiologia della Takotsubo che è più frequente nelle donne anziane nelle quali il sistema di conduzione potrebbe già essere danneggiato dall'invecchiamento. Nel caso presentato inoltre l'associazione tra le due condizioni ha avuto come risultato la comparsa di torsioni di punta: la marcata bradicardia ha infatti causato un ulteriore prolungamento dell'intervallo QT che ha verosimilmente aumentato il rischio insito nella sindrome di Takotsubo di aritmie ventricolari.

CardioSic

86° CONGRESSO NAZIONALE SIC
Roma, 4-7 dicembre 2025

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 191
IPERTENSIONE POLMONARE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE
(IMAGING CARDIOVASCOLARE)
PROGNOSI (SCOMPENSO CARDIACO)

ACCOPPIAMENTO VENTRICOLO-ARTERIOSO DESTRO NELL'IPERTENSIONE ARTERIOSA POLMONARE: DIFFERENZA TRA LE FORME IDIOPATICA E ASSOCIATA A SCLEROSI SISTEMICA

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Introduzione: L'ipertensione arteriosa polmonare (PAH) è una complicanza severa della sclerosi sistemica (SSc) e si associa ad elevata morbidità e mortalità. I pazienti con SSc-PAH e quelli affetti da forma idiopatica (IPAH) presentano caratteristiche epidemiologiche e prognostiche diverse. La peggior prognosi dei pazienti con SSc-PAH riconosce cause multifattoriali e la ridotta contrattilità del ventricolo destro (RV) sembra rivestire un ruolo chiave.

Obiettivi: Il presente studio ha confrontato il rapporto tra l'escursione sistolica del piano anulare della valvola tricuspide (TAPSE) e la pressione sistolica dell'arteria polmonare (PASP), come surrogato dell'accoppiamento ventricolo-arterioso destro, in due coorti di pazienti con PAH idiopatica e associata a SSc.

Metodi: 202 pazienti con SSc-PAH sono stati abbinati per età, sesso, indice di massa corporea (BMI) e resistenze vascolari polmonari (PVR) a 201 pazienti con IPAH. Al momento della diagnosi è stata raccolta una valutazione comprendente esame obiettivo, classe funzionale, test del cammino dei sei minuti (6MWD), ecocardiografia e cateterismo del cuore destro.

Risultati: Mentre per bassi valori di postcarico le due popolazioni presentavano caratteristiche sovrapponibili, la distribuzione del rapporto TAPSE/PASP tra pazienti con IPAH e pazienti con SSc-PAH divergeva per PVR ≥5 WU (analisi logistica derivata da curva ROC, Sp 99%, Se 51%; AUC=0,89, IC al 95% 0,85-0,92, p<0,0001). Infatti, la funzione del RV e il rapporto TAPSE/PASP nei pazienti SSc-PAH sono risultati significativamente ridotti rispetto agli idiopatici (TAPSE: 15 ± 4 vs. 18 ± 4 mm, p < 0,001; TAPSE/PASP: 0,22 ± 0,09 vs. 0,27 ± 0,08 mm/mmHg, p < 0,001).
Inoltre, considerando PVR ≥ 5 WU, i pazienti SSc-PAH presentavano una classe funzionale più avanzata, una capacità di esercizio più compromessa, livelli più elevati di peptide natriuretico e di pressione atriale destra (RAP) e un indice cardiaco (CI) più basso (NYHA III/IV 84% vs 72%, p=0,01; 6MWD 335 ± 106 m vs 367 ± 114 m, p = 0,01; BNP 535 ± 696 pg/ml vs 212 ± 407 pg/ml, p=ns, RAP: 9,3 ± 4,6 mmHg vs 7,5 ± 3,9 mmHg, p < 0,001; CI: 2,2 ± 0,5 l/min/m2 vs 2,4 ± 0,6 l/min/m^2, p=0,01).

Conclusioni: Il presente studio mostra come per elevati valori di PVR, i pazienti con SSc-PAH presentano un adattamento del ventricolo destro meno favorevole all'aumento del postcarico rispetto ai pazienti IPAH, con un "disaccoppiamento ventricolo-arterioso" che si verifica per PVR ≥ 5 WU. Il coinvolgimento intrinseco del RV sembra rivestire un ruolo cruciale nella fisiopatologia della SSc-PAH e potrebbe spiegare la scarsa prognosi di questi pazienti.

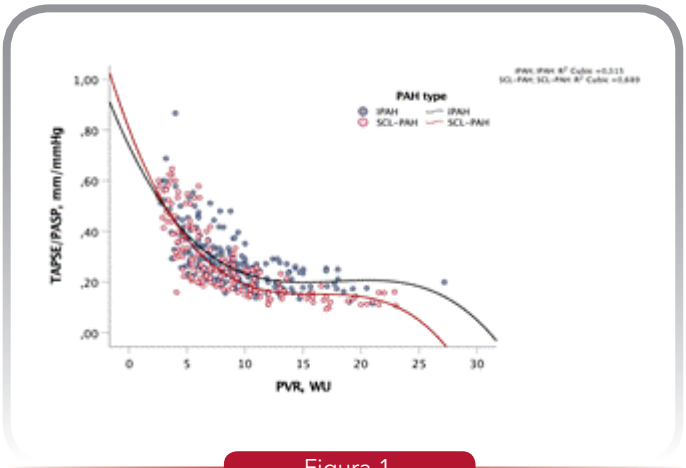


Figura 1

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 951
CARDIOLOGIA PEDIATRICA
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
CARDIOPATIE CONGENITE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT)
(IMAGING CARDIOVASCOLARE)
CARDIOPATIE CONGENITE NELL´ADULTO
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
IMAGING DELLE CARDIOPATIE CONGENITE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)

UN PARADOSSO VITALE: QUANDO UNA DOPPIA ANOMALIA CARDIACA DIVENTA COMPATIBILE CON LA VITA

Flavia Cipriani (a), Teresa Trunfio (a), Simona Mega (a), Gian Paolo Ussia (a), Francesco Grigioni (a)
(a) FONDAZIONE POLICLINICO CAMPUS BIO MEDICO

La trasposizione congenitamente corretta delle grandi arterie (ccTGA) è una rara cardiopatia congenita che rappresenta meno dell'1% dei casi e si distingue per un peculiare equilibrio emodinamico determinato dalla presenza contemporanea di discordanza atrioventricolare e discordanza ventricolo-arteriosa, che si compensano tra loro. Tale configurazione anatomica mantiene un flusso emodinamico in serie permettendo ai pazienti non sottoposti a correzione chirurgica di rimanere asintomatici fino all'età adulta. Tuttavia, la presenza di un ventricolo morfologicamente destro, non progettato per sostenere il carico pressorio della circolazione sistemica a lungo termine, espone nel tempo al rischio di disfunzione ventricolare, insufficienza tricuspidalica ed aritmie. Le anomalie associate quali destrocardia, difetto interventricolare, stenosi polmonare, anomalia di Ebstein e blocchi atrioventricolari, contribuiscono ulteriormente a rendere complessa la storia naturale di questa condizione. Riportiamo il caso di un giovane uomo di 23 anni, originario del Bangladesh, con diagnosi nota di ccTGA non corretta, associata a destrocardia, giunto in Pronto Soccorso per dispnea ingravescente e marcata astenia. All'elettrocardiogramma si riscontrava fibrillo-flutter atriale a lenta risposta ventricolare. L'ecocardiogramma documentava severa dilatazione del ventricolo sistemico morfologicamente destro, massiva insufficienza tricuspidalica secondaria a dilatazione dell'anulus. La CardioTC garantiva un'adeguata visualizzazione di tutte le strutture cardiache e delle rispettive dimensioni, evidenziando inoltre una valvola aortica bicuspide con origine anomala delle coronarie dalla cuspide posteriore. Il paziente è stato dimesso in terapia anticoagulante orale a dosaggio terapeutico e con trattamento per scompenso cardiaco a frazione d'eiezione preservata, comprensivo di diuretici per la riduzione del sovraccarico di volume, con indicazione a follow-up presso un centro GUCH specializzato. Questo caso evidenzia la complessità diagnostica e gestionale della ccTGA in età adulta. Le opzioni terapeutiche rimangono controverse: la correzione anatomica mediante doppio switch o la correzione fisiologica espongono comunque al rischio di insufficienza ventricolare sistemica, mentre la terapia medica, sebbene spesso l'unica praticabile nei pazienti adulti, è supportata da evidenze limitate. Recenti osservazioni hanno suggerito un potenziale beneficio del Sacubitril/Valsartan nei pazienti con disfunzione del ventricolo destro sistemico, ma i dati sono ancora preliminari. Alla luce di ciò, emerge con forza l'esigenza di ulteriori studi prospettici che definiscano strategie terapeutiche più mirate e di un'assistenza concentrata in centri dedicati, in grado di offrire un follow-up strutturato ed integrato.

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 491
CARDIOPATIE CONGENITE (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
CARDIOPATIE CONGENITE NELL´ADULTO (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
IMAGING DELLE CARDIOPATIE CONGENITE (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
CARDIOLOGIA PEDIATRICA (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)

CLINICAL IMPROVEMENT OF PROTEIN LOSING ENTEROPATHY AFTER SGLT-2 INHIBITOR THERAPY IN AN ADULT WITH FAILING FONTAN CIRCULATION

Emanuela Concetta D Angelo (a, b), Micol Rebonato (a), Veronica Bordonaro (a), Rosalinda Palmieri (a), Vernica Lisignoli (a), Antonella Bruna Cutri (a), Monica Pelegrini (a), Giulia Di Gia´ (a), Marco Della Porta (a), Rossella Iuzzolino (a), Antonella Santilli (a), Aurelio Secinaro (a), Gianfranco Butera (a), Claudia Montanaro (a, c)
(a) BAMBINO GESU' CHILDREN'S HOSPITAL, IRCCS, ROME, ITALY; (b) GUY'S AND ST THOMAS FUNDATION TRUST, LONDON, UK; (c) IMPERIAL COLLEGE, LONDON, UK

Background: Sodium-glucose cotransporter 2 inhibitors (SGLT-2i) have proven benefits in patients with biventricular heart failure, reducing the risk of worsening heart failure and cardiovascular death in both heart failure with reduced and preserved ejection fraction. However, their role in patients with univentricular physiology and failing Fontan circulation (FC), particularly those with protein-losing enteropathy (PLE), remains largely unexplored.

Clinical Case: A 21-year-old male with failing Fontan circulation, preserved ejection fraction, and PLE presented to our Adult Congenital Heart Disease Unit for evaluation. Born with a left univentricular heart, he underwent a Fontan completion at age 5. Since age 16 years, he had multiple admissions for FC failure complicated by PLE and ascitis, which did not respond to conventional treatments including albumin, corticosteroids, and immunoglobulin infusions. Optimisation of the extracardiac fontan conduit by stent implantation was performed and a further conduit balloon dilation after 3 years was delivered, however the patient continued to experience ascites and hypoalbuminemia. Therapy with SGLT-2i was initiated and an MRI lymphatic study was performed to consider invasive occlusion of abnormal lymphatic pathway. The MRI study showed significant lymphatic congestion, with leakage into the duodenal lumen and prominent stasis in the thoracic duct. The invasive procedure was then not performed as the patient showed a marked clinical improvement after SGLT-2i initiation with reduction in ascites, and normalisation of serum protein and albumin levels, which has lasted up to last follow-up (18 months).

Conclusions: This case highlights the potential benefit of SGLT-2i in managing Fontan failure complicated by PLE. Current treatments for PLE, including albumin infusions and corticosteroids, do not always provide and ensure durable improvement of hypoalbuminemia and acitis. SGLT-2i, known for their natriuretic, anti-inflammatory, and metabolic effects, may reduce venous congestion and improve lymphatic drainage. Lympho MRI played a critical role in diagnosing and quantifying the lymphatic dysfunction. Multicenter studies are needed to further investigate the safety and efficacy of SGLT-2i in this unique patient population.

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 813
IMAGING DELLE CARDIOPATIE CONGENITE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
CARDIOPATIE CONGENITE NELL´ADULTO
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE)
(IMAGING CARDIOVASCOLARE)
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE
(IMAGING CARDIOVASCOLARE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)

LAUBRY-PEZZI SYNDORME IN AN 18-YEAR-OLD MALE: A CASE REPORT

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(a) U.O.C. UTIC CON CARDIOLOGIA E UNITÀ SCOMPENSO CARDIACO OSPEDALE ABELE AJELLO MAZARA DEL VALLO ASP TRAPANI ; (b) S.C. CARDIOLOGIA-UTIC OSPEDALE SAN MARTINO ORISTANO; (c) CENTRO DI CARDIOLOGIA ED EMODINAMICA PEDIATRICA E DEL CONGENITO ADULTO IRCCS POLICLINICO SAN DONATO MILANO; (d) UNIVERSITÀ DEGLI STUDI DI ENNA "KORE" GVM CARE AND RESEARCH, MEH, PALERMO

Background. Laubry-Pezzi syndrome is a rare congenital heart disease characterized by the association of a ventricular septal defect (VSD) and aortic regurgitation. Clinical presentation is heterogeneous, and imaging is often crucial for diagnosis.

Case description. An 18-year-old Gambian male with no previous cardiac or family history presented to the emergency department with atypical chest pain. The electrocardiogram showed left ventricular hypertrophy, with normal troponin levels and blood pressure. Transthoracic echocardiography (TTE) demonstrated a markedly dilated left ventricle with preserved systolic function, dilation of the aortic root (42 mm), and a restrictive perimembranous VSD with left-to-right shunt (maximum velocity 5.5 m/s, peak gradient 123 mmHg) associated with aortic regurgitation. Transesophageal echocardiography (TEE) was performed for a detailed assessment of the valvular lesion, showing severe eccentric aortic regurgitation with right coronary cusp prolapse, due to the Venturi effect created by the turbulent flow through the VSD. The overall findings

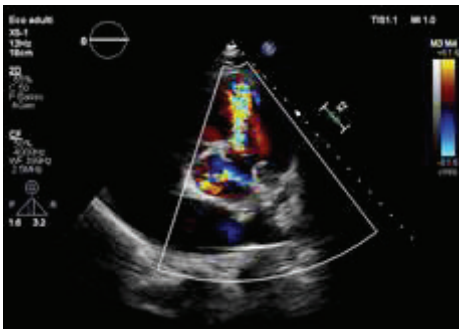


Figure 1

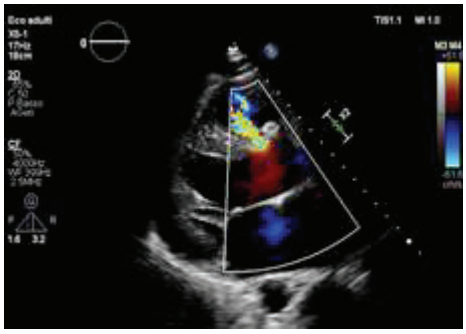


Figure 2

supported the diagnosis of Laubry-Pezzi syndrome. The patient underwent surgical repair with pericardial patch closure of the VSD and reconstruction of the right coronary cusp, where a basal perforation was also detected.

Conclusions. Laubry-Pezzi syndrome, although rare, should be considered in young patients presenting with VSD and aortic regurgitation. Echocardiography remains the cornerstone for diagnosis and surgical planning.

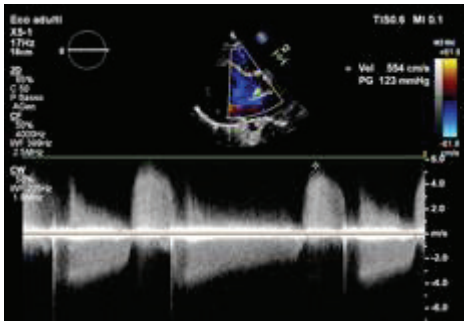


Figure 3

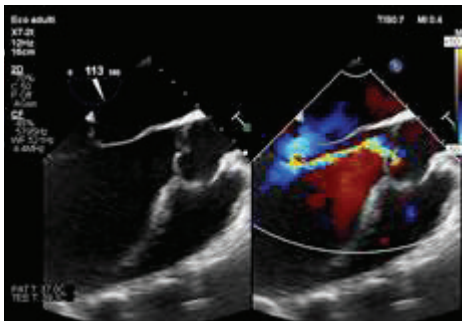


Figure 4

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 1015
CARDIOLOGIA PEDIATRICA
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
CARDIOPATIE CONGENITE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE
(IMAGING CARDIOVASCOLARE)
IMAGING DELLE CARDIOPATIE CONGENITE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO

PROGNOSTIC VALUE OF LEFT ATRIAL STRAIN IN PEDIATRIC CADRIOMYOPATHIES:A MULTI-CENTER STUDY

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Background: In pediatric cardiomyopathy (CM), left ventricular (LV) systolic dysfunction is a well-established predictor of adverse outcomes. However, the prognostic significance of diastolic function, and particularly left atrial (LA)mechanics, remains poorly defined. LA strain, assessed by 2D speckle-tracking echocardiography (2D-STE), reflects atrial compliance and filling pressures, and may provide incremental prognostic information in this population.

Aims: This study evaluates the prognostic value of LA function, quantified through LA reservoir strain (LAS), in children with various forms of CM.

Methods: We conducted a retrospective analysis of 144 pediatric CM patients (dilated, hypertrophic, and restrictive phenotypes) and 45 age-matched controls across three institutions. Echocardiographic parameters, including LAS, LV ejection fraction (LVEF), global longitudinal strain (GLS), LA volume index (LAVi), and E/e',were measured from each patient's earliest complete echocardiogram. The primary composite endpoint included cardiovascular death or aborted cardiac arrest, heart failure hospitalization, need for ventricular assist device (VAD), or cardiac transplantation. Cox regression models, receiver operating characteristic (ROC) analysis, and Kaplan–Meier survival curves were used to assess the predictive value of LAS and other echocardiographic markers.

Results: Over a median follow-up of 78.8 months, 25 patients reached the composite endpoint. Lower LAS ($p < 0.001$), impaired GLS ($p = 0.003$), reduced LVEF ($p = 0.003$), increased LAVi ($p = 0.027$), and elevated E/e' ($p = 0.024$) were significantly associated with adverse outcomes. Multivariable Cox analysis confirmed that LAS independently predicted the composite endpoint across multiple models: adjusted for E/A and E/e' (HR 0.90 [0.84–0.96], $p = 0.001$), adjusted for LAVi and LVEF (HR 0.94 [0.89–0.99], $p = 0.018$), and adjusted

for GLS and LVEF (HR 0.91 [0.87–0.95], p<0.001). LAS outperformed LAVi in outcome prediction (AUC 0.739, p< 0.001) with an optimal cutoff of 15.3% (sensitivity 0.58; specificity 0.86).

Conclusion: LA reservoir strain is a robust and independent predictor of adverse outcomes in pediatric CM, surpassing conventional echocardiographic parameters. Routine incorporation of LAS into clinical evaluation may enhance risk stratification and support earlier therapeutic interventions in this high-risk population.

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 1034
CARDIOLOGIA PEDIATRICA
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
CARDIOPATIE CONGENITE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
CARDIOPATIE CONGENITE NELL´ADULTO
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
IMAGING DELLE CARDIOPATIE CONGENITE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)

INTRACARDIAC FLOW VORTEX ANALYSIS IN HEALTHY CHILDREN: A SINGLE CENTER PEDIATRIC STUDY USING HYPERDOPPLER

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Background: Intracardiac flow fluid dynamics analysis is an innovative echocardiographic technique based on color Doppler imaging that allows for a non-invasive assessment of myocardial performance, as recently demonstrated in adult patients. This approach enables a detailed evaluation of blood flow dynamics within the cardiac chambers.

Aims: This study aims to define reference values for key vortex-related parameters and energy fluctuation indices of intracardiac flow in healthy pediatric subjects.

Methods: All participants underwent transthoracic echocardiography, followed by left ventricular fluid dynamic analysis using apical three-chamber views. Evaluated parameters included vortex area, length, depth, intensity; average kinetic energy; fluctuations in vorticity, kinetic energy, and shear stress; and vectorial force (magnitude and angle).

Results: We analyzed a cohort of 126 healthy pediatric subjects (mean age 11.1 ± 4.8 years), including 54 females (46.6%), stratified into three age groups: 0–5, 6–12, and 13–18 years.All values are presented as mean ± standard deviation, followed by the 5th and 95th percentile values in parentheses.In the 0–5-year group, the mean kinetic energy was 40.4 ± 80.3 mW/m² (1.5–192.9). Fluctuations in energy and vorticity were 14.6 ± 29.2 (0.7–72.2) and 15.0 ± 30.1 (0.6–70.0), respectively. Shear stress averaged –8.2 ± 16.8 (–40.1 to –0.2). Vortex morphology in this age group showed an average area of 5.7 ± 11.4 cm² (0.22–27.35), intensity of –5.1 ± 10.3 (–24.55 to –0.17), length of 0.47 ± 0.09 (0.33–0.63), and depth of 0.25 ± 0.08 (0.14–0.39).Among children aged 6–12 years, mean kinetic energy was 37.9 ± 71.2 mW/m² (0.7–214.0), with fluctuations in energy and vorticity of 6.0 ± 19.6 (0.6–44.0) and 6.0 ± 19.9 (0.6–43.4), respectively. Shear stress was –3.2 ± 11.1 (–24.4 to –0.2). Vortex characteristics in this group included an average area of 6.0 ± 11.0 cm² (0.18–28.77), intensity of –6.3 ± 10.6 (–25.06 to –0.18), length of 0.50 ± 0.10 (0.34–0.67), and depth of 0.26 ± 0.08 (0.15–0.38).In adolescents aged 13–18 years, kinetic energy reached the highest values, averaging 58.2 ± 82.2 mW/m² (0.4–

236.5), with energy and vorticity fluctuations of 20.1 ± 29.9 (0.7–69.3) and 20.9 ± 31.2 (0.6–67.9), respectively. The mean shear stress was –6.7 ± 10.2 (–23.4 to –0.1). Vortex morphology in this group revealed an average area of 9.6 ± 12.8 cm² (0.10–29.23), intensity of –9.8 ± 12.5 (–29.56 to –0.11), length of 0.53 ± 0.09 (0.36–0.67), and depth of 0.29 ± 0.09 (0.17–0.42).

Conclusions:
This study provides, age-specific reference intervals for key intracardiac flow vortex parameters in a cohort of healthy pediatric subjects. These data support the potential of fluid dynamic analysis as a complementary tool in the pediatric echocardiographic evaluation of ventricular function.

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 769 IPERTENSIONE POLMONARE (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE) SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO) ASSISTENZA INTENSIVA CARDIOVASCOLARE IN ACUTO (ASSISTENZA CARDIACA IN ACUTO)

A CHALLENGING CASE OF RIGHT CARDIOGENIC SHOCK WITH AN UNUSUAL CAUSE OF PULMONARY HYPERTENSION

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(b) CARDIO CENTER, HUMANITAS RESEARCH HOSPITAL, ROZZANO (MI)

INTRODUCTION: Right-sided cardiogenic shock is a challenging condition to manage, as both pharmacological therapies and mechanical circulatory support options are limited. In this setting, establishing the correct etiological diagnosis is essential to guide appropriate management and avoid potentially harmful treatments.

CLINICAL CASE: We report the case of a 64-year-old man, heavy smoker and hypertensive on treatment, with a history of prolonged occupational exposure to organic solvents. He presented to the emergency department with dyspnea and hypotension (blood pressure 90/60 mmHg, heart rate 110 bpm, oxygen saturation 96% on reservoir mask). Arterial blood gas analysis showed respiratory alkalosis with mildly elevated lactate (3 mmol/L). Chest X-ray revealed bilateral pleural effusion and pulmonary congestion. ECG demonstrated sinus tachycardia with right bundle branch block, left posterior fascicular block, S1Q3T3 pattern and repolarization abnormalities consistent with right ventricular overload. Echocardiography showed severe right ventricular dilatation and dysfunction (TAPSE 9 mm, s' 8 cm/s, FAC 18%) with estimated pulmonary pressures of 95–100 mmHg, while the left ventricle was small, unloaded and with preserved ejection fraction. Laboratory tests revealed acute kidney injury (creatinine 3.2 mg/dL), elevated BNP (2400 ng/L), troponin (85 ng/L) and D-dimer (6500 ng/mL). Pulmonary embolism (PE) was initially suspected and empiric unfractionated heparin (UFH) was started. The patient was admitted to the coronary care unit, where he required dobutamine infusion, high-flow oxygen therapy and low-dose loop diuretic with clinical benefit. Pulmonary artery catheter was not placed in this setting due to the high suspicion of PE, while a central venous catheter was placed with findings of tissue hypoperfusion (central venous oxygen saturation of 50%) and high central venous pressure (16 mmHg). After renal function improved, CT pulmonary angiography excluded embolism and showed interlobular septal thickening, ground-glass opacities and mediastinal lymphadenopathy. Therefore, UFH infusion was stopped. Once hemodynamic stabilization was achieved, right heart catheterization demonstrated precapillary pulmonary hypertension (mPAP 45 mmHg, PVR 9 WU, PCWP 6 mmHg) without response to vasodilator testing. Pulmonary function testing showed reduced DLCO (56% predicted) with preserved spirometry. Connective tissue disease screening was negative. The overall picture was consistent with pulmonary veno-occlusive disease (PVOD). The patient was referred to a specialized pulmonary hypertension center for further management.

DISCUSSION: PVOD is a rare and underdiagnosed cause of pulmonary hypertension, often presenting with nonspecific symptoms until advanced stages. Its etiology may be genetic, most frequently related

to biallelic EIF2AK4 mutations with juvenile onset, or acquired, due to exposure to chemotherapeutic agents or organic solvents; cigarette smoking has also been suggested as a disease enhancer. From a therapeutic perspective, anticoagulation may be potentially harmful because of the risk of alveolar hemorrhage, while vasodilator drugs traditionally used in group 1 PH are off-label in PVOD and may precipitate pulmonary edema. Therefore, recognition of this entity is crucial to avoid inappropriate treatments and to guide timely referral for advanced options, including lung transplantation. This case highlights the importance of considering PVOD in the differential diagnosis of unexplained right-sided cardiogenic shock and severe precapillary PH.

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 1018
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
IPERTENSIONE POLMONARE (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
INTELLIGENZA ARTIFICIALE (TELECARDIOLOGIA ED E-HEALTH)
PROGNOSI (SCOMPENSO CARDIACO)

THE ADDED VALUE OF ECHOCARDIOGRAPHY IN PAH RISK ASSESSMENT: AN AI MACHINE LEARNING-DERIVED ANALYSIS OF THE ULTRA RIGHT VALUE REGISTRY

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(a) SAPIENZA UNIVERSITÀ DI ROMA; (b) UNIVERSITY HOSPITAL GIESSEN AND MARBURG -GIESSEN - GERMANY; (c) 12TH OF OCTOBER UNIVERSITY HOSPITAL - MADRID- SPAIN; (d) IRCCS SAN MATTEO - UNIVERSITÀ DI PAVIA - PAVIA - ITALIA; (e) AO DEI COLLI - MONALDI HOSPITAL - NAPLES - ITALY; (f) AHEPA GENERAL HOSPITAL OF ARISTOTLE UNIVERSITY - THESSALONIKI - GREECE; (g) IMPERIAL COLLEGE HEALTHCARE NHS TRUST - LONDON - UNITED KINGDOM OF GREAT BRITAIN & NORTHEN IRELAND; (h) JAGIELLONIAN UNIVERSITY MEDICAL COLLEGE, CHAIR OF INTERNAL MEDICINE - CRACOW- POLAND; (i) FREE UNIVERSITY OF BRUSSELS (ULB) - BRUSSELS - BELGIUM

Background: The right ventricle (RV) significantly influences outcomes in pulmonary arterial hypertension (PAH), yet its assessment is not included in current mortality risk scores.

Purpose: This study aimed to evaluate the added prognostic value of RV echocardiographic parameters (including RV strain analysis) when integrated with established risk scores in a large multicenter European cohort of prevalent PAH patients enrolled in the ULTRAsound RIGHt venTricular eVALUation in PAH (ULTRA RIGHT VALUE) study.

Methods: A total of 401 prevalent PAH patients, enrolled between January 2022 and December 2023, underwent comprehensive echocardiographic evaluation and risk assessment using the REVEAL 2.0 and COMPERA 2.0 scoring systems. The primary outcome was a composite of all-cause mortality and heart failure hospitalizations. The secondary outcome was the maintenance or achievement of low-risk status according to ESC/ERS and REVEAL 2.0 at the latest follow-up.

Results: During a median follow-up of 177 days (IQR 126–241), 54 patients (13.5%) experienced adverse events, including heart failure hospitalization (44, 11.0%) or death (10, 2.5%). In univariate Cox regression analysis adjusted for age and PAH duration, increased right heart dimensions and reduced left ventricular (LV) dimensions were significantly associated with adverse outcomes. Markers of impaired RV-pulmonary artery (RV-PA) coupling showed the strongest associations with the primary outcome, while LV eccentricity index and pericardial effusion were most predictive of the secondary outcome. Missing data on functional class, 6-minute walking distance, or brain natriuretic peptide levels reduced the discrimination capacity of risk scores. Incorporating RV echocardiographic parameters into the COMPERA and REVEAL 2.0 models in case of one key missing data improved the c-index. Enhanced risk stratification was also observed when integrating

RV echocardiographic variables with the complete ESC/ERS and REVEAL 2.0 scores. Random survival forest analysis and permutation importance analysis identified systolic dimensional metrics of the RV and LV (i.e., RV end-systolic area, LV end-systolic area, and LV eccentricity index), along with RV-PA coupling markers, as those with the highest added prognostic value.

Conclusion: Integrating echocardiographic parameters of the right heart enhances the predictive accuracy of existing risk scores in PAH, thereby improving risk stratification and potentially guiding clinical decision-making.

Figure: The plot shows the relative importance of echocardiographic variables when added to the ESC/ERS and REVEAL 2.0 risk models (y-axis) by randomly shuffling their values and observing the change in the c-index (x-axis). For each variable in the model the c-index drop and the relative 95% C.I. are reported in the corresponding row.

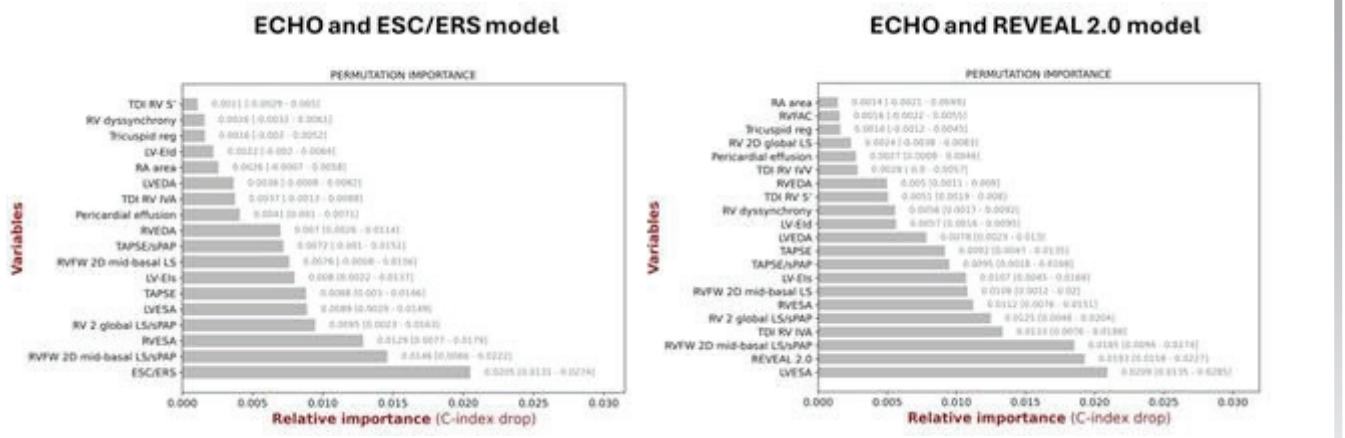


Figure 1

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 744
IPERTENSIONE POLMONARE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
DIAGNOSTICA INVASIVA INTRAVASCOLARE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)

EDEMA POLMONARE TARDIVO NELLA MALATTIA POLMONARE VENO-OCCLUSIVA: IL PESO DELLA DIAGNOSI DIFFERENZIALE

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(c) UNIVERSITA' DEGLI STUDI DI PADOVA

Introduzione: la malattia polmonare veno-occlusiva (PVOD) è una rara forma di ipertensione polmonare pre-capillare (PH) dovuta al rimodellamento delle venule polmonari. La diagnosi differenziale con l'ipertensione arteriosa polmonare (PAH) è insidiosa, ma cruciale per la prognosi (peggiore nel caso di PVOD) e la terapia, considerando che l'utilizzo degli inibitori dell'endotelina può indurre edema polmonare acuto (EPA) nei pazienti con PVOD, la cui unica terapia definitiva è il trapianto polmonare.
Obiettivo: Presentare un caso clinico di PVOD inizialmente sospettata come Sclerosi Sistemica (SSc) in paziente con ipertensione polmonare severa pre-capillare.

Caso clinico: Donna cinese di 60 anni con dispnea progressiva da un anno a seguito di episodio influenzale prolungato, dita a bacchetta di tamburo e cianosi alle estremità. Spirometria: deficit ventilatorio misto, prevalentemente ostruttivo, severa riduzione della capacità di diffusione del CO (DLCO); Profilo autoanticorpale inizialmente debolmente positivo, poi risultato negativo; capillaroscopia positiva per sclerodermia pattern active. HRCT: noduli ground glass centrolobulari, marcata ectasia del tronco principale e dei rami dell'arteria polmonare. Ecocardiogramma: ventricolo destro dilatato, ipertrofico e disfunzionante, con elevata probabilità di ipertensione polmonare. Cateterismo cardiaco destro: severa ipertensione polmonare pre-capillare, aumento delle resistenze arteriolari (PAPm 37 mmHg, PCWP 4 mmHg, IC 1.89 l/min/mq). Vista la compatibilità con un quadro di PVOD, ma senza escludere la diagnosi di SSc si iniziava terapia con Macitentan e Furosemide a cui la paziente rispondeva con benessere soggettivo e stabilità radiologica e laboratoristica. Pertanto, veniva dimessa dopo quattro giorni di follow-up, con diagnosi di PH secondaria a SSc. Dopo 3 settimane, seguiva nuovo ricovero per EPA, edemi declivi ed aumento ponderale (+6 kg). Si sospendeva Macitentan e si implementava terapia diuretica con beneficio. Uno studio radiologico dell'esofago, risultato nella norma, permetteva di escludere definitivamente la diagnosi di SSc, confermando la diagnosi di PVOD. Il caso veniva discusso in meeting multidisciplinare trapiantologico, ma la paziente non risultava candidabile a trapianto polmonare per barriera linguistica totale e scarsa rete sociale.

Discussione: nei casi descritti in letteratura, l'EPA indotto da terapia con Macitentan nei pazienti con PVOD ha comparsa precoce. Nel nostro caso, invece, la comparsa tardiva dell'EPA (a tre settimane circa dall'introduzione della terapia) sottolinea l'importanza di una corretta diagnosi differenziale, tenendo anche in considerazione le differenze epidemiologiche e la

variabilità farmacocinetica degli inibitori dell'endotelina nelle varie etnie.

Conclusioni: La PVOD va sospettata in presenza di PH severa, DLCO ridotta, quadro radiologico tipico e peggioramento clinico sotto terapia per PAH. Tuttavia, la comparsa tardiva di EPA, nel nostro caso, mostra come la variabilità interindividuale degli effetti farmacologici, richieda un monitoraggio più prolungato dei pazienti in terapia, al fine di intercettare precocemente i primi segni e sintomi di scompenso cardiaco, soprattutto post-dimissione.

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 462
ENDOCARDITI (VALVULOPATIE)
CARDIOLOGIA PEDIATRICA
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
CARDIOPATIE CONGENITE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)

CLINICAL FEATURES, PREDISPOSING FACTORS AND OUTCOMES OF INFECTIVE ENDOCARDITIS IN A NATIONAL PEDIATRIC COHORT WITH CONGENITAL HEART DISEASE

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Infective endocarditis (IE) remains a significant cause of morbidity and mortality in pediatric patients with congenital heart disease (CHD), however, data on its epidemiology, risk factors, symptoms, complications, and outcomes remain scarce. This retrospective multicenter study analyzed pediatric patients (< 18 years) with CHD diagnosed with IE between 2008 and 2023.
Clinical data—including demographic information, cardiac history, echocardiographic findings, microbiological results, treatment strategies, and outcomes — were collected and analyzed. A total of 41 patients were included. The most common risk factors were prior cardiac surgery or percutaneous intervention, prosthetic materials, and significant valvulopathies. A significant association was observed between vegetation size and embolic events (r=0.52, p=0.03), with larger vegetation conferring a higher embolic risk (OR: 1.4252, 95% CI = 1.1 - 1.8; p < 0.002). Staphylococcus aureus (24%) and Coagulase-negative staphylococci (17%) were the most frequently isolated microorganisms. Fever (70%), new onset or worsening valvulopathies (83%), and vegetation (58%) or abscesses formation (22%) were the predominant clinical presentation. Aggressive medical and surgical management resulted in favorable outcome in most patients (95%). While IE remains a major challenge in pediatric CHD patients, early detection and timely intervention are crucial for optimizing outcomes, particularly in patients with large vegetations. Future research should aim to identify additional risk factors and refine strategy for prevention and treatment in this high-risk population.

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 333
CARDIOPATIE CONGENITE (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
CARDIOPATIE CONGENITE NELL´ADULTO (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
PATOLOGIA DELLA VALVOLA TRICUSPIDE (VALVULOPATIE)

EBSTEIN'S ANOMALY WITH ASSOCIATED COR TRIATRIATUM DEXTER IN AN ADULT: A RIGHT HEART FAILURE PRESENTATION

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Introduction: Ebsteinâ€™s anomaly is a rare congenital heart defect characterized by the apical displacement of the septal and posterior leaflets of the tricuspid valve due to incomplete delamination of the valve tissue. This condition causes significant tricuspid regurgitation and reduction of the functional right ventricle, right atrial and right ventricular dilatation and atrial and ventricular arrhythmias.We present a case of right-sided heart failure in a 60-year-old male patient with Ebsteinâ€™s anomaly and a coexisting non-obstructive cor triatriatum dexter.

Case Presentation: A 60-year-old man was admitted to our hospital with signs and symptoms consistent with right heart failure. Physical examination revealed jugular venous distention, bilateral pitting edema, and a grade 3/6 systolic murmur. The patient was non-cyanotic, with stable vital signs. Electrocardiogram demonstrated atrial fibrillation, complete right bundle branch block (RBBB), and evidence of RV hypertrophy. Chest X-ray showed marked cardiomegaly (Figure 1). TTE revealed severe enlargement of the RA and RV (RVD1: 73.8 mm; RA area: 84 cmÂ²) (Figure 2, Panel A). The RVFAC was preserved at 45% (Figure 2, Panel D), with a TAPSE of 18 mm.There was apical displacement of the septal tricuspid leaflet measuring approximately 23 mm from the atrioventricular junction (15 mm/mÂ²), consistent with a mild form of Ebsteinâ€™s anomaly (Figure 2, Panel A). Severe tricuspid regurgitation was observed, with complete loss of leaflet coaptation; estimation of pulmonary artery systolic pressure was not feasible (Figure 2, Panel C). Additionally, a non-obstructive cor triatriatum dexter was identified as an associated congenital anomaly (Figure 2, Panel B). The patient was referred for cardiac RMN, coronary angiography and right heart catheterization to assess pulmonary hemodynamics and to guide further therapeutic decision-making.

Discussion and conclusion: echocardiography is diagnostic in most patients and demonstrates apical displacement of the septal leaflet and variable tethering of leaflet tissue to the right ventricular

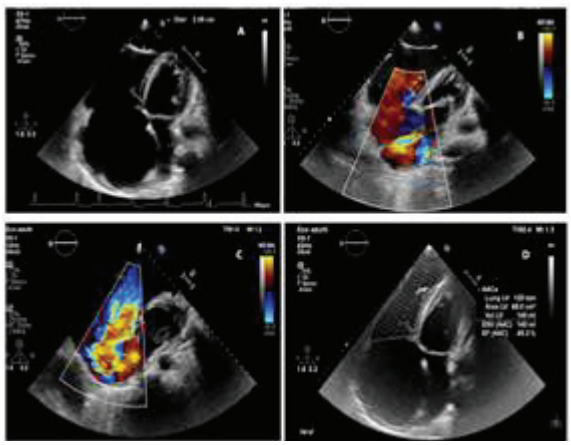


Figure 1

myocardium. Management strategies vary depending on symptom severity, RV function and presence of arrhythmias or associated defects. In asymptomatic or mildly symptomatic patients, medical management may be sufficient. Indications for surgical intervention include worsening exercise tolerance, progressive RV enlargement, and RV dysfunction. Surgical options include cone Â reconstruction(the current gold standard), tricuspid valve replacement, or palliative procedures Â such as bidirectional cavopulmonary shunt in selected cases.



Figure 2

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 335
CARDIOPATIE CONGENITE NELL´ADULTO
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE)
(IMAGING CARDIOVASCOLARE)
CARDIOPATIE CONGENITE (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)

PLATYPNEA-ORTHODEOXIA SYNDROME: AN UNUSUAL CLINICAL MANIFESTATION MANAGED WITH PERCUTANEOUS CLOSURE OF PFO

Elisabetta Girella (a), Marzia Maltempi (a), Filippo Massei (a), Daniela Grassano (a), Gianvito Orlando (a), Erberto Carluccio (a), Riccini Clara (b), Benedetta Casini (a), Francesco Aliberti (a), Enrica Fede (a)
(a) DEPARTMENT OF CARDIOLOGY AND CARDIOVASCULAR PHYSIOPATHOLOGY, SANTA MARIA DELLA MISERICORDIA, PERUGIA; (b) DEPARTMENT OF CARDIOLOGY, SANTA MARIA DELLA MISERICORDIA, PERUGIA

Introduction: Platypnea-orthodeoxia syndrome represents an uncommon but clinically significant entity, characterized by positional dyspnea and orthostatic arterial desaturation. The pathophysiological of POS is most frequently attributable to the presence of a intracardiac shunts, most notably PFO, atrial septal defect and atrial septal aneurysm. Less commonly, extracardiac shunts, such as pulmonary arteriovenous malformations, hepatopulmonary syndrome, or acute respiratory distress syndrome may be implicated. Additionally, conditions leading to ventilation-perfusion mismatch have been described in the pathogenesis of this syndrome.

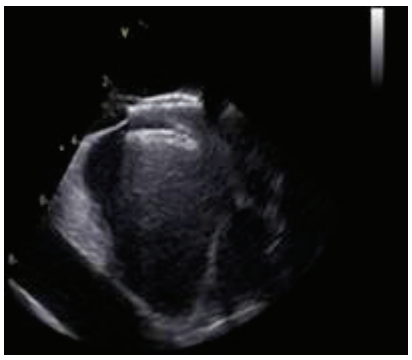


Figure 1



Figure 2

Case Presentation: An elderly female patient with a history of systemic hypertension, type 2 diabetes mellitus, OSAS and subcortical ischemic vascular encephalopathy was referred to our department for evaluation of unexplained hypoxemia. She had also a story of right lobectomy performed for lung malignancy and silent cerebellar ischemic stroke. She had previously been hospitalized for acute respiratory failure due to respiratory syncytial virus pneumonia. During follow-up, she developed persistent partial respiratory failure, with hypoxemia and exertional desaturation not corrected by high-flow oxygen therapy. Given the suspicion of a right-to-left shunt, an

ETT was performed, revealing a normal left ventricular function (LVEF 65%), preserved right ventricular size and function (TAPSE 17 mm), in absence of pulmonary hypertension. Transesophageal echocardiography demonstrated a large PFO with massive right-to-left shunting at rest (figure 1) an associated atrial septal aneurysm (24 mm base, 15 mm excursion, figure 2), and Eustachian valve prominence. Baseline room air oximetry showed SpOâ,, 95% supine vs. 86â€"89% upright, consistent with POS. A 6-minute walk test was prematurely interrupted for dyspnea, with SpOâ,, nadir 87%. The patient underwent successful percutaneous PFO closure with an occluder device (figure 3).The procedure was uneventful, with no residual shunt on color Doppler. Post-intervention, oximetry showed normalization of supine/upright SpOâ,, values, and a repeat 6MWT demonstrated preserved exercise tolerance without desaturation (nadir SpOâ,, 94%).

Discussion: Platypnea-orthodeoxia syndrome is a rare manifestation of PFO. In our case, the story of right lobectomy, the presence of an atrial septal aneurysm and Eustachian valve prominence favored a preferential flow of systemic venous blood toward the interatrial communication, resulting in significant hypoxemia.Â Percutaneous PFO closure is the treatment of choice, with high rates of technical success and immediate symptomatic improvement.

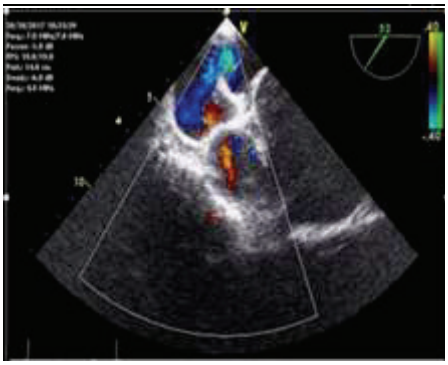


Figure 3

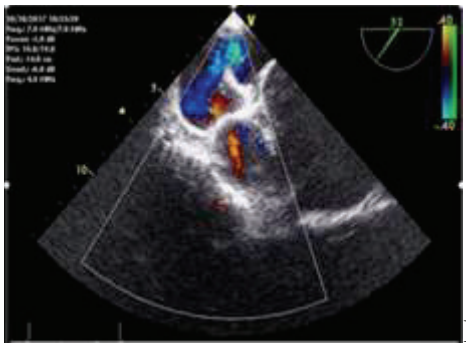


Figure 4

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 703
CARDIOPATIE CONGENITE NELL´ADULTO
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
PATOLOGIA DELL´AORTA (MALATTIE DEI VASI)
TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT)
(IMAGING CARDIOVASCOLARE)
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

ENDOVASCULAR REPAIR OF A LATE POSTCOARCTATION SURGERY AORTIC ANEURYSM

Marco Giuranna (b), Mariagrazia Sardone (a), Francesca De Angelis (a), Marzia Maltempi (a), Manuel Freschini (a), Claudio Cavallini (a)
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Background: 69-year-old woman with a history of Dacron patch aortoplasty for peri-isthmic aortic coarctation 47 years earlier, systemic arterial hypertension, dyslipidemia, smoking, MGUS, hypothyroidism, overweight, supernumerary ribs and carotid atheromasia. She was asymptomatic for chest pain but reported exertional dyspnea stable over time. An ergometric test carried out 10 years prior was negative. The echocardiogram and a subsequent contrast enhanced CT scan showed a large saccular aneurysm of the thoracic aorta extending from the isthmus to the descending tract, with maximum axial dimensions of 70 x 61 mm and a cranio-caudal extension of 72 mm. Corrective surgery was performed through aorto-subclavian-carotid bypass and percutaneous implant of a covered stent.

Conclusion: Aortic coarctation accounts for 4-8% of congenital heart defects and presents as a discrete stenosis of the aorta in the peri-isthmic area or as a hypoplasia of an aortic segment (arch). Often associated with bicuspidaortic valve (85%), Turner syndrome (30%), aortic stenosis (supra- or subvalvular), berry aneurysms (10%) and other congenital heart or vascular defects. Clinical manifestations may vary

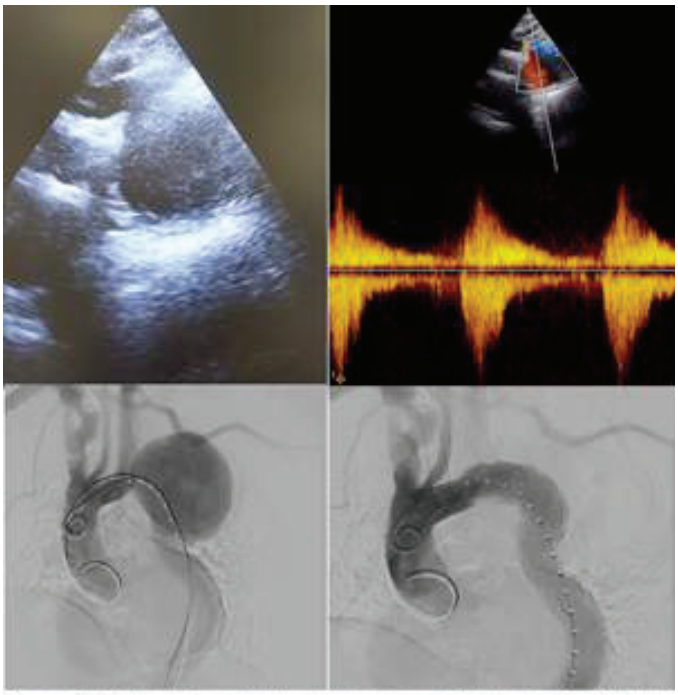


Figure a and b. An echografic suprasternal view showing an aneurismatic descending aorta with turbulent flow in it as revealed at colorDoppler examination.
Figure c and d. Fluoroscopic images before and after endovascular repair.

Figure 1

depending on the development of collateral circulation during fetal life and include hypertension, dyspnea, weak peripheral pulses, precordial systolic murmur, poor development of inferior extremities, differential cyanosis up to cardiogenic shock. Patients who reach adolescence have a good prognosis. Indications for intervention include non-invasive gradient between upper and lower limbs of more than 20 mmHg or a narrowing of the aorta greater than 50% relative to the aortic diameter at the diaphragm level even in the absence of a significative gradient (that could be underestimated in presence of collateral circulation). Currently, stenting with covered stents has become the first-choice in adults and older children. In the past, surgery was the preferred treatment via resection and end-to-end anastomosis, implantation of a vascular prosthesis, aortoplasty with subclavian flap or Dacron patch. The latter carries the highest rate of development of aortic aneurysms opposite or near to the repair site (50%), therefore requiring close follow-up with imaging techniques (MRI). The preferred treatment of this complication is repair through thoracic endovascular stent-graft

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 802
CARDIOPATIE CONGENITE NELL´ADULTO
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE
(IMAGING CARDIOVASCOLARE)
IMAGING DELLE CARDIOPATIE CONGENITE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)

PREVALENCE AND PROGNOSTIC VALUE OF RIGHT VENTRICULAR TO PULMONARY ARTERY UNCOUPLING IN ADULTS WITH RIGHT-SIDED CONGENITAL HEART DISEASE

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Background: Right-sided congenital heart diseases (R-CHD) are frequently associated with right ventricular (RV) dysfunction and adverse outcomes. The interaction between RV contractility and pulmonary arterial afterload—quantified as RV–pulmonary artery (RV-PA) coupling—has emerged as a key determinant of prognosis in various cardiac conditions, yet its role in adults with R-CHD remains underexplored.

Methods: Consecutive patients with R-CHD evaluated in our adult CHD clinic between October 2013 and November 2023 were reviewed. RV-PA uncoupling was defined echocardiographically as a tricuspid annular plane systolic excursion (TAPSE) to pulmonary artery systolic pressure (PASP) ratio ≤0.55. The primary composite endpoint included all-cause mortality, major supraventricular and ventricular arrhythmias, unplanned cardiac hospitalizations, and need for surgical or percutaneous (re)-interventions.

Results: A total of 132 patients (mean age 41.6±15.7 years; 51.5% males) were enrolled. RV-PA uncoupling was present in 48 patients (36.4%) Over a median follow-up of 40.3 months, 71 patients (53.8%) experienced the primary composite endpoint. Those with events were older and showed lower TAPSE, higher PASP, increased RV and right atrial dimensions, and a greater prevalence of RV-PA uncoupling ($p<0.001$). Multivariable Cox regression confirmed RV-PA uncoupling (HR 4.478, $p<0.001$), TAPSE/PASP ratio (HR 0.217, $p = 0.006$), and PASP (HR 1.038, $p = 0.003$) as independent predictors of the primary composite endpoint, with the RV-PA uncoupling model demonstrating superior performance. Additionally, 56 patients (42%) required surgical/interventional procedures; RV-PA uncoupling (HR 2.641, $p=0.001$) and RV mid-diameter (HR 1.025, $p=0.025$) independently predicted the need of (re)-intervention.

Conclusions: Echocardiographic assessment of RV-PA uncoupling (TAPSE/PASP ≤0.55) provides independent prognostic information in adults with R-CHD, identifying patients at higher risk for adverse events.

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 816
CARDIOPATIE CONGENITE NELL´ADULTO (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
IMAGING DELLE CARDIOPATIE CONGENITE (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)

LEFT VENTRICULAR MYOCARDIAL WORK ANALYSIS IN ADULT PATIENTS WITH REPAIRED AORTIC COARCTATION AND INSIGHTS ON FUNCTIONAL CAPACITY

Giulia Iannaccone (a, b), Rosa Lillo (b), Maria Chiara Meucci (b), Maria Grandinetti (b), Alessandro Olimpieri (a), Filippo Tusa (a), Claudio Di Brango (a), Alessio Cianci (a), Angelica Bibiana Delogu (a, b), Massimo Massetti (a, b), Gaetano Antonio Lanza (a, b), Antonella Lombardo (a, b), Francesca Graziani (a, b), Francesco Burzotta (a, b)
(a) UNIVERSITÀ CATTOLICA DEL SACRO CUORE, ROME, ITALY; (b) DEPARTMENT OF CARDIOVASCULAR SCIENCES-CUORE, FONDAZIONE POLICLINICO UNIVERSITARIO A.GEMELLI IRCCS, ROME, ITALY

Aims: To assess left ventricular (LV) myocardial mechanics and energetics through speckle tracking echocardiography (STE) and myocardial work (MW) analysis in patients repaired aortic coarctation with no residual lesions (RCoA) and to investigate correlations between echocardiographic and cardiopulmonary test (CPET) parameters.

Methods: We prospectively enrolled adult RCoA with no signs of recoartation or valvular disease and normal LV ejection fraction at the time of the evaluation. STE and MW analyses were performed and a group of healthy subjects aged- and sex-matched was included for comparison. All RCoA patients underwent CPET.

Results: Twenty RCoA patients were enrolled (mean age 41± 13 years, 50% males). RCoA patients had a significantly higher values of left ventricular mass index ($p<0.001$) as compared to controls; no significant difference between groups was found in LVEF, while E/E' was higher in the former ($p=0.019$). RCoA showed lower values of LVGLS ($p=0.005$), left atrial reservoir strain ($p=0.008$) and right ventricular GLS ($p=0.036$), more impaired value of global work efficiency (94.4 ± 3.9 vs 97.0 ± 0.8; $p=0.007$) and constructive work (1949.9 ± 363.8 vs 2132.3 ± 165.5; $p= 0.048$), with higher values of global wasted work (94.9 ± 59.9 vs 52.8 ± 21.7; $p= 0.005$). Pearson analysis showed a significant correlation between the percentage of predicted peak VO2 with LA reservoir strain ($R=0.577$, $p=0.008$), LVGLS ($R=0.632$, $p=0.003$), global work efficiency ($R=0.531$, $p=0.016$) and constructive work ($R=0.483$, $p= 0.031$), TAPSE ($R=0.495$, $p=0.026$), RVGLS ($R=0.553$, $p=0.011$). Univariate linear regression analysis results were consistent with the same findings.

Conclusions: In patients with RCoA with no significant residual obstruction and lesions LV mechanics and efficiency are impaired as compared to controls. LVGLS and MW indices correlate with functional capacity.

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 872
CARDIOPATIE CONGENITE (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
IMAGING DELLE CARDIOPATIE CONGENITE (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)
TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT) (IMAGING CARDIOVASCOLARE)

DIAGNOSTIC PITFALLS IN ARVC DIAGNOSIS: A CASE OF PAPVR MIMICKING RIGHT VENTRICULAR INVOLVEMENT

Lorena Iezzi (a, b), Marika Martini (b), Parodi Alessandro (b), Ilaria Rigato (b), Kalliopi Pilichou (b), Annagrazia Cecere (b), Maria Bueno Marinas (b), Rudy Celeghin (b), Serena Pinci (b), Giulia Renda (a), Fabrizio Ricci (a), Sabina Gallina (a), Barbara Bauce (b)

(a) DEPARTMENT OF NEUROSCIENCE, IMAGING AND CLINICAL SCIENCES, G. D'ANNUNZIO UNIVERSITY OF CHIETI-PESCARA, ITALY; (b) DEPARTMENT OF CARDIAC, THORACIC, AND CARDIOVASCULAR SCIENCES AND PUBLIC HEALTH, UNIVERSITY OF PADOVA, ITALY

Arrhythmogenic right ventricular cardiomyopathy (ARVC) is a heritable myocardial disorder associated with ventricular arrhythmias, RV remodeling, and increased risk of sudden cardiac death. Despite advances in imaging and genetics, diagnosis remains challenging, particularly in borderline cases or when structural anomalies coexist. We report the case of a young male with a family history of ARVC, illustrating pitfalls in this diagnostic pathway.

The proband's father was diagnosed with gene-elusive ARVC, and extended clinical screening revealed definite disease in two of his five sons. The fourth son underwent CMR in 2020, which showed preserved biventricular function with mild RV dilatation, RV outflow tract enlargement (31 mm), possible RVOT akinesia, and junctional late gadolinium enhancement (LGE) of uncertain significance, without RV LGE or fatty infiltration. No ECG criteria were met, and serial Holter monitoring and exercise testing excluded significant ventricular arrhythmias. On this basis, a borderline ARVC diagnosis was considered (1 major familial criterion + 1 uncertain morphofunctional criterion).

In 2025, due to suboptimal echocardiography, repeat CMR was performed. It demonstrated moderate RV dilatation and hypertrabeculation with preserved systolic function, no regional wall motion abnormalities, and a significant left-to-right shunt (Qp:Qs 1.57), together with small junctional LGE spots (fig 1). Importantly, no definite ACM features were observed.

Chest CT subsequently confirmed partial anomalous pulmonary venous return (PAPVR) of the right superior pulmonary vein draining into the superior vena cava below the azygos vein (fig. 2). Clinically, the patient remained asymptomatic and in NYHA class I and he was referred for right heart catheterization.

This case underscores the diagnostic complexity of ARVC. RV dilatation and nonspecific CMR findings initially suggested possible early ARVC; however, multimodality imaging clarified the true etiology as PAPVR, with hemodynamically significant shunt.

In conclusion, ARVC diagnosis demands careful integration of clinical, imaging, and genetic information.

Over-interpretation of isolated CMR abnormalities, particularly in patients with familial predisposition, risks misdiagnosis. Recognition of congenital mimics such as PAPVR is essential to avoid inappropriate definite diagnosis, ensuring accurate risk stratification and management.

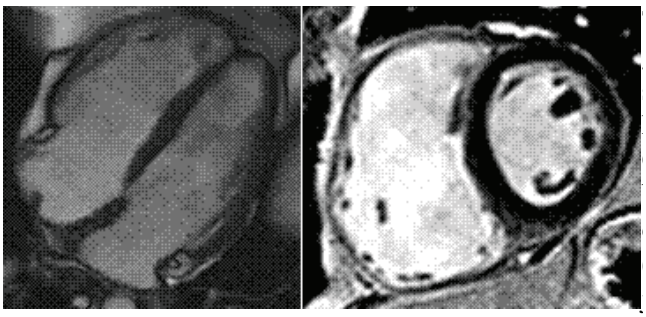


Figure 1

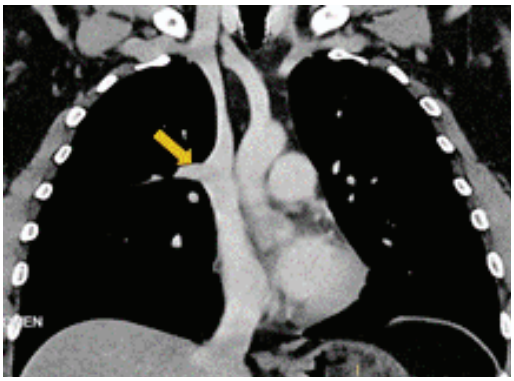


Figure 2

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 35
CARDIOPATIE CONGENITE NELL´ADULTO
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE)
(IMAGING CARDIOVASCOLARE)
CARDIOPATIE CONGENITE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)

COR TRIATRIATUM SINISTRUM IN A YOUNG WOMAN: A CASE REPORT

Rita Cristina Myriam Intravaia (a), Mario Audoly (a), Zelda Noto (a), Michele Massimo Gulizia (a)
(a) U.O.C. CARDIOLOGIA - AZIENDA DI RILIEVO NAZIONALE E DI ALTA SPECIALIZZAZIONE GARIBALDI PRESIDIO OSPEDALIERO NESIMA - CATANIA

37-year-old female patient, no family history of ischaemic heart disease, came to our attention because, for about four days, she had been experiencing episodes of chest pain, modifying with breathing, lasting for hours, always self-limiting. Moreover, for two days, she had been complaining of hoarseness, productive cough and hyperpyrexia, only partially responsive to paracetamol. Due to worsening of these symptoms, she went to Emergency Department and then admitted to our Cardiological Department. On admission patient was symptomatic with intermittent chest pain, which worsened with coughing and inspiration, partially relieved by sitting in forward leaning position. Admission EKG was normal. Urgent troponin T HS on admission was negative. Blood chemistry on admission: normal leukocyte count, haemoglobin 10. 3 g/dL, creatinine 0.78 mg/dL, negative procalcitonin, weakly positive C reactive protein. Transthoracic echocardiogram showed: normal left ventricle dimensions with wall thickness within normal limits (IVS 10 mm PW 9 mm). No major alterations in segmental kinetics. Preserved global systolic function (EF 55%). Presence of apical trabeculation of left ventricle and accessory chordae tendineae. In left atrium there was a linear hyperechoic formation, compatible with a fibromuscular membrane, with transverse orientation, which incompletely separated upper and lower portion of left atrial chamber. No significant gradient between interatrial chambers. Thinned interatrial septum. Aortic valve: no haemodynamically significant flow alterations. Mitral valve: redundant anterior leaflet causing mild insufficiency. Right ventricle of normal endocavitary dimensions with preserved longitudinal and radial systolic function indices (S' 0.11, TAPSE 18 cm FAC > 35%). Mild tricuspid insufficiency. Inferior vena cava of normal calibre, normocollapsible with inspiration. Mild pericardial effusion. Echocardiographic imaging was consistent with CTS and mild pericardial inflammation. Our young patient also had a history of recurrent migraines from a very young age, not previously investigated, a symptom which required further instrumental investigation in this clinical setting. Transoesophageal echocardiography was performed in order to better explore the anatomy of left atrium and adjacent structures and to exclude presence of right-to-left atrial shunt, both at rest and during saline infusion and Valsalva manoeuvre. CTS can occur isolated or in association with other congenital heart diseases. The most widely used classification is Loeffler's one, which distinguishes it into three different groups: patients without membrane patency, with one or more small membrane patencies; with large membrane patencies. Presence and extent of patency is closely associated with the onset of symptoms. CTS can present with severe and limiting symptoms such as palpitations, dyspnoea, orthopnoea, ascites, lower limb oedema, and bendopnoea; however, in adults, CTS is often an isolated finding. In previously asymptomatic adults with CTS clinical presentation may also be caused by fibrosis and calcification of the membrane, leading to

obstruction, which can mimic mitral stenosis. Moreover anatomical conformation of left atrial chamber may promote arrhythmogenesis thus contributing to the onset of atrial fibrillation. Evidences in literature highlight the pivotal role of imaging in correctly identifying congenital heart abnormalities and any concomitant defects, in order to promptly initiate optimal management strategy with a multidisciplinary approach. Thus, once the diagnosis of non restrictive cor triatriatum sinistrum is performed, an accurate risk stratification is mandatory.

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 900
CARDIOPATIE CONGENITE NELL´ADULTO (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
IMAGING DELLE CARDIOPATIE CONGENITE (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
IPERTENSIONE POLMONARE (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)

INQUADRAMENTO DIAGNOSTICO DI UN CASO DI DIA TIPO OS CON PRESENTAZIONE IN ETA' ADULTA

Claudia Ioannucci (a), Silvia Leone (b), Livio Giuliani (b)
(a) UNIVERSITA' DEGLI STUDI DELL'AQUILA;
(b) UOC CARDIOLOGIA E UTIC - OSPEDALE SAN SALVATORE L'AQUILA

Donna di 54 anni, di etnia araba, in anamnesi cefalea dall'età giovanile e ipertensione arteriosa. Non familiarità per patologie cardiovascolari. Non fattori di rischio cardiovascolari. In terapia domiciliare con Ramipril/idroclorotiazide 12,5mg/25mg.
Si presentava alla nostra attenzione per l'insorgenza da circa 10 giorni di cardiopalmo e dispnea da sforzo. Negava angor e sincope.
Alla visita, toni cardiaci aritmici, normofrequenti, soffio sistolico 3/6 al centrum. Al torace non stasi né broncospasmo. All'ECG di base riscontro di fibrillazione atriale alla frequenza ventricolare media di 110 bpm, asse equilibrato, blocco di branca destro incompleto con anomalie secondarie della ripolarizzazione ventricolare.
All'ecocardiogramma transtoracico colordoppler sezioni sinistre nei limiti (LVDTd 48mm), buona funzione sistolica globale in assenza di alterazioni cinetiche segmentarie. Sezioni destre di normali dimensioni con cinesi longiutdinale conservata e TAPSE 18mm. Dilatazione biatriale. Evidenza di shunt interatriale. Lieve insufficienza mitralica. Insufficienza tricuspidalica di grado lieve con PAPs 30mmHg.
In relazione alla fibrillazione atriale di nuovo riscontro con insorgenza verosimilmente >48h e al CHA2DS2-VA 1, iniziava terapia anticoagulante con NAO e terapia di rate control con bisoprololo 1,25mg.
Al controllo a 4 settimane si effettuava ecocardiogramma transesofageo basale che confermava DIA tipo ostium secundum di 25mm e contestualmente si procedeva, con beneficio a CVE. Al controllo dopo un anno, la paziente lamentava persistenza della dispnea da sforzo e del cardiopalmo. All'esame obiettivo si riscontrava una lieve succulenza pretibiale. Si ripeteva quindi l'iter diagnostico con evidenza ecocardiografica di sezioni sinistre ai limiti per dimensioni con LVDTd 51mm, SIV11mm, discinesia del SIV. Prolasso dei lembi mitralici e dilatazione dell'anulus condizionanti rigurgito di grado moderato. Conferma dei reperti ecocardiografici riscontrati un anno prima a carico delle sezioni destre ma un incremento della PAPs a 40mmHg e congestione della vena cava inferiore con ridotta dinamica respiratoria.
Veniva completato l'inquadramento diagnostico tramite RM cardiaca e cateterismo destro. Al cateterismo destro riscontro di PVR 1.6 WU e Qp/Qs 4.4.
Alla RM cardiaca venivano confermati i valori dimensionali e flussimetrici a carico del DIA e veniva evidenziato un significativo incremento dimensonale del ventricolo destro con performance sistolica modicamente ridotta.
Si inviava pertanto la paziente presso un centro di riferimento il trattamento del DIA.

CardioSic

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 899
CARDIOPATIE CONGENITE (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE) INTERVENTISTICA STRUTTURALE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE) CARDIOPATIE CONGENITE NELL´ADULTO (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)

SOSTITUZIONE DELLA VALVOLA POLMONARE NELLE CARDIOPATIE CONGENITE: APPROCCIO CHIRURGICO VS PERCUTANEO SULLA BASE DELL' ESPERIENZA DI UN SINGOLO CENTRO

Andrea Laurito (a, b), Giuliano Giusti (a)
(a) OSPEDALE MAGGIORE METROPOLITANO NIGUARDA; (b) OSPEDALE PEDIATRICO BAMBINO GESU

Background: La patologia dell'efflusso destro è caratteristica delle cardiopatie congenite, native o operate in età pediatrica. I residui chirurgici del primo intervento correttivo e la degenerazione del materiale protesico inevitabile con il passare degli anni, sono determinanti di outcome significativi in questa popolazione. Il rimodellamento ventricolare conseguente alla severa insufficienza della valvola polmonare determina dilatazione e disfunzione ventricolare destra, con segni clinici di scompenso. La severa stenosi all'efflusso determinerà lo sviluppo di elevate pressioni di riempimento destro con ipertrofia, disfunzione e burden aritmico. La valvolazione polmonare è quindi un intervento necessario nell'iter di tanti pazienti congeniti. Negli ultimi 20 anni l'impianto percutaneo della valvola polmonare ha preso sempre più piede nella pratica clinica come strategia alternativa alla chirurgia.

Metodi: La popolazione dello studio è stata selezionata retrospettivamente all'interno del centro ospedaliero di Niguarda di Milano, tra i pazienti trattati tra il 2022 e il 2024 (30 mesi) con sostituzione della valvola polmonare per severa disfunzione RVOT (stenosi, rigurgito o difetti combinati). L'obiettivo del nostro studio monocentrico retrospettivo è valutare quali sono state le condizioni che hanno portato alla scelta della strategia chirurgica piuttosto che percutanea, la sicurezza e l'efficacia dell'impianto della protesi a breve termine nei due bracci di trattamento e valutare con SSQ8-questionnaire la popolazione sottoposta a trattamento percutaneo.

Risultati: Sono stati identificati un totale di 33 pazienti, con età media di 28 anni. Di questi, 13 sono stati sottoposti a TPVR e 20 a SPVR. La popolazione del braccio percutaneo era più anziana (34 vs 25 anni) e con un tasso di interventi chirurgici più alto alle spalle. Difetti associati con necessità di riparazione chirurgica erano presenti nel 21% dei pazienti, che quindi sono andati incontro a chirurgia. Un altro 21% è stato giudicato non idoneo al trattamento percutaneo dopo studio emodinamico per anatomia sfavorevole. Nella popolazione percutanea, la percentuale di stenosi con efflusso di piccole dimensioni era più significativa (77% vs 40%, annulus medio 21 vs 26), seppur nel tempo si è arrivati a trattare efflussi dilatati anche con strategia percutanea. Il tasso di complicanze totali è stato più elevato nel braccio chirurgico, anche se l'esiguità del campione non permette un'inferenza statisticamente significativa. I risultati in termini di stenosi o insufficienza residua pre-dimissione sono ottimi e sovrapponibili nei due gruppi di trattamento. La durata del ricovero nel gruppo TPVR è significativamente ridotta, sia in termini di giorni totali di ricovero post procedura, sia in degenza in terapia intensiva. Il questionario SSQ8 dimostra un elevato tasso di soddisfazione nella popolazione TPVR.

Conclusioni: La tecnica di valvolazione percutanea dell'efflusso destro sta diventando sempre più una valida alternativa al trattamento chirurgico, anche grazie alla disponibilità di dispositivi protesici che raggiungono diametri superiori a quelli delle precedenti tecnologie. La popolazione in esame dimostra un progressivo incremento della percentuale di pazienti candidabili a trattamento percutaneo, con una buona safety (1 sola complicanza significativa, 1 legata all'accesso vascolare), durata dell'ospedalizzazione significativamente ridotta e soddisfazione dei pazienti elevata.

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 382 IPERTENSIONE POLMONARE (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE) TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT) (IMAGING CARDIOVASCOLARE) FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)

ASSESSMENT OF THORACIC WALL MUSCLES IN PATIENTS WITH PULMONARY HYPERTENSION UNDERGOING RIGHT HEART CATHETERIZATION

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Introduction: several studies indicate a relationship between chronic cardiovascular disease and sarcopenia, but its expression in different pulmonary hypertension (PH) subgroups is still unknown.
Our study aims to identify loss of muscle mass in different subgroups of PH, exploring the correlation with different hemodynamic parameters, using the skeletal muscle index (SMI) and the intramuscular fibroadipose tissue (IMAT) derived by the chest high resolution computed tomography (HRCT) scan to evaluate muscles such as pectoral muscles (PM) and erector spinae muscle (ESM).

Materials and methods: we included in this retrospective monocentric cohort study 914 patients, corresponding to a total of 1188 right heart catheterization (RHC) performed between 2009 and 2021 at Policlinico Umberto I Hospital in Rome. We excluded patients with missing data (11 patients, 1,2%) or those (168 patients, 14%) who did not respect the European guidelines criteria for the diagnosis of PH. Furthermore, we have excluded repeated (RHC (274, 27,15%) from the study by focusing exclusively on the first RHC performed for each patient, resulting in a total of 735 RHCs included in the study. Of these, 235 (32%) were identified, based on anamnesis data, as belonging to Group 1 (PAH), 192 (26%) belonged to Group 2 (PH due to left heart disease), and the remaining 308 (42%) belonged to Group 3 (PH due to lung diseases and/or chronic hypoxemia). Moreover, only 294 patients underwent HRCT, distributed as 123 in Group 1, 55 in Group 2, and 116 in Group 3. Vital parameters, anthropometric indices and laboratory parameters were collected for each patient enrolled in the present study.

Results: Our results showed that IMAT was higher in Group 2 (4.85 ± 2.94 cm^2) compared to Group 1 (4.28 ± 3.50), and both were higher than in Group 3 (3.29 ± 2.19 cm^2) ($p < 0.01$). By stratifying by sex, we observed that, under the same hemodynamic conditions, men exhibited greater muscle mass and lower IMAT compared to women. Of note, a subanalysis in PAH patients (Group 1) show a statistically significant positive correlation between wedge pressure (WP) and IMAT PM ($r=0.334$, $p<0.001$), IMAT ESM ($r=0.371$, $p<0.001$), IMAT (PM+ESM) ($r=0.331$, $p<0.001$), IMAT PM/body surface area (BSA) ($r=0.321$, $p<0.001$), IMAT ESM/BSA ($r=0.355$, $p<0.001$) and IMAT (PM+ESM)/BSA ($r=0.382$, $p<0.001$). Similarly, mean pulmonary artery pressure (PAPm) shows a statistically significant positive correlation with IMAT PM ($r=0.133$, $p=0.012$), IMAT ESM ($r=0.168$, $p=0.002$), IMAT PM/BSA ($r=0.121$, $p=0.020$), IMAT ESM/BSA ($r=0.159$, $p=0.003$) and IMAT (PM+ESM)/BSA ($r=0.164$, $p=0.002$). Regarding cardiac index (CI), we found a statistically significant negative

correlation with IMAT ESM (r=-0.176, p=0.001), IMAT ESM/BSA (r=-0.156, p=0.004) and IMAT (PM+ESM)/BSA (r=-0.132, p=0.012). Finally, TPVR shows a statistically significant positive correlation with IMAT ESM (r=0.103, p=0.040) and IMAT ESM/BSA (r=0.117, p=0.023).

Conclusion: These findings highlighted that pulmonary hypertension is associated with myosteatosis, with a direct correlation with the increased afterload and reduced CI. This is particularly important because patients with pulmonary hypertension tend to move less (mainly due to dyspnea), thereby promoting sarcopenia, which in turn worsens motor skills. This relationship constitutes a positive feedback loop that could worsen quality of life and prognosis.

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 913 IPERTENSIONE POLMONARE (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE) FARMACI CARDIOVASCOLARI (FARMACI CARDIOVASCOLARI E NUTRACEUTICI) PROGNOSI (SCOMPENSO CARDIACO)

SURVEY SULL'IPERTENSIONE ARTERIOSA POLMONARE: UNA FOTOGRAFIA DELLA REALTA' ITALIANA

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(d) POLICLINICO SANT'ORSOLA - BOLOGNA; (e) ISMETT, PALERMO

Background: Pulmonary arterial hypertension (PAH) is a rare and progressive syndrome, which in advanced stages can lead to right-sided heart failure and death. Although therapeutic strategies are continuously evolving, significant differences in clinical practice still exist between countries.

Methods: An Italian Survey was conducted to evaluate differences in the diagnosis, management and treatment of PAH patients across specialized Italian centers. The Survey was administered to 32 PAH Centers throughout Italy via an online questionnaire. A panel of nine PAH experts analyzed and discussed the collected data.

Results: Thirty Centers from 15 regions responded to the survey, thus providing a comprehensive representation of the Italian landscape. The results showed that all participating Centers (100%) perform right heart catheterization at the time of PAH diagnosis, while genetic testing is available in 73% of cases. In high-volume Centers, 10.4% of patients are on oral monotherapy, whereas low-volume Centers report a lower use of triple oral therapy (15%) and parenteral prostanoids (11.3%). Many Centers (70%) use parenteral prostanoids as part of an upfront approach in newly diagnoses high-risk PAH patients. Nine Centers (30%) achieve the low risk profile in more than 60% of their population. Consistent with data from the literature, the use of an upfront strategy including parenteral prostanoids was associated with a higher probability of achieving a low-risk profile. In conclusion, 70% of Centers have patients currently on the list for lung transplant.

Conclusions: Italian PAH Centers show excellent adherence to the diagnostic standards recommended by European guidelines and a good uniformity in therapeutic management, with some divergences related to differences in the phenotype of PAH patients. The Survey also revealed a high level of awareness regarding the efficacy of parenteral prostanoids, particularly when initiated early in the disease course. Collaboration and referral of selected PAH patients to Centers with greater experience in the management of complex infusion therapies emerge as the key to success.

(Il manoscritto relativo a questo studio è stato sottomesso al Giornale Italiano di Cardiologia ed è attualmente in attesa di pubblicazione)

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 1019
CARDIOLOGIA PEDIATRICA
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
CARDIOPATIE CONGENITE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
ELETTROCARDIOGRAFIA/ CARDIOVERSIONE/ DEFIBRILLAZIONE (ARITMIE)
ARITMIE VENTRICOLARI (ARITMIE)
CARDIOPATIE CONGENITE NELL´ADULTO
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)

SINGLE-LEAD ECG PATCH VS CONVENTIONAL HOLTER IN CHILDREN WITH CONGENITAL HEART DISEASE: FEASIBILITY, DIAGNOSTIC YIELD, AND AGREEMENT IN A SINGLE-CENTER STUDY

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Background: Ambulatory ECG (aECG) is pivotal for surveillance of pediatric patients and those with congenital heart disease (CHD). Single-lead patch devices promise greater comfort and extended recording times, yet evidence in children - especially with CHD - remains limited. In this context, our aim was to evaluate feasibility, signal quality, diagnostic yield, tolerability, and agreement of a single-lead ECG patch against a conventional multichannel Holter across pediatric and CHD populations.

Methods: We combined (i) a retrospective cohort of 140 outpatients aged 1.5–18 years who wore the patch for up to 6 days; flagged events were adjudicated by two pediatric cardiologists, and (ii) a prospective, head-to-head comparison in 20 consecutive pediatric/young adult patients with CHD and/or prior arrhythmias who underwent simultaneous 24-h monitoring with a single-lead patch and a standard multichannel Holter.

Results:
In the head-to-head analysis, the patch yielded a higher proportion of interpretable signal with fewer electrode-related artifacts and superior patient-reported comfort; the multichannel Holter remained preferable for complex conduction abnormalities and repolarization assessment. Both modalities detected supraventricular and ventricular ectopy with comparable burden, and adherence was excellent, with fewer interruptions in the patch group. In the larger pediatric patch cohort (n=140), compliance was high (95%; 5% early discontinuation). Median monitoring was 1 day (IQR 1–3); 31.2% recorded ≥2 days and 16.1% ≥4 days. Symptom–rhythm correlation was achieved in 70%. Clinically significant arrhythmias occurred in 4.5% (SVT 0.9%, VT 0.9%, pauses ≥2 s 2.7%). Monitoring influenced clinical management in 7% and supported follow-up discontinuation in 9%. In 20 paired studies, patch findings showed 100% correlation with standard Holter. Specifically, in the head-to-head analysis, the patch yielded a higher proportion of interpretable signal with fewer electrode-related artifacts and superior patient-reported comfort. However, the multichannel Holter remained preferable for complex conduction abnormalities and repolarization assessment. Both modalities detected supraventricular and ventricular ectopy with comparable burden, and adherence was excellent, with fewer interruptions in the patch group.

Conclusions: Single-lead ECG patch monitoring is feasible, well-tolerated, and clinically informative in children and patients with CHD, offering arrhythmia detection comparable to multichannel Holter alongside improved comfort and signal continuity. Multichannel systems remain advisable when detailed conduction or repolarization analysis is required. These data support broader use of patch monitoring for routine surveillance and symptom evaluation, warranting validation in multicenter studies.

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 258
IPERTENSIONE POLMONARE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI
(PREVENZIONE E RIABILITAZIONE)
PROGNOSI (SCOMPENSO CARDIACO)

REPRESENTATIVENESS OF RANDOMIZED CLINICAL TRIAL CRITERIA IN THE REAL WORLD OF PATIENTS WITH PULMONARY ARTERIAL HYPERTENSION: AN ANALYSIS FROM THE FOCUS PAH REGISTRY

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(a) HAMMERSMITH HOSPITAL; (b) DIPARTIMENTO DI CARDIOLOGIA CA' FONCELLO TREVISO; (c) UNIVERSITÀ DI BRESCIA; (d) UNIVERSITÀ DI GENOVA; (e) UNIVERSITÀ DI MODENA E REGGIO EMILIA; (f) UNIVERSITÀ DI MILANO, NIGUARDA; (g) UNIVERSITÀ DI PAVIA; (h) UNIVERSITÀ DI TORINO; (i) UNIVERSITÀ DI PISA; (j) UNIVERSITY OF GOTHENBURG; (k) AZIENDA SANITARIA UNIVERSITARIA FRIULI CENTRALE, UDINE; (l) CARDIOTHORACOVASCULAR DEPARTMENT, AZIENDA SANITARIA UNIVERSITARIA GIULIANO ISONTINA, UNIVERSITY OF TRIESTE, ITALY. MEMBER OF ERN GUARD-HEART

Background. Randomized clinical trials (RCTs) have significantly improved the management of pulmonary arterial hypertension (PAH), but enrolled patients may differ from those seen in routine practice. We aimed to assess the representativeness of RCT populations in a "real-world" cohort.

Methods. We retrospectively analyzed patients from the FOCUS PAH Registry. Patients meeting the inclusion and exclusion criteria and key baseline characteristics of the most recent RCTs (AMBITION, STELLAR, GRIPHON, TRITON) were classified as "trial-like"; all others as "real-world". We assessed the proportion of "trial-like" patients, reasons for non-eligibility, and their distribution over time and across centers. Univariable and multivariable Cox regression models were used to evaluate the association between "trial-like" status and 5-years mortality.

Results. Among 764 patients with PAH, only 107 (14%) were "trial-like", with no differences over time or across centers. Main exclusion criteria were age and hemodynamic thresholds: mean pulmonary arterial pressure (mPAP) <38 or >63 mmHg, pulmonary vascular resistance (PVR) <5.5 or >15.5 Wood units, and pulmonary capillary wedge pressure (PCWP) >12 mmHg. "Trial-like" patients were younger, more frequently had idiopathic or heritable PAH, and fewer comorbidities (systemic hypertension: 32% vs 45%, p=0.013; atrial fibrillation: 2% vs 7%, p=0.034). They had more severe hemodynamics (mPAP 49 vs 44 mmHg, PVR 10 vs 8 WU, both p<0.0001), more right ventricular (RV) dysfunction (55% vs 48%, p=0.059), and higher ESC/ERS risk profile. Upfront combination

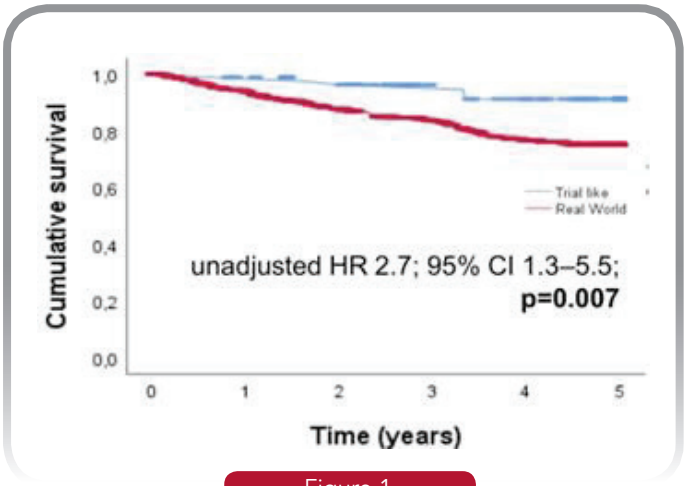


Figure 1

therapy was more common (48% vs 32%, p=0.004). "Real-world" status was associated to higher 5-years mortality (HR 2.7; 95% CI 1.3–5.5; p=0.007) and it was confirmed at multivariable analysis.

Conclusion. Representativeness of RCTs in the real-world scenario is very limited. Differences in clinical profiles and outcomes highlight the need for enrichment strategies to improve the generalizability of future RCTs results to routine care.

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 737
IPERTENSIONE POLMONARE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
ASSISTENZA CARDIACA IN ACUTO NEL DIPARTIMENTO DI EMERGENZA
(ASSISTENZA CARDIACA IN ACUTO)

ONCE ON EPOPROSTENOL, FOREVER ON EPOPROSTENOL? A CASE REPORT ON SUCCESSFUL WITHDRAWAL

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(a) UNIVERSITÀ DEGLI STUDI DI ROMA "SAPIENZA" - POL.UMBERTO I

Background: Pulmonary arterial hypertension (PAH) is a rare, progressive disease characterized by elevated pulmonary arterial pressure and pulmonary vascular resistance. Despite advances in targeted therapies, PAH remains a life-threatening condition. Epoprostenol is a synthetic analogue of prostacyclin (PGI_2), a potent vasodilator and inhibitor of platelet aggregation produced by endothelial cells. Due to its extremely short half-life, approximately 3 to 5 minutes, it requires continuous intravenous infusion via a central venous catheter, typically administered through an infusion pump. Because abrupt discontinuation is associated with an immediate risk of death, current guidelines do not recommend or provide indications for treatment withdrawal.

Case presentation: We present the case of a 76-year-old woman with idiopathic pulmonary arterial hypertension (IPAH), diagnosed in 1996 by right heart catheterization after a clinical presentation characterized by progressive fatigue and worsening dyspnoea. In 2000, due to deteriorating functional status, she was initiated on continuous intravenous epoprostenol therapy, which led to a complete normalization of clinical and hemodynamic parameters and resulted in stable disease for nearly 20 years. In September 2024, she presented to the emergency department with fever and chills. Clinical evaluation revealed signs of a catheter-related bloodstream infection originating from the Groshong line. Blood cultures were positive, and the patient rapidly developed features consistent with septic shock, including hypotension, tachycardia, and elevated lactate levels. During hospitalization, given the infectious risk, the patient's overall frailty due to multiple comorbidities, including a history of cancer, and the sustained normalization of both hemodynamic and echocardiographic parameters over more than two decades, a shared decision was made to initiate gradual weaning from intravenous epoprostenol. In parallel, oral PAH–targeted therapy was introduced, and the transition was carried out under close monitoring. The Groshong catheter was surgically removed in September 2024, without complications. Serial transthoracic echocardiograms consistently demonstrated preserved right ventricular size and function, with no direct or indirect signs of pulmonary hypertension worsening. Six months after the discontinuation of intravenous epoprostenol, the patient was re-evaluated both clinically and hemodynamically. A repeat right heart catheterization confirmed the persistence of a stable hemodynamic profile, consistent with her preserved functional status.

Conclusion: This case report raises an important

question: can prostanoid therapy be safely discontinued in a small, highly selected group of patients who have maintained complete normalization of hemodynamic parameters and cardiac imaging findings over many years? The case highlights the need for more evidence to better define the selection criteria and long-term outcomes of such an approach. However, any decision to withdraw therapy should be made by experienced pulmonary hypertension centres using individualised risk assessments and close monitoring. It is also important to ensure that patients are well-informed and actively involved in the decision-making process.

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 943
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INFARTO STEMI (CARDIOPATIA ISCHEMICA)
CARDIOPATIE CONGENITE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT)
(IMAGING CARDIOVASCOLARE)
FISIOLOGIA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

UN CASO "ANOMALO" DI STEMI INFERO-POSTERIORE

Maddalena Mitra (a), Margherita Zanoletti (a), Roberta Della Bona (a), Italo Porto (a)
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Le anomalie coronariche congenite sono un gruppo di patologie piuttosto rare la cui prevalenza si attesta tra 0.6% e 1.3%. Possono restare asintomatiche per tutta la vita, essere riscontrate incidentalmente all'imaging, essere responsabili di eventi ischemici acuti, extrasistolia ventricolare associata allo sforzo, o causare morte cardiaca improvvisa soprattutto nei giovani sportivi.

Presentiamo il caso di un uomo di 57 anni, ex sportivo agonista (canottaggio), con in anamnesi una storia di extrasistolia da sforzo non meglio indagata. Accedeva in PS per dolore epigastrico irradiato al giugulo, insorto sotto stress emotivo, con evidenza elettrocardiografica di STEMI infero-posteriore. Alla coronarografia eseguita in urgenza non si riscontravano stenosi significative a carico del circolo sinistro, ma impossibilità a visualizzare la coronaria destra nonostante aortografia e nonostante l'utilizzo di diversi cateteri diagnostici. Si eseguiva pertanto una valutazione ecocardiografica in sala di emodinamica che documentava una immagine dubbia per dissezione aortica tipo A. La angioTC toraco-addominale eseguita in urgenza, tuttavia, non confermava segni di dissezione aortica, ma apprezzava un'origine anomala dell'arteria coronaria di destra dal seno di Valsalva di sinistra con decorso interarterioso e brusco difetto di opacizzazione (> 90 % del lume) al tratto medio-prossimale, sospetto per occlusione trombotica acuta. Stante la stabilità emodinamica, la regressione del dolore, e la normalizzazione del tracciato elettrocardiografico si optava per strategia conservativa con triplice terapia antitrombotica, beta-bloccante e controllo imaging evolutivo. La TC cuore confermava l'origine anomala dal seno di Valsalva di sinistra con morfologia ostiale tipo "slit-like" e iniziale decorso intramurale aortico; in sede di difetto di opacizzazione precedentemente segnalato si documentava un modesto ematoma intramurale, in quadro suggestivo per dissezione coronarica spontanea in fase di risoluzione. Si de-escalava terapia a singola antiaggregazione e si programmava controllo TC ad una settimana, che mostrava una minima riduzione dell'ematoma intramurale, determinante stenosi di circa il 60% del lume coronarico. In considerazione dei reperti di imaging, e della stabilità clinica, si proseguiva con approccio conservativo con indicazione a controllo TC ad un mese.

DISCUSSIONE:

La coronaria destra ad origine dal seno di Valsalva sinistro con decorso interarterioso è un'anomalia rara ma associata ad un aumentato rischio di morte cardiaca improvvisa. La tomografia computerizzata coronarica è la metodica gold standard nel riconoscimento di tale anomalia. Il nostro caso rappresenta un esempio di origine anomala della coronaria destra (ARCA) a

decorso interarterioso che si è manifestato con un evento ischemico acuto in età più avanzata rispetto ai dati riportati in letteratura (età media < 30 anni). Il meccanismo fisiopatologico sembra essere correlato allo stress di parete dovuto alla compressione della coronaria tra aorta e arteria polmonare, che può portare alla formazione di un ematoma intramurale. Ampio dibattito rimane riguardo la gestione ottimale dei pazienti con ARCA a decorso interarteriale. La nostra scelta di un approccio conservativo è stata guidata dai dati clinici e da dati di letteratura che supportano questa strategia, rispetto alla chirurgia, tenendo in considerazione l'età più avanzata del paziente, l'assenza di eventi aritmici maggiori (anche in corso di attività sportiva praticata in giovane età), la stabilità del quadro clinico e l'evidenza di una graduale regressione dell'ematoma intramurale all'imaging.

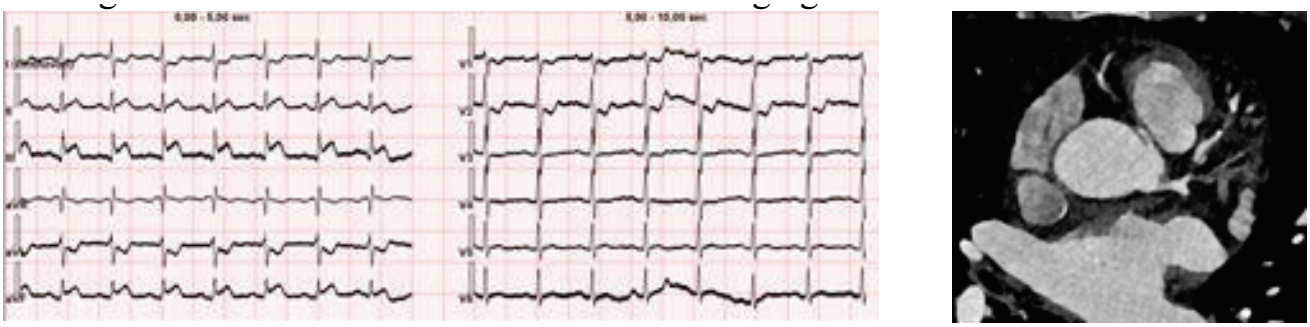


Figura 1

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 91
IPERTENSIONE POLMONARE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)

MACITENTAN AND RIOCIGUAT UP-FRONT COMBINATION THERAPY IN PATIENTS WITH IDIOPATHIC PULMONARY ARTERIAL HYPERTENSION AT INTERMEDIATE RISK: SAFETY AND EFFICACY RESULTS AFTER SIX-MOUTHS OF FOLLOW-UP

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(a) OSPEDALE DEI COLLI - MONALDI HOSPITAL, NAPLES, ITALY

Background: According to the current guidelines on pulmonary hypertension the use of Riociguat may be considered in patients with idiopathic pulmonary arterial hypertension (PAH) who present at intermediate-low risk of death during the follow-up, while receiving endothelin receptor antagonist and phosphodiesterase-5 inhibitor (PDE5i) therapy, switching from PDE5i to Riociguat. Aim of this study was to evaluate the efficacy and the safety of initial combination therapy with Macitentan and Riociguat in patients newly diagnosed with idiopathic PAH at intermediate risk.

Methods: In this open-label study we enrolled in a single tertiary centre all consecutive patients with newly diagnosed idiopathic PAH from January to December 2023. We evaluated the risk profile and collected clinical data, pro-brain natriuretic peptide (pro-BNP), six-minute walk distance (6MWD), echocardiographic data and haemodynamics at baseline and at six-month follow-up. Survival and transplantation status were analysed over 18 months.

Results: We enrolled 25 patients, 17/25 (68%) women, age 58±7. Results are showed in table 1. All patients were at intermediate risk at baseline evaluation. All were treated with Macitentan and Riociguat as up-front double oral combination therapy.
At six-month follow-up pro-BNP decreased of 61% (375±258 vs 951±312 pg/ml, p=0.001) and 6MWD increased of 51 m (p=0.001). At echocardiographic evaluation, right atrial area decreased (18±4 vs 23±7 cm2, p=0.001), and TAPSE (18±4 vs 16±4 mm, p=0.020) and TAPSE/sPAP, (0.35±0.12 vs 0.23±0.07 mm/mmHg, p<0.001) increased. Haemodynamics showed a reduction of right atrial pressure (6±4 vs 9±4 mmHg, p=0.014), mean pulmonary pressure (32±10 vs 45±11 mmHg, p<0.001) and pulmonary vascular resistance (4.5±2.9 vs 7.3±2.1 Wood Units, p<0.001), and an increase of cardiac index (3.4±0.9 vs 2.9±0.7 l/min/m2, p=0.001) and stroke volume index (46±16 vs 36±8 ml/m2, p=0.001). At baseline all patients were at intermediate risk (3 strata model), and at sixmonth follow-up 16/25 patients (64%) were at low and 9/25 (36%) at intermediate-low risk (4 strata model).

Variables	Baseline	6-month follow-up	p
Demographics and clinical characteristics, n=25			
Sex = female (%)	17 (68)		
Age	58±7		
6MWD (m)	310±79	361±87	0.001
proBNP (pg/ml)	951±312	375±258	0.001
Echocardiography			
RA area (cm^2)	23±7	18±4	0.001
TAPSE (mm)	16±4	18±4	0.020
TAPSE/sPAP (mm/mmHg)	0.23±0.07	0.35±0.12	<0.001
Right heart catheterization			
RAP (mmHg)	9±4	6±4	0.014
PAWP (mmHg)	9±2	8±2	0.369
mPAP (mmHg)	45±11	32±10	<0.001
CI (l/min/m^2)	2.9±0.7	3.4±0.9	0.001
SVi (ml/m^2)	36±8	46±16	0.001
PVR (Wood units)	7.3±2.1	4.5±2.9	<0.001
SvO_2 (%)	63±10	67±10	<0.001

Values are expressed as mean±SD.

Table 1

There were no serious side effects. No patient discontinued the double oral therapy and 20/25 (80%) reached the maximum dose of Riociguat (2.5 mg tid). Two patients died during the follow-up due to causes unrelated to PAH (malignancy and pneumonia).

Conclusion: These preliminary data support the safety and the efficacy of initial Macitentan and Riociguat combination therapy in patients with idiopathic PAH. Larger randomized trials are warranted to extend this approach to clinical practice.

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 92
IPERTENSIONE POLMONARE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
PROGNOSI (SCOMPENSO CARDIACO)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
IMAGING MIOCARDICO-PERICARDICO
(MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE
(IMAGING CARDIOVASCOLARE)

USE OF THE VENUS EXCESS LUNG ULTRASOUND (VEXUS) SCORE FOR THE ESTIMATION OF RIGHT ATRIAL PRESSURE

Antonio Orlando (a), Marco Di Maio (b), Andrea Vergara (a), Paola Argiento (a), Emanuele Romeo (a), Bianca Baino (a), Silvia Caiazza (a), Gaetano Rea (a), Nicola Cangiano (c), Berardo Sarubbi (a), Michele D´alto (a)
(a) OSPEDALE DEI COLLI - MONALDI HOSPITAL, NAPLES, ITALY; (b) SAN GIOVANNI DI DIO E RUGGI D'ARAGONA UNIVERSITY HOSPITAL, SALERNO, ITALY; (c) POLICLINICO SANTA MARIA ALLE SCOTTE, SIENA, ITALY

Background: The venous excess ultrasound (VExUS) score is a four-staged validated protocol which evaluates the presence and severity systemic venous congestion examining the inferior vena cava (IVC) diameter and its collapsibility and the flow in the hepatic vein (HV), portal vein (PV) and interlobar renal veins (IRVs). The purpose of our study was to determine if VExUS score predicts the right atrial pressure (RAP) in patients undergoing right heart catheterization.

Methods: In this perspective study, all consecutive patients undergoing indicated right heart catheterization (RHC) from September to December 2024 in two Italian centres underwent echographic scan examining IVC, HV, PV and IRVs within one hour from RHC.

Results: 72 patients were enrolled (46% women, mean age 57±17 years). After a complete assessment, patients received the following diagnosis: 57 (79%) pulmonary arterial hypertension, 2 (3%) post-capillary

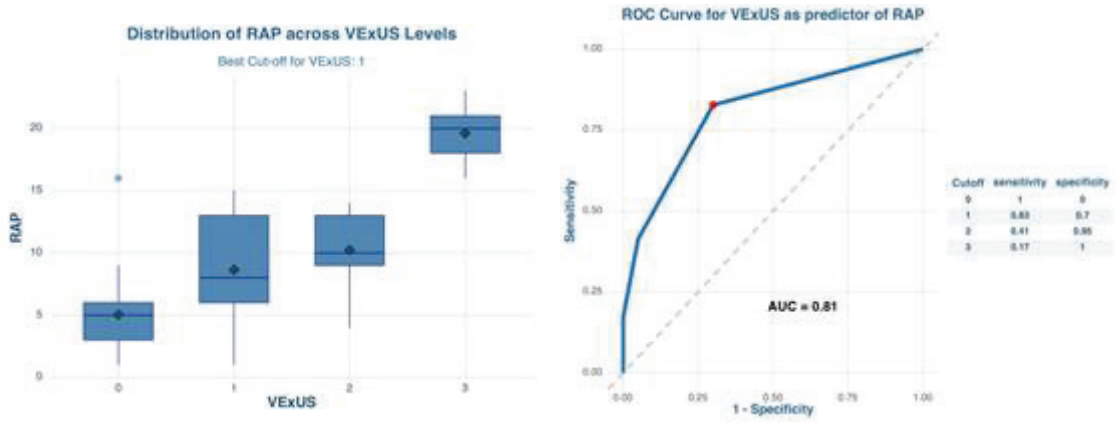


Figure 1

pulmonary hypertension (PH), 3 (4%) PH associated with lung disease, 5 (7%) chronic thrombo-embolic PH, 2 (3%) PH with unclear and/or multifactorial mechanisms, 3 (4%) normal haemodynamics. The VExUS index was evaluated as a predictor of RAP, showing a significant association (Kruskal-Wallis χ^2 test, $p < 0.001$). The receiver operating characteristic (ROC) analysis yielded an AUC of 0.81, indicating good discriminative ability (figure 1). The optimal VExUS cutoff of 1 was identified, achieving a sensitivity of 0.83 and a specificity of 0.70 for predicting RAP >8 mmHg. Figure 2 represents the distribution of RAP across VExUS levels.

Conclusion: Our findings suggest that the VExUS score is a valuable non-invasive tool for assessing venous congestion and for estimating right atrial pressure.

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 109 IPERTENSIONE POLMONARE (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE) ECOCARDIOGRAFIA 3-D (IMAGING CARDIOVASCOLARE) FUNZIONE VENTRICOLARE, RIMODELLAMENTO E DANNO D'ORGANO (IPERTENSIONE ARTERIOSA)

THE RATIO OF RIGHT VENTRICULAR FRACTIONAL AREA CHANGE OVER PULMONARY ARTERY SYSTOLIC PRESSURE PREDICTS PROGNOSIS IN PULMONARY ARTERIAL HYPERTENSION

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(a) UNIVERSITY OF TURIN, DEPARTMENT OF MEDICAL SCIENCES, TURIN, ITALY; (b) AZIENDA SANITARIA UNIVERSITARIA FRIULI CENTRALE (ASUFC), CARDIOLOGY, CARDIOTHORACIC DEPARTMENT, UDINE, ITALY; (c) AZIENDA SANITARIA UNIVERSITARIA GIULIANO ISONTINA (ASUGI), CARDIOTHORACOVASCULAR DEPARTMENT, TRIESTE, ITALY; (d) HOSPITAL CITTÀ DELLA SALUTE E DELLA SCIENZA DI TORINO, DIVISION OF CARDIOLOGY, CARDIOVASCULAR AND THORACIC DEPARTMENT, TURIN, ITALY

Background: In pulmonary arterial hypertension (PAH), echocardiographic ventriculoarterial coupling is traditionally assessed with the ratio between tricuspid annular plane systolic excursion (TAPSE) and pulmonary artery systolic pressure (PASP). However, TAPSE may not accurately reflect global right ventricular (RV) function in initial stages of the disease and may lack sensitivity in advanced PAH. Conversely, echocardiographically-derived RV fractional area change (FAC) may better reflect global RV systolic function.

Purpose: We aimed to investigate FAC/PASP ratio as a novel prognostic marker in PAH.

Methods: All consecutive patients with incident PAH enrolled in the multicenter FOCUS-PAH registry between April 2001 and November 2023 were included. Only patients with both FAC and PASP data available at PAH diagnosis were considered. The study primary outcome was to assess FAC/PASP as a predictor of 1-year all-cause mortality and 5-year all-cause mortality.

Results: 347 patients were included. Mean age at PAH diagnosis was 56±17 years; 144 (41.5%) patients were males. Median FAC/PASP at PAH diagnosis was 0.34%/mmHg [IQR 0.25-0.52%/mmHg]). 23 (6.6%) patients died during the first year of follow-up and 84 (24.2%) patients died within 5 years. As compared to 1-year survivors, patients who died at one year were significantly older (68±17 years vs 56±17 years, p-value 0.017) and more frequently male (65.2% vs 39.8%, p-value 0.017), and had higher prevalence of chronic kidney disease (34.8% vs 5.4%, p-value 0.016). At ROC curve analysis, the FAC/PASP value with the highest accuracy in predicting 1-year all-cause death was 0.37%/mmHg (sensitivity 78.3%, specificity 48.1%, AUC 0.650). Baseline FAC/PASP was low (< 0.37%/mmHg) in 18 (78.3%) of the 23 patients who died at one year and in 55 (65.5%) of the 84 patients who died at 5 years. At univariable Cox regression analyses, both low baseline FAC/PASP and low TAPSE/PASP (< 0.18 mm/mmHg) significantly predicted 1-year all-cause mortality (HR 3.050 [95 CI 1.132-8.215], p-value 0.027, and HR 2.608 [95%CI 1.115-6.101], p-value 0.027, respectively); conversely, low FAC/PASP was associated with significantly higher all-cause mortality at 5 years (HR 1.687 [95%CI 1.076-2.645], p-value 0.027), whereas low TAPSE/PASP ratio was not (HR 1.213 [95%CI 0.770-1.909], p-value 0.405).

At the multivariable Cox regression models adjusted for age and WHO functional class, low FAC/PASP ratio predicted significantly higher 1-year and 5-year all-cause mortality (HR 3.000 [95%CI 1.088-8.276],

p-value 0.034, and HR 1.718 [95%CI 1.085-2.722], p-value 0.021, respectively), whereas low TAPSE/PASP predicted significantly higher 1-year all-cause mortality (p-value 0.021) but not 5-year all-cause death (p-value 0.227).

Conclusions: In this multicenter, observational, prospective study on patients with incident PAH, low baseline FAC/PASP was associated with significantly higher mid-term and long-term all-cause mortality.

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 624
CARDIOLOGIA PEDIATRICA
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
CARDIOPATIE CONGENITE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
GRAVIDANZA E CARDIOPATIA
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)

PREVALENCE AND MAIN FEATURES OF CONGENITAL HEART DISEASES IN NEWBORNS FROM PREGNANCIES CONCEIVED BY ASSISTED REPRODUCTIVE TECHNOLOGY (ART): A SINGLE-CENTER RETROSPECTIVE STUDY

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Background and aims: Congenital heart diseases (CHD) are the most common congenital anomalies observed in newborns. In at least 10% of the cases, they are defined as critical (cCHD), as they manifest in the first month of life and potentially threaten the survival. Pregnancies obtained with assisted reproductive technology (ART) are becoming increasingly prevalent. Although the literature presents no definitive consensus regarding the association between ART and an elevated incidence of CHD, particularly cCHD, this topic remains a subject of active debate. We aimed to assess retrospectively the prevalence of CHD in our Center, with a particular focus on cCHD, among infants conceived by ART compared with those spontaneously conceived, and to evaluate their primary characteristics.

Methods: We conducted a single-center, retrospective observational study including all newborns delivered in our Center between January 2017 and December 2023. Two groups were created, based on spontaneous or ART conception. The distribution of CHD and cCHD across the two cohorts was assessed. Subsequently, we analyzed the statistical significance of the association between the type of CHD and various factors, including general population characteristics, mode of conception, the specific ART technique employed.

Results: Among a total of 40,157 newborns, 3,826 (10%) were conceived through ART. A total of 605 infants were diagnosed with CHD, with an overall prevalence of 1.4% (520/36,331) in those conceived spontaneously, compared to 2.2% (85/3,826) in those conceived via ART (OR 1.56, 95% CI: 1.24–1.97, p <0.001; OR adjusted for maternal age 1.56, 95% CI: 1.22–1.98, p <0.001).

Seventy-seven cases of cCHD were identified, with a prevalence of 0.2% (61/36,331) in spontaneous pregnancies and 0.4% (16/3,826) in ART pregnancies (OR 2.49, 95% CI: 1.44–4.33, p = 0.001; OR adjusted for maternal age 3.06, 95% CI: 1.71–5.50, p <0.001). No statistically significant association was observed between the type of CHD and mode of conception.

Conclusions: Our data revealed a significantly higher prevalence of both CHD and cCHD among infants conceived through ART. Further single-center and multicenter studies will be needed to confirm our observations, which at least suggest that ART should be part of the indications for performing a fetal echocardiogram.

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 880
CARDIOPATIE CONGENITE (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
CARDIOPATIE CONGENITE NELL´ADULTO (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
IMAGING DELLE CARDIOPATIE CONGENITE (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
PROGNOSI (SCOMPENSO CARDIACO)

FONTAN CONDUIT STENTING IN ASYMPTOMATIC PATIENTS: IMPROVING INVISIBILE HSEMODYNAMICS

Giulia Di Già (a), Marco Della Porta (a), Rossana Palumbo (a), Rosalinda Palmieri (a), Mara Pilati (a), Micol Rebonato (a), Enrico Piccinelli (a), Antonella Cutrì (a), Monica Pelegrini (a), Veronica Lisignoli (a), Rossella Iuzzolino (a), Gianfranco Butera (a), Claudia Montanaro (a)
(a) OSPEDALE PEDIATRICO BAMBINO GESÙ

INTRODUCTION: The Fontan procedure, such as the total cavo-pulmonary connection (TCPC), is nowadays the most common type of surgical palliation performed in patients with single ventricle physiology. Since this anatomy relies on passive pulmonary circulation, it is essential to maintain low pressure in the systemic and pulmonary circulation. It has been previously demonstrated that the systolic-diastolic time ratio measured on the atrioventricular valve (AVV S/D) by echocardiogram in this cohort of patients had 100% positive predictive value and 92% negative predictive value for detecting ventricular end-diastolic pressure (EDP) >10 mmHg.We aimed to assess if there is any change in the clinical, functional and echocardiographic parameters in patients who underwent a stenting of the Fontan tunnel in our Centre. METHODS: All adult patients (>18 years old) with a Fontan circulation who underwent a stenting procedure of the Fontan conduit under active follow-up in our ACHD clinic were identified. Clinical, echocardiographic, functional and blood test data (including liver markers) were collected at three-point in time: pre-stent (T0), 6-month post-stent (T1), and at latest follow-up (T2).

RESULTS: Out of 290 adults with a Fontan circulation, we identified 33 (median age (28) year-old,57 % female) patients who underwent a stenting Fontan conduit procedure. Indications for stenting were presence of stenosis with a gradient of at least 2 mmHg or evidence of relative small size conduit based on the BSA. Al latest follow-up (T2) there were no death and there was no need to change oral medication apart from initiation of aspirin when antiplatelet or anticoagulant therapy was already prescribed. At T1 and T2 time there was no difference in NYHA class (≤II), baseline O2 saturation, peak oxygen consumption on CPET, 3D-ejection fraction and global longitudinal and Free wall strain. There was a significant reduction in the AVV Systolic/Diastolic (S/D) ratio, which decreased from 1.1 [SD 1–1.2] to 1 [0.92,1.1] at T1 follow-up ($p < 0.001$) and to 0.95 [0.9,1.08] at T2 follow-up ($p = 0.0001$). Blood tests, in particular AST, ALT, bilirubin, total protein, albumin did not show significant changes over time, with the exception of gamma-glutamyl transferase (GGT) which increased slightly over time, from 77[52.5–93] U/L to 80 [59.5,93.25] U/L ($p<0.01$) at T1 and to 84 [55.5–120] U/L ($p<0.01$) at T2 follow-up. Although there was not a statistically significant change in the pro-BNP levels over time, it was noted an increasing trend at T1 which then came back to baseline at T2 follow-up.

CONCLUSIONS: At short- and mid-term follow-up after stenting of the Fontan Conduit there is a significant improvement in the AVV S/D ratio (indirect parameter of invasive VEDP). Hence, this approach should be considered also in asymptomatic patients, especially if the AVV S/D is > 1. Interestingly there is a concomitant increase in GTT which needs further investigation and multicentre studies.

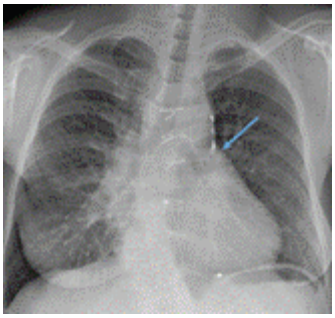
CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 890
CARDIOPATIE CONGENITE NELL´ADULTO (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
CARDIOPATIE CONGENITE (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
IMAGING DELLE CARDIOPATIE CONGENITE (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)

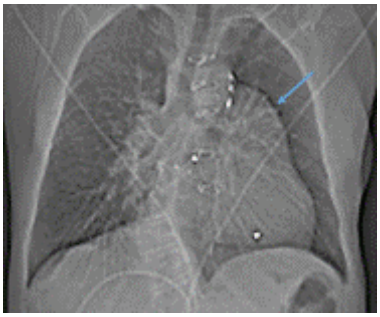
MASSIVE CALCIFICATION OF THE NATIVE RIGHT VENTRICLE: A 62 YEAR OLD FONTAN PATIENT

Rossana Palumbo (a), Rosalinda Palmieri (a), Antonella Bruna Cutrì (a)
(a) OSPEDALE PEDIATRICO BAMBINO GESÙ

INTRODUCTION: Tricuspid atresia is a rare congenital heart defect that requires Fontan palliation for survival. The first cases in the literature were described in 1971, and since then several modifications of the procedure have been introduced, gradually abandoning the original technique, which involved a direct atrial–pulmonary connection. The long-term complications of all Fontan variations remain the subject of ongoing investigation.

CASE REPORT: We present the case of a 62-year-old female patient with tricuspid atresia, pulmonary stenosis, and normally related great arteries, associated with a persistent left superior vena cava draining into the coronary sinus. She underwent a classic right Blalock–Taussig shunt at the age of 4 years, followed by a bidirectional Glenn procedure at the age of 16 years. At 35 years of age, a fenestrated extracardiac conduit was placed between the inferior vena cava and the right pulmonary artery, and an epicardial pacemaker was implanted. Five years later, the fenestration was closed percutaneously, and since then she has not required any further invasive procedures. She is currently in NYHA functional class II.During routine follow-up, an abnormal cardiac silhouette was noted, and a contrast-enhanced computed tomography (CT) scan of the heart was requested, as echocardiography showed no signs of cardiac compression. CT confirmed an unobstructed Fontan circuit but revealed a large calcified mass measuring 6.6 × 5.4 × 6.6 cm, occupying the original right ventricle (RV) and extending into the native outflow tract and pulmonary recess, which were themselves markedly ectatic. We speaculated that the severe pulmoanry valve stenosis and the absence of atrial and ventricular defect favour the formation of a chronic thrombus in the native RV and its outflow





Figures

tract. As this mass in the thorax did not interfere with cardiac or pulmonary function, surgical removal was not pursued.

CONCLUSION: This case illustrates the long-term evolution and challenges associated with Fontan physiology, particularly in patients who underwent earlier, non-standardised surgical approaches. Patients with complex anatomy should be evaluated using a multimodality imaging strategy, and clinical decisions should take into account the pathophysiological implications of unexpected findings. Structured, multidisciplinary, and lifelong follow-up is essential for patients with Fontan circulation, with careful assessment not only of the cavopulmonary connection but also of the anatomical evolution of cardiac chambers with stenotic/durgically closes edge, which may silently harbor clinically significant pathology.

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 525
IPERTENSIONE POLMONARE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE
(IMAGING CARDIOVASCOLARE)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)

RIGHT HEART DIMENSION AND PULMONARY ARTERIAL WEDGE PRESSURE IN PULMONARY ARTERIAL HYPERTENNSION: EXPLORING A CONTROVERSIAL RELATIONSHIP

Silvia Papa (a), Giorgia Serino (a), Francesca Adamo (a), Domenico Filomena (a), Enrico Maggio (a), Alexandra Mihai (a), Gianmarco Scoccia (a), Giovanna Manzi (a), Carmine Dario Vizza (a), Roberto Badagliacca (a)
(a) SAPIENZA UNIVERSITA' DI ROMA

Background: Pulmonary capillary wedge pressure (PCWP) provides an indirect estimate of left ventricular (LV) end-diastolic pressure. Its assessment is crucial in evaluating pulmonary hypertension. Hypothesis: Recent research indicates a correlation between advanced pulmonary arterial hypertension (PAH) and worsened pulmonary congestion, suggesting a paradoxical relationship between right ventricular (RV) dysfunction and elevated lung water content. However, the correlation between PCWP and cardiac chamber size or RV afterload remains unclear in PAH.

Aim: This study aims to evaluate the correlation between PCWP, right and left ventricular dimensions, and right ventricular overload, in a large, multicenter cohort of patients with PAH.

Methods: A post-hoc analysis was conducted from 401 idiopathic, heritable, or PAH associated with connective tissue disease patients, prospectively included in the ULTRAsound RIGHt venTricular eVALUation (ULTRA RIGHT VALUE) registry. This is the first multicentre, observational registry, involving 8 European expert referral PAH centers, characterized by centralized echocardiography reading with high-quality data imaging, according to FDA/EMA regulatory standards. Each patient received a comprehensive clinical, echocardiographic, and hemodynamic evaluation. All echocardiographic images were electronically transmitted to a core laboratory at Sapienza University of Rome for standardized evaluation. Echocardiographic studies were performed on average 0±31 days from RHC. Correlations between PCWP and ventricular dimensions were assessed using Pearson's correlation coefficient (r).

Results: From January 2022 to December 2023, the study included 401 patients with prevalent PAH. The mean age was 52±17 years. The majority of patients were female (275 patients,68%), with idiopathic PAH (244 patients,61%). One hundred thirty (32.4%) of patients had at least one cardiometabolic comorbidity. Two hundred eighty-nine (72%) patients completed echocardiographic studies within 24 hours after RHC. No significant correlations were observed between PCWP and RV end-diastolic area (r=0.07; p=ns), LV end-diastolic index (r=-0.06; p=ns), and LV end-diastolic area (r=-0.004; p=ns) at baseline. Additionally, no correlation was found between ΔPCWP and ΔPVR (r=-0.06; p=ns) in 150 patients (37%) from baseline to follow-up.

Conclusion: Increased PVR and echocardiographic data of cardiac chamber size from patients with PAH were not associated with increased PCWP.

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 1062
CARDIOLOGIA PEDIATRICA
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
CARDIOPATIE CONGENITE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
IMAGING DELLE CARDIOPATIE CONGENITE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)

NON-INVASIVE ASSESSMENT OF VORTEX PATTERNS IN PEDIATRIC VENTRICULAR SEPTAL DEFECT USING HYPERDOPPLER TECHNOLOGY

Giulia Pelaia (a), Rosalba De Sarro (a), Giuseppe Antonio Mazza (a), Isabella Leo (a), Nicole Carabetta (a), Antonio Strangio (a), Sabato Sorrentino (b), Nadia Salerno (a), Rosario Panuccio (a), Salvatore De Rosa (b), Fabio Troilo (d), Marco Maglione (d), Giovanni Di Salvo (c), Daniele Torella (a), Jolanda Sabatino (a)
(a) DEPARTMENT OF EXPERIMENTAL AND CLINICAL MEDICINE, MAGNA GRAECIA UNIVERSITY, 88100 CATANZARO, ITALY; (b) DEPARTMENT OF MEDICAL AND SURGICAL SCIENCES, MAGNA GRAECIA UNIVERSITY, 88100 CATANZARO, ITALY; (c) PAEDIATRIC CARDIOLOGY UNIT, DEPARTMENT OF WOMAN'S AND CHILD'S HEALTH, UNIVERSITY OF PADUA, 35128, PADUA, ITALY; (d) GLM ESAOTE SPA, 16155 GENOVA, ITALY

Background: Altered intraventricular flow dynamics have been associated with ventricular remodeling in congenital heart disease. Vortex analysis may provide additional insights into left ventricular (LV) function in children with ventricular septal defect (VSD).

Methods: Twenty-five children with VSD (mean age 6 months, range 0–3 years) were prospectively enrolled and underwent non-invasive evaluation of intracardiac flow dynamics. In addition to standard echocardiography, fluid dynamics were assessed using HyperDoppler. Results were compared with those obtained in 25 age- and sex-matched healthy controls. Vortex area and depth were quantified, and subgroup analysis was performed according to VSD size and LV dimensions.

Results: Children with VSD showed significantly larger vortex area and increased vortex depth compared to controls ($p < 0.05$). Among them, 6 patients with large, unrestrictive VSD and dilated LV diastolic dimensions exhibited markedly greater vortex area compared with both the remaining VSD cohort and controls ($p < 0.01$).

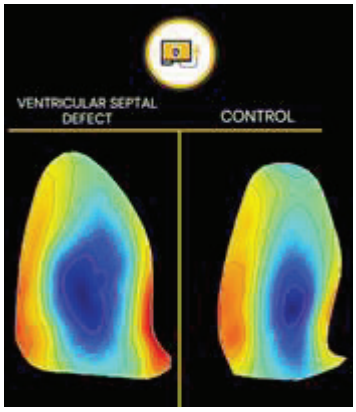


Figure 1

Conclusions: Children with VSD demonstrate abnormal vortex patterns characterized by increased vortex area and depth. These alterations are more pronounced in patients with large, unrestrictive defects and LV dilation, suggesting a potential role of vortex analysis as an imaging marker of hemodynamic burden and remodeling.

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 804 IPERTENSIONE POLMONARE (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE) FARMACI CARDIOVASCOLARI (FARMACI CARDIOVASCOLARI E NUTRACEUTICI) PROGNOSI (SCOMPENSO CARDIACO)

TIME RELATED EFFICACY IN CHRONIC THROMBO-EMBOLIC PULMONARY HYPERTENSION

Marvi´ Petraglia (a), Lucia Soriente (a), Carmine Vecchione (a), Gennaro Galasso (a)
(a) SAN GIOVANNI DI DIO E RUGGI D'ARAGONA

Chronic thrombo-embolic pulmonary hypertension is a common and important cause of PH, with a distinct management strategy. Chronic thrombo-embolic pulmonary disease describes symptomatic patients with mismatched perfusion defects on V/Q scan and with signs of chronic, organized, fibrotic clots on Computed tomography pulmonary angiography or Digital subtraction angiography, such as ring-like stenoses, webs/slits, and chronic total occlusions after at least 3 months of therapeutic anticoagulation. The clinical case we are going to introduct is about a 68-year-old man suffering from severe polmunary hypertension due to chronic thrombo embolic pulmonary embolism since 2010 , which was followed by a diagnosis of idiopathic pulmonary hypertension, currently being treated at our pulmonary hypertension clinic (San Giovanni di Dio e Ruggi D'Aragona). At the first clinical check-up, the patient was placed in the intermediate-high risk range according to the ESC 2022 guidelines for pulmonary hypertension (BNP 748 ng/L, RA area 22 cm^2, TAPSE/PAPs 0.16 mm/mmHg, 6MWD 360 m, signs and symptoms of right heart failure). Thanks to therapeutic optimization during years (Macitentan 10 mg, Adempas 2.5 mg x 3, Selexipag 800 mg 1 cp x 2), with the addition of diuretic therapy and SGLT1 inhibitors, there was a progressive clinical, laboratory and instrumental improvement with its placement in the intermediate-low risk band , (BNP 498 pg, TAPSE/PAPs 0.38 mm/mmHg, 6MWD 500 m, with right heart failure signs and symptoms decreased), which confirmed the therapeutic efficacy of the treatment and the validity of the clinical studies present in literature.

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 1004
CARDIOPATIE CONGENITE NELL´ADULTO
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
CARDIOPATIE CONGENITE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
CARDIOLOGIA PEDIATRICA
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
PROGNOSI (SCOMPENSO CARDIACO)

PREVALENCE AND ROLE OF IRON DEFICIENCY IN ADULT FONTAN PATIENTS

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Background: Patients with Fontan circulation have different mechanisms of failure, many of which are not entirely understood, and it is well known that Fontan patients face decreased functional capacity, multiple hospitalisations and a higher mortality in their adult life. Iron deficiency (ID) is a recognised risk factor in patients with HF and may contribute to the failing of the Fontan circulation. Data upon the prevalence and the role of ID in adult patients with Fontan circulation are lacking.
Aim: In this study we investigate the relationship of iron deficiency and functional capacity in a cohort of adult Fontan patients.

Methods: we retrospectively reviewed adult patients with Fontan circulation consecutively admitted for reassessment at our institution. Investigations included clinical evaluation, blood tests and cardiopulmonary exercise test (CPET). ID was diagnosed as ferritin <100 ng/mL or serum ferritin 100-299 ng/mL with transferrin saturation (TSAT) <20%, as per as per ESC Guidelines. Patients aged < 16 y.o at the time of admission and those who did not give consent were excluded from the analysis.

Results: thirty-one patients (67.7% female, mean age 26.3 ± 9.1 years) met the inclusion criteria. NYHA Class was I in 25 (83.3%); II in 5 (16.1%); III in 1 (0.6%). 28/31 (90.3%) patients had a total cavo-pulmonary connection (TCPC), either lateral tunnel or extracardiac conduit. 20/31 patients (64.5%) had a systemic left ventricle, 9 (29.0%) systemic right, 2 (6.5%) undetermined ventricular morphology. Mean SpO2 was 95 ± 3%, mean VO2 peak was 26.3 ± 6.61 mlO2/kg/min, mean VE/VCO2 slope 32.8 ± 6.98. At blood tests mean Hb was 151 ± 14 g/L, median ferritin 36 (IQR 22;132) ng/ml, and median TSAT 15 (IQR 10;25) %. ID was present in 25/31 (80.6%) patients. Female sex (OR 20, CI95 1.89-212, p = 0.003) and non-left systemic ventricle (OR 10.3, CI95 0.52-203, p = 0.043) were both strong risk factors for ID. CPET parameters were not influenced by the presence of ID VO2 peak (p = 0.929), VE/VCO2 slope (p= 0.745).

Conclusion: Iron deficiency is outstandingly frequent in adult patients with Fontan circulation, especially in women and in patients with a systemic ventricle of non-left morphology, but it does not appear to be correlated with functional capacity.

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 24
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
CARDIOLOGIA PEDIATRICA
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
CARDIOPATIE CONGENITE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
CARDIOPATIE CONGENITE NELL´ADULTO
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
PATOLOGIA DELLA VALVOLA POLMONARE (VALVULOPATIE)

PRIMA CASISTICA ITALIANA MONOCENTRICA DI IMPIANTO DI NUOVA VALVOLA POLMONARE SELF-EXPANDABLE

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(a) CARDIOLOGIA PEDIATRICA E DEL CONGENITO ADULTO UNIVERSITÀ DI PADOVA;
(b) CARDIOLOGIA UNIVERSITÀ DI PADOVA

Introduzione: Le Cardiopatie congenite colpiscono a livello mondiale circa 1% dei nati vivi. Tra questi si stima che circa il 20% sarà sottoposto a ad una o più procedure chirurgiche o percutanee sul tratto di efflusso destro (RVOT) o sulla valvola polmonare. L'impianto percutaneo della valvola polmonare è una alternativa meno invasiva alla chirurgia per il trattamento della disfunzione del tratto di efflusso del ventricolo destro. Tale opzione è disponibile da circa 20 anni. Tuttavia, negli ultimi 3 anni si sono rese disponibili protesi auto espandibili che hanno ulteriormente allargato la platea di pazienti potenzialmente elegibili per un trattamento percutaneo.

Obiettivo: Analisi di outcome a breve termine dell'impianto di nuova una valvola polmonare auto espandibile tipo Harmony. Materiali e metodi: Nel centro di cardiologia pediatrica di Padova dal 01/04/2024 al 30/05/2025 sono state eseguite 9 procedure di impianto di nuove valvole polmonari self-expandable, di cui la prima eseguita in regime di uso compassionevole. Tutti i 9 pazienti arruolati rispondevano ai criteri di sostituzione di valvola polmonare secondo le linee guida ESC per insufficienza. Il diametro minimo dell'efflusso destro escludeva l'utilizzo di protesi balloon expandable. I pazienti erano stati sottoposti a cateterismo diagnostico e angioTC ECG gated preimpianto. Valutata la fattibilità procedurale, l'impianto del device è stato eseguito in 8 casi in sala di emodinamica con sola guida fluoroscopia mentre un caso è stato eseguito sempre per via percutanea ma in sala ibrida previo restringimento tramite sutura diretta del tronco polmonare in toracotomia sinistra. La valutazione post-operatoria, basata su ecocardiografia trans-toracica 2D e 3D, ha preso in considerazione la presenza di leak para-valvolare, gradiente ed insufficienza a livello della protesi e parametri di funzionalità del ventricolo destro (TAPSE, Volume, onda S' e grado di insufficienza tricuspidalica a 24 h a 30 giorni ed a 6 mesi dall'impianto; ECG holter a 1 mese e a 6 mesi; test da sforzo cardio polmonare a 6 mesi.

Risultati: La procedura è stata efficace in tutti i 9 e non sono state riscontrate complicanze procedurali o peri-procedurali. In 4 casi era presente un leak para valvolare al controllo a 24 ore che non è stato riscontrato al controllo a 30 giorni. Aritmie post-operatorie si sono registrati in 3 pazienti, in nessun caso hanno avuto impatto emodinamico. I paramenti di funzionalità cardiaca del ventricolo destro sono in tutti e 9 i casi migliorati

e non sono stati riscontrati alterazioni della funzionalità valvolare, al controllo ecocardiografico a 30 giorni. L'holter ECG a 30 dall'impianto è risultato negativo per tutti e 9 i casi.

Conclusioni: La nuova valvola polmonare self-expandable permette di trattare in modo sicuro ed efficace pazienti con caratteristiche anatomiche di RVOT nativi o post-chirurgici che prima erano elegibili esclusivamente per valvulazione chirurgica. I dati a breve termine confermano che leak para valvolari e aritmie sono eventi transitori che non meritano ulteriori trattamenti. I pazienti hanno dichiarato un miglioramento della sintomatologia già a un mese dalla procedura.

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 71
CARDIOPATIE CONGENITE NELL´ADULTO
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
IMAGING DELLE CARDIOPATIE CONGENITE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE)
(IMAGING CARDIOVASCOLARE)

TRANSESOPHAGEAL ECHOCARDIOGRAPHIC DIAGNOSIS OF SUPERIOR CAVAL TYPE ATRIAL SEPTAL DEFECT WITH OVERRIDING SUPERIOR VENA CAVA: A RARE CONGENITAL MALFORMATION IN A SYMPTOMATIC ADULT PATIENT TREATED SURGICALLY

Alberto Ruggiero (a, b), Antonella Pompa (a, b), Michele Catapano (a, b), Domenico Panico (a, b), Donato Soviero (a, b), Arturo Cesaro (a, b), Raffaella Provenzano (a, c), Andrea Montalto (a, c), Paolo Calabrò (a, b)
(a) A.O.R.N SANT'ANNA E SAN SEBASTIANO - CASERTA; (b) DEPARTMENT OF TRANSLATIONAL MEDICAL SCIENCES UNIVERSITY OF CAMPANIA "LUIGI VANVITELLI" - NAPLES; (c) DEPARTMENT OF TRANSLATIONAL MEDICAL SCIENCES - DIVISION OF CARDIAC SURGERY

Atrial septal defects (ASDs) are among the most common congenital heart diseases diagnosed in.
We report the case of a 54-year-old woman with a history of migraine with aura and newly discovered severe right-to-left interatrial shunt identified through transcranial Bubble test.
Transesophageal echocardiography (TEE) revealed a 10 mm superior caval type ASD, with continuous right-to-left shunting and a Qp/Qs ratio of 1.05.
Cardiac MRI confirmed the diagnosis and excluded anomalous pulmonary venous return.
Due to the defect's anatomical position and incompatibility with percutaneous closure, surgical correction using a Dacron patch was performed successfully.
Post-operative follow-up showed complete closure with resolution of the patient's symptoms.
This case highlights the importance of multimodal imaging in diagnosing rare congenital defects in adults and the need for individualized treatment strategies when percutaneous approaches are not viable.
Early recognition and surgical correction can significantly improve outcomes and reduce long-term complications.

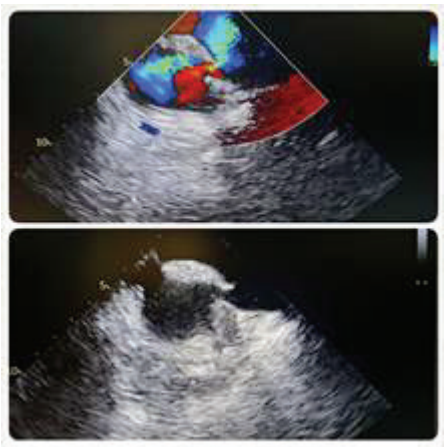


Figure 1

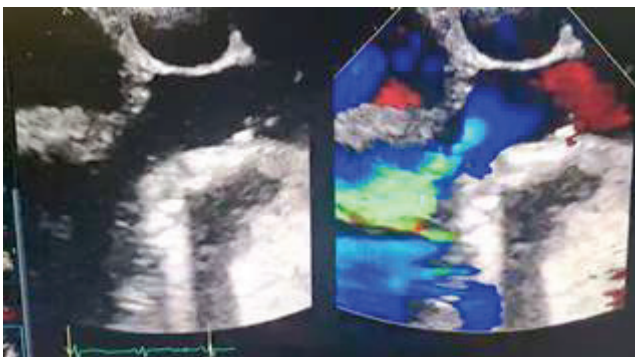


Figure 2

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 645
TROMBOSI E COAGULAZIONE (ATEROTROMBOSI)
EMBOLIA POLMONARE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
IPERTENSIONE POLMONARE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)

EXPERIENCE OF 10-YEARS OF BALLOON PULMONARY ANGIOPLASTY IN A SINGLE CENTRE: SHORT TERM RESULTS

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Introduction: Balloon pulmonary angioplasty (BPA) has emerged as an alternative, less invasive, therapeutic approach for chronic thromboembolic pulmonary hypertension (CTEPH). Nonetheless, the clinical effectiveness and procedural safety of this technique require thorough validation. This study aims to assess the impact of BPA in patients with inoperable CTEPH or persistent pulmonary hypertension after pulmonary endarterectomy (PEA).

Methods: From June 2015 to May 2025, patients with symptomatic inoperable CTEPH (WHO FC ≥II), as well as those with residual pulmonary hypertension (PH) after PEA, were enrolled. Clinical assessments, six-minute walking distance (6MWD), and right heart catheterization (RHC) were performed at baseline and between three to six months following the final BPA session. Data are expressed as median values with interquartile ranges. Comparative analyses of pre- and post-BPA parameters were conducted using a two-tailed paired T-test, while statistical significance for non-normally distributed data was evaluated via the Wilcoxon Signed-Rank Test.

Results: Seventy-eight patients [male 44%, median age 72 (36-89) years, 67 inoperable and 11 with residual PH

	RA (mmHg) n=71	mPAP (mmHg) n=71	CI (l/min/m2) n=71	PVR (WU) n=71	PAC (ml/mmHg) n=71	6MWD (m) n=61	NYHA FC n=70
Pre-BPA	6 (4-7)	40 (33-48)	2.7 (2.3-3)	6 (4.4-9.2)	1.34 (0.92-2.00)	450 (376-512)	3 (2-3)
Post-BPA	6 (4-7)	34 (28-39)	2.8 (2.5-3.3)	4.5 (2.9-6.2)	1.86 (1.23-2.84)	460 (390-567)	2 (2-2)
p-value	ns	<0.001	0.004	<0.001	<0.001	<0.001	<0.001

Legend: RAP, Right Atrial Pressure; mPAP, mean Pulmonary Arterial Pressure; CI, Cardiac Index; PVR, Pulmonary Vascular Resistance; PAC, Pulmonary arterial compliance; 6MWD, 6 Minute Walking Distance

Table 1

after PEA] were treated for a total of 209 sessions and 457 treated vessels [median number of sessions for each patient: 2 (1-4); median number of vessels treated for each patient: 5 (2-8)]. Sixty-nine patients were assuming pulmonary arterial hypertension specific drugs before BPA (18 were in combination therapy). All patients received life-long anticoagulation therapy (vitamin K-antagonist: 32 patients, direct oral anticoagulation: 44, fondaparinux: 2). In 6 patients there was a small, non-flow limiting pulmonary artery dissection, and 20 patients experienced mild hemoptysis during the procedure, in only 1 case requiring oro-tracheal intubation; there were 3 major vascular complications (2 artero-venous fistulas, 1 pseudoaneurysm) and 5 minor vascular complications (groin hematoma < 5 cm). Clinical and haemodynamic results are shown in the Table.

Conclusions: BPA is a safe and effective treatment for symptom relief and hemodynamic improvement in inoperable CTEPH and residual PH after PEA.

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 104
IPERTENSIONE POLMONARE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)

REAL-WORLD SOTATERCEPT ELIGIBILITY: ANALYSIS FROM THE FOCUS-PAH REGISTRY

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Background. Pulmonary arterial hypertension (PAH) remains life-threatening despite vasodilator-based therapies. Sotatercept, targeting the activin signaling pathway, has shown significant clinical and hemodynamic benefits in the STELLAR and ZENITH trials, marking a paradigm shift in PAH treatment.

Research Question. What is the real-world eligibility for sotatercept, based on STELLAR and ZENITH criteria, and how does this eligibility evolve over time?

Study Design and Methods. We retrospectively analyzed 657 patients with incident PAH (2001–2024), excluding 116 with incomplete follow-up data. Inclusion criteria mirroring STELLAR were WHO functional class II/III, PVR ≥5 WU, and stable background therapy. Exclusion criteria included severe comorbidities or recent cardiovascular events. Multivariable models identified predictors of non-eligibility. Extended eligibility per ZENITH criteria was also assessed.

Results. Among 541 analyzed patients, 104 (19%) were ineligible at baseline, mainly due to non-permitted PAH subtypes (71%) or vasoreactivity (29%). During a median 45-month follow-up, 50% remained eligible, with most exclusions due to PVR <5 WU (53%) or recent therapy changes (53%). Older age (OR 1.011, p=0.003) and triple therapy (OR 2.841, p<0.001) predicted non-eligibility, while idiopathic PAH was protective (OR 0.742, p=0.025). Integrating ZENITH criteria increased eligibility to 56% (+6% vs STELLAR).

Interpretation. STELLAR criteria exclude a substantial portion of real-world PAH patients, particularly during follow-up, when therapy intensification is often required per the 7th World Symposium algorithm. ZENITH criteria offer only a modest improvement. Tailored selection strategies and optimal timing for initiation are needed to enhance sotatercept's applicability. Future trials should consider enrichment strategies to broaden treatment eligibility.

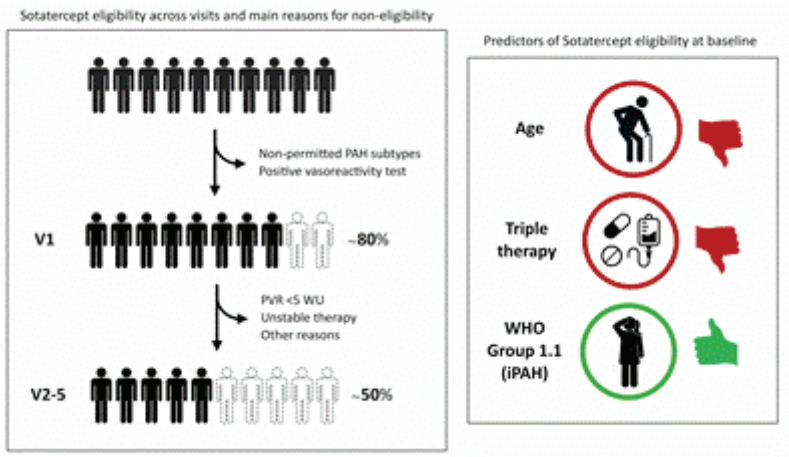

Sotatercept eligibility across visits and main reasons for non-eligibility
Non-permitted PAH subtypes
Positive vasoreactivity test
V1
~80%
PVR <5 WU
Unstable therapy
Other reasons
V2-5
~50%
Predictors of Sotatercept eligibility at baseline
Age
Triple therapy
WHO Group 1.1 (iPAH)

Figure 1

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 223
IPERTENSIONE POLMONARE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE
(IMAGING CARDIOVASCOLARE)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)

IL RUOLO DELL'ECOCARDIOGRAMMA NELLA VALUTAZIONE DELLA RISPOSTA AL TRATTAMENTO CON PROSTANOIDI PARENTERALI NEI PAZIENTI CON IPERTENSIONE ARTERIOSA POLMONARE

Giorgia Serino (a), Silvia Papa (a), Francesca Ileana Adamo (a), Domenico Filomena (a), Enrico Maggio (a), Alexandra Mihai (a), Gianmarco Scoccia (a), Giovanna Manzi (a), Carmine Dario Vizza (a), Roberto Badagliacca (a)
(a) UNIVERSITÀ LA SAPIENZA DI ROMA

BACKGROUND. L'ipertensione arteriosa polmonare (IAP) è una sindrome clinica caratterizzata da un aumento progressivo delle resistenze vascolari polmonari (RVP) determinante insufficienza cardiaca destra. Sebbene la prognosi dell'IAP sia migliorata negli ultimi due decenni, gli outcomes per i pazienti sono ancora sfavorevoli e rimangono questioni irrisolte riguardo alle attuali strategie terapeutiche.

OBIETTIVI. Il presente studio ha l'obiettivo di identificare variazioni dei parametri ecocardiografici a un anno dall'inizio della terapia con prostanoidi parenterali predittive di sopravvivenza a lungo termine in pazienti con IAP.

METODI. 163 pazienti consecutivi affetti da IAP (IAP idiopatica, 69%) trattati con prostanoidi parenterali sono stati seguiti nel tempo con valutazione clinica, ecocardiografica ed emodinamica.

RISULTATI. Il miglioramento del dato di area telediastolica ventricolare destra (RVEDA) e variazione frazionale dell'area ventricolare destra (RVFAC) a un anno dall'inizio della terapia parenterale è risultato predittore indipendente di sopravvivenza (c-statistic: 0.83, C.I. 0.75-0.92). I cut-off derivati dalle curve ROC, ΔRVEDA > -2.5 cm2 e ΔRVFAC > 5.6%, sono stati utilizzati per definire una risposta al trattamento clinicamente significativa. Dopo un follow-up mediano di 33 mesi (IQR 10-69), 68 pazienti (42%) erano deceduti. 55 pazienti (34%) sono risultati pienamente responsivi al trattamento parenterale con tassi di sopravvivenza significativamente migliori rispetto ai 108 pazienti parzialmente responsivi (66%), rispettivamente 100%, 100%, 100% e 100% contro 69%, 44%, 33% e 13% dopo 1, 3, 5 e 10 anni di follow-up (p<0.0001). All'analisi multivariata, la riduzione delle RVP è risultata l'unico determinante indipendente del miglioramento sia di RVEDA che di RVFAC (O.R. 0.76, 95% C.I. 0.66-0.89, p<0.001). Sebbene non si siano riscontrate differenze significative nel dosaggio massimo del prostanoide raggiunto nel tempo tra sopravvissuti e non sopravvissuti (55.8±33.2 vs 48.1±25.9 ng/kg/min, rispettivamente; p=ns), i pazienti pienamente responsivi sono stati caratterizzati da un miglioramento progressivo di RVEDA e RVFAC con l'aumento del dosaggio dei prostanoidi rispetto ai parzialmente responsivi (pienamente responsivi: Δ RVEDA vs dosaggio di prostanoidi: r2=0.61, p=0.0001, y=-11.3-0.27x; Δ RVFAC vs dosaggio di prostanoidi: r2=0.12, p=0.01, y=9.43+0.09x). Nei pazienti che hanno iniziato il trattamento con prostanoidi parenterali in classe di rischio ESC/ERS alta si è registrata una riduzione del 52% (O.R. 0.48, 95% C.I. 0.26-0.79, p<0.01) della probabilità di raggiungere una definizione di risposta clinicamente significativa.

CONCLUSIONI. Nei pazienti con IAP la valutazione ecocardiografica a un anno dall'inizio della terapia con prostanoidi parenterali consente di definire una risposta clinicamente significativa al trattamento identificando i pazienti caratterizzati da una sopravvivenza a lungo termine maggiore.

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 1041
EMBOLIA POLMONARE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
ASSISTENZA INTENSIVA CARDIOVASCOLARE IN ACUTO
(ASSISTENZA CARDIACA IN ACUTO)
IPERTENSIONE POLMONARE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)

MECHANICAL THROMBECTOMY AFTER FAILED THROMBOLYSIS IN MASSIVE PULMONARY EMBOLISM: A CASE REPORT

Giuseppe Piero Starita (a), Gemma Miletti (a), Davide D´anna (a), Jacopo Capparelli (a), Federico Perconti (a), Rosa Maria Giordano (a), Vito Michienzi (a), Edoardo Massaro (a), Simon Benjamin Meghnagi (a), Marta Belmonte (a), Antonella Romaniello (a), Aleksejs Zolovkins (a), Michele Rossi (a), Emanuele Barbato (a)
(a) AOU SANT'ANDREA

Clinical Presentation. A 63-year-old woman with a history of arterial hypertension, dyslipidemia, atrial fibrillation and previous triple-negative breast cancer, recently bedridden due to a depressive condition, presented to the emergency department with acute dyspnea. At hospital admission, she was tachypneic and hypoxemic (ABG: pH 7.47, SpO2 87% pO2 55 mmHg, pCO2 27 mmHg, Lactate 2.4 mmol/L, BE -4 mmol/L), non-invasive arterial pressure 90/50 mmHg. ECG showed atrial fibrillation at 80 bpm with right bundle branch block. TTE showed RV dilation and dysfunction (TAPSE 12 mm, S' 9 cm/s), marked interventricular septal flattening (D-shape), moderate-to-severe tricuspid regurgitation (sPAP 40 mmHg), and multiple hyperechoic masses floating in the right atrium and right ventricle; LV function was preserved, without regional wall motion abnormalities. Due to her medical history and clinical presentation, she was suspected to have acute pulmonary embolism with initial hemodynamic compromise. Pre-test probability of PE was intermediate-high (Wells score 5.5). The patient was admitted to the ICCU for monitoring and treatment.

Diagnostic work-up. CT pulmonary angiography showed massive saddle PE with bilateral segmental and subsegmental involvement and RV enlargement (RV/LV >1). Laboratory tests showed elevated D-dimer (7600 ng/mL) and BNP (2080 pg/mL), hs-TnI (26 pg/mL).

Treatment strategy. Systemic thrombolysis with alteplase was initiated, followed by i.v. heparin. The following day, the patient remained dyspneic (BP 110/65 mmHg, HR 75 bpm, SpO_2 96% with Ventimask 40%). TTE showed persistent RV dilatation and dysfunction, with sPAP still elevated (30–35 mmHg), though floating intracardiac thrombi were no longer visible. Control CT showed persistent bilateral embolic burden and new triangular parenchymal consolidations with ground-glass opacities, consistent with pulmonary infarction, along with worsening respiratory compromise. Subsequent Doppler ultrasound revealed right popliteal vein thrombosis. Considering the clinical scenario, rescue catheter-directed mechanical thrombectomy was performed via right femoral access. Diagnostic pulmonary arteriography confirmed extensive bilateral thrombi with elevated pressures. Multiple aspiration passes with a 20 Fr Inari FlowTriever system, with blood reinfusion via the FlowSaver system, achieved significant thrombus removal and a 10–15 mmHg reduction in pulmonary pressures. Post-operative hospital stay was clinically uneventful. The patient experienced a rapid improvement in dyspnea,

as well as her vital parameters. Post-thrombectomy echocardiography documented significant reduction of right ventricular size, recovery of systolic function (TAPSE 16 mm), and decrease of pulmonary pressures (sPAP 25 mmHg). Anticoagulation was transitioned to oral edoxaban. The patient remained clinically stable and was discharged with nocturnal oxygen therapy and elastic compression stockings.

Learning points. Massive PE may be fatal and often requires systemic thrombolysis, though this may fail. Persistent clot burden increases the risk of CTEPH, associated with poor prognosis. Catheter-directed mechanical thrombectomy represents an effective and safe rescue option. Multimodality imaging and a multidisciplinary approach were key for timely diagnosis, optimal therapy, and favorable outcome.

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 351
GRAVIDANZA E CARDIOPATIA (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
FARMACI ANTIARITMICI (ARITMIE)
ARITMIE VENTRICOLARI (ARITMIE)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
CARDIOPATIE CONGENITE (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)

PROCREAZIONE MEDICALMENTE ASSISTITA (PMA) IN PAZIENTE CON TACHICARDIA VENTRICOLARE POLIMORFA CATECOLAMINERGICA (CPVT)

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B.C. una paziente di 38 anni nota per CPVT e senza altre comorbilità, decide di intraprendere una gravidanza mediante procreazione medicalmente assistita (PMA). Nonostante assenza di familiarità per morte cardiaca improvvisa, la storia clinica della paziente inizia a 4 anni (nel 1990) con arresto cardiaco (ACC) sul territorio in corso di stress fisico, a cui segue rianimazione efficace. Due successivi episodi di ACC occorrono a 6 e 17 anni per stress fisico/emotivo. In occasione dell'ultimo, nel 2003, viene impiantato ICD monocamerale transvenoso in prevenzione secondaria ed effettuata analisi genetica con riscontro di mutazione in eterozigosi composta per il gene della calsequestrina 2 (CASQ2). La paziente inizia terapia antiaritmica con Propranololo a dose massima tollerata e viene sottoposta ad intervento di simpatectomia. Entrambi risultano inefficaci nel controllo delle tachicardie ventricolari indotte da stress. Nel follow up viene testata efficacia di combinazioni farmacologiche mediante test da sforzo, ottenendo migliore copertura antiaritmica con Flecainide 75mg bid e Nadololo 20mg bid. Nel gennaio 2025, la paziente si sottopone a PMA tramite tecnica FIVET senza sospensione della terapia antiaritmica. Nel contesto della stimolazione ovarica e nel trasferimento dell'embrione non si registrano aritmie o interventi dell'ICD. L'ecocardiografia materna ad inizio gravidanza mostra normali parametri morfo-funzionali, mentre le ecografie morfologiche fetali mostrano crescita del feto al 50° percentile ma stabile nel tempo. Alla 28-esima settimana si reperta rallentamento del battito fetale (FC 90bpm), viene escluso shift a Propranololo e si decide di ridurre la posologia del Nadololo a 10mg bid. Non si registrano aritmie al monitoraggio materno e la FC fetale aumenta a 120bpm con stabilità della curva

Principali caratteristiche farmacocinetiche degli antiaritmici utilizzati per la gestione aritmologica della paziente

Farmaco	Volume di distribuzione	Emivita plasmatica	Clearance epatica/renale	Lipofilia
Flecainide	5.0-13.4 L/kg	13-20 h	70/30 %	Alta
Nadololo	147-157 L	20-24 h	Renale	Bassa
Propranololo	4 L/kg – 320 L	3-6 h	Epatico	Alta

Tabella 1

di crescita al 50° percentile. Al momento la paziente si trova alla 32-esima settimana di gestazione e prosegue terapia antiaritmica con Nadololo a dosaggio ridotto e in assenza di aritmie al monitoraggio del device. È stato programmato taglio cesareo con sedazione materna. Il caso rimarca l'importanza di un approccio tailored al paziente, in particolare quando le evidenze ci pongono in una zona grigia.

Andamento del dosaggio dei farmaci antiarmitici titolati in base alla FC fetale.

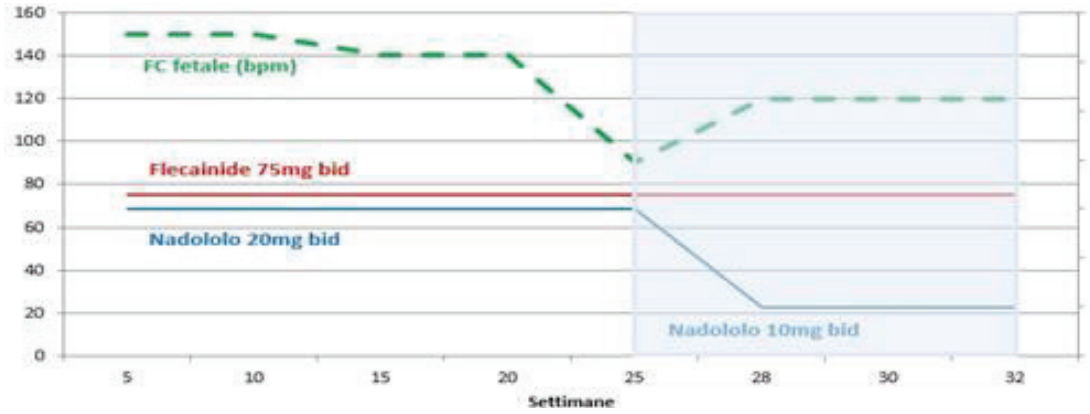


Figura 1

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 808
IPERTENSIONE POLMONARE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
ECOSTRESS (IMAGING CARDIOVASCOLARE)
INFIAMMAZIONE E IMMUNITÀ (ATEROTROMBOSI)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)

ADATTAMENTO CARDIORESPIRATORIO NEI PAZIENTI CON SCLEROSI SISTEMICA: UTILITÀ DEL TEST CARDIOPOLMONARE COMBINATO

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Obiettivo: i pazienti affetti da sclerosi sistemica (SSc) presentano un adattamento cardiorespiratorio da sforzo alterato. La valutazione tramite il test cardiopolmonare combinato ad ecocardiogramma (eco-CPET) permette di ottenere dati fisiopatologici non-invasivi di adattamento funzionale ed emodinamico.
Obiettivo dello studio è descrivere la risposta cardiorespiratoria confrontando una popolazione di pazienti affetti da SSc e un pool di pazienti senza SSc a parità di sintomatologia clinica per dispnea.

Metodi: Abbiamo condotto uno studio retrospettivo su un campione di 39 pazienti SSc e 13 pazienti non-SSc sottoposti al test eco-CPET. Al fine di descrivere l'adattamento fisiologico cardiorespiratorio, abbiamo considerato parametri derivati dal CPET (consumo di ossigeno, VO2; inefficienza ventilatoria, VE/VCO2 slope) e dall'ecocardiogramma da sforzo (pressione polmonare sistolica e media, PAPs e PAPm; gittata cardiaca, CO; contrattilità del cuore destro, TAPSE) così come la combinazione delle due metodiche. In particolare, la relazione PAPm/CO è stata considerata per indicare la compliance del circolo polmonare durante esercizio mentre la variazione del rapporto TAPSE/PAPs è stata usata per descrivere l'accoppiamento cardiopolmonare.

Risultati: la popolazione SSc ha mostrato simile capacità aerobica (VO2 picco 15.23 vs 14.94 ml/min/kg, p 0.595) con valori di frequenza cardiaca (FC) più elevati rispetto al gruppo non-SSc (FC 126.5 vs 117, p 0.029). Il rapporto CO/VO2 non ha mostrato differenze tra i due gruppi (9.26 vs 9.27 l/lO2, p 0.897). Inoltre, il gruppo SSc ha mostrato una maggiore alterazione dell'efficienza ventilatoria (VE/VCO2 43.24 vs 34.02, p 0.036). Nella popolazione SSc la relazione mPAP/CO è risultata più pendente (3.94 vs 1.98 mmHg/l/min, p 0.041) e il rapporto TAPSE/PAPs (Fig. 1a) ha mostrato una variazione negativa in corso di esercizio (delta baseline-picco TAPSE/PAPs -0.64 vs -0.43 mm/mmHg, p 0.001). Inoltre, nei pazienti SSc (Fig. 1b) il TAPSE presenta una riduzione improvvisa nella seconda parte di esercizio a fronte di una progressione della PAPs misurata. Tale andamento non è osservato nei pazienti non-SSc (Fig. 1c).

Conclusione: a parità di presentazione clinica e di classe NYHA, le due popolazioni hanno mostrato simili valori di capacità aerobica ma diverso adattamento cardiopolmonare. Rispetto ai pazienti non-SSc, i pazienti SSc hanno presentato maggiore inefficienza ventilatoria e minore compliance del circolo polmonare (PAPm/CO slope più elevata) associate ad una maggiore riduzione degli indici di ac-

coppiamento cardiopolmonare (variazione negativa del TAPSE/PAPs durante esercizio). L'incremento della FC sembra essere uno dei meccanismi di compensazione atto al mantenimento di una gittata cardiaca adeguata al raggiungimento della stessa capacità aerobica rispetto ai pazienti non-SSc. Ulteriori dati di carattere invasivo combinati sono necessari per confermare l'ipotesi e aprire nuove prospettive fisiopatologiche nell'ambito dell'adattamento cardiorespiratorio dei pazienti SSc con sintomi dispnoici.

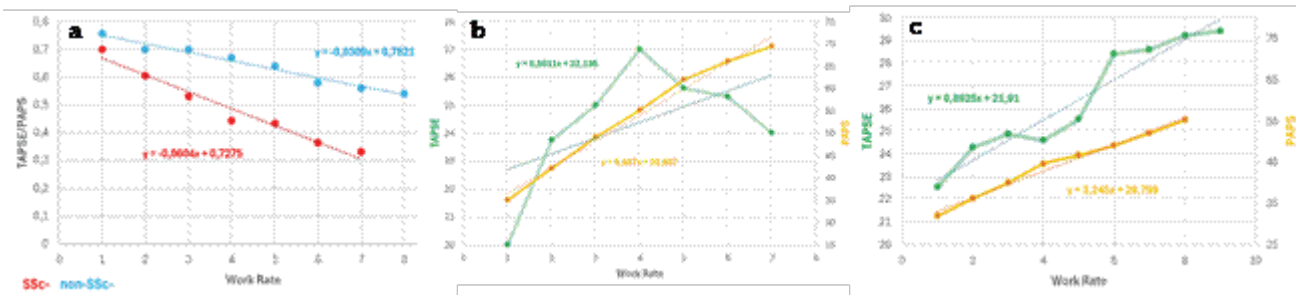


Fig. 1: pannello a: variazione TAPSE/PAPs durante il test; pannello b e c: andamento TAPSE (linea verde) e PAPs (linea gialla) durante esercizio nei pazienti con SSc (pannello b) e non-SSc (pannello c)

Figura 1

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 379
IPERTENSIONE POLMONARE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
PROGNOSI (SCOMPENSO CARDIACO)
DIABETE E MALATTIE CARDIOVASCOLARI
(DIABETE E MALATTIE DEL METABOLISMO)

RENAL-METABOLIC OVERLAP IN PULMONARY ARTERIAL HYPERTENSION

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Introduction: The availability of sodium-glucose cotransporter 2 inhibitors (SGLT2i), which have cardiovascular, renal, and metabolic effects, has sparked research into the features and implications of a renal-metabolic (RM) overlap in cardiac diseases. We sought to describe the RM overlap in a cohort of patients with pulmonary arterial hypertension (PAH).

Methods: We retrospectively assessed clinical, echocardiographic, hemodynamic, and risk profiles according to the presence of RM overlap in incident PAH patients from the multicenter, observational FOCUS-PAH study. RM overlap was defined as history or biochemical diagnosis of diabetes mellitus (DM) and/or chronic kidney disease (CKD). Outcomes were assessed with Cox and Kaplan–Meier analyses.

Results: Among 555 PAH patients diagnosed between 2001 and 2023 with outcome data, 45 had DM, 135 CKD and 54 both (total 234, 42%). RM patients were older (68.8 vs 54.5 years, p<0.001) and had higher BMI (26.9 vs 25.0 kg/m², p=0.007), PAH associated with connective tissue disease (38% vs 26%, p=0.005), hypertension (61% vs 33%, p<0.001), atrial fibrillation (19% vs 8.1%, p<0.001), and NYHA class III–IV (68% vs 59%, p=0.04) than non-RM patients. Mean PAP (44 vs 45 mmHg) and PVR (8.1 vs 8.9 WU) were similar, but PAWP was slightly higher in RM patients (10 vs 9 mmHg, p=0.008). In the subset of patients with recorded data, NT-proBNP concentration (1,632 vs 500 pg/mL, p<0.001) and E/e' (8 vs 7, p<0.001) were higher, and E/A ratio (0.7 vs 0.8, p=0.006) was lower in RM than non-RM. At PAH diagnosis, single therapy was more

frequently prescribed in RM patients (53% vs 45%, p=0.05). However, at 9-month reassessment, treatment patterns were similar between groups, with most being on dual oral combination therapy. RM patients more frequently belonged to higher-risk classes at baseline and follow-up by ESC 3- and 4-strata models (Figure, panel A).

During a follow-up of 2.5 [1-5] years, 175 (31.5%) patients died after 32 [13–59] months. RM overlap independently predicted mortality (HR 1.47, 95% CI 1.05–2.04, p=0.02) along with age (HR 1.05, 95% CI 1.04–1.07, p<0.001) and ESC 3-strata (HR 1.70, 95% CI 1.20-2.40, p=0.03). Death or PAH hospitalization occurred in 220 (40%) patients, and was also predicted by RM overlap (HR 1.45, 95% CI 1.07-1.98, p=0.02), age (HR 1.03, 95% CI 1.02-1.04, p<0.001), and ESC 3-strata (HR 1.58, 95% CI 1.15-2.18, p<0.001). Findings were confirmed by Kaplan–Meier analysis (Figure, panel B).

Conclusions: RM overlap was common in this PAH cohort, associated with diastolic dysfunction markers, and linked to poorer prognosis, highlighting the potential benefit of SGLT2i.

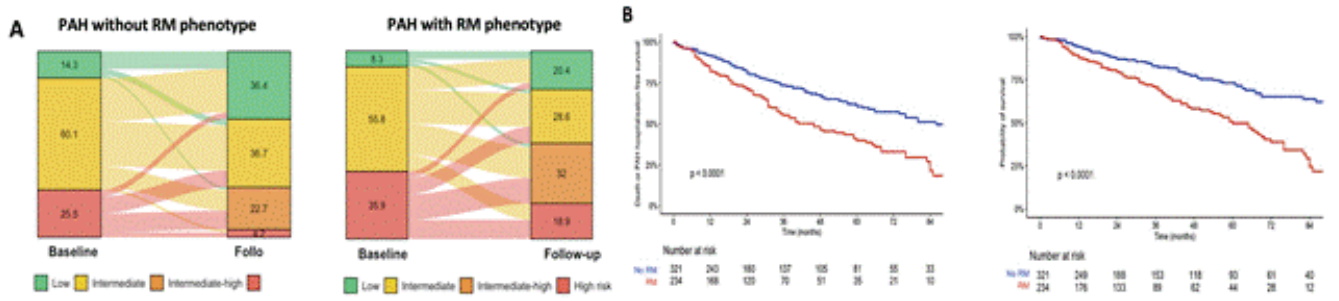


Figure 1

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 747
CARDIOPATIE CONGENITE NELL´ADULTO (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
IPERTENSIONE POLMONARE (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
CARDIOPATIE CONGENITE (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
IMAGING DELLE CARDIOPATIE CONGENITE (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
ELETTROSTIMOLAZIONE (ARITMIE)

TETRALOGIA DI FALLOT NON OPERATA, IN ETA' ADULTA AVANZATA: ADATTAMENTI FISIOPATOLOGICI E GESTIONE MULTIDISCIPLINARE

Sara Trivigno (a), Carlo Lavalle (a), Carmine Dario Vizza (a)
(a) POLICLINICO UMBERTO I

Introduzione/Background: La Tetralogia di Fallot (ToF) non corretta è un evento eccezionale nell'adulto: la sopravvivenza media senza chirurgia è minore di 20 anni, con tasso di mortalità del 95% entro i 40 anni [1]. I rarissimi casi oltre la sesta decade consentono di osservare peculiari adattamenti emodinamici e strategie terapeutiche personalizzate, con rilevante valore clinico e didattico [2].

Presentazione del caso: Donna di 64 anni con ToF mai operata per ripetuto rifiuto, flutter atriale permanente e pacemaker bicamerale (impianto nel 2016). Anamnesi: neoplasia uterina (2002), epatite B guarita. Ricoverata per astenia e bradicardia, in discreto compenso emodinamico. ECG: flutter a 50 bpm.
Ecocardiogramma: ventricolo destro severamente dilatato e ipertrofico, funzione sistolica gravemente ridotta (FE 3D 25%), stenosi infundibolare polmonare severa (Vmax 3.85 m/s), difetto interventricolare subaortico con shunt prevalentemente sx→dx, severa dilatazione biatriale; ventricolo sinistro dilatato ma con funzione conservata (FE 59%).
TC torace: marcata dilatazione aneurismatica dell'arteria polmonare principale (DT 37 mm), cardiomegalia, piccolo versamento pericardico. Durante il ricovero: assenza di aritmie ventricolari in telemetria. Ottimizzata la terapia diuretica (furosemide, tolvaptan) con miglioramento clinico e svezzamento dall'ossigenoterapia. Alla dimissione: buon compenso, asintomatica, in terapia con bisoprololo a basso dosaggio, diuretici, tolvaptan, supplementazione potassica e anticoagulazione con apixaban. Programmato cateterismo cardiaco destro presso ambulatorio dedicato a ipertensione polmonare.

Discussione: La sopravvivenza oltre i 60 anni in ToF non corretta è spiegabile con fattori protettivi: stenosi polmonare non critica in età infantile, shunt prevalentemente sx→dx, ipertrofia e progressiva dilatazione del ventricolo destro, maggiore compliance polmonare, funzione ventricolare sinistra preservata e tolleranza alle aritmie garantita dal pacing [3]. La presenza di aneurisma dell'arteria polmonare, reperto eccezionale in questa popolazione [5–6], rende il caso particolarmente peculiare, aumentando la complessità della gestione clinica: è correlato a flusso turbolento cronico, ipertensione polmonare e degenerazione della parete vascolare; rappresenta un marker di malattia avanzata e comporta rischio di complicanze gravi (rottura, trombosi in situ, compressioni estrinseche).
La strategia aritmica è stata conservativa: in atri severamente dilatati l'ablazione avrebbe avuto bassa probabilità di successo e rischio elevato, mentre il

controllo della frequenza ha garantito outcome favorevole. La terapia dello scompenso è stata adattata alla disfunzione prevalentemente destra [4].

Conclusioni: Questo caso documenta un raro esempio di lunga sopravvivenza con ToF non corretta, reso possibile da un fragile ma funzionale equilibrio emodinamico e da una gestione terapeutica mirata. La concomitanza di un aneurisma dell'arteria polmonare principale sottolinea l'unicità del quadro e l'importanza di un follow-up multidisciplinare in centri dedicati, con un approccio personalizzato che combini terapia farmacologica, pacing e monitoraggio emodinamico avanzato.

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CardioSic

CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE 291 IPERTENSIONE POLMONARE (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE) DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO) PROGNOSI (SCOMPENSO CARDIACO)

A SINGLE ECHOCARDIOGRAPHIC OR HEMODYNAMIC PARAMETER IMPROVES RISK STRATIFICATION IN PREVALENT PATIENTS WITH PULMONARY ARTERIAL HYPERTENSION

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Introduction: The ESC/ERS guidelines classify prevalent patients with pulmonary arterial hypertension (PAH) into four mortality risk categories based on clinical variables. We investigated whether the integration of transthoracic echocardiography (TTE) and/or right heart catheterization (RHC) data improves prognostication at follow-up.

Methods: We retrospectively analyzed an international observational cohort of PAH patients from tertiary centers (FOCUS-PAH). We used Cox models to assess the association of TTE and RHC variables with all-cause mortality, when added to the 4-strata risk classification. Discrimination, survival differences, and optimal cutoffs were evaluated using ROC curves, Kaplan–Meier analysis, and the Youden index.

Results: We evaluated 197 patients who underwent both TTE and RHC within the first year after PAH diagnosis between 2001 and 2023. Key characteristics across the ESC/ERS risk classes are shown in Figure A. At multivariate analysis, right atrial area (RAA; HR 1.09 [1.03–1.15] per cm^2) and percent change in pulmonary vascular resistance (ΔPVR; HR 1.01 [1.005–1.02] per 1% change) independently predicted mortality on top of the 4-strata classification. Compared to 4-strata alone (0.66 [0.57-0.76]), adding RAA (AUC 0.73 [0.64-0.82], P=0.02) or ΔPVR (AUC 0.74 [0.65-0.83], P=0.002) improved discrimination, with highest predictive accuracy when both were included (AUC 0.77 [0.68-0.86]; P=0.0005 vs 4-strata, P=0.002 vs 4-strata+RAA, and P=0.02 vs 4-strata+ΔPVR), reclassifying 16% of patients into most appropriate risk groups. The optimal

thresholds to refine risk prediction were 26 cm² for RAA and <20% for ΔPVR. By applying these cutoffs, 2 subgroups with different mortality risk were identified within each ESC/ERS risk category (Figure B).
These results were confirmed in 394 patients in FOCUS-PAH, who underwent only TTE or RHC at follow-up. Distribution across ESC/ERS risk categories was: 31% low, 36.6% intermediate-low, 28.4% intermediate-high, and 4.3% high risk. Incorporating RAA into the 4-strata model increased the AUC from 0.69 (0.63–0.76) to 0.73 (0.63–0.76; P=0.007), while adding ΔPVR improved the AUC from 0.64 (0.56–0.72) to 0.68 (0.60–0.76; P=0.004).

Conclusions: Incorporating at least one TTE or RHC variable (RAA or ΔPVR) improves risk stratification of prevalent PAH patients.

A

	Low-risk N=50	Intermediate-Low risk N=81	Intermediate-High risk N=59	High risk N=7	P
Age at diagnosis, years	48 [38;59]	55 [44;68]	64 [52;73]	68 [59;75]	<0.001
Female	26 (52%)	45 (56%)	38 (64%)	5 (71%)	0.5
Idiopathic PAH	26 (52%)	48 (59%)	25 (43%)	3 (43%)	0.3
CTD-PAH	8 (16%)	15 (19%)	27 (46%)	3 (43%)	<0.001
Combination therapy	26 (52%)	44 (54%)	35 (59%)	4 (57%)	0.9
Follow-up WHO-FC I-II	50 (100%)	43 (53%)	4 (5%)	0	<0.001
Follow-up NTproBNP, ng/L	114 [50;203]	540 [229;1,017]	1,276 [662;2,740]	1,146 [947;5,164]	<0.001
Follow-up 6MWD, m	458[393;494]	376 [290;432]	191 [80;257]	144 [81;203]	<0.001
Follow-up RA area, cm²	19 [16;23]	21 [15;26]	25 [20;30]	25 [19;29]	<0.001
Follow-up TAPSE/PASP	0.43 [0.28;0.55]	0.31 [0.22;0.45]	0.25 [0.17;0.28]	0.18 [0.15;0.22]	<0.001
Follow-up CI, L/min/m²	3.13 [2.70;3.70]	2.80 [2.21;3.39]	2.50 [2.16;3.10]	2.20 [1.92;3.05]	0.001
Follow-up PVR, WU	4.57 [3.08;6.32]	6.09 [3.16;8.91]	7.60 [5.11;10.00]	7.76 [6.61;9.40]	<0.001
ΔPVR %	-44 [-62;-29]	-38 [-60;-11]	-27 [-51;9]	-47 [-62;-33]	0.02

B

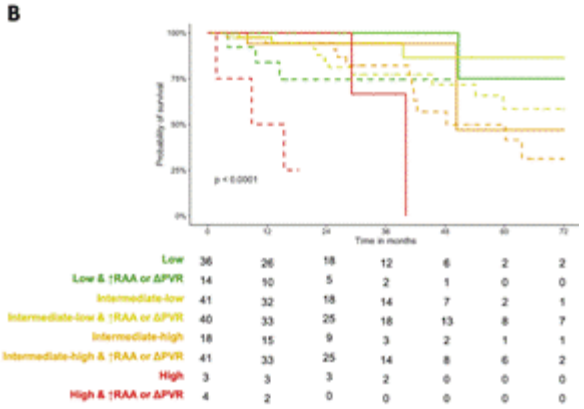


Figure 1

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Roma, 4-7 dicembre 2025

COVID-19

COVID-19 279
ECOCARDIOGRAFIA E COVID-19 (COVID-19)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
IL SISTEMA SANITARIO NAZIONALE DOPO COVID-19 (COVID-19)

SEQUELE CARDIOVASCOLARI DA COVID-19 IN GIOVANI ADULTI SANI VACCINATI SENZA COMORBIDITÀ: FOLLOW UP PROSPETTICO A 3 ANNI

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Background: Le conseguenze cardiovascolari post-acute dell'infezione da virus COVID-19 possono manifestarsi anche in giovani sani completamente vaccinati, ma rimane poco chiaro se sia giustificato monitorare questo sottogruppo a basso rischio. Lo scopo del nostro studio è stato quello di valutare l'incidenza e i fattori predittivi delle sequele cardiache dopo l'infezione da SARS-CoV-2 in questa popolazione.

Metodi: Abbiamo arruolato prospetticamente 78 operatori sanitari completamente vaccinati senza comorbidità (età 27±8 anni; 62% donne); 39 con infezione da COVID-19 paucisintomatica (confermata da tampone naso-faringeo molecolare PCR 8 ± 2 mesi prima) e 39 controlli di pari età e sesso senza infezione. Tutti i partecipanti sono stati sottoposti a una valutazione cardiovascolare completa. Abbiamo raccolto i dati di follow-up a 3 anni.

Risultati: Nonostante la lievità dell'infezione, il COVID-19 si è associato a una ridotta funzione ventricolare sinistra, evidenziata dalla riduzione del GLS ($p<0,001$). Sintomi e/o aritmie non pericolose per la vita si sono verificati complessivamente nel 15% dei pazienti dopo l'infezione e hanno mostrato correlazione con valori ridotti di GLS (AUC = 0,82). Non si sono verificati eventi avversi significativi durante il periodo di studio.

Conclusioni: La funzione ventricolare sinistra valutata mediante GLS identifica un sottogruppo di soggetti sani a maggior rischio di eventi avversi non gravi dopo COVID-19 seppur in forma lieve, anche dopo vaccinazione completa. La sorveglianza ecocardiografica può essere utile per chiarire l'eziologia dei sintomi in questo ampio gruppo di pazienti.

COVID-19 1080
MIOCARDITI & COVID 19 (COVID-19)
SHOCK CARDIOGENO
(ASSISTENZA CARDIACA IN ACUTO)
ASSISTENZA INTENSIVA CARDIOVASCOLARE IN ACUTO
(ASSISTENZA CARDIACA IN ACUTO)

ISOLATED CARDIAC INVOLVEMENT IN COVID-19: HEMODYNAMIC-GUIDED BIPELLA SUPPORT FOR BIVENTRICULAR SHOCK WITHOUT RESPIRATORY FAILURE

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COVID-19 may manifest with isolated cardiac involvement, progressing rapidly to fulminant cardiogenic shock (CS). We report a case of a 60-year-old man with no significant comorbidities apart from an incidental finding of IgGκ MGUS. The patient presented with influenza-like prodrome, chest discomfort, and progressive dyspnea. Within 24 hours, he developed worsening symptoms and was admitted to an emergency department of another hospital. Echocardiography revealed severe biventricular systolic dysfunction in the absence of lung injury confirmed by chest CT. He presented with beginning (SCAI B) CS, requiring inotropic support and endotracheal intubation for progressive haemodynamic deterioration. Coronary angiography excluded significant coronary disease. Due to profound left ventricular dysfunction, Impella CP was implanted, but hemodynamics further deteriorated (SCAI D) toward manifest biventricular cardiogenic shock with prevalent right ventricular dysfunction, and the patient was referred to our center. Upon arrival, Impella CP malrotation was diagnosed, causing hemolysis and acute kidney injury. Escalation to biventricular support with a "BiPella" strategy (Impella 5.5 + Impella RP) was thus performed, and continuous renal replacement therapy was started. Endomyocardial biopsy was carried out for diagnostic purposes at ICU admission. Laboratory blood testing for viruses revealed isolated SARS-CoV-2 PCR positivity (Ct ~25–26). Biomarkers showed: peak hs-troponin T 1,124 ng/L, NT-proBNP 17,404 pg/mL, CRP 47 mg/L, D-dimer 2,700 µg FEU/L. Antiviral therapy with Remdesivir was initiated. Anticoagulation with Bivalirudin was given according to the MCS protocol, with an aPTT target of 45-50 seconds and with careful adjustment given the thrombosis/bleeding risk in COVID-19. Hemodynamic-guided management leveraged the pulmonary artery pulsatility index (PAPi) and RAP/PCWP ratio, to precisely balance of right- and left-sided support. Over 48 hours, congestion improved (RAP 10→4 mmHg; PAWP 14→8 mmHg), cardiac index improved (1.9→3.71 L/min/m²), and a polyuric kidney recovery phase ensued, and CRRT was discontinued.. Right ventricular function recovered first (PAPi 1.0→3.8; RAP/PCWP 0.79→0.50), enabling stepwise weaning from the Impella RP after 48 hours, while maintaining unchanged left-sided support. Myocardial injury markers declined, and complete recovery of left ventricular systolic function was documented 96 hours after ICU admission, allowing for Impella 5.5 explant. Biopsy demonstrated macrophage-predominant infiltrates with capillary microthrombi, consistent with COVID-19 myocardial endotheliitis. A subsequent cardiac magnetic resonance (CMR) confirmed recovery of biventricular systolic function and absence of late gadolinium enhancement. The patient was discharged home in stable condition. This case illustrates how fulminant COVID-19 myocarditis may present in isolation, without pneumonia. This case was successfully rescued with tailored hemodynamically-

guided biventricular mechanical support. Early recognition of CS, timely escalation of support, and predefined hemodynamic targets (PAPi≥2; RAP/PCWP ≤0.6; SvO_2 ≥60–65%; lactate <2 mmol/L) were crucial to prevent irreversible multi-organ failure and to guide safe weaning. The coexistence of IgGβ MGUS may have contributed to preload instability through capillary-leak–like physiology.

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DIABETE E MALATTIE DEL METABOLISMO

DIABETE E MALATTIE DEL METABOLISMO 28
DIABETE E MALATTIE CARDIOVASCOLARI (DIABETE E MALATTIE DEL METABOLISMO)
FARMACI ANTI-DIABETICI (DIABETE E MALATTIE DEL METABOLISMO)
MALATTIE DEL METABOLISMO (DIABETE E MALATTIE DEL METABOLISMO)

REAL-WORLD USE OF ORAL SEMAGLUTIDE IN ADULTS WITH TYPE 2 DIABETES: THE PIONEER REAL SWITZERLAND MULTICENTRE, PROSPECTIVE, OBSERVATIONAL STUDY

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Introduction: Real-world data provide insight into how medications perform in clinical practice. PIONEER REAL Switzerland aimed to understand clinical outcomes with oral semaglutide in adults with type 2 diabetes (T2D).

Methods: PIONEER REAL Switzerland was a 34–44-week, multicentre, prospective, non-interventional, single-arm study of adults with T2D naïve to injectable glucose-lowering medication who were initiated on oral semaglutide in routine clinical practice. The primary endpoint was change in HbA1c from baseline (BL) to end of study (EOS); secondary endpoints included change in body weight (BW) from BL to EOS and the proportion of participants achieving HbA1c <7.0% and the composite endpoints HbA1c reduction ≥1% with BW reduction ≥3% or ≥5% at EOS. Safety was assessed in participants who received ≥1 dose of oral semaglutide.

Results: 185 participants (female/male, n = 67/118) initiating oral semaglutide, 168 (90.8%) completed the study and 143 (77.3%) remained on treatment with oral semaglutide at EOS. At BL, participants had a mean age of 62 years, diabetes duration of 6.4 years, HbA1c of 7.7%, BW of 95.6 kg and body mass index of 33.2 kg/m2; 56.2% of participants were receiving glucose-lowering medications. Significant reductions were observed for HbA1c (estimated change [95% confidence interval (CI)] −0.91% [−1.10, −0.71]; p < 0.0001), as well as BW (estimated change [95% CI] −4.85% [−5.70, −4.00]; p < 0.0001). In total, 139 adverse events (AEs) were reported in 65 (35.1%) participants; most were mild or moderate. The most frequent were gastrointestinal disorders (27.0%), and 31 AEs in 20 (10.8%) participants led to discontinuation of oral semaglutide. Six serious AEs were reported; all were considered unlikely to be related to oral semaglutide.

Conclusion: People living with T2D treated with oral semaglutide in Switzerland achieved clinically significant reductions in HbA1c and BW, with no new safety signals.

DIABETE E MALATTIE DEL METABOLISMO 930
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
DIABETE E MALATTIE CARDIOVASCOLARI (DIABETE E MALATTIE DEL METABOLISMO)
FARMACI CARDIOVASCOLARI (FARMACI CARDIOVASCOLARI E NUTRACEUTICI)

CHALLENGES IN DIABETES ESC GUIDELINES IMPLEMENTATION - INSIGHTS FROM A REAL WORLD REGISTRY

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Background: Type II diabetes mellitus (T2DM) is known to be associated with development of cardiovascular (CV) events, increasing the risk of onset by two to six times.
In recent years, the therapeutic approach to diabetic patients has changed profoundly, placing greater emphasis on cardiorenal and metabolic protection rather than reducing blood glucose levels with drugs that cannot reduce cardiovascular events. Results from randomized clinical studies with GLP1Ras and SGLT2is in T2DM patients have shown a favorable impact on cardio renal metabolic risk reducing CV events and renal disease progression. However, so far, there is little real-world evidence regarding the implementation of guideline recommendations.

Aim of the study: To evaluate CV risk profile and therapeutic strategies implementation according to ESC 2023 guidelines for the management of cardiovascular disease in patients with T2DM.

Methods: From September 2024 to January 2025 we prospectively enrolled in this registry patients (pts) affected by T2DM, in primary and secondary prevention, referred to our outpatient Cardiology Centre. We excluded patients with T1DM and cardiac surgery or percutaneous coronary revascularization planned within the next 3 months. Medical history (including current therapy, concomitant pathologies and general information), clinical, laboratory (including complete blood count, liver and renal function, lipid profile and glycated hemoglobin) and Echocardiographic parameters (EF, LVEDV, LVESV, E/A, LAV, PAPs, valvular diseases) were collected at enrollment visit and after 6 months.

Results: At this time, the preliminary analysis of data collected at baseline and at six months of follow-up includes a total of 174 pts, mean age was 75 years old, 131 were men (75,2%) and 43 were women (24,8%). Of these, using the guideline-recommended score2 and score2OP for risk stratification, 140 (80%) were at very high risk, 15 (8%) were at high risk, and 19 (12%) at moderate CV risk. Moreover, 58 pts (33%) had severe left ventricular dysfunction (EF<40%) and 73 (41,9%) had a previous acute coronary syndrome. At time of enrolling, all patients were receiving one or more of the following drugs: Metformin (43,1%) Sulfonylureas (4,5%), DPP4 (16%), SGLT2 (42,5%), GLP1 agonists (13,2%) and Insulin (34,4%). After six months, it has been observed an implementation in the use of the GLP-1 agonists (13.2% vs 24.1%) and of the SGLT2 inhibitors (42.5% vs 48.2%) and of the use of insulin (34.4% vs 36.2%) in comparison whit baseline.

Conclusion: Our preliminary analysis shows an increasing use of GLP-1RAs and SGLT2is. However, we are still far from a satisfactory implementation of the recommended therapies according to ESC guidelines for the management of cardiovascular disease in patients with type 2 diabetes.

DIABETE E MALATTIE DEL METABOLISMO 313
DIABETE E MALATTIE CARDIOVASCOLARI (DIABETE E MALATTIE DEL METABOLISMO)
FARMACI ANTI-DIABETICI (DIABETE E MALATTIE DEL METABOLISMO)
MALATTIE DEL METABOLISMO (DIABETE E MALATTIE DEL METABOLISMO)

EFFETTI CARDIOVASCOLARI E SULLA MORTALITÀ DELLA SEMAGLUTIDE NELLO SPETTRO CARDIOMETABOLICO: REVISIONE SISTEMATICA E METANALISI

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Introduzione: Gli agonisti del recettore GLP 1, come la semaglutide, svolgono un ruolo sempre più importante nella gestione del diabete di tipo 2, dell'obesità e del rischio cardiovascolare. Studi randomizzati hanno dimostrato che la semaglutide riduce eventi cardiovascolari (CV) maggiori, compresi tassi di mortalità CV e totale.

Obiettivi: L'obiettivo di questa meta analisi è valutare l'impatto della semaglutide sulla mortalità per tutte le cause e cardiovascolare, includendo pazienti con diabete, obesità e rischio CV elevato, attraverso i principali studi clinici di fase III e studi registrativi.

Metodi: È stata condotta una revisione sistematica della letteratura secondo le linee guida PRISMA, al fine di identificare tutti gli studi randomizzati e controllati con placebo, che riportino dati su mortalità ed eventi avversi CV maggiori (MACE) in seguito a trattamento con semaglutide (sia orale che iniettiva). Gli endpoint primari erano mortalità CV e per tutte le cause. Gli endpoint secondari includevano MACE a 3 punti, infarto miocardico non fatale, ictus non fatale ed eventi avversi maggiori agli arti inferiori (MALE). Per l'analisi dei dati è stato utilizzato un modello a effetti casuali per calcolare gli hazard ratio (HR) e gli intervalli di confidenza al 95% (IC).

Risultati: Sono stati selezionati 6 studi, includendo 38059 pazienti con diabete, obesità e rischio CV elevato. Semaglutide ha ridotto in modo significativo la mortalità per tutte le cause (HR: 0,84; IC 95%: 0,77–0,92; p=0,0001) e la mortalità CV (HR: 0,83; IC 95%: 0,73–0,95; p=0,0087), rispetto al placebo. Inoltre, semaglutide ha ridotto l'incidenza di MACE a 3 punti del 18% (HR: 0,82; IC 95%: 0,77–0,87; p<0,0001), di infarto miocardico non fatale del 25% (HR: 0,75; IC 95%: 0,68–0,84; p<0,0001) e di MALE del 30% (HR: 0,70; IC 95%: 0,53–0,91; p=0,0092), rispetto al placebo.
Non sono stati osservati effetti significativi su ictus non fatale.

Conclusioni: I risultati della presente metanalisi confermano che semaglutide riduce in modo significativo la mortalità totale e CV, oltre a diminuire il rischio di MACE e MALE, in un ampio spettro di pazienti con diabete di tipo 2, obesità o malattia cardiovascolare.

DIABETE E MALATTIE DEL METABOLISMO 445
DISLIPIDEMIE (DIABETE E MALATTIE DEL METABOLISMO)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
TROMBOSI E COAGULAZIONE (ATEROTROMBOSI)

LP(A) AND PLATELET AGGREGATION IN PATIENTS UNDERGOING PCI

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Background: The 2022 EAS Consensus Statement updates the evidence on the association between lipoprotein(a) [Lp(a)] and atherosclerotic cardiovascular disease (ASCVD), reinforcing its inclusion in clinical guidelines and global cardiovascular risk estimation. Lp(a) is known to possess pro-inflammatory and pro-atherosclerotic properties, partly due to its content of oxidized phospholipids (OxPLs). However, whether Lp(a) contributes to thrombotic processes in humans—via enhanced coagulation or impaired fibrinolysis—remains uncertain.
Two major trials have shown that antiplatelet therapy with aspirin is beneficial for primary prevention only in individuals with elevated Lp(a) genotypes. The Women's Health Study (2007) and the ASPREE trial (2018) both failed to show a significant reduction in cardiovascular events with daily aspirin in healthy individuals—women aged ≥45 years and older adults aged ≥70 years, respectively. However, subsequent sub-analyses of these trials (published in 2009 and 2022) indicated that aspirin may provide a protective effect in individuals with elevated Lp(a) genotypes in the context of primary prevention.

Purpose: This study aimed to evaluate the association between Lp(a) levels and platelet aggregation in patients undergoing percutaneous coronary intervention (PCI). Specifically, we investigated whether the observed benefit of aspirin in primary prevention among individuals with elevated Lp(a) is related to a differential effect of aspirin on platelet function.

Methods: We analyzed two independent cohorts examining the relationship between Lp(a) and platelet aggregation. (I) The first cohort included 1,931 consecutive patients who underwent PCI for acute coronary syndromes (ACS) between April 2005 and April 2009, with assessments of Lp(a) kringle IV type 2 repeat polymorphisms and platelet aggregation. (II)The second cohort included 393 patients who underwent PCI between 2013 and 2017, with measurements of plasma Lp(a) levels and platelet aggregation.

Results: (I) Among the 1,931 study participants who underwent PCI for acute coronary syndromes (ACS) between April 2005 and April 2009, 27 patients carried the LPA rs3798220 allele polymorphism. There was no significant difference in the response to aspirin between patients with or without the LPA rs3798220 polymorphism (p = 0.646). (II) Among 393 consecutive patients who underwent PCI between 2013 and 2017, the mean Lp(a) level was 440.98 ± 486.94 mg/L. There was no significant difference in the response to aspirin between patients with high Lp(a) levels (≥ 500 mg/L) and those with lower levels (p = 0.983)

Conclusions: Our data suggest that the response to aspirin does not differ significantly between patients with high and low Lp(a) levels. Therefore, the benefit of aspirin in primary prevention among individuals with elevated Lp(a) does not appear to be due to a differential effect on platelet aggregation.

DIABETE E MALATTIE DEL METABOLISMO 909
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
MALATTIE DEL METABOLISMO (DIABETE E MALATTIE DEL METABOLISMO)
FUNZIONE VENTRICOLARE, RIMODELLAMENTO E DANNO D'ORGANO (IPERTENSIONE ARTERIOSA)
BIOMARCATORI DELLO SCOMPENSO (SCOMPENSO CARDIACO)

TEMPORAL DYNAMICS OF WEIGHT LOSS, METABOLIC REPROGRAMMING, AND CARDIAC REMODELLING: INSIGHTS FROM UNTARGETED METABOLOMIC

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Background: Obesity is strongly associated with concentric left ventricular hypertrophy (LVH), diastolic dysfunction, and heightened cardiovascular risk. Bariatric surgery improves cardiometabolic health and reverses adverse myocardial geometry; however, the metabolomic signature predicting cardiac recovery remains unknown.

Purpose: This study aimed to characterise longitudinal changes in the serum metabolome following bariatric surgery and evaluate their association with the regression of concentric cardiac remodelling.

Methods: In a cohort of 127 adults with severe obesity, anthropometric, biochemical, and echocardiographic parameters were assessed at baseline and at 4, 12, and 24 weeks post-surgery. Cardiac geometry was defined using indexed left ventricular mass and relative wall thickness. Untargeted gas chromatography–mass spectrometry-based metabolomic profiling was performed, followed by multivariate modelling, pathway enrichment analysis, and least absolute shrinkage and selection operator (LASSO) regression to identify metabolic predictors of cardiac and adiposity changes.

Results: Concentric remodelling was present in over half of participants at baseline, with complete resolution by 24 weeks, with improvements mainly occurring within the first 12 weeks. Metabolomic profiling revealed progressive shifts involving amino

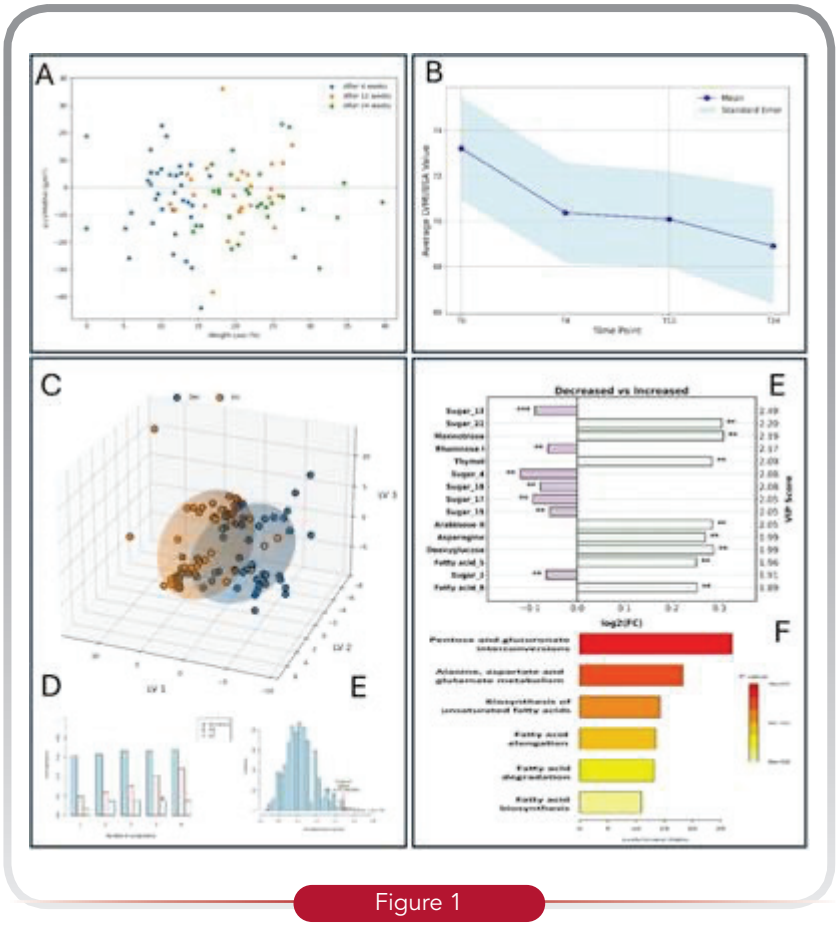


Figure 1

acid, fatty acid, and ketone metabolism associated with favourable remodelling, characterised by enrichment in mitochondrial substrate flexibility signatures, including short-chain fatty acids, branched-chain amino acid derivatives, and dicarboxylic acids. LASSO models identified distinct metabolite sets predictive of changes in relative wall thickness and visceral adiposity.

Conclusions: Cardiac remodelling following bariatric surgery reflects a coordinated metabolic reprogramming that precedes and predicts myocardial recovery. Untargeted metabolomic profiling may provide potential biomarkers predictive of weight-loss-induced cardiovascular adaptation and enable personalized risk stratification in obesity-associated cardiomyopathy.

DIABETE E MALATTIE DEL METABOLISMO 246
MALATTIE DEL METABOLISMO (DIABETE E MALATTIE DEL METABOLISMO)
FARMACI ANTI-DIABETICI (DIABETE E MALATTIE DEL METABOLISMO)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)

EFFETTI DI DAPAGLIFLOZIN SULLA MORTALITÀ NELLA SINDROME CARDIO-RENO-METABOLICA: REVISIONE SISTEMATICA E METANALISI

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(a) UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II

Introduzione: Gli inibitori del co-trasportatore sodio-glucosio di tipo 2 (SGLT-2i) sono emersi come importanti farmaci in grado di modificare il decorso della malattia nei pazienti con scompenso cardiaco (SC) e malattia renale cronica (CKD), indipendentemente dalla presenza di diabete. Nonostante i benefici ben consolidati sugli outcome cardiovascolari (CV) e renali, gli effetti individuali sulla mortalità non sono stati finora esplorati come endpoint primari.

Obiettivi: L'obiettivo della presente metanalisi è valutare l'impatto di dapagliflozin sulla mortalità in diversi studi clinici di fase III condotti su pazienti con sindrome cardio-nefro-metabolica (CKM).

Metodi: È stata condotta una revisione sistematica della letteratura secondo le linee guida PRISMA, al fine di identificare tutti gli studi randomizzati e controllati con placebo, focalizzati sugli outcome CV di dapagliflozin in pazienti con malattie CV, renali o metaboliche.
Gli endpoint primari erano la mortalità per tutte le cause e la mortalità CV. Gli endpoint secondari includevano eventi CV maggiori (MACE), infarto miocardico non fatale (IM), ictus non fatale, ospedalizzazione per SC e un endpoint composito di ospedalizzazione per SC o morte CV.
È stato utilizzato un random effects model per combinare gli hazard ratio (HR) e gli intervalli di confidenza al 95% (IC).

Risultati: Sono stati inclusi quattro studi, per un totale di 32.471 pazienti. Dapagliflozin ha ridotto in modo significativo la mortalità per tutte le cause (HR: 0,88; IC 95%: 0,80–0,97; p=0,008) e la mortalità CV (HR: 0,89; IC 95%: 0,80–0,98; p=0,015), oltre ad aver ridotto l'incidenza di MACE (HR: 0,92; IC 95%: 0,85–0,99; p=0,019), rispetto al placebo.
Dapagliflozin ha inoltre ridotto in modo sostanziale le ospedalizzazioni per SC (HR: 0,72; IC 95%: 0,66–0,79; p<0,001) ed il composito di ospedalizzazione per SC o morte CV (HR: 0,79; IC 95%: 0,73–0,85; p<0,001). Non sono stati osservati effetti significativi su IM o ictus.

Conclusioni: Questa metanalisi conferma che dapagliflozin riduce in modo significativo sia la mortalità per tutte le cause che quella CV, oltre a MACE e ospedalizzazioni per HF, in un ampio spettro di pazienti con sindrome CKM.

DIABETE E MALATTIE DEL METABOLISMO 567
DIABETE E MALATTIE CARDIOVASCOLARI (DIABETE E MALATTIE DEL METABOLISMO)
FARMACI ANTI-DIABETICI (DIABETE E MALATTIE DEL METABOLISMO)
MALATTIE DEL METABOLISMO (DIABETE E MALATTIE DEL METABOLISMO)

REAL-LIFE PRESCRIPTION OF ANTIDIABETIC DRUGS WITH CARDIOVASCULAR PROTECTIVE EFFECTS IN PATIENTS HOSPITALIZED FOR CARDIOVASCULAR DISEASES

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(a) SAPIENZA UNIVERSITA' DI ROMA; (b) UOC DI CARDIOLOGIA/UTIC UNIVERSITARIA, OSPEDALE ICOT, LATINA ; (c) UOC DI CARDIOLOGIA, OSEPDALE SANTA MARIA GORETTI, LATINA

INTRODUCTION: Cardiovascular (CV) diseases remain the leading cause of death in adults, with diabetes (DM) playing a key role in atherosclerosis development (1). Recently, GLP-1 receptor agonists (GLP-1RA) and SGLT2 inhibitors (SGLT2i), have shown significant cardiovascular benefits in diabetic patients. Since the 2019 ESC guidelines on DM, updated in 2023, these drugs have been recommended for patients with DM and CV diseases (Class I, Level A) or high/very high CV risk (2). However, despite guideline support, real-life prescription patterns remain unclear.

AIM: To assess the prescription patterns of SGLT2-I and GLP1-RA in patients hospitalized because of a CVD, who already met the clinical indications for their use in routine practice before the admission.

METHODS: All patients admitted to the University Cardiovascular Unit of our hospital were analyzed from January 2023 to December 2024. Among them, all patients with a history of a diagnosis of type II diabetes mellitus (T2DM) were selected. Conducting a retrospective observational analysis, we examined each patient medical history and anthropometric, clinical, hematological, pharmacological, and echocardiographic data collected during the hospitalization.

RESULTS: Among 1,070 patients, 164 patients (15.3%) had a confirmed diagnosis of T2DM. Within this subgroup, 69 patients (42.1%) had already a history of atherosclerotic CV disease, 19 (11.5%) had a history of heart failure (HF), and 40 (24.4%) could be classified as having high/very high CV risk according to ESC guidelines criteria based on their medical records before the admission. Consequently, 128 out of 164 patients (78.1%) already had an indication for GLP-1RA or SGLT2i treatment for CV risk reduction before being hospitalized. However, among these 128 patients, 45 (35.1%) were indeed receiving therapy with SGLT2i or GLP-1RA, specifically 38 (29.7%) with SGLT2i, 11 (8.6%) with GLP-1RA, of those 4 patients received both drugs. We then investigated the rate of prescription of these two drug classes in patients with clinical indication based on ESC Guidelines criteria before the hospitalization (i.e. CV disease or high/very high CV risk), with respect to patients without indication. Our analysis found no significant difference between the two groups regarding either SGLT2i (Chi-square = 1.882, df = 1, p = 0.170) or GLP-1RA prescription (Chi-square = 1.553, df = 1, p = 0.213).

CONCLUSION: Despite strong guideline recommendations and robust evidence supporting the role of these drugs in CV risk reduction among diabetic patients, GLP-1RA and SGLT2i remain underprescribed in the clinical practice. In addition, the prescription of these drugs is not guided by the assessment of CV risk, as indicated by guidelines. It is crucial to raise awareness and implement targeted strategies to increase the prescription of these cardioprotective therapies, which have the potential to prevent CV events in both diabetic and non-diabetic patients.

DIABETE E MALATTIE DEL METABOLISMO 526
MALATTIE DEL METABOLISMO (DIABETE E MALATTIE DEL METABOLISMO)
FUNZIONE VENTRICOLARE, RIMODELLAMENTO E DANNO D'ORGANO (IPERTENSIONE ARTERIOSA)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)

LIPEDEMA AND CARDIOVASCULAR RISK: AN UNDERRECOGNISED INFLAMMATORY PHENOTYPE

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Background. Lipedema is a chronic, female-predominant adipose disorder characterized by disproportionate lower-body fat distribution, pain, and resistance to weight loss. Its inflammatory profile may contribute to systemic vascular alterations.

Aim. To evaluate early vascular remodeling in women with lipedema compared to matched controls.

Methods. Twelve women with lipedema and twelve age- and fat mass percentage (FM%)- matched controls underwent carotid ultrasonography. Participants had no history of cardiovascular disease and were not on lipid-lowering or antihypertensive medication.

Results. Women with lipedema demonstrated significantly increased cIMT and greater prevalence of carotid plaques than controls ($p < 0.05$), despite comparable FM%. Traditional risk factors such as smoking and family history were not stratified due to sample size. Data suggest an intrinsic vascular vulnerability related to the inflammatory nature of lipedematous tissue.

Conclusions. Our pilot data highlight lipedema as an overlooked cardiovascular risk phenotype, warranting earlier recognition in cardiology practice. Further studies are needed to clarify its mechanisms and to develop tailored preventive strategies for affected women.

DIABETE E MALATTIE DEL METABOLISMO 531
DIABETE E MALATTIE CARDIOVASCOLARI (DIABETE E MALATTIE DEL METABOLISMO)
FUNZIONE VENTRICOLARE, RIMODELLAMENTO E DANNO D'ORGANO (IPERTENSIONE ARTERIOSA)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)

EPICARDIAL FAT AND SUBCLINICAL ATHEROSCLEROSIS: HIDDEN CARDIOMETABOLIC RISK FACTORS BEHIND MODERATE DIET ADHERENCE

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Background. Epicardial adipose tissue (EAT) is increasingly recognized as a marker of cardiometabolic dysfunction. Its relationship with dietary patterns and vascular health may reveal early pathways of cardiovascular disease.

Aim. We conducted an observational study of 30 adults undergoing dietary, anthropometric, and vascular assessments.

Methods. Mediterranean diet adherence was evaluated with the MEDAS score; body composition with fat mass percentage (FM%); and vascular status with carotid intima-media thickness (cIMT).

Results. Participants reported moderate diet adherence (mean MEDAS <10), accompanied by dyslipidemia (LDL and total cholesterol above preventive thresholds) and increased EAT thickness (mean 6.8 ± 1.3 mm).
A strong association emerged between EAT >5 mm and FM%, with sex-specific thresholds (>30.9% in men; >29.5% in women) showing high predictive accuracy. cIMT correlated positively with FM%, suggesting a direct link between visceral adiposity and vascular remodeling. No significant associations were found between MEDAS scores and isolated metabolic or vascular parameters.

Conclusions. Our findings indicate that limited adherence to the Mediterranean diet may contribute to a latent cardiometabolic risk profile, even in non-obese individuals. EAT and FM% assessment could improve early identification of high-risk phenotypes in preventive cardiology.

DIABETE E MALATTIE DEL METABOLISMO 362
GRAVIDANZA E CARDIOPATIA
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
DIABETE E MALATTIE CARDIOVASCOLARI
(DIABETE E MALATTIE DEL METABOLISMO)
MALATTIE DEL METABOLISMO (DIABETE E MALATTIE DEL METABOLISMO)

STRAIN ATRIALE SINISTRO E OUTCOMES MATERNO-FETO-NEONATALI: NUOVE PROSPETTIVE ECOCARDIOGRAFICHE NEL DIABETE GESTAZIONALE

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Introduzione: Il diabete gestazionale rappresenta una delle principali complicanze metaboliche della gravidanza, con potenziali implicazioni sia per la madre che per il feto. Studi recenti hanno evidenziato come, nelle donne in gravidanza con multipli fattori di rischio metabolico, si manifestino alterazioni subcliniche della funzione dell'atrio sinistro, rilevabili tramite ecocardiografia speckle tracking (STE). Questi risultati suggeriscono un crescente interesse nell'utilizzo dello strain atriale per il suo potenziale ruolo predittivo rispetto allo sviluppo di complicanze materne e feto-neonatali.

Obiettivo: Confrontare i valori di strain atriale sinistro tra pazienti con diabete gestazionale tra la 31ª e la 34ª settimana di gestazione, e correlare questi parametri con la presenza di complicanze materne o feto neonatali.

Metodi: È stato condotto uno studio prospettico di coorte di 43 pazienti normotese all'arruolamento affette da diabete gestazionale. Le pazienti sono state seguite fino a termine di gravidanza e successivamente divise in due gruppi in base alla presenza (n=8) o assenza (n=35) di complicanze materne o feto-neonatali. La funzione atriale è stata valutante mediante STE: global longitudinal strain dell'atrio sinistro (LA GLS, corrispondente alla reservoir atriale), funzione di conduit atriale sinistra (LA conduit), funzione di contrazione dell'atrio sinistro (LA CTR) e compliance atriale. Tali parametri sono stati confrontati tra i due gruppi utilizzando statistiche descrittive (media ± deviazione standard) e un test t per campioni indipendenti per valutare la significatività statistica.

Risultati: Il valore medio di LA GLS è risultato significativamente più basso nel gruppo complicato 28.95 ± 5.41 vs non complicato 34.12 ± 5.11 (p 0,03). Così come il valore di LA conduit (complicato -18,5 ± 3,4 vs non complicato -23,5 ± 3,7; p 0,004), di LA CTR (complicato -8,7 ± 1,8 vs non complicato -11,5 ± 3,3; 0,003) e di compliance atriale (complicato 4,56 ± 1,11 vs non complicato 6,03 ± 1,75; p 0,029). Non sono state osservate differenze significative nei valori di LAVi (19,41 ± 5,31 ml/m² vs. 22,37 ± 4,52 ml/m², p=0,17) e nel rapporto E/e' (6,64 ± 1,78 vs. 6,06 ± 1,81, p=0,42) tra i gruppi con e senza complicanze, rispettivamente.

Conclusioni: L'analisi eseguita sul nostro campione ha mostrato una differenza statisticamente significativa tra i due gruppi suggerendo un'associazione tra ridotta funzione atriale sinistra e presenza di complicanze perinatali. Questi risultati suggeriscono che una riduzione dello strain atriale sinistro materno (GLS, conduit, CTR e compliance atriale) potrebbe rappresentare un potenziale marker ecocardiografico di rischio nelle pazienti affette da diabete gestazionale. Studi su coorti più ampie con gruppo di confronto non affetto da diabete gestazionale saranno necessari per validare questi risultati e chiarire l'utilità clinica dello strain atriale nella stratificazione del rischio ostetrico e neonatale.

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86° CONGRESSO NAZIONALE SIC
Roma, 4-7 dicembre 2025

EPIDEMIOLOGIA E POLITICA SANITARIA

EPIDEMIOLOGIA E POLITICA SANITARIA 1017
ELETTROCARDIOGRAFIA/ CARDIOVERSIONE/ DEFIBRILLAZIONE (ARITMIE)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)

PREVALENCE OF ECG ABNORMALITIES IN PATIENTS SCHEDULED FOR LOW AND INTERMEDIATE RISK NON-CARDIAC SURGERY : AN ONGOING OBSERVATIONAL STUDY

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Introduction: Cardiovascular (CV) complications in the first month following non-cardiac surgery (NCS) represent a problem of clinical relevance, considering the high annual global volume of interventions worldwide. Performing an accurate CV evaluation and implementing adequate peri-operative management in patients scheduled for NCS is of primary importance. The latest ESC guidelines do not recommend routine ECG screening for low- and intermediate-risk NCS patients without known cardiovascular risk factors. However, the utility of such screening, particularly for detecting unknown cardiovascular conditions that could impact peri-operative management and outcomes, remains a topic of interest. The aim of the present study was to assess the prevalence of abnormal ECG findings among patients scheduled for elective low- and intermediate-risk surgery, and to explore if these findings could provide additional prognostic information or modify peri-operative management."

Methods: This cross-sectional, observational study included individuals scheduled for low-risk NCS, and individuals scheduled for intermediate-risk NCS who were under 65 years of age and without CV risk factors/CV disease. Participants underwent baseline CV assessments including collection of clinical history, physical examination, and ECG. Data collection is currently ongoing.

Results: A total of 459 pre-operative evaluations were conducted. Nine evaluations are currently undergoing higher-level diagnostic investigation and were excluded from this preliminary prevalence analysis. Previously unknown ECG abnormalities were found in 35 patients. Of these, 18 (4% of the total evaluated population) were subsequently diagnosed with cardiovascular disease. Unknown atrial fibrillation (1,3%) and hypertrophic cardiopathy (0,9%) were the most prevalent. Other abnormalities include: Atrial Flutter, chronic coronary syndrome, Heart Failure with reduced Ejection Fraction and Mitral valve prolapse. Notably, 33 out of the 35 patients with unknown ECG abnormalities presented with at least one cardiovascular risk factorThese findings are preliminary and subject to change with the analysis of the complete dataset.

Conclusions: These preliminary data suggest a significant prevalence of previously unknown ECG abnormalities in patients undergoing low- to intermediate-risk NCS, even in cohorts not routinely recommended for ECG screening by current guidelines. Given its low-cost and non-invasive nature, our findings support further investigation into the utility of pre-operative ECG as a screening method to potentially diagnose unknown CV disease, optimize therapy, and guide preventive strategies, particularly in patients with cardiovascular risk factors.

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86° CONGRESSO NAZIONALE SIC
Roma, 4-7 dicembre 2025

FARMACI CARDIOVASCOLARI E NUTRACEUTICI

FARMACI CARDIOVASCOLARI E NUTRACEUTICI 469
TERAPIA DI RESINCRONIZZAZIONE (ARITMIE)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
BIOLOGIA MOLECOLARE CARDIOVASCOLARE
(GENETICA E BIOLOGIA MOLECOLARE)

GLI SGLT2I MIGLIORANO IL RIMODELLAMENTO ELETTRICO NEI PAZIENTI CON HFREF SOTTOPOSTI A CRT: EVIDENZE DA UN'ANALISI CLINICA E METABOLOMICA INTEGRATA (SAETTA-STUDY)

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Negli ultimi anni, diversi studi controllati randomizzati hanno dimostrato i significativi benefici prognostici degli inibitori del cotrasportatore sodio-glucosio di tipo 2 (SGLT2i) nei pazienti affetti da scompenso cardiaco. È noto che questi farmaci modulano il metabolismo energetico cardiaco, promuovendo un cambiamento nell'utilizzo dei substrati da glucidico a lipidico. Inoltre, gli SGLT2i possono contribuire alla normalizzazione dei livelli intracellulari di sodio, il cui accumulo nelle cellule miocardiche compromette l'omeostasi del calcio, riduce la contrattilità e favorisce lo sviluppo di aritmie.
Attraverso la regolazione delle dinamiche ioniche di sodio e calcio, gli SGLT2i potrebbero non solo migliorare la funzione ventricolare, ma anche potenziare la risposta alla terapia di resincronizzazione cardiaca (CRT).

Obiettivi dello studio:
- Valutare l'effetto degli SGLT2i sul metabolismo energetico nei pazienti con scompenso cardiaco, mediante analisi di biomarcatori metabolici, allo scopo di ottimizzare diagnosi e trattamento.
- Esaminare il rimodellamento elettrico indotto dagli SGLT2i, attraverso valutazione della percentuale di responder alla CRT, ipotizzando un potenziale miglioramento della funzione cardiaca legato alla modulazione ionica.

Disegno dello studio:
Studio prospettico, osservazionale e randomizzato, condotto su pazienti non diabetici con scompenso cardiaco a frazione di eiezione ridotta (HFrEF) candidati all'impianto di CRT. Il gruppo di trattamento ha ricevuto dapagliflozin o empagliflozin per almeno tre mesi; il gruppo di controllo ha ricevuto terapia ottimizzata per lo scompenso senza SGLT2i. Durante l'intervento di impianto della CRT, sono stati raccolti campioni ematici da sedi venose periferiche e centrali ed arteriose periferiche, successivamente analizzati tramite spettrometria di massa per il profiling metabolomico. Follow-up clinici, laboratoristici ed ecocardiografici sono stati eseguiti a 3, 6 e 12 mesi, valutando frazione di eiezione ventricolare sinistra (LVEF), percentuale di risposta alla CRT ed efficacia della stimolazione biventricolare.

Risultati preliminari:
Il profilo metabolomico ha evidenziato modificazioni significative nei pazienti trattati con SGLT2i, con un aumento degli intermedi del ciclo di Krebs, del beta-idrossibutirrato e delle carnitine a catena corta, indicando un maggior utilizzo di substrati lipidici. Contestualmente, è stata osservata una riduzione delle carnitine a catena lunga. I marcatori di stress metabolico e cardiovascolare, come polioli e ceramidi, sono risultati significativamente ridotti nei pazienti trattati, suggerendo una diminuzione dello stress ossidativo e

del carico metabolico. I dati ecocardiografici preliminari hanno mostrato un tasso maggiore di risposta alla CRT rispetto al gruppo controllo e superiore rispetto a quello riportato in letteratura, suggerendo un potenziale effetto sinergico degli SGLT2i sulla terapia di resincronizzazione. E' stata inoltre notata una riduzione del burden aritmico.
Questo studio mette in evidenza l'effetto degli SGLT2i sul metabolismo energetico e sull'omeostasi ionica nei pazienti con HFrEF non diabetici, sottolineando la possibilità di utilizzare specifici biomarcatori metabolici per migliorare la gestione dello scompenso cardiaco. I risultati suggeriscono inoltre che gli SGLT2i possono favorire il rimodellamento elettrico ed aumentare l'efficacia della CRT, confermando il loro ruolo emergente come modulatori della funzione miocardica oltre il controllo glicemico.

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FARMACI CARDIOVASCOLARI E NUTRACEUTICI 20
NUTRACEUTICI (FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
MALATTIE DEL METABOLISMO (DIABETE E MALATTIE DEL METABOLISMO)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)

THE ROLE OF BERGAMOT POLYPHENOLIC FRACTION (BPF) IN MASLD-INDUCED HFPEF: MITIGATE DIASTOLIC DYSFUNCTION BY TARGETING CHRONIC LOW-GRADE INFLAMMATION

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Metabolic dysfunction-associated steatotic liver disease (MASLD) is an independent risk factor and a key contributor to the pathophysiology of heart failure with preserved ejection fraction (HFpEF), highlighting the urgent need for an early detection and intervention. Bioimaging techniques provide valuable morphological and functional insights to monitor the disease progression and guide therapeutic strategies targeting the early metabolic and inflammatory mechanisms that link these conditions. Alongside traditional pharmacological therapies, nutraceuticals are a promising candidate for primary prevention, due to their antioxidant, anti-inflammatory and cardioprotective properties. Herein, we investigated the potential role of Bergamot Polyphenolic Fraction (BPF) in mitigating MASLD-related HFpEF.

Male DIAMOND (diet-induced animal model of non-alcoholic fatty liver disease) mice were randomly assigned to receive either a chow diet with tap water or a high-fat, high-carbohydrate diet with a high-fructose glucose water solution (23.1 g/L d-fructose and 18.9 g/L d-glucose) for up to 30 weeks. From week 16 onwards, mice were further subdivided and treated with either vehicle or BPF (50 mg/kg/day po), until week 30. Echocardiographic analysis was conducted at the baseline and at the end of the experiment. Correlation and regression analyses were performed to assess the role of systemic pro-inflammatory mediators in the onset of cardiac alterations.

BPF administration significantly ameliorated diastolic function, improving the E/A ratio, as well as left ventricular diastolic and systolic tissue strain dysfunction and dyssynchrony. These effects were accompanied by a reduction in the systemic levels of chronic low-grade

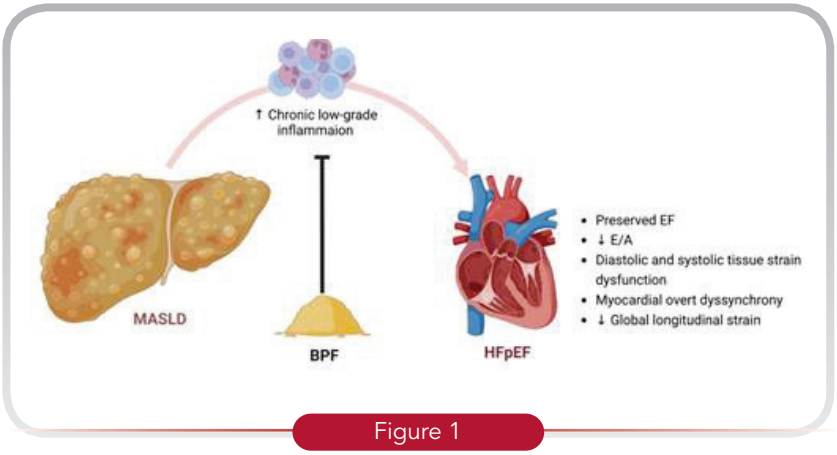


Figure 1

inflammatory mediators, that were straightly associated with the HFpEF phenotype.

Our results demonstrated that BPF improved diastolic dysfunction and reduced chronic low-grade inflammation. As this inflammatory state is a key predisposing factor for the HFpEF, BPF supplementation has emerged as a potential therapeutic strategy for alleviating early MASLD-related inflammation and the pathological changes that contribute to the onset of cardiac dysfunction and HFpEF phenotype.

FARMACI CARDIOVASCOLARI E NUTRACEUTICI 415
FARMACI CARDIOVASCOLARI (FARMACI CARDIOVASCOLARI E NUTRACEUTICI) TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO) PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)

POTENTIAL CARDIOLOGIC PROTECTIVE EFFECTS OF ACHETYLCHOLINESTERASE INHIBITORS IN PATIENTS WITH MILD TO MODERATE DEMENTIA

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Background. In patients with mild to moderate Alzheimer's disease (AD), acetylcholinesterase inhibitors (AChE-I) are employed to improve cognitive function by increasing acetylcholine (ACh) availability in the neuronal synapses. Bradycardia, cardiac electrical conduction abnormalities and hypotension due to muscarinic M2 receptor stimulation are potential side effects. However, whether these "side effects" could play a potential protective effect on cardiovascular (CV) events is not yet well defined.Aim of the study. To evaluate potential beneficial cardiac effects of AChE-Is in patients with AD, in terms of reduction of major adverse cardiovascular events (MACEs).

Methods. We conducted a retrospective, monocentric, observational cohort study in patients referred to the Memory Centre of San Raffaele Hospital of Milan was performed. Two groups were considered: the interventional group included AD patients treated with AChE-I. The control group enrolled a cohort of subjects matched for age and comorbidities recruited among the caregivers of intervention group and subjects that were cognitively unimpaired but not on AchE-I. The primary endpoint was a composite of hospitalization for heart failure (HF), non-fatal acute myocardial infarction (AMI), myocardial revascularization, hospitalization for cardiovascular (CV) causes, cardiovascular mortality and occurrence of stroke and/or TIA (MACEs) during the follow-up period. Secondary endpoints were each individual component of the primary end point, total mortality, non-cardiovascular death and incidence of pacemaker implant.Results. 221 AD patients treated with AChE-I (91 with Donepezil, 130 with Rivastigmine) were included in intervention group and 221 non-AD patients in control group. Groups were homogeneous in terms of age, gender and main cardiovascular risk factors, except for family history of cardiovascular diseases (CVD), which was more frequent in non AChE-I group. During a median follow-up of 3.1 years the primary endpoint occurred in 24 patients in intervention group (2.1 per 100 patient-years) compared to 56 patient in the control group (5.0 per 100 patient-years), HR 0.48, 95% CI 0.24-0.95; p= 0.036. Even not significant, the difference was mainly driven by myocardial revascularization (3.2% in intervention group vs 6.8% in controls) and hospitalization for heart failure (4.5% in intervention group vs 14.5% in controls). Non-CVD mortality was significantly higher in treatment group (13,6% in intervention group vs 2,7% in controls). No significant difference was observed between groups in terms of other secondary outcomes.

Conclusion. Among patients with AD, use of AChE-I may be protective for CV outcomes, especially reducing HF hospitalisation and myocardial revascularization.

FARMACI CARDIOVASCOLARI E NUTRACEUTICI 146
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
FARMACI ANTI-DIABETICI (DIABETE E MALATTIE DEL METABOLISMO)

IMPROVE ENDOTHELIAL FUNCTION IN CHRONIC HEART FAILURE OUTPATIENTS WITH DIABETES AFETR ORAL SEMAGLUTIDE INITIATION

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Background: Semaglutide, an agonist of GLP1 receptor, has been shown effective in reducing of MACE and cardiac remodelling, with an improvement of performance associated with weight reduction in some studies on diabetic patients, on obese patients and on patients with heart failure with perserved ejection fraction (HFpEF). We sought to evaluate possible changes in cardiometabolic parameters and endothelial function assessed by flow-mediated dilation (FMD) in diabetic patients with chronic HF treated with oral Semaglutide.

Methods: Forteen consecutive outpatients with diabetes and chronic HF were enrolled in the study after starting treatment with oral Semaglutide. All patients underwent clinical and conventional, TDI and strain echocardiography in an ambulatory setting. In all patients endothelial function was assessed by FMD at the baseline and after 3 months of therapy with oral Semaglutide.

Results: Three months of therapy with oral Semaglutide were associated with a statistically significant improvement of anthropometric parameters: weight (94.5± 19.7 kg vs 91.1±18.3 kg, p=0.0008), BMI (32.9±5.8 kg/m2 vs 31.7±5.2 kg/m2, p=0.0011), waist circumference (114.7±13.3 cm vs 110.5±11.7 cm, p=0.0002); systolic blood pression (120.38 ± 15.47 mmHg vs 118.84 ± 7.94 mmHg p=0,699); NYHA functional class (2.15 ± 0.55 a 1.92 ± 0.49, p=0.082); functional capacity assessed by 6MWT (334.8±97.5 m vs 373.1±108.4 m, p=0.0079); left atrial GLS values (69.8±56% vs 107±3.9%, p=0.0313) and at least the improvement of endothelial function (19±8.6% vs 23.6±7.2%, p=0.03).

Conclusions: 3-month therapy with oral semaglutide in patients with chronic HF and diabetes was associated with an improvement of cardiometabolic parameters and endothelial function assessed by FMD.

FARMACI CARDIOVASCOLARI E NUTRACEUTICI 210
FARMACI CARDIOVASCOLARI (FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
DISLIPIDEMIE (DIABETE E MALATTIE DEL METABOLISMO)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)

EFFICACIA E SICUREZZA DI ALIROCUMAB 300 MG NELLA PRATICA CLINICA REALE: DATI PRELIMINARI DAL REGISTRO ALINET

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Introduzione: Alirocumab, un anticorpo monoclonale diretto contro la proproteina convertasi subtilisina/kexina di tipo 9 (PCSK9), è ampiamente utilizzato per ridurre i valori di colesterolo-LDL (LDL-C). La formulazione da 300 mg, somministrata come singola iniezione ogni quattro settimane, è stata recentemente introdotta nella pratica clinica. Studi clinici di fase III hanno dimostrato che alirocumab 300 mg garantisce effetti ipolipemizzanti prolungati ed è ben tollerato, rappresentando una valida opzione nella gestione del rischio cardiovascolare (CV). Tuttavia, i dati sull'uso di alirocumab 300 mg in contesti reali sono ancora limitati.

Obiettivi: ALINET è un registro prospettico multicentrico italiano di fase 4, ideato per valutare efficacia, sicurezza, aderenza e persistenza della terapia con alirocumab 300 mg. Scopo di questa analisi è stato valutare la variazione percentuale di LDL-C rispetto al basale e la proporzione di pazienti che raggiungono i target di LDL-C in base alla classe di rischio CV.

Metodi: Il registro ALINET ha arruolato pazienti trattati con alirocumab 300 mg secondo la pratica clinica standard. Le caratteristiche cliniche e demografiche, le terapie concomitanti e i dati biochimici sono stati registrati alla prima prescrizione e ai successivi follow-up.
Risultati: Questa analisi preliminare ha incluso 80 pazienti (66,3% uomini, età media 62 anni). Alirocumab 300 mg è stato prescritto principalmente in regime ambulatoriale (66,3%), durante il ricovero per sindrome coronarica acuta (SCA, 26,2%) o per altre cause (7,5%). Tra questi, il 46,3% presentava ipertensione, l'8,8% diabete mellito di tipo 2, il 2,5% ipercolesterolemia familiare e il 28,8% una SCA pregressa. La maggior parte dei pazienti (88,8%) era a rischio CV molto alto.
Al momento dell'analisi, i valori di LDL-C al primo controllo lipidico erano disponibili per 28 pazienti; di questi, il 53,6% era in terapia combinata con statina ed ezetimibe, il 28,6% in monoterapia con ezetimibe, e il 17,9% non assumeva ulteriori terapie ipolipemizzanti oltre ad alirocumab 300 mg. In questa popolazione, il valore mediano di LDL-C basale era 128 mg/dL [IQR 74; 154], con una riduzione a 32 mg/dL [IQR 22; 51] al primo controllo lipidico, a una mediana di 123 giorni dalla prima prescrizione ($p<0,001$). La riduzione percentuale mediana di LDL-C è stata del 70% [IQR 56; 83]. Tra i 28 pazienti valutati, 23 (82%) hanno raggiunto il target di LDL-C in base alla classe di rischio CV

(p<0,001). La persistenza terapeutica in questi pazienti è stata del 100%.

Conclusioni: Questa analisi preliminare del registro ALINET dimostra che alirocumab 300 mg determina una significativa riduzione dell'LDL-C, con l'82% dei pazienti che raggiunge il target in base alla classe di rischio CV. Studi futuri con campioni più ampi e follow-up più prolungati sono necessari per confermare questi risultati e valutarne l'impatto sugli esiti a lungo termine.

FARMACI CARDIOVASCOLARI E NUTRACEUTICI 660
FARMACI ANTIARITMICI (ARITMIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
ELETTROCARDIOGRAFIA/ CARDIOVERSIONE/ DEFIBRILLAZIONE (ARITMIE)
CARDIOTOSSICITA' DA FARMACI
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
DIAGNOSTICA INVASIVA INTRAVASCOLARE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

A RARE CASE OF AMIODARONE-INDUCED CORONARY VASOSPASM

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A 72-year-old male patient presented at emergency department (ED) with palpitations. His medical history was characterized by ischemic heart disease (Prinzmetal angina with non-critical coronary stenosis at previous angiography), hypertension, peripheral vascular disease, glucose intolerance, obstructive sleep apnea syndrome, and paroxysmal atrial fibrillation (AF). Eighteen months before, the patient presented with angina episodes, initially managed conservatively with medical therapy due to concomitant anemia and high bleeding risk. Eventually, six months later, he underwent percutaneous coronary intervention in the setting of a non-ST-segment elevation myocardial infarction. Coronary angiography revealed acute occlusion of the MO3/PL branch, and two drug-eluting stents were successfully deployed in MO3. Additionally, angiography showed vasospasm in the circumflex artery. Two months before the current admission, he underwent percutaneous left atrial appendage occlusion for recurrent anemia (Hb 7.8 g/dl) secondary to gastrointestinal bleeding during oral anticoagulation. Two weeks before, the patient presented to the ED with AF and rapid ventricular response, which was successfully managed with electrical cardioversion, after thrombus on the left atrial appendage occluder was excluded. He was subsequently given amiodarone 200 mg BID for prophylaxis of AF recurrences.

During the current admission at the ED, however, the ECG showed recurrence of AF with fast ventricular response (127 bpm) and, therefore, intravenous loading dose of amiodarone (2 ampoules in 100 mL of 5% glucose solution over 20 minutes) was started. Suddenly, the patient developed severe hypotension, marked bradycardia, and transient loss of consciousness, necessitating external cardiac massage. Upon recovery, the patient reported epigastric pain and at ECG ST-segment elevation in the inferior leads was recorded (Figure 1). Therefore, the patient was urgently transferred to the cardiac catheterization laboratory where coronary artery angiography showed mild vasospasm of the ostium of the right coronary artery (Figure 2). Importantly, when angiography was performed the patient was asymptomatic and the ECG showed no longer ST elevation.

In this case, the causal relationship between intravenous amiodarone administration and coronary artery vasospasm is very likely due to the solvent, as amiodarone was already administered orally with no side effects. A few cases of coronary vasospasm related to amiodarone have been already reported and in all the drug was administered intravenously. A drug-mediated reaction with histamine release can be considered as a working hypothesis for coronary vasospasm in this patient, particularly prone to vasospasm.

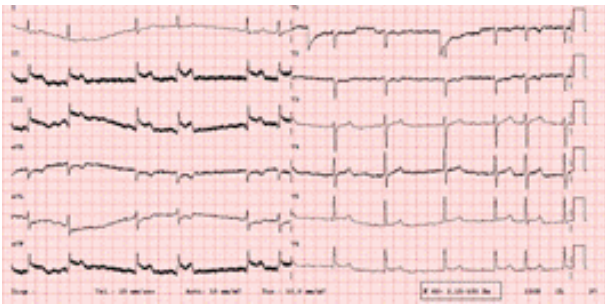


Figure 1

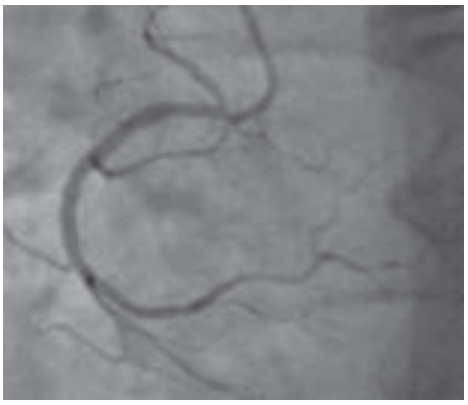


Figure 2

FARMACI CARDIOVASCOLARI E NUTRACEUTICI 795
DISLIPIDEMIE (DIABETE E MALATTIE DEL METABOLISMO)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
MALATTIE DEL METABOLISMO (DIABETE E MALATTIE DEL METABOLISMO)

EFFECTIVENESS AND SAFETY OF BEMPEDOIC ACID IN ROUTINE CLINICAL PRACTICE: 1-YEAR FOLLOW-UP DATA FROM MILOS ITALIAN COHORT

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Background: Bempedoic acid (BA), a first-in-class adenosine triphosphate-citrate lyase inhibitor, has demonstrated reductions in low-density lipoprotein cholesterol (LDL-C) and risk of cardiovascular (CV) events in randomised trials. However, real-world data with BA in clinical practice are limited.

Methods: MILOS is a European, prospective, observational study (NCT04579367) in adult patients with primary hypercholesterolaemia or mixed dyslipidaemia that evaluates the effectiveness and safety of BA or BA + ezetimibe (EZE) fixed-dose combination (FDC) in routine clinical practice. This analysis presents 8-week and 1-year follow-up data from the Italian cohort, collected across 106 sites.

Results: Among 1331 enrolled patients, 1021 had LDL-C data available both prior to BA initiation and at 1-year follow-up. Overall, the mean (SD) age was 65.9 (10.6) years, 59.3% were male, 15.6% had diabetes and 11.0% had heterozygous familial hypercholesterolemia. Most patients (58.1%) were secondary prevention, with 82.6% classified by investigator as high (29.2%) and very-high (53.3%) CV risk. At 1 year, 89.2% patients were taking BA in combination with other LLTs, primarily statins and ezetimibe. Mean LDL-C reduction from BA initiation to 8-weeks (n=857) was 22.7%. Over the 1-year follow-up (n=1021; mean [SD] treatment duration: 368.5 [71.6] days), mean (SD) LDL-C decreased from 110.2 (44.5) mg/dL before BA initiation to 72.8 (31.7) mg/dL at 1-year follow-up (corresponding to a reduction from 2.9 [1.2] to 1.9 [0.8] mmol/L), with a mean (SD) relative LDL-C reduction of 28.7% (31.3). LDL-C levels fell across all CV risk categories at 1-year, with mean relative reductions of 28.7% (very high), 28.0% (high), and 30.0% (low/moderate). Overall, LDL-C goal attainment increased from 7.7% (79/1021) before BA initiation to 43.3% (442/1021) at 1-year. The

most frequently reported ADRs were myalgia (1.3%), arthralgia (0.8%), hyperuricaemia (0.7%) and no new safety signals were observed during this follow-up period.

Conclusions: One-year data from the Italian MILOS cohort demonstrate that the addition of BA or BA+EZE FDC, with or without other LLTs, is associated with early and sustained LDL-C reduction, consistent with the findings from Phase III studies. This was accompanied by a marked increase in proportion of patients achieving their LDL-C goals. The safety profile observed in this real-world population was consistent with the randomized clinical trials. These findings support the real-world effectiveness and safety profile of bempedoic acid in LDL-C management.

CardioSic

FARMACI CARDIOVASCOLARI E NUTRACEUTICI 799
DISLIPIDEMIE (DIABETE E MALATTIE DEL METABOLISMO)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
MALATTIE DEL METABOLISMO (DIABETE E MALATTIE DEL METABOLISMO)

CHALLENGES IN ACHIEVING LDL-C GOALS: INSIGHTS FROM THE ITALIAN SANTORINI STUDY COHORT

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Background and Aim: Cardiovascular disease continues to be the leading cause of death worldwide, with atherosclerotic cardiovascular disease (ASCVD) being a major contributor. Elevated low-density lipoprotein cholesterol (LDL-C) levels are an important risk factor, which led to updated guidelines from the European Society of Cardiology (ESC) and the European Atherosclerosis Society (EAS) in 2019 recommending lower LDL-C goals for patients at high- and very high-risk. However, many patients do not achieve the recommended LDL-C levels. The SANTORINI study was initiated to evaluate lipid management across Europe. This report presents the results of the 1-year follow-up of the Italian cohort.

Methods and Results: The study included 2,095 patients, with 1,993 having 1-year follow-up data. At baseline, 32% of patients were not receiving lipid-lowering therapy (LLT), decreasing to 2.1% at follow-up. Monotherapy use increased from 34.2% to 41.0%, while combination therapy use increased from 33.8% to 55.5%, particularly with high-intensity statin and ezetimibe combinations. LDL-C levels decreased from 2.5 to 1.9 mmol/L overall, with a greater reduction in very high-risk patients. The proportion of patients achieving LDL-C goals increased from 20.8% to 35.0%. Cardiovascular events were more frequent in very high-risk patients, with 11 cardiovascular deaths and 80 major adverse cardiovascular events (MACE).

Conclusion: The Italian cohort of the SANTORINI study demonstrated improved LLT usage and LDL-C management, with a shift towards combination therapy. Despite these improvements, only one-third of patients achieved guideline-recommended LDL-C targets, highlighting the need to further optimise lipid-lowering strategies to reduce cardiovascular risk.

FARMACI CARDIOVASCOLARI E NUTRACEUTICI 306
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
DISLIPIDEMIE (DIABETE E MALATTIE DEL METABOLISMO)
TRATTAMENTO POST-INFARTO (CARDIOPATIA ISCHEMICA)

PATIENTS' AND CLINICIANS' PERSPECTIVES: EXPLORING KEY TREATMENT ATTRIBUTES FOR SECONDARY PREVENTION OF ASCVD IN ITALY

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Background: Atherosclerotic cardiovascular disease (ASCVD) is the leading cause of mortality in Italy, accounting for nearly 20% of all deaths. The therapeutic goal for patients in secondary prevention of ASCVD is to achieve low-density lipoprotein cholesterol (LDL-C) levels below 55 mg/dL. In patients failing to achieve this target despite treatment with both high-intensity statins and ezetimibe, one among bempedoic acid, inclisiran, or PCSK9 monoclonal antibodies (i.e., alirocumab and evolocumab) should be added to the combination. Given that these drugs differ across several dimensions, our objective is to understand which treatment characteristics are considered relevant by patients and clinicians when choosing a therapy for the secondary prevention of ASCVD in Italy.

Methods: To identify a preliminary list of treatment characteristics (i.e., attributes), a targeted literature review was conducted using PubMed, Google Scholar, and cross-referencing. Articles were included based on the following criteria: 1) studies investigating stakeholders' preferences; 2) focus on cardiovascular diseases; 3) comparison of alternative treatment options; and 4) availability of the full text. No exclusion criteria based on the publication year were applied. The list of attributes derived from the literature was subsequently discussed in a structured workshop involving 3 clinicians, 3 patients and 1 foundation member representing the civil society. The aim of the workshop was to select the most relevant attributes, while also encouraging participants to suggest additional treatment characteristics based on their personal experiences. This allowed to derive a final list of attributes, which was ultimately validated through a final review and a concluding consultation with the 3 clinicians and the foundation member.

Results: The targeted literature review identified 20 full-text manuscripts, none of which were specific to the Italian context. From the set of publications, 20 treatment attributes were initially extracted. Of these, 6 were excluded as referred to other decision-making contexts or because they did not differentiate among the therapeutic alternatives under consideration. The remaining 14 attributes were organized into four domains: efficacy, administration, safety and costs. During the workshop, both clinicians and patients agreed on the importance of treatments' efficacy, defined as the percentage reduction in LDL-C levels. Similarly, there was broad consensus on the relevance

of the mode and setting of administration as well as the frequency of administration. In the safety domain, participants recommended including the rate of treatment discontinuation due to adverse events as a meaningful indicator. No cost-related attributes were retained, as they were not deemed relevant. Following the final review and stakeholder validation, the final list included four attributes: the percentage reduction in LDL-C levels, representing the primary measure of treatment efficacy from both stakeholders' perspectives; the mode and setting of administration, reflecting the practical implications for patients' daily lives; the frequency of administration, affecting patients' ability to integrate treatment into their routines; and the rate of treatment discontinuation due to adverse events, considered the most meaningful indicator of treatment safety.

Conclusions: This analysis provides a deeper understanding of key attributes influencing clinicians' and patients' preferences for the treatment for secondary prevention of ASCVD in individuals who have not reached LDL-C targets despite receiving both high-intensity statins and ezetimibe in Italy. Their relative importance should be further explored through a discrete choice experiment.

FARMACI CARDIOVASCOLARI E NUTRACEUTICI 336
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
CARDIOPATIE CONGENITE NELL´ADULTO (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
TROMBOSI E COAGULAZIONE (ATEROTROMBOSI)

USO OFFLABEL DI NOAC IN CUORE SINISTRO IPOPLASICO NELL'ADULTO

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P.A., di 26 anni, giungeva alla attenzione della nostra unità con anamnesi di Sindrome del Cuore Sinistro Ipoplasico trattata perinatalmente con intervento di Norwood I stadio con completamento successivo del circuito di Fontan con valvuloplastica tricuspidalica, impianto di PM epicardico per disfunzione sinusale concomitante, fabbricazione di circuito extracardiaco fenestrato, seguito per la malattia cardiaca congenita (CHD) presso altro centro. Il paziente era stato sottoposto a cateterismo cardiaco diagnostico su valutazione collegiale del centro eseguente la presa in carico globale, esitante in rilievo di stenosi diffuse del condotto VCI-AAPP con minimo diametro di 1 cm richiedente stenting con device Andra XL 57 mm, per cui i colleghi disponevano interruzione assunzione CardioASA e avvio di VKA sec. INR. Il paziente, ancora affidato alle cure genitoriali, esibiva documentazione indicante scarsa aderenza terapeutica, con ampie variazioni dei valori di INR (in un range tra 1,2-4,0) imputabile a pasti addizionali incongrui alla terapia, assunzione incostante, lamentando anche difficoltà logistica nell'esecuzione dei dosaggi periodici. Interrogandoci sulla possibilità di introduzione di NOAC, fosse anche off-label anche in considerazione del tempo residuo per la terapia anticoagulante proposta, si falliva nell'interfacciarsi con il centro inviante, declinante collaborazione adducendo un razionale che non ci appariva supportato da evidenze scientifiche, ossia la presenza di scompenso cardiaco a frazione di eiezione moderata, l'assenza di Afib, e la presenza di un deficit deambulatorio che peraltro era già stato inquadrato a follow up neurologico come imputabile ad ipertono verosimilmente centrale con deficit in flessione, in assenza di deficit del circolo arterioso periferico e di lesioni centrali cerebrali. Considerata la scarsa copertura della terapia proposta, è stata effettuata una valutazione della letteratura pertinente: Van den Eynde et al. in una metanalisi hanno evidenziato pari efficacia di ASA, VKA e NOAC in tromboprofilassi primaria (con un leggero primato per i NOAC) con profilo di sicurezza comparabile (con incidenza non significativamente maggiore di sanguinamento in NOAC; peraltro la quota maggiore di eventi era rappresentata da sanguinamenti uterini in giovani donne, dato già rilevato da Kawamatsu et al.); Yang et al. hanno evidenziato in un'analisi su registro NOTE un profilo di tollerabilità, efficacia e sicurezza comparabile tra VKA e NOAC nel follow up a breve (13 mesi in media) termine, con evidenza di come un INR subottimale incrementi il rischio tromboembolico di 3,5 volte durante terapia con VKA; si evidenzia comunque come la casistica esplorata includesse pazienti con aritmie ipercinetiche e quindi verosimilmente con Fontan di tipo atriopolmonare. Alsaied, Possner e Van den Eynde in una Expert Opinion per l'ACC proponevano poi un algoritmo condiviso estendente i dati esposti anche al paziente sottoposto a stenting del condotto.

Si procedeva pertanto, informato il paziente e i congiunti di potenziali rischi e benefici, alla sostituzione del VKA con Rivaroxaban 20 mg 1 cp/die per il resto della durata proposta della terapia profilattica, in assenza di complicazioni tromboemboliche o emorragiche, nonostante coeva rimozione chirurgica di lesione angiomatosa preesistente al ginocchio sinistro, e con buon risultato finale ai TTE di controllo successivi, reintroducendo l'ASA su indicazione del centro originario. Nonostante la nostra esperienza aneddotica positiva, appare necessario pur con i limiti della scarsa prevalenza di malattia lo sviluppo di studi, fosse anche retrospettivi, offrenti la necessaria categorizzazione di pazienti in funzione di tipo di condotto e profilo trombotico.

FARMACI CARDIOVASCOLARI E NUTRACEUTICI 499
INFIAMMAZIONE E IMMUNITÀ (ATEROTROMBOSI)
NUTRACEUTICI (FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
DISLIPIDEMIE (DIABETE E MALATTIE DEL METABOLISMO)
MALATTIE DEL METABOLISMO (DIABETE E MALATTIE DEL METABOLISMO)

THE BERGAMOT POLYPHENOLIC FRCTION REDUCES POST-PRANDIAL LIPOPROTEIN(A) AND MALONDIALDEYDE LEVELS IN NORMOLIPIDEMIC PATIENTS

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Lipoprotein(a) (Lp(a)) represents a consistent biomarker for the development of Atherosclerotic CardioVascular Disease (ASCVD) as Lp(a) levels strongly correlate with the occurrence and severity of disease progression. Besides clear evidence exists supporting the advantage of lowering Lp(a) serum levels, many of the drugs used for lowering serum LDLc and ASCVD severity fail to reduce Lp(a) concentration which, in turn, represents a cholesterol-independent risk factor, being genetic factors the most relevant determinants contributing to the regulation of Lp(a) concentrations. The study of post-prandial changes of Lp(a) concentration appears as a reliable tool for detecting appropriate changes of Lp(a) concentration mostly correlating with oxidative stress and potential nutraceutical interventions in patients. Here we investigated 104 normolipidemic patients either untreated or pre-treated with a natural antioxidant represented by the Bergamot Polyphenolic Fraction (BPF)) both under basal conditions and after a High Fat Meal (HFM) alongside with measurement of a biomarker of oxidative stress such as malondialdehyde (MDA) levels.

We divided 104 patients into two groups randomly, with one group receiving BPF (1200 mg daily) and the other group receiving a placebo for 12 weeks. Fasting concentration at baseline of Lp(a), MDA, serum total cholesterol, LDL, HDL and triglycerides and after HFM were measured 2, 4, and 6 hours after consuming an 800-calorie HFM. Measurements were also performed after 12 weeks of treatment of subjects entering the study with BPF (1200 mg/daily)

The baseline fasting Lp(a), lipid and MDA serum concentrations were similar in both groups. As expected, the levels of postprandial triglyceride, MDA and Lp(a) showed a significant increase. Measurements carried out after 12 weeks showed that no significant changes occurred in the placebo group neither in lipid biomarkers nor in oxidative stress. In contrast, treatment of patients with 1200 mg/daily of BPF significantly attenuated postprandial elevation of triglycerides and Lp(a) levels, an effect accompanied by a notable reduction in fasting MDA concentration ($p<0.001$). Thus, our data show that BPF effectively reduced postprandial oxidative stress, an effect which correlates with reduced Lp(a) and triglyceride levels, Further studies are required in order to define the correlation between the BPF-induced reduction of post-prandial Lp(a) and oxidative stress biomarkers and the potential attenuation of ASCVD risk.

FARMACI CARDIOVASCOLARI E NUTRACEUTICI 230
FARMACI CARDIOVASCOLARI (FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
DISLIPIDEMIE (DIABETE E MALATTIE DEL METABOLISMO)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)

EFFICACIA DI INCLISIRAN IN PAZIENTI CON E SENZA IPERCOLESTEROLEMIA FAMILIARE: UN'ANALISI PER SOTTOGRUPPI DAL REGISTRO CHOLINET

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Introduzione: Trials randomizzati hanno dimostrato che inclisiran riduce i valori di colesterolo LDL (LDL-C) di circa il 50%. Tuttavia, nei trials che hanno incluso pazienti affetti da ipercolesterolemia familiare (FH) trattati con inclisiran la riduzione dei valori di LDL-C era minore nei pazienti affetti da FH, ed in particolare non significativa, in confronto con il placebo, nei pazienti con FH omozigote. Attualmente dati di mondo reale sulla riduzione del LDL-C in pazienti affetti da FH e trattati con inclisiran sono limitati.

Obiettivi: Dal registro Cholinet sono stati estratti ed analizzati separatamente i dati di pazienti affetti da FH e confrontati con quelli di pazienti senza FH, con l'obiettivo di valutare l'efficacia di inclisiran in questa popolazione.

Metodi: Cholinet è uno studio multicentrico, osservazionale, prospettico di fase IV che ha arruolato pazienti di età superiore a 18 anni con indicazione clinica a iniziare terapia con inclisiran. In questa analisi, sono stati confrontati pazienti con e senza diagnosi di FH, definita secondo i criteri del Dutch Lipid Clinical Network Score (DLCNS).

Risultati: Abbiamo analizzato 902 pazienti arruolati nel registro, di cui 105 affetti da FH e con 797 non affetti, che avevano effettuato almeno un primo follow-up, ad un tempo mediano di 9 mesi dalla prima prescrizione di inclisiran. Al basale, i pazienti con FH presentavano un valore mediano di LDL-C significativamente più elevato rispetto a quelli senza FH (103 mg/dL vs 167 mg/dL; $p<0.001$), avevano un'età media inferiore (56,3±13,3 vs 64±9,2; $p<0.001$) ed erano più frequentemente donne (46,7% vs 29,7%; $p=0.001$). Nella popolazione non affetta da FH prevalevano – rispetto alla popolazione non affetta da FH - ipertensione arteriosa (75,8% vs 51,4%; $p<0.001$), diabete mellito di tipo 2 (26,9% vs 8,6%; $p<0.001$), nonchè diagnosi di malattia aterosclerotica cardiovascolare (sindrome coronarica acuta, 44,7% vs 13,3%, $p<0.001$; sindrome coronarica cronica 57,7% vs 17,1%, $p<0.001$); malattia cerebrovascolare, 8,1% vs 4,8%, $p=0,3$). All'ultimo follow-up disponibile, ad una mediana di 9 mesi dall'inizio del trattamento con inclisiran, la riduzione percentuale mediana di LDL-C è risultata inferiore nei pazienti con FH rispetto a quelli senza FH (47,6% vs 50.9%; $p=0.06$); similmente, la percentuale di pazienti che hanno raggiunto il target di LDL-C per la propria classe di rischio era significati-

vamente inferiore nei pazienti affetti da FH (25,7% vs 58,6%; p<0.001).

Conclusioni: La minor efficacia di inclisiran nei soggetti con FH potrebbe riconoscere svariati ipotetici meccanismi fisiopatologici come genotipo, funzione residua dei recettori per LDL-C e mutazioni multiple. Pertanto, si rendono necessari ulteriori studi per una miglior caratterizzazione di tale cluster di pazienti.

FARMACI CARDIOVASCOLARI E NUTRACEUTICI 322
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE
(IMAGING CARDIOVASCOLARE)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)

EFFETTI DEGLI INIBITORI DEL COTRASPORTATORE SODIO-GLUCOSIO DI TIPO 2 (SGLT2-I) SULLA FUNZIONE VENTRICOLARE DESTRA NELLO SCOMPENSO CARDIACO A CON FRAZIONE D'EIEZIONE LIEVEMENTE RIDOTTA O PRESERVATA

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Background: Gli inibitori del cotrasportatore sodio-glucosio di tipo 2 (SGLT2i) hanno dimostrato di ridurre la mortalità cardiovascolare o i ricoveri per scompenso cardiaco nei pazienti con scompenso cardiaco, indipendentemente dalla presenza o assenza di diabete.

Obiettivi: Valutare i potenziali effetti degli SGLT2i nei pazienti con scompenso cardiaco a frazione di eiezione preservata o lievemente ridotta (HFpEF e HFmrEF) sulla funzione ventricolare destra e sul coupling ventricolo destro–arteria polmonare, analizzati mediante ecocardiografia speckle tracking (STE).

Metodi: Questo studio prospettico ha confrontato pazienti ambulatoriali con HFpEF o HFmrEF in trattamento con SGLT2i secondo le attuali linee guida sullo scompenso, in aggiunta alla terapia medica standard (SMT). I pazienti sono stati sottoposti a una valutazione ecocardiografica completa, compresa l'analisi dei parametri di deformazione miocardica. L'endpoint primario era la presenza di una variazione significativa della funzione ventricolare destra valutata con STE (RVFWLS e RVGLS) e del coupling ventricolo destro–arteria polmonare (RVFWLS/PASP e RVGLS/PASP) dalla valutazione basale al follow-up a sei mesi.

Risultati: Sono stati arruolati 80 pazienti [55 con HFmrEF e 25 con HFpEF, età mediana 74 anni (64–81), 66% uomini] e seguiti per 6 mesi. La frazione di eiezione ventricolare sinistra (LVEF) e il GLS, il rapporto E/è', la velocità di rigurgito tricuspidale, la funzione ventricolare destra (TAPSE, RV FWLS) e il coupling ventricolo destro–arteria polmonare (RV FWLS/PAPs) sono risultati significativamente migliorati sia nella popolazione complessiva sia nei due sottogruppi.

Conclusioni: Questo studio pilota ha fornito dati preliminari sull'effetto benefico degli SGLT2i sulla funzione ventricolare destra nei pazienti con HFpEF e HFmrEF.

FARMACI CARDIOVASCOLARI E NUTRACEUTICI 197
FARMACI ANTI-DIABETICI (DIABETE E MALATTIE DEL METABOLISMO)
DISLIPIDEMIE (DIABETE E MALATTIE DEL METABOLISMO)
BIOLOGIA CELLULARE (GENETICA E BIOLOGIA MOLECOLARE)

BEMPEDOIC ACID DOES NOT IMPAIR MITOCHONDRIAL ACTIVITY IN THE SKELETAL MUSCLES OF MICE FED A HIGH-FAT HIGH CHOLESTEROL DIET

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Background. Lipid-lowering therapy is a cornerstone in preventing coronary disease. Bempedoic acid (BA) can be prescribed when statin-associated muscular side effects are observed. Based on the hypothesis that statins impact skeletal mitochondrial activity, this study aimed to evaluate the effect of BA on this aspect in a murine model of hypercholesterolemia and compare it to the results obtained using atorvastatin.

Methods. ApoE-/- mice were fed a high-fat high-cholesterol (HFHC) diet for 12 weeks, either alone (n= 15) or with atorvastatin (40 mg kg−1 per day; n=13) or BA (30 mg kg−1 per day; n=15). The primary outcome was skeletal muscles mitochondrial functionality and morphology. Secondary outcomes were locomotion and riding time. Tertiary outcomes included changes in lipids, liver enzymes, plaque deposition, energy expenditure, oxygen consumption and liver proteomic analysis.

Results. After 12 weeks, body weight, food intake, glycaemic profile, liver enzymes (ALT and AST) and organ weights were unaffected by BA vs HFHC diet. Liver proteomic analysis showed that in mice receiving BA, there were an enrichment in pathways involved in very long-chain fatty acid metabolic processes, fatty acid beta oxidation, fatty acid metabolic processes. BA significantly reduced HDLc, but not triglycerides and circulating levels of PCSK9. En-face analysis performed on aortas showed that BA led to a significant reduction of plaque in the thoracic and abdominal segments, respectively, -61% ($p< 0.01$) and -71% ($p< 0.01$). BA showed a significant reduction in necrotic core area compared to HFHC -35% ($p< 0.05$), respectively. Mitochondrial functionality of skeletal muscles (tibialis anterior, extensor digitorum longus, soleus, gastrocnemius, quadriceps, biceps brachii) in mice receiving BA (mito stress analysis) was not reduced vs HFHC alone, whereas mice receiving atorvastatin showed a significant -30% reduction in basal and maximal mitochondrial respiration ($p< 0.05$). BA did not affect proteins of mitochondrial dynamics and those of OXPHOS complexes (WB). Furthermore, the transmission electron microscopy analysis of muscle fibres of tibialis anterior showed that BA did not affect the morphology and distribution of mitochondria. The same analysis in mice fed HFHC plus atorvastatin showed fragmented mitochondria. No changes were found in locomotion (stride width and length, distance to opposite foot) and riding time in mice with BA or atorvastatin vs HFHC. Metabolic cages revealed a significant 12% increment in pedestrian locomotion in mice given BA vs those on HFHC diet, which was also associated with a significant rise in oxygen consumption rate.

Conclusions. In apoE-/- mice, BA positive impacts plaque burden while preventing skeletal muscle mitochondrial functionality.

FARMACI CARDIOVASCOLARI E NUTRACEUTICI 680
FARMACI CARDIOVASCOLARI (FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
DISLIPIDEMIE (DIABETE E MALATTIE DEL METABOLISMO)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)

EFFICACY OF PCSK9 INHIBITORS ON CLINICAL OUTCOMES IN PATIENTS WITH ESTABLISHED ATHEROSCLEROTIC CARDIOVASCULAR DISEASE: A NETWORK META-ANALYSIS

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Background: In patients with established atherosclerotic cardiovascular disease (ASCVD), residual cardiovascular risk persists despite high-intensity statin therapy. PCSK9 inhibitors (PCSK9i), including monoclonal antibodies and small interfering RNA agents, have demonstrated additional benefit, but comparative data across individual regimens are limited.

Aim: To evaluate the comparative efficacy of different PCSK9i regimens on major cardiovascular outcomes in patients with established ASCVD.

Methods: A systematic review and network meta-analysis were conducted, including randomized controlled trials investigating approved PCSK9i dosages in patients with documented ASCVD. The primary outcome was major adverse cardiovascular events (MACE), while secondary endpoints encompassed myocardial infarction, stroke, coronary revascularization, cardiovascular mortality, and all-cause death.

Results: The analysis included eight trials involving 49,847 participants. Evolocumab (140 mg every two weeks or 420 mg monthly) and alirocumab 150 mg every two weeks were associated with a significant reduction in MACE compared with placebo (RR 0.78, 95% CI 0.66–0.93 and RR 0.47, 95% CI 0.25–0.86, respectively). Evolocumab further reduced the incidence of myocardial infarction, stroke, and need for revascularization. Alirocumab 150 mg showed the greatest effect on revascularization rates and was statistically superior to both evolocumab and the lower alirocumab dose in this outcome. No treatment showed a significant benefit on all-cause or cardiovascular mortality.

Conclusions: PCSK9i are effective in ASCVD, with comparable efficacy across agents. Higher dosages achieving lower and stable LDL-C levels appear favored, supporting the "lower is better" concept.

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GENETICA E BIOLOGIA MOLECOLARE

GENETICA E BIOLOGIA MOLECOLARE 698
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
BIOLOGIA MOLECOLARE CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)

LMNA VARIANTS DISTRIBUTION AND THEIR IMPACT ON THE CARDIAC PHENOTYPIC SPECTRUM

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Introduction: A-type lamins (Lamins A and C), encoded by the lamin A/C gene (LMNA), are type V intermediate filament proteins produced through alternative RNA splicing. These proteins are essential components of the nuclear lamina. LMNA variants result in diverse clinical phenotypes, including premature aging, muscular dystrophy, lipodystrophy, and cardiomyopathies—the latter being the most prevalent. The precise correlation between specific LMNA variants and resulting phenotypes remains to be fully elucidated.

Material and methods: We retrospectively evaluated LMNA-carriers from inherited cardiac disease patients referred to the Cardiovascular Genetics Laboratory at University Hospital Padua. Whole Exome Sequencing was performed, and variants were classified according to current guidelines. Only VUS >5 points (Hot VUS), likely pathogenic (LP), and pathogenic (P) variants were considered clinically significant.

Results: We identified 32 genetic variants in 93 subjects (mean age 46 ± 14 years, 52 males), of which 53 were index cases (41 symptomatic, 4 sudden cardiac death – SCD, 8 heart transplanted HTx) and 40 relatives from 25 families. Twenty-nine missense and 3 radical LMNA variants were classified as 'Hot VUS' 5, LP 13, and P 14. Nine variants (28%) were recurrent in 30 index cases (57%), while the remaining 23 were private. LMNA variants spanned all protein domains, with a 2.7-fold enrichment in the Ig-Like domain (p = 0.0107).
Cardiologic and histologic evaluation led to a wide spectrum of phenotypes considering both index cases and relatives, including: 28% arrhythmogenic cardiomyopathy (26/93), 24% dilated cardiomyopathy (22/93), 6,5% hypertrophic cardiomyopathy (6/93), 7,5% channelopathies (7/93), 29% asymptomatic (27/93, all of them relatives), and in 5% of subjects, SCD was the first clinical manifestation (4/93). The distribution of genetic variants across the LMNA protein was correlated with specific cardiac phenotypes, with Coiled-Coil domain (CCD) variants predominantly associated with DCM (70%), while Ig-like domain variants were linked to ACM (72%) (p = 0.0271). These findings were corroborated by left ventricular ejection fraction (EF) analysis, showing CCD carriers with lower EF (mean 42%) compared to Ig-like carriers (mean 57%) (p=0.0076). No significant differences were observed in late gadolinium enhancement or arrhythmic patterns. Notably, the analysis of LMNA genetic variants in HTx patients revealed that all individuals carried a variant in the CCD (p = 0.0417).

Conclusion: Our findings reveal an enrichment of Ig-like domain variants within the Padua cohort of LMNA carriers. Individuals harboring CCD-LMNA variants are predominantly affected by DCM, characterized by significantly reduced ejection fractions and a high likelihood of progressing to heart transplantation. In contrast, Ig-like domain variant carriers predominantly display features consistent with ACM, highlighting a distinct divergence in cardiac phenotypes associated with these genetic variant distribution. Further studies are warranted to elucidate the molecular mechanisms underlying these distinct cardiac phenotypes.

GENETICA E BIOLOGIA MOLECOLARE 647
BIOLOGIA MOLECOLARE CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
INFIAMMAZIONE E IMMUNITÀ (ATEROTROMBOSI)
BIOLOGIA CELLULARE (GENETICA E BIOLOGIA MOLECOLARE)

CORRELAZIONE TRA SUBSET IMMUNITARI E SHUNT INTRACARDIACO: NUOVI POSSIBILI PROSPETTIVE DIAGNOSTICHE E TERAPEUTICHE NEL FORAME OVALE PERVIO

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Il forame ovale pervio (PFO) è un'anomalia cardiaca congenita caratterizzata da una comunicazione anomala tra l'atrio destro e quello sinistro. Il PFO è più diffuso nei pazienti con ictus criptogenico rispetto alla popolazione generale. Tuttavia, la sola presenza di un PFO non è sufficiente per stabilire la causalità, poiché si riscontra anche in individui senza una storia di ictus.
Gli ultimi studi ci portano a ipotizzare altri fattori, oltre allo shunt cardiaco destro-sinistro, che possano influenzare significativamente il rischio cardiovascolare dei pazienti con PFO.
È stato riconosciuto il ruolo dell'infiammazione di basso grado e della disfunzione endoteliale, nonché della risposta immunitaria adattativa mediata dalle cellule T nelle fasi acute e croniche del danno ischemico e nelle sequele a lungo termine dell'ictus.L'obiettivo primario è valutare nei pazienti con PFO la correlazione tra il subset immunitario, in particolare CD4+ e CD8+, e l'ecografia transtoracica e transcranica alle microbolle, al fine di identificare biomarker che consentano di affinare le strategie diagnostiche e di ottimizzare gli interventi terapeutici.
Dalla nostra analisi è emerso che i pazienti con PFO mostrano una disregolazione selettiva del sottogruppo di linfociti T CD4+, in particolare, una riduzione di CD4+ TCM e un concomitante aumento di CD4+ TEM, entrambe correlate ad una sostanziale compromissione della funzione endoteliale. A tale disregolazione è stata associata la presenza di un polimorfismo genetico capace di influenzare i processi di apoptosi/proliferazione nelle cellule T CD4+ nei pazienti portatori.
Pertanto queste evidenze aprono nuove prospettive nella comprensione dei meccanismi immunopatogenetici alla base delle malattie cardiovascolari aprendo nuovi possibili scenari terapeutici mirati a ridurre il rischio di ictus criptogenico.

GENETICA E BIOLOGIA MOLECOLARE 982
BIOLOGIA MOLECOLARE CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
BIOLOGIA CELLULARE (GENETICA E BIOLOGIA MOLECOLARE)
BIOMARCATORI DELLO SCOMPENSO (SCOMPENSO CARDIACO)

SMALL RNA-SEQ IDENTIFIES CIRCULATING MIRNAS ASSOCIATED WITH FRAILTY IN ELDERLY PEOPLE WITH CARDIOVASCULAR DISEASES

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Background: Frailty is a complex clinical syndrome associated with a higher risk of poor outcomes, e.g. mortality, being particularly prevalent in elderly individuals with cardiovascular diseases (CVD). Previous studies suggested that circulating miRNAs might be harnessed as biomarkers of frailty trajectories. However, specific studies are needed.

Methods: Taking advantage of a cohort derived from a randomized trial conducted in elderly people with CVD, we selected 24 subjects to create two groups of individuals with vs without frailty, defined according to having an Essential Frailty Toolset (EFT) ≥ or < 3 and matched for all the other main clinical variables (e.g. age, sex, and lipids), to assess the expression of the whole plasma miRNOme through small RNA-Seq. The 12 miRNAs with the highest difference in frail vs non-frail subjects were then validated with single miRNA dosage in plasma samples from a subset of 106 people from the same cohort, 34 frail and 72 not frail.

Results: Small RNA-Seq identified a large number of differentially expressed miRNAs between individuals with vs without frailty, but principal component analysis did not effectively discriminate the two groups. Among the 12 miRNAs assessed at single level in the validation cohort, the expression level of hsa-miR-511-5p was lower in frail individuals compared with non-frails, while the levels hsa-miR-181b-3p and hsa-miR-203a-3p showed the opposite trend.

Conclusions: In a population of elderly people with CVD, the plasma levels of hsa-miR-511-5p, hsa-miR-181b-3p and hsa-miR-203a-3p are significantly associated with frailty. Future studies are warranted to explore a possible diagnostic or prognostic role of these miRNAs.

GENETICA E BIOLOGIA MOLECOLARE 254
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
BIOLOGIA CELLULARE (GENETICA E BIOLOGIA MOLECOLARE)
BIOLOGIA MOLECOLARE CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)

MODELLING TITIN-DILATED CARDIOMIOPATHY THROUGH GENETICALLY ENGINEERED HUMAN HEART TISSUES

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Introduction. Dilated cardiomyopathy (DCM) is a leading cause of heart failure and sudden cardiac death, with titin-truncating variants (TTNtv) being the most common genetic cause, representing approximately 25% of familial DCM cases. Despite progress in genetic understanding, the molecular mechanisms driving TTNtv-mediated DCM remain poorly understood, requiring advanced models for further investigation.

Purpose. This study aims to generate patient-specific human induced pluripotent stem cell-derived cardiomyocytes (hiPSC-CMs) to model TTNtv-induced DCM, providing a comprehensive molecular characterization, and evaluating potential therapeutic approaches using engineered heart tissue (EHT) models.

Methods. hiPSC-CMs were generated from four patient-specific cell lines carrying a band A TTNtv. Molecular characterization was performed through immunostaining and proliferation assay. Western blot and RT-PCR analyses were conducted to assess titin expression and post-transcriptional regulation. EHTs were created to evaluate contractile performance, cell proliferation and mechanical properties.

Results. Immunostaining revealed disassembly of sarcomeric structures in TTNtv hiPSC-CMs, with reduced expression of both titin and α-actinin compared to healthy controls. Proliferation assays showed significantly reduced EdU incorporation in mutated cells. Western blot and RT-PCR analyses indicated a marked reduction of the wild-type protein, suggesting post-transcriptional regulation of titin . EHT analysis demonstrated increased contractile force and frequency in TTNtv hiPSC-CM-derived tissues, alongside decreased proliferative capacity. The efficacy of several compounds routinely used in DCM treatment was tested on the TTNtv- EHT models. In particular, Mavacamten, Omecamtiv mecarbil, Danicamtiv, Bisoprolol and Ramipril were administered to evaluate their effects on sarcomere organization, contractility, and diastolic function.

Conclusions. Our patient-specific hiPSC-CM and EHT models successfully replicate key aspects of TTNtv-associated DCM, including sarcomeric disruption and altered contractility. These models provide a valuable platform for dissecting the molecular mechanisms of TTNtv-mediated DCM and for testing potential therapeutic interventions, including next-generation myosin modulators (Mavacamten, Omecamtiv, Danicamtiv) and established standard-of-care drugs (Bisoprolol, Ramipril).

GENETICA E BIOLOGIA MOLECOLARE 829
BIOLOGIA CELLULARE (GENETICA E BIOLOGIA MOLECOLARE)
BIOLOGIA MOLECOLARE CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

CARDIOMYOCYTES FUSION CONTRIBUTES TO CARDIAC HYPERTROPHY IN ADULT HEARTS

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Cardiac hypertrophy is an adaptive response of the heart to increased workload, defined by the enlargement of cardiomyocytes. It occurs physiologically during pregnancy and exercise but also develops in response to pathological stimuli such as hypertension and genetic mutations, ultimately progressing to heart failure. Cardiomyocyte fusion has been identified as a mechanism promoting cardiac growth early after birth, when these cells increase in both size and ploidy. We hypothesized that cardiomyocyte fusion may also contribute to pathological cardiac hypertrophy in adults.

To detect fusion events in adult hearts during the development of hypertrophy, we employed a fluorescent genetic lineage tracing system (ROSA26-mTmG), in which cardiomyocytes are labeled by a cardiac-specific, inducible Cre recombinase (MHC6-CreER). By administering a low dose of tamoxifen, we randomly labeled cardiomyocytes with either red (tdTomato) or green (GFP) fluorescence. Cardiac hypertrophy was induced by transverse aortic constriction (TAC). After one month, we assessed the size, fluorescence, and ploidy of isolated cardiomyocytes. Control animals received the same tamoxifen dose but underwent sham surgery instead of TAC.

A small number of yellow cardiomyocytes were observed in sham hearts, likely due to incomplete recombination in multinucleated cells. However, analysis of more than 8,000 cardiomyocytes from eight animals per group revealed a greater number of double-labeled yellow cardiomyocytes in TAC hearts compared with the sham group, indicating fusion between green and red cardiomyocytes. These hypertrophic yellow cardiomyocytes were predominantly multinucleated (≥3 nuclei). To exclude heterotypic fusion between green cardiomyocytes and non-cardiomyocyte red cells, we repeated the experiment with a high dose of tamoxifen, which resulted in nearly 100% GFP+ cardiomyocytes. Under these conditions, no yellow cells were observed after TAC, ruling out heterotypic fusion.

Together, these results suggest that homotypic cardiomyocyte fusion is a mechanism contributing to cardiac hypertrophy in response to pressure overload in adult mammals, and they open the way for the identification of novel therapeutic targets for the prevention and treatment of cardiac hypertrophy.

GENETICA E BIOLOGIA MOLECOLARE 916
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
ARITMIE VENTRICOLARI (ARITMIE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)
ASPETTI GENETICI DELLE ARITMIE (ARITMIE)

GENETIC BACKGROUND IN ARRHYTHMOGENIC MITRAL VALVE PROLAPSE: A COMPARATIVE ANALYSIS WITH UK BIOBANK AND NIH ALL OF US

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Background: Mitral valve prolapse (MVP) is a common valvular abnormality, termed arrhythmogenic MVP (aMVP) when associated with ventricular arrhythmias, occasionally presenting as sudden cardiac death (SCD). Familial clustering suggests a possible genetic contribution, though this remains unclear.

Objective: To compare the genetic background of aMVP patients with non-aMVP individuals from large biobanks, and to identify clinical and imaging features associated with genotype-positive (G+) status in aMVP.

Methods: The aMVP cohort included prospectively enrolled patients from an inherited cardiovascular disease center (Wellspan) undergoing comprehensive genetic testing. Comparator cohorts included MVP participants from the UK Biobank (UKBB) and NIH All of Us (AoU). Genes with definitive, strong, or moderate evidence for cardiomyopathy or inherited arrhythmia syndromes were analyzed. Variants were classified using ACMG criteria; pathogenic/likely pathogenic (P/LP) variants reported on ClinVar with ≥2-star evidence, and select reclassified variants of uncertain significance based on clinical context and familial segregation, were considered G+.

Results: We analyzed 62 aMVP patients (61.8 ± 15.2 years, 50% male) and 3,372 non-aMVP participants (70.6 ± 12.7 years, 34.7% male). G+ prevalence was higher in aMVP [21/62 (42.9%)] vs. non-aMVP [76/3372 (2.3%); p<0.001]. Within the aMVP cohort, G+ individuals showed higher prevalence of clinically diagnosed cardiomyopathy (76.2% vs. 29.6%; p<0.001), family history of SCD (12.2% vs. 7.1%; p=0.001), inferior

T-wave inversion (TWI) (29.4% vs. 3.8%; p=0.018), and basal inferoseptal late gadolinium enhancement (LGE) (33.3% vs. 4%; p=0.010) compared with G-.

Conclusion: aMVP patients show higher prevalence of P/LP variants in cardiomyopathy and arrhythmia genes, suggesting a genetic substrate underlying the arrhythmogenic phenotype. In aMVP, G+ status was associated with cardiomyopathy phenotype, family history of SCD, inferior TWI and inferoseptal LGE that could serve as potential red flags to improve risk stratification.

Keywords: arrhythmogenic mitral valve prolapse, ventricular arrhythmias, genetics, cardiomyopathy, precision medicine.

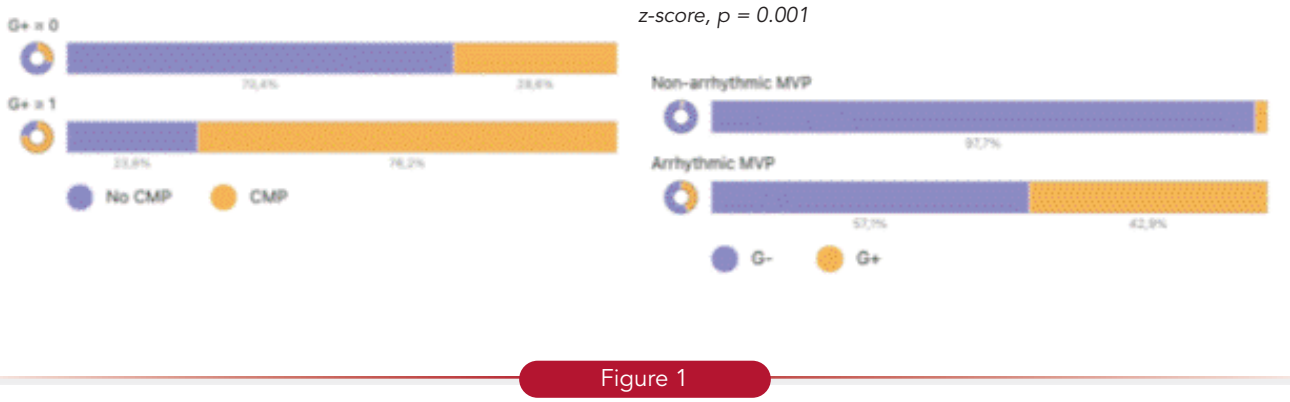


Figure 1

GENETICA E BIOLOGIA MOLECOLARE 1035
ASPETTI GENETICI DELLE ARITMIE (ARITMIE)
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
MECCANISMI DELLE ARITMIE (ARITMIE)

FAMILIAL RISK OF WOLFF-PARKINSON-WHITE SYNDROME: A NATIONWIDE FAMILY STUDY IN SWEDEN

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Objective: Wolff-Parkinson-White syndrome (WPW) is a rare cardiac disorder that predispose to supraventricular arrhythmias. Prognosis is usually benign, yet there is a lifetime risk of sudden death. While typically sporadic, familial clustering has been reported. This study aimed to assess familial risk of WPW and associated arrhythmias and mortality among siblings of affected individuals.

Methods: This population-based multigenerational cohort included 5,338,434 individuals born in Sweden (1932–2018), with 3,172 diagnosed cases of WPW identified through linkage to the Swedish National Patient Registers. Familial risks among siblings were assessed using incidence rate ratios (IRRs) and sub-distributional hazard ratios (SHRs), with adjustments for sex, year of birth, education, and relevant comorbidities including hypertrophic cardiomyopathy and congenital heart disease. Sensitivity analyses excluded WPW cases without procedural confirmation.

Results: WPW incidence was significantly higher in siblings of affected individuals (0.121 vs. 0.032 per 1,000 person-years; IRR:3.83;95%CI:2.27–6.46; p<0.001), with 14 of 3,172 (0.4%) WPW cases classified as familial. Adjusted SHRs confirmed a nearly four-fold increased risk (3.79;95%CI:1.81–7.97; p<0.001). Risks of atrial fibrillation (SHR:1.19;95%CI:1.05–1.35; p<0.01) and ventricular arrhythmias (SHR:1.84; 95%CI:1.45–2.35; p<0.001) were also significantly higher among

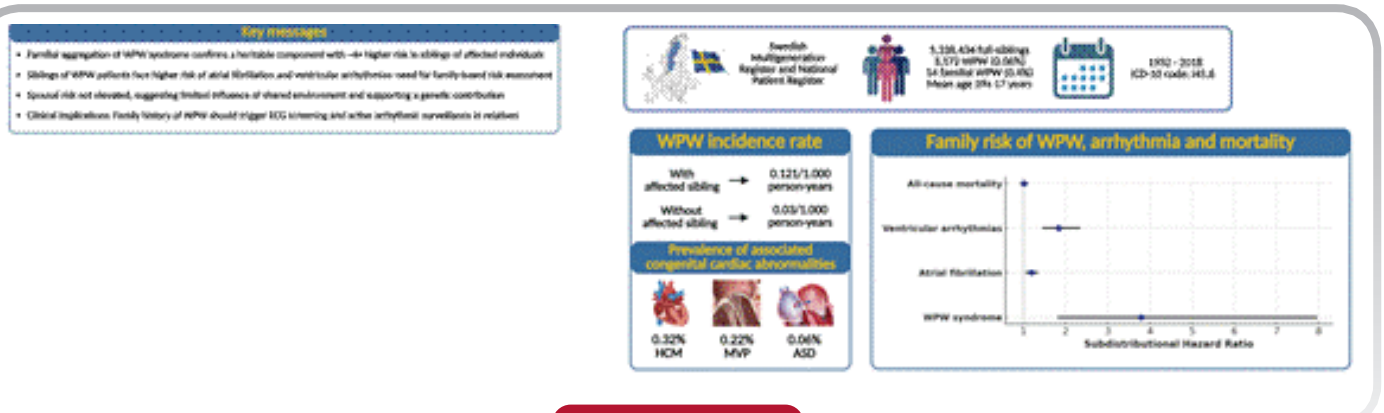


Figure 1

siblings of affected individuals. All-cause mortality was similar regardless of familial WPW history (SHR:1.01; 95% CI:0.92–1.11; p=0.88). Spouses of affected individuals exhibited no increased risk (SHR:0.83; 95% CI 0.21–3.31; p=0.76).

Conclusions: WPW syndrome features significant familial aggregation, suggesting genetic contribution. The sporadic nature of most cases suggests complex inheritance patterns. Family history should be an integral part of clinical risk assessment for WPW and related arrhythmic events.

Keywords: Wolff-Parkinson-White syndrome; Pre-Excitation Syndrome; Family; Atrial Fibrillation; Cardiac Arrhythmias; Sudden Cardiac Death

GENETICA E BIOLOGIA MOLECOLARE 683
ISCHEMIA, STUDI SPERIMENTALI (CARDIOPATIA ISCHEMICA)
BIOLOGIA CELLULARE (GENETICA E BIOLOGIA MOLECOLARE)
BIOLOGIA MOLECOLARE CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)

MITOCHONDRIAL GRK2 ACCUMULATION IN HYPOXIA: ENDOTHELIAL PROTECTION

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Background: Transient hypoxia, characterized by a short-term decrease in oxygen supply, is a common pathological feature in many cardiovascular and pulmonary diseases. This condition induces mitochondrial dysfunction, leading to impaired energy metabolism, oxidative stress, and ultimately, endothelial cell damage. Since endothelial dysfunction is generally involved in the development of vascular diseases, understanding the molecular mechanisms that protect endothelial cells during hypoxic conditions is essential. G-protein-coupled receptor kinase 2 (GRK2) is a kinase well known for its role in desensitizing G-protein-coupled receptors. Beyond this traditional function, GRK2 moves within cellular compartments, including mitochondria, where it is involved in mitochondrial biogenesis, ATP production, and oxidative stress. However, the specific role of mitochondrial GRK2 in endothelial responses to transient hypoxia remains poorly understood.

Purpose: This study aimed to investigate the effects of mitochondrial accumulation of GRK2 on vascular reactivity and endothelial cells under transient hypoxic conditions.

Methods: To direct GRK2 to the mitochondria, we employed a molecular cloning strategy using a 10-amino-acid TAT-conjugated peptide derived from the pleckstrin homology domain of GRK2. This peptide was designed to promote GRK2 accumulation into mitochondria. Vascular studies were conducted on isolated swine arteries to assess vasodilatory responses. In vitro experiments were performed on isolated endothelial cells exposed to transient hypoxia to evaluate mitochondrial membrane potential, mitochondrial mass, oxidative stress, and cell viability.

Results: Mitochondrial accumulation of GRK2 significantly improved endothelium-dependent vasodilation in isolated swine arteries, suggesting enhanced vascular reactivity. Furthermore, in endothelial cells, mitochondrial GRK2 preserved mitochondrial membrane potential and mass, reduced oxidative stress, and protected against hypoxia-induced cell death.

Conclusion: Our findings demonstrate that redirecting GRK2 to mitochondria enhances endothelial cell survival and improves vascular function during an acute stimulus such as hypoxia. These results highlight a novel role for mitochondrial GRK2 in preserving mitochondrial and vascular integrity, opening new therapeutic strategies for hypoxia-related cardiovascular diseases.

GENETICA E BIOLOGIA MOLECOLARE 1042
ASPETTI GENETICI DELLE ARITMIE (ARITMIE)
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
PROGNOSI (SCOMPENSO CARDIACO)

LONG TERM OUTCOMES AND ARRHYTMIC PRESENTATIONS OF LMNA-RELATED HEART DISEASE: INSIGHTS FROM A SIGNLE-CENTRE EXPERIENCE

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Background: Heart involvement induced by LMNA gene mutations is frequent and characterized by left ventricular (LV) dysfunction and a variety of arrhythmic presentations.

Objectives: To describe the clinical features and outcomes of a single-centre cohort of LMNA mutation carriers.

Methods: Patients were enrolled and followed-up for a median of 9 years. Occurrence of advanced cardiac conduction system disease, supraventricular (SVA), ventricular arrhythmias (VA), need for cardiac device implantation (CDI) and advanced heart failure (AHF) were reported. All-cause mortality or heart transplantation was the main clinical endpoint.

Results: The study comprised 46 patients with a mean age of 48 years at the time of genetic diagnosis and a family history of sudden cardiac death in 14 (30%) of cases. At first medical contact neuromuscular manifestations were observed in 14 (30%) patients and the main symptoms were dyspnoea (30%), fatigue (23%) and palpitations (28%). At baseline, abnormal electrocardiogram findings were present in 23 (50%) patients, echocardiography showed a mean LV ejection fraction of 48%. During follow-up, SVAs and VAs occurred in 24 (52%) and 30 (65%) patients respectively and AHF developed in 26% (12 patients). CDI was performed in 34 (74%) patients (8 pacemaker, 4 CRT, 12 ICD, 4 CRT-D and 6 ILR). An appropriate intervention (ATP/shock) was observed in 10 out of 16 ICD carriers (62%). During follow-up 6 (13%) patients died while 4 (9%) received heart transplantation.

Conclusions: LMNA gene mutations are associated with frequent arrhythmic events (both brady/tachyarrhythmias) even in the context of mild impairment of LV systolic function.

GENETICA E BIOLOGIA MOLECOLARE 616
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)

PREDICTING CMP - GENE-SPECIFIC EARLY MANIFESTATIONS IN PRE-CLINICAL CARDIOMYOPATHIES, INSIGHTS FROM FAMILY SCREENING

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Predicting CMP: Gene-Specific Early Manifestations in Pre-Clinical Cardiomyopathy - Insights from Family Screening

Background: Dilated cardiomyopathy (DCM) and non-dilated left ventricular cardiomyopathy (NDLVC) are clinically and genetically diverse disorders. Family screening enables the identification of variant carriers before overt left ventricular (LV) dysfunction, but early clinical expression varies significantly depending on the underlying gene.

Methods: We evaluated first-degree relatives of probands with pathogenic or likely pathogenic variants in major DCM and NDLVC genes. These 302 relatives were assessed during family screening, prior to the onset of systolic dysfunction (LVEF <50%). Early manifestations, not yet meeting diagnostic criteria for DCM or NDLVC, included ECG abnormalities, significant ventricular arrhythmic burden (PVC>500/24h or non-sustained ventricular tachycardia at Holter ECG monitoring), late gadolinium enhancement (LGE), and LV dilatation with preserved function.

Results: The mean age at first assessment ranged from 31 to 42 years across all groups. TTN carriers (n=153) almost universally had ECG abnormalities (98%), but a lower arrhythmic burden (60%) and limited LGE (27%), while LV dilatation with preserved function was common (70%). FLNC carriers (n=45) had frequently ventricular nonsustained arrhythmias (80%) and a higher prevalence of LGE (56%), with dilatation in 62%. DSP carriers (n=33) exhibited the highest arrhythmic burden (84%) and universal T-wave inversion, with LGE in one-third and dilatation in 73%. LMNA carriers (n=39) were characterized by conduction and arrhythmic features (>70%), infrequent LGE (18%), but frequent early dilatation (80%). Sarcomeric variant carriers (n=32) presented a more heterogeneous profile, generally with lower arrhythmic burden and modest LGE (20–25%), though ACTC1 and TPM1 carriers often showed early-onset disease. Across all genotypes, LV dilatation with preserved ejection fraction frequently preceded overt systolic dysfunction.

Conclusions: Relatives identified through family screening display distinct, gene-specific early phenotypes, with LV dilatation as the predominant common finding. These findings underscore the critical importance of gene-informed surveillance and the development of tailored, preventative strategies for at-risk individuals.

GENETICA E BIOLOGIA MOLECOLARE 994
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)

GENETIC VARIANTS IN YOUNG OUT-OF-HOSPITAL CARDIAC ARREST (OHCA) PATIENTS IN PAVIA PROVINCE: THE GENETICA STUDY

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Introduction: Genetically-determined cardiovascular diseases are found in 11–40% of out-of-hospital cardiac arrests (OHCAs) in young individuals. Most genetic investigations to date have focused on survivors or autopsied victims, leaving a gap in population-wide data. This study aimed to determine the prevalence of likely pathogenic/pathogenic (LP/P) variants in genes linked to inherited cardiovascular diseases among young OHCA cases in a single Italian province.

Methods: This prospective, longitudinal study included all OHCA cases of medical origin in individuals ≤50 years old occurring in Pavia province from Feb/2021 to Jan/2025. Blood samples were collected during pre-hospital resuscitation by the Emergency Medical Service (EMS), and next generation sequencing (NGS) multigene panel testing was performed. Variants were classified according to the ACMG (American College of Medical Genetics and Genomics) guidelines.

Results: Among 2,011 OHCAs occurred, 94 met the inclusion criteria, and 49 underwent genetic testing. At least one variant was detected in 24 patients (49%): LP/P variants were identified in 6 cases (12%), while variants of uncertain significance were excluded. In 4 cases, sufficient information was available to conduct family genetic and clinical screening. In cases 1 and 3, autopsy revealed acute coronary syndrome as the cause of death, unrelated to the identified variants (TTN in case 1 and LAMA2 in case 3). In case 2, patient carried two LP/P trans-variants in GAA, without clinical manifestations, but family screening identified heterozygous variants in healthy relatives consistent with autosomal recessive late-onset Pompe disease. Case 5 harbored a LP MYH7 variant while the post-resuscitation imaging showed cerebellar hemorrhage.

Conclusions: Our results showed the prevalence of LP/P variants in young OHCA victims, some of them incidental. Even though identifying pathogenic variants alone does not establish causality, cascade testing prompted yielded actionable information for relatives. Combined autopsy and molecular analysis of young OHCAs are crucial for refining epidemiology and preventing further events within families.

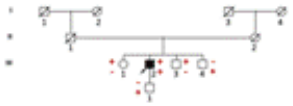
Case	Genetic variant	Family study	Family Data	Autopsy	Autopsy cause; survival	Segregation in families	Actions in relatives
1 M, 40 yrs	*TTN* c.13501_13519del (p.Thr4501Trpfs*23)		I:1 and I:2 known risk factors II:1 Hypercholeterolemia, smoking, hypertension II:2 → Hypercholeterolemia, smoking, hypertension, alcohol abuse	YES	Death; acute occlusive thrombosis of a major epicardial CA	NO; incomplete segregation; both living parents refused testing	II:1 and III:1 → clinical monitoring
2 M, 44 yrs	*GAA* c.2238G>C (p.Trp746Cys) c.784G>A (p.Glu262Lys)		I:1-I:4 death at 87, 80, 82, and 95 yrs II:1, CAD, PCI, death at 67 II:2, Lung cancer, death at 64 III:2 → known hypertriglyceridemia (max known value 750) III:1, III:3, III:4 (age 46-28): healthy IV:1 8 yrs, healthy	NO	/	YES; Pompe disease is inherited in an autosomal recessive manner	Heterozygous health carriers. Counselling: significance of heterozygous variants in GAA gene
3 M, 43 yrs	*LAMA2* c.4177_4187delins (p.Ala1393Glyfs*27) c.8244+1G>A *SCN10A* c.599+1G>A *GPD1L* c.124G>T - p.Val42Phe		I:1 death, at 67, SD I:1 74 yrs, healthy II:1 53 yrs, healthy II:2 45 yrs, cognitive problems II:3 → circumstances: phone call to the mother: acute chest pain; no risk factors	YES	Death; CAD; acute occlusive thrombosis of a major epicardial CA	NO: incomplete: father test missing; possible AR merosin deficiency	Monitoring I:2 and II:1 both carriers of the variant in *SCN10A* gene (non-validated gene for Brugada syndrome.
4 F, 30 yrs	*MYBPC3* c.655G>T (p.Val219Phe)	Not addressed to genetic counselling	No data about the family; Relatives untraceable	NO	/	NO	None
5 F, 25 yrs	*MYH7* c.5536C>T (p.Arg1846Gly)		I:1, II:2, II:2: clinically healthy; genetic testing ongoing	NO	ICU, Imaging left cerebellar hemorrhage; decompression; death	Ongoing	Planned monitoring
6 F, 29 yrs	*GAA* (heterozygous) c.2560C>T (p.Arg854*)	Not addressed to genetic counselling: inheritance of Pompe Disease is autosomal recessive	No data about the family; post-resuscitation CMR: no cardiomyopathy	/	Survivor	NO	None

Figure 1

GENETICA E BIOLOGIA MOLECOLARE 401
INFIAMMAZIONE E IMMUNITÀ (ATEROTROMBOSI)
BIOLOGIA MOLECOLARE CARDIOVASCOLARE
(GENETICA E BIOLOGIA MOLECOLARE)
BIOLOGIA CELLULARE (GENETICA E BIOLOGIA MOLECOLARE)

DIMETHYL SULFOXIDE, A COMMON SOLVENT USED IN PRECLINICAL RESEARCH, REDUCES INFLAMMATION IN VIVO

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(a) UNIVERSITA' CAMPUS BIO-MEDICO DI ROMA; (b) UNIVERSITY OF VIRGINIA

Introduction. Dimethyl sulfoxide (DMSO) is a solvent that interferes with cell signaling and viability. DMSO is widely used in biomedical research, including cardiovascular research, to dissolve hydrophobic compounds. When we were characterizing a novel NLRP-3 inhibitor (NLRP3-i) in mouse macrophages, we found the NLRP3-i (20 to 0.02 μM) in 1% DMSO before LPS, strongly inhibited the Interleukin (IL)-1β release (NLRP3 dependent) but also Tumor Necrosis Factor (TNF)-α secretion (NLRP3-independent) (>70% suppression of all cytokines, all doses $p<0.001$).

Hypothesis. We hypothesized that DMSO could inhibit NLRP3-dependent and -independent cytokine release.

Methods. We stimulated mouse macrophages (J774.1 cells) with LPS (1 μg/ml, 6h, to activate NF-kB-dependent gene expression) and ATP (5 mM, 30 min, to activate NLRP3). Cells were exposed to increasing concentrations of DMSO (0.2, 0.5, 1.0%). We collected the cell supernatants and performed ELISA assays to measure NLRP3-dependent (Interleukin-1β, or IL-1β) and -independent (Tumor Necrosis Factor-α, or IL-6) cytokine production.

Results. The 1% dose of DMSO significantly reduced IL-1β after LPS+ATP stimulation (205±12 vs 709±7 pg/ml; $p<0.0001$); 0.5% and 0.2% DMSO had no effect. DMSO 1% with ATP did not inhibit NLRP3-dependent release of IL-1 (708±16 vs 709±16); 1.0 and 0.5% DMSO reduced TNF-α (1348±37 and 2672±25 vs 3125±27 pg/ml; all $p<0.0001$); 0.2% DMSO had no effect. The effect was lost when 1% DMSO was given with ATP (3047±38 vs 3125±27 pg/ml). In conclusion, DMSO has a dose-dependent inhibition of IL-1β and TNF-α, preventing LPS/NF-kB-dependent gene expression, a NLRP3-independent mechanism.

Conclusion. DMSO doses have to be carefully tested before performing experiments evaluating anti-inflammatory properties of compounds. The data here presented also remind of the importance of vehicle control use in preclinical research.

GENETICA E BIOLOGIA MOLECOLARE 611
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
BIOLOGIA MOLECOLARE CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)

UNMASKING DES P.LEU136HIS A VARIANT OF UNCERTAIN SIGNIFICANCE IN A FAMILY WITH MULTIGENERATIONAL SUDDEN CARDIAC DEATH

Maria Luana Rizzuto (a), Vittoria Zuardi (a), Daniele Falco (a), Fabrizio Ricci (a, b, c), Giulia Renda (a, b), Sabina Gallina (a, b)
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Pathogenic variants in the DES gene, encoding the muscle-specific intermediate filament desmin, are established causes of arrhythmogenic cardiomyopathies. The clinical interpretation of Variants of Uncertain Significance (VUS) remains a major challenge in contemporary cardiogenetics.
We describe a 44-year-old asymptomatic man referred for cardiac evaluation following the sudden cardiac death (SCD) of his 26-year-old brother. The brother's autopsy was inconclusive, and genetic testing had not been performed. The proband's initial clinical evaluation was unremarkable. Cascade genetic screening revealed a rare heterozygous DESc.407T>A (p.Leu136His) missense variant in the proband and his asymptomatic mother, who reported a multigenerational maternal history of SCD (aunt and cousin). Cardiac magnetic resonance (CMR) of the mother showed subepicardial late gadolinium enhancement (LGE) in the basal inferior and inferolateral segments (Figure 1), fulfilling criteria for possible arrhythmogenic left ventricular cardiomyopathy (ALVC) according to the 2024 European Task Force. The proband's CMR demonstrated preserved ventricular function but ring-like subepicardial LGE and features of fibro-fatty myocardial replacement, qualifying as borderline ALVC (Figure 2).

Discussion: ClinVar currently classifies DES p.Leu136His as a VUS: it is extremely rare in the population (MAF <0.005%) and has only anecdotal associations with arrhythmogenic or dilated cardiomyopathy. Importantly, it affects codon 136, a mutational hotspot where other substitutions (e.g., Leu136Pro) are established pathogenic mutations, thereby qualifying as a HOT-VUS. In silico predictors support a deleterious effect,

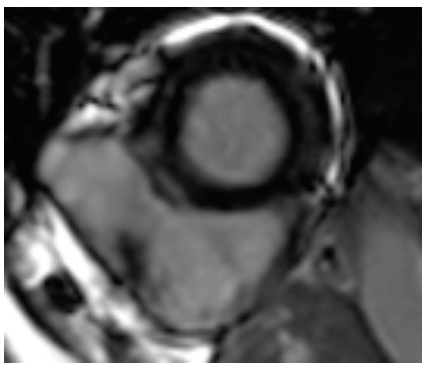


Figure 1

yet functional studies have reported preserved desmin protein expression and filament assembly, suggesting that pathogenicity may involve subtler nanomechanical or structural properties not captured by current assays. Despite discordant functional evidence, the clinical context—namely the presence of this variant in a family with multigenerational SCD and concordant CMR abnormalities in two carriers—supports probable pathogenicity. Furthermore, the more severe phenotype observed in the proband compared with his mother raises the possibility of additional genetic or epigenetic modifiers influencing disease expression.

Conclusion: This case highlights the inherent difficulty of classifying VUS, particularly when located in mutational hotspots with conflicting lines of evidence. To our knowledge, this is the first report linking DES p.Leu136His to multigenerational SCD and ALVC features in multiple family members. Here, the clinical phenotype emerges as the most compelling marker of pathogenicity, underscoring the indispensable role of integrated genetic and clinical evaluation in familial risk stratification and SCD prevention.

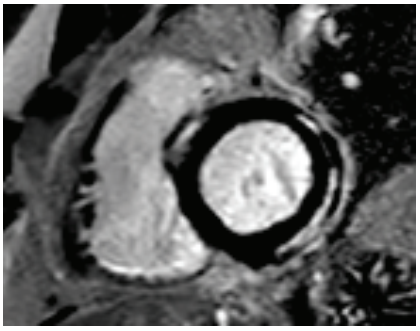


Figure 2

GENETICA E BIOLOGIA MOLECOLARE 786
TUMORI CARDIACI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
BIOLOGIA CELLULARE (GENETICA E BIOLOGIA MOLECOLARE)
BIOLOGIA MOLECOLARE CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)

MECHANICAL FORCES PROTECT THE HEART FROM CANCER

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(a) UNIVERSITA DEGLI STUDI DI TRIESTE; (b) CENTRO CARDIOLOGICO MONZINO; (c) UNIVERSITA DELLA CAMPANIA VANVITELLI

Introduction: Primary heart cancer is extremely rare, with an estimated prevalence of 0.001%. Metastatic dissemination to the heart is commoner, but it is still a rare event. Our laboratory has a long-lasting interest in understanding the mechanisms that control cardiomyocyte proliferation for cardiac regeneration, in particular the role of mechanical forces generated by the beating heart. This led us to hypothesize that mechanical forces could similarly inhibit the proliferation of both cardiomyocytes and cancer cells, thereby explaining the low incidence of cancer in the heart. Thus, we set up ex vivo and in vivo models to assess the mechanisms that prevent cancer cell growth within a beating cardiac muscle.

Methods: Heart unloading in vivo was achieved by heterotopically transplanting mouse hearts into the neck of syngeneic recipient mice, followed by cancer cell injection in both native and transplanted hearts. Engineered heart tissues (EHTs) were generated using a home-made system to finely tune mechanical load. We included different types of cancer cells in EHTs, which were cultured in both static and beating conditions. Spatial transcriptomics was performed on samples of primary tumor, cardiac and extra-cardiac metastasis from the same patients.

Results: In line with our hypothesis we observed that cancer cells proliferated significantly more in unloaded than in native hearts, resulting in a larger tumor mass. Consistently, cardiomyocyte beating in EHTs inhibited the proliferation of all types of cancer cells. The LINC complex was identified as a key mediator in translating mechanical forces into inhibition of cell proliferation. In particular, Nesprin 2 emerged as an essential factor to inhibit the proliferation of several cancer types upon mechanical loading both in vitro and in vivo. Cancer cells exposed to contraction-induced mechanical load displayed increased chromatin condensation, which was reversed in unloaded tissues. Consistent with this evidence, spatial transcriptomics showed overexpression of several histone deacetylases (HDAC) genes by cardiac metastasis compared to extracardiac lesions, independent from the origin of the primary tumor.

Conclusion: Overall, these results demonstrate the key role of mechanical forces in inhibiting the proliferation of cancer cells in the heart. Mechanical load inhibits cancer cell proliferation through Nesprin 2, which alters chromatin condensation in the nucleus. These data provide fundamental insights on the mechanisms that protect the heart from cancer and pave the way to a mechanical therapy for other solid tumors.

GENETICA E BIOLOGIA MOLECOLARE 926
BIOLOGIA MOLECOLARE CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
BIOMARCATORI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
BIOLOGIA CELLULARE (GENETICA E BIOLOGIA MOLECOLARE)

SNORD3A COME BIOMARCATORE CIRCOLANTE DELL'ISCHEMIA MIOCARDICA E COME NUOVO REGOLATORE DELLA FUNZIONE CARDIACA

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(a) UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II;
(b) AZIENDA OSPEDALIERA UNIVERSITARIA FEDERICO II NAPOLI

Introduzione: Lo small nucleolar RNA (snoRNA) SNORD3A è un RNA non codificante appartenente alla famiglia degli snoRNA box C/D, il cui ruolo nella fisiologia e patologia cardiaca rimane poco definito. Dati preliminari sul trascrittoma eseguiti mediante sequenziamento dell'RNA di tessuto ventricolare sinistro (LV) e di cellule mononucleate del sangue periferico (PBMC) di pazienti con insufficienza cardiaca (HF) ischemica sottoposti a trapianto di cuore e controlli di pari età, hanno identificato SNORD3A come nuovo biomarcatore circolante, i cui livelli erano aumentati nei pazienti affetti da HF di natura ischemica.

Scopo: Abbiamo mirato a caratterizzare la regolazione di SNORD3A in vitro ed in vivo, ed a determinare le conseguenze funzionali del silenziamento di SNORD3A sulla sopravvivenza dei cardiomiociti, sulla sintesi proteica e sulla funzione cardiaca.

Metodi: HF è stato indotto in topi wild-type C57BL/6 di 8 settimane di età mediante legatura permanente dell'arteria coronarica (infarto del miocardio, MI; n = 25). I topi sottoposti ad intervento SHAM sono stati usati come gruppo di controllo (SHAM, n = 10). La funzione cardiaca è stata valutata mediante ecocardiografia; i campioni di LV and PBMC sono stati raccolti in più punti temporali fino a 4 settimane dopo MI. Oligonucleotidi antisenso SNORD3A (SNOaso) e oligonucleotidi scrambled di controllo (GFPaso) sono stati sintetizzati e testati in vivo in topi wild-type C57BL/6 ed in vitro usando cardiomioblasti H9C2 esposti a condizioni di normossia ed ipossia. Sono stati testati i livelli di espressione di SNORD3A, l'attivazione di Annessina V e di Caspasi-3, la sintesi proteica mediante incorporazione della Puromicina e l'espressione delle subunità ribosomiali.

Risultati: L'espressione di SNORD3A è risultata significativamente aumentati nei campioni di LV e PBMC dei topi MI rispetto ad i controlli SHAM, mostrando una regolazione dipendente dal tempo. In vitro, i livelli di SNORD3A dopo ipossia risultavano aumentati nelle cellule H9C2. Il silenziamento effettuato mediante SNOaso riduceva i livelli del trascritto SNORD3A; tale reperto era associato a compromissione della funzione ribosomiale, soppressione della sintesi proteica e aumentata apoptosi indotta dall'ipossia. In vivo, in seguito al silenziamento di SNORD3a è stato riscontrato un aumento dell'apoptosi dei cardiomiociti, una riduzione dei livelli delle subunità ribosomiali 45S e 18S ed un peggioramento della funzione cardiaca sistolica.

Conclusioni: L'espressione di SNORD3A è aumentata in risposta all'ipossia in vitro ed in seguito ad ischemia miocardica nei campioni di LV e PBMC. Il silenziamento di SNORD3A compromette la biogenesi ribosomiale, la sintesi proteica e promuove la morte dei cardiomiociti, culminando nel deterioramento della funzione cardiaca. Questi risultati confermano che SNORD3A è sia un regolatore meccanicistico dell'omeostasi cardiaca sia un promettente biomarcatore circolante per l'insufficienza cardiaca ischemica.

CardioSic

86° CONGRESSO NAZIONALE SIC
Roma, 4-7 dicembre 2025

IMAGING CARDIOVASCOLARE

IMAGING CARDIOVASCOLARE 26
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
ECOSTRESS (IMAGING CARDIOVASCOLARE)
RIABILITAZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)

LONG APPLICATION EXPERIENCES REPORT OF EXERCISE STRESS ECHO (RE-LEESE) IN CLINICAL PRACTICE. PREDICTIVE VALUE AND INDICATIVE SUGGESTIONS

Flavio Acquistapace (a)
(a) MEDICAL IN PRACTICE ASSOCIATION, LUGANO, SWITZERLAND

Introduction: The predictive and prognostic value of the functional is still debated by the evidences, for appropriate and cost effective evaluation, under different condition: assessment of coronary heart disease (CHD) screening, valvular detection and decision making assessment, gender, sport cardiology. The operational variability, and therefore the practical expertise, play a primary role in the best application of clinical practice.

Purpose: The aim is to report a long standing application experience (20 years) of Exercise Stress Echo (ESE) (Release) applied in different clinical condition. Evaluating the predictive and cost/effective value.

Methods: 15.000 patients (pts) evaluated, from 1994 to June 2024, with ESE - 50% men and 50% women). 13.000 pts for CHD primary and secondary screening, 1.500 pts for valvular assessment, 500 pts for sport cardiology screening. They were analyzed in 2 groups: the first one evaluation, or absence of events, and the second one presence of CAD (cardiovascular event and/or revascularization). Were evaluated risk factors (FRC), presence of clinical parameters limiting the predictive value of the Stress ECG from effort (EE) such as: ECG abnormalities – branch blocks - of ECG, hypertrophic, cardiomyopathy, gender. FRC registered are hypertension on 12.800 pts (85%), hypercholesterolemia on 8.300 pts (55% - 52% m.; 48% w.), smoking on 3.000 pts (20% - 57% m., 43% w.), familiarity on 7.000 pts (45% - 50% m., 50% w.), anxiety, depression, dystonia on 6.000 pts (40% - 80% m., 20% w.), diabetes on 3.000 pts (20% - 1-55% m., 45% w.).

Results: All pts were subjected to ESE. Outcome at 1 year for CAD and mortality due to myocardial infarction, hospitalization for unstable angina or major complications (CMC): no one pts. After ESE 4500 pts (30%) was followed in coronary angiography (CAG) and 750 (5%: 680% m. 20% w.) with revascularizations (PTCA/CABG). ESE/CAG correspondence in 100% of pts. Comparison of CAD without revascularizations, i.g. diffuse atheromasia with sub-critical stenosis in 5% pts (25% m., 75% w.), all in primary evaluation (without events) and all hypertensive, compatible as vasospastic ischemia (i.g. x syndrome). All the men was in secondary evaluation (CAD events and revascularized) and with multiple risk factors and diabetes also. No one pts was exposed to further radioactive stress procedures during the observation period.

Conclusions: The functional imaging stress tests (FIST) with ESE appears to be a valid efficient tool for screening and follow-up of Ischemic Heart Disease (IHD), as well as Valvular Hemodynamic Detection especially in sport cardiology , in women and in general for pts with multiple risk factors or pathophysiological diversity. The predictive value is the same of others FIST (i.g. of RMN Scintigraphy) and with a better cost/effectiveness ratio, reduced exposition to radiations. ESE reduce to the risk of an unappropriated useless number investigations.

IMAGING CARDIOVASCOLARE 754
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
MALATTIE DEL METABOLISMO (DIABETE E MALATTIE DEL METABOLISMO)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)

CORRELAZIONE TRA GRASSO EPICARDICO E MYOCARDIAL WORK DEL VENTRICOLO SINISTRO

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Il tessuto adiposo epicardico (epicardial adipose tissue, EAT), localizzato tra il miocardio e il pericardio viscerale, ha suscitato crescente interesse clinico per il suo potenziale coinvolgimento nelle patologie cardiovascolari. In condizioni fisiologiche, svolge un ruolo protettivo nei confronti del cuore, offrendo sostegno meccanico, isolamento termico, riserva energetica e contribuendo alla regolazione ormonale. In presenza di alterazioni metaboliche, può aumentare e acquisire caratteristiche infiammatorie e profibrotiche, potendo contribuire potenzialmente ad una disfunzione precoce del ventricolo sinistro. Il myocardial work (MW), che combina strain miocardico e pressione arteriosa, rappresenta un metodo avanzato per valutare la funzione sistolica. Questo studio mira a verificare se l'aumento dell'EAT sia associato a cambiamenti ndei parametri del MW, suggerendo il possibile ruolo dell'EAT come marcatore precoce di disfunzione ventricolare sinistra preclinica.
Sono stati studiati84 pazienti (32 donne e 52 uomini), di età superiore ai 18 anni, presso a cardiologia del Policlinico "Gaetano Martino" di Messina. Per ciascuno dei pazienti sono stati raccolti dati anamnestici, con focus sui fattori di rischio cardiovascolare (ipertensione, dislipidemia, diabete), parametri antropometrici (BMI e BSA), precedenti eventi cardiovascolari e terapie in corso. È stata inoltre misurata la pressione arteriosa prima dell'ecocardiogramma come previsto per lo studio del MW.

Lo studio ha evidenziato una riduzione significativa del Global Constructive Work (GCW) nei pazienti con spessore dell'EAT superiore a 7 mm, indicando un p effetto negativo dell'incremento dell'EAT sulla deformazione del ventricolo sinistro. Gli altri parametri (GWI-Global Work Index, GWE-Global Work Efficiency, hanno mostrato tendenze simili, ma non significative. Nonostante il campione limitato, i risultati supportano l'ipotesi che l'EAT possa rappresentare un marker precoce di disfunzione asintomatica del ventricolo sinistro. Ulteriori studi con un maggiore numero di pazienti sono necessari per confermre i risultati ottenuti.

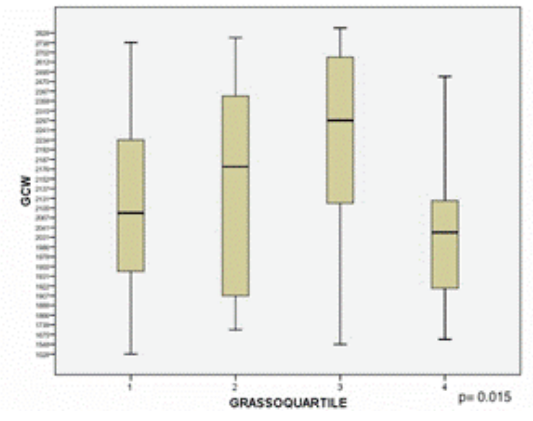


Figura 1

CardioSic

IMAGING CARDIOVASCOLARE 139
TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT) (IMAGING CARDIOVASCOLARE)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)

SCREENING CORONARY AND CAROTID ATHEROSCLEROSIS AND LUNG DISEASE BY COMPUTED TOMOGRAPHY ANGIOGRAPHY WITH PHOTON-COUNTING DETECTOR TECHNOLOGY: THE ACTA STUDY

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Background: Photon-counting computed tomography (PCCT) can provide high-resolution, multiorgan vascular and thoracic imaging. The ACTA study evaluates whether single-visit PCCT screening detects subclinical, clinically actionable disease in asymptomatic, high-risk adults invited by general practitioners.

Methods: We conducted a prospective, community-based cohort study of asymptomatic adults aged 45–75 years meeting ≥1 criterion: type 2 diabetes ≥10 years, current or former smoking, or Framingham Hard CHD risk ≥10%. Exclusions included prior coronary/carotid CT/angiography, known cardiomyopathy, iodinated-contrast allergy, and chronic kidney disease. Participants underwent a standardized single-breath-hold PCCT protocol covering coronary arteries, thorax, and carotids; effective dose was ~11–13 mSv. Outcomes for this interim analysis (enrollment 11 January–21 June 2025) included prevalence and severity of coronary atherosclerosis (obstructive ≥50% stenosis and/or extensive disease), carotid plaque burden, Lung-RADS category, incidental findings, downstream referrals, and therapy changes.

Results: Among 172 participants (median age 62 years; 56% male), PCCT was completed in all without adverse events. Any coronary atherosclerosis was present in 75%, obstructive disease in 15%, and extensive non-obstructive disease in 41%. Five percent were referred for invasive coronary angiography; 2% underwent percutaneous coronary intervention and 1% coronary artery bypass grafting. Carotid plaques were identified in 55% (bilateral in 35%). Thoracic findings included Lung-RADS 3–4 nodules in 12% and emphysema in 24%. Incidental extracardiothoracic findings included a thyroid nodule subsequently diagnosed as papillary carcinoma. Following PCCT, antiplatelet therapy was initiated in 62%, lipid-lowering therapy in 45%, and intensified in 22%.

Conclusions: In this interim community cohort, single-visit PCCT screening revealed a high burden of subclinical, clinically actionable atherosclerotic and pulmonary disease, prompting frequent treatment initiation/intensification and selective invasive evaluation. These preliminary findings support the feasibility and potential preventive impact of integrated PCCT screening; outcome and comparative effectiveness analyses are planned as enrollment proceeds toward 560 participants.

IMAGING CARDIOVASCOLARE 215
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)
INFARTO STEMI (CARDIOPATIA ISCHEMICA)
TROMBOSI E COAGULAZIONE (ATEROTROMBOSI)

THE RUPTURE RISK TRIAD: A NOVEL CARDIAC MAGNETIC RESONANCE-BASED PREDICTOR OF IMPENDING HEART RUPTURE

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Background: Heart rupture is a rare but life-threatening complication of acute myocardial infarction (MI). Subacute forms may allow for early detection and treatment. The role of CMR in identifying impending heart rupture (IHR) is underexplored, therefore we aimed to identify CMR imaging features associated with IHR.

Methods: CMR examinations performed within the first week from STEMI in patients from January 2018 to November 2024 were retrospectively evaluated. IHR was defined by the presence of transmural MVO, extra-myocardial thrombosis, pseudoaneurysm, or post-infarction septal defect.

Results: A total of 205 patients were included. IHR was identified in 26 patients (12%). Compared to patients without IHR, these individuals were all experiencing their first MI (0% vs 31%, p = 0.02) and had lower LVEF% (38% vs 49%, p = 0.002), higher LV mass (88 vs 75 g/m², p = 0.003), greater infarcted wall thickness (15 vs 10 mm, p < 0.001), and a higher infarcted-to-remote wall thickness ratio (1.44 vs 1.09, p < 0.001). The prevalence of MVO and IMH was significantly higher among patients with IHR, occurring in 100% of cases compared to 39% and 26% in the non-rupture group, respectively. Also, LV thrombus and pericardial effusion were more frequent in patients with IHR (48% vs 13% and 88% vs 15% respectively). On univariate analysis, infarcted wall thickness (OR 1.57, 95% CI 1.3–1.9, p < 0.001), the presence of MVO (OR 38, 95% CI 5.1–293, p < 0.001), LV thrombus (OR 45, 95% CI 13–161, p < 0.001), lower LVEF% (OR 0.97, 95% CI 0.95–0.99, p = 0.015), and infarcted-to-remote wall thickness ratio > 1 (OR 1.4, 95% CI 1.25–1.63, p < 0.001) were all predictors of IHR. The presence of the "Rupture Risk

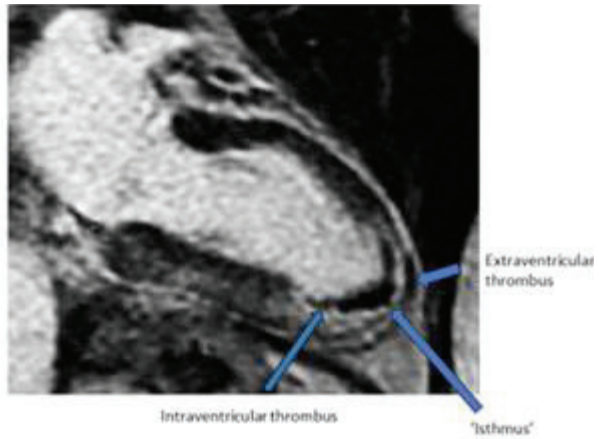


Figure 1

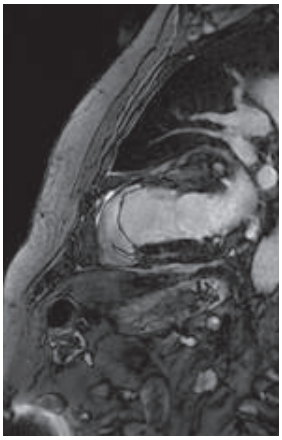


Figure 2

Triad", characterized by a combination of pericardial effusion, infarcted wall thickness > 12 mm, and an infarcted-to-remote wall thickness ratio > 1 had the highest predictive value (OR 371, 95% CI 68–2036, p < 0.001). On multivariate analysis, only MVO (OR 27, 95% CI 1.7–416, p = 0.02) and the Rupture Risk Triad (OR 263, 95% CI 28–2512, p < 0.001) remained independent predictors of IHR.

Conclusions: CMR plays a crucial role in the identification of IHR following STEMI. The Rupture Risk Triad, represented by a combination of pericardial effusion, infarcted wall thickness > 12 mm, and infarcted-to-remote wall thickness ratio > 1 emerged as a strong and independent predictor of IHR, with a sensitivity of 81% and a specificity of 99%

IMAGING CARDIOVASCOLARE 144
CARDIOPATIE CONGENITE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
IMAGING DELLE CARDIOPATIE CONGENITE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)

THE IMPORTANCE OF RECOGNIZING THE RETROAORTIC ANOMALOUS CORONARY SIGN

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Gianluigi Condorelli (a, b), Renato Maria Bragato (b)
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Background: The retroaortic anomalous coronary (RAC) sign is an echocardiographic finding that indicates the presence of an anomalous coronary artery coursing behind the aorta. Such coronary anomalies can pose significant risks in certain circumstances.

Case presentation: A 65-year-old man, with past medical history of dyslipidemia and arterial hypertension, was admitted to our ward after an incidental finding of complete left bundle branch block on an ECG during a routine cardiology check-up. At the time of admission, he was asymptomatic with stable vital signs, an unremarkable physical exam and normal blood tests. Transthoracic echocardiography revealed marked left ventricular dilation with a severely reduced ejection fraction (EF = 30%), accompanied by diffuse hypokinesia and ventricular dyssynchrony. Interestingly, the apical window revealed a hyperechoic tubular structure running perpendicularly to the aorta on the atrial side of the atrioventricular sulcus. Although this finding resembled a vascular structure, it did not correlate with the typical location for any normal vessel. This image was interpreted as a RAC sign, indicating the possibility of an anomalous coronary artery coursing behind the aortic root. Subsequent invasive coronary angiography showed an anomalous origin of the left main coronary artery from the right sinus of Valsalva, without any significant stenosis. Cardiac MRI later confirmed the diagnosis of idiopathic dilated

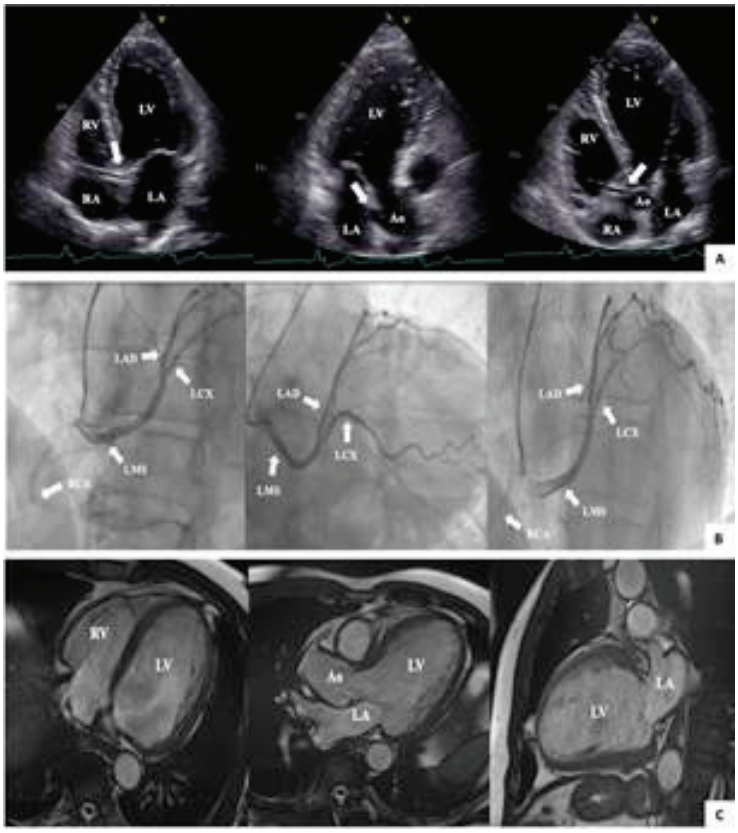


Figure 1

cardiomyopathy. The patient was discharged on optimal heart failure therapy.

Conclusions: In this case the identified coronary anomaly was an incidental finding unrelated to the patient's clinical condition. Although the knowledge of the RAC sign among cardiologists and echo technicians is not yet widespread, its awareness is important so that it is not ignored or misinterpreted as any artifacts or pathological conditions.

IMAGING CARDIOVASCOLARE 878
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
ENDOCARDITI (VALVULOPATIE)
PROGNOSI (SCOMPENSO CARDIACO)

IMPATTO PROGNOSTICO DELL'IMAGING MULTIMODALE E DELLA TERAPIA CARDIOCHIRURGICA NELL'ENDOCARDITE INFETTIVA

Giulia Andolina (a), Maria Teresa Savo (a), Bianca Maria Gattari (a), Eleonora Lassandro (a), Gabriele Cordoni (a), Maria Martina Palmisano (a), Giulia Mattesi (a), Giorgio De Conti (a), Raffaella Motta (a), Valeria Pergola (a)
(a) UNIVERSITÀ DEGLI STUDI DI PADOVA

Introduzione. L'endocardite infettiva (EI) rimane una patologia ad elevata mortalità. Negli ultimi anni l'imaging multimodale (TC, PET-TC) ha assunto crescente rilevanza diagnostica, mentre il ruolo prognostico di queste metodiche e della cardiochirurgia necessita di ulteriori chiarimenti.

Metodi. Studio retrospettivo su 115 pazienti con EI (criteri di Duke modificati) ricoverati tra 2016 e 2025. Sono stati analizzati dati clinici, microbiologici, di imaging e terapeutici. Gli outcome principali erano mortalità a 30 giorni e oltre. L'analisi statistica ha incluso una regressione logistica con metodo di Firth, Kaplan-Meier e modello di Cox. Sono state valutate le performance diagnostiche di PET-TC e TC rispetto al gold standard chirurgico e sviluppato uno score di rischio prognostico.

Risultati. Età media 60±16 anni, maschi 80%. Mortalità a 30 giorni 12,3%, oltre i 30 giorni 3,0%. All'analisi multivariata, l'età era predittore indipendente di mortalità precoce (OR 1,08 per anno; p=0,032). La cardiochirurgia (33% dei casi) si associava a mortalità più bassa (10,2% vs 19,2% a 30 giorni; 1,3% vs 9,5% oltre 30 giorni), pur con complicanze perioperatorie. L'impiego della PET-TC è aumentato significativamente (dal 15% al 45%), con sensibilità superiore ma minore specificità rispetto alla TC.

Score di rischio. Abbiamo costruito uno score semplice basato su: età ≥65 anni (2 punti), embolizzazioni sistemiche (1 punto), mancata cardiochirurgia (1 punto). Mortalità a 30 giorni: 3% (0–1 punti), 15% (2–3 punti), 28% (≥4 punti). L'AUC della curva ROC è stata 0,82, indicando buona capacità discriminativa.

Conclusioni. L'età avanzata si conferma principale predittore di mortalità precoce. La cardiochirurgia riduce il rischio di morte, nonostante il carico di complicanze. L'imaging multimodale, in particolare la PET-TC, aggiunge valore diagnostico. Lo score di rischio proposto, semplice e validato internamente, può guidare la stratificazione precoce e le decisioni cliniche, promuovendo un approccio personalizzato nella gestione dell'EI.

IMAGING CARDIOVASCOLARE 670
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)
IMAGING MIOCARDICO-PERICARDICO
(MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
BIOMARCATORI DELLO SCOMPENSO (SCOMPENSO CARDIACO)

CARDIAC TROPONIN RELEASE, MYOCARDIAL FUNCTION AND INFLAMMATION IN PATIENTS WITH TAKOTSUBO SYNDROME: A CARDIAC MAGNETIC RESONANCE STUDY

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Background: Takotsubo syndrome (TTS) is an acute heart failure condition characterized by transient left ventricular systolic dysfunction in the absence of culprit coronary artery disease. Troponin release is a hallmark diagnostic criterion, yet its pathophysiological determinants in TTS remain poorly understood. This study aimed to investigate the relationship between troponin release, myocardial edema, and systemic inflammatory activation, using advanced cardiac magnetic resonance (CMR) with T2 mapping and surrogate serum biomarkers of inflammatory activation.

Methods: We conducted a single-center observational study including n=94 consecutive patients with TTS who underwent CMR during the index hospitalization (median 4 days (3, 6) after admission). Diagnosis required fulfillment of established TTS criteria, including follow-up recovery of left ventricular ejection fraction (LVEF). Serial blood sampling included high-sensitivity troponin T, blood cells count, and C-reactive protein. Inflammatory indices were derived, including neutrophil-to-lymphocyte ratio (NLR), lymphocyte-to-monocyte ratio (LMR), systemic immune-inflammation index (SII), aggregate index of systemic inflammation (AISI), and systemic inflammation response index (SIRI). CMR protocol included cine imaging and T2 mapping for quantitative assessment of myocardial edema. Patients were grouped according to peak high-sensitivity troponin T release (< or ≥28× upper limit of normal, a cut-off previously associated with prognosis).

Results: Patients had a mean age of 74 years, with 7% men, reflecting a typical TTS population. Those with higher troponin release (≥28×ULN) presented with lower admission LVEF (36% vs. 41%, p=0.005) and higher T2 mapping values (60 vs. 57 ms, p=0.035). At blood sampling taken on the day of CMR, systemic inflammation was more pronounced in this group, with elevated NLR (3.7 vs. 2.7, p=0.020), SII (960 vs. 624, p=0.007), and AISI (556 vs. 356, p=0.035), alongside reduced LMR (3.2 vs. 3.9, p=0.020). Multivariable regression identified admission LVEF (β=−0.524, p<0.001), T2 mapping (β=0.171, p=0.045), NLR (β=0.262, p=0.032), and LMR (β=−0.282, p=0.033) as parameters independently associated with increased high-sensitivity troponin T levels.

Conclusions: Differently from an ischemic injury and closer to what observed in acute heart failure, TTS presents a troponin release reflecting a complex interplay between ventricular dysfunction, myocardial edema, and systemic inflammatory activation. From a clinical perspective, Troponin, an inexpensive and widely available biomarker, may serve as a surrogate marker of inflammatory myocardial injury, with potential clinical utility for risk stratification and therapeutic targeting.

IMAGING CARDIOVASCOLARE 352
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)
INTELLIGENZA ARTIFICIALE (TELECARDIOLOGIA ED E-HEALTH)
TUMORI CARDIACI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

RADIOMICS-BASED ANALYSIS APPLIED TO CARDIAC MAGNETIC RESONANCE IMAGING FOR THE PREDICTION OF CARDIAC MASSES MALIGNANCY

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(c) UNIVERSITÀ DEGLI STUDI DI MILANO

Background: Technical developments in medical imaging have significantly improved the diagnosis of cardiac masses (CMs). Compared to other techniques, CMR offers superior tissue characterization, though current methods are largely qualitative. Radiomics enables high-dimensional quantitative image analysis and has demonstrated promise in oncological imaging. However, its application in cardiac imaging remains largely unexplored. The aim of this study is to develop an objective radiomics-based model using CMR images to differentiate malignant lesions from benign tumours and non-neoplastic CMs, thereby addressing the existing challenges in CMs characterization.

Methods: A retrospective study was conducted on patients from three hospitals who underwent CMR for suspected CMs. Final diagnoses were confirmed through histological examination or radiological resolution following anticoagulation in thrombus cases. Radiomics features were extracted from CINE and LGE sequences using the PyRadiomics library, after pre-processing steps such as noise reduction, intensity correction, and standardization. Three models were developed: one using CINE data, one using LGE data, and one combining both. Stability analysis was performed to refine feature selection, followed by the evaluation of multiple classification models. Radiomics performance was assessed using a training and independent test dataset.

Results: The study included 172 patients, with 52% diagnosed with benign masses and 48% with malignant masses. Stability analysis reduced features from 851 to 240 (CINE) and from 474 to 169 (LGE). The best-performing classifier varied across models: AdaBoost for CINE and LGE models, and logistic regression for the combined model. On an independent test set, the models achieved 84.62% accuracy for CINE, 81.82% for LGE, and 90% for the combined model.

Conclusions: Radiomics analysis of CMR cine and post-contrast imaging can effectively differentiate between benign and malignant cardiac masses with high accuracy, thus representing a promising complementary tool for non-invasive cardiac mass evaluation, particularly in settings where expertise in CMR interpretation is limited.

IMAGING CARDIOVASCOLARE 356
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)
INTELLIGENZA ARTIFICIALE (TELECARDIOLOGIA ED E-HEALTH)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

FAST CARDIAC MAGNETIC RESONANCE PROTOCOL FOR BIVENTRICULAR FUNCTIONAL ASSESSMENT AND TISSUE CHARACTERIZATION

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(a) CENTRO CARDIOLOGICO MONZINO IRCCS; (b) UNIVERSITÀ DEGLI STUDI DI MILANO

Background: Cardiovascular magnetic resonance (CMR) imaging is a reference tool for the evaluation of cardiac function and myocardial tissue, but its use is limited by long acquisition times. This study compared a conventional 'standard protocol' (ASSET bSSFP cine sequences and 2D single-segment PSIR late gadolinium enhancement [2D-SS PS LGE]) with a new 'fast protocol' (Sonic DL bSSFP cine with deep learning reconstruction and 2D multisegment PSIR LGE [2D-MS PS LGE] with AIR Recon DL). The aim was to assess image quality, ventricular functional measurements, myocardial post-contrast evaluation, and overall scan time.

Materials and methods: A total of 100 consecutive patients with known or suspected myocardial disease underwent both protocols. Quantitative analysis included left and right ventricular volumes and ejection fraction, and left ventricular (LV) mass. Qualitative assessment included subjective image quality (Likert scores). Acquisition times of cine and LGE sequences were compared. Statistical significance was set at $p < 0.05$.

Results: The study population was mainly male (78%), with a mean age of 52±16 years and mean BMI of 25.0±4.3 kg/m². Clinical indications included ventricular arrhythmias (26%), hypertrophic cardiomyopathy (19%), and coronary artery disease (13%). Cine image quality was comparable between ASSET bSSFP and Sonic DL bSSFP (Likert score 4.59 vs 4.56, $p = 0.682$). No significant differences emerged in biventricular size and function, or LV mass ($p > 0.05$). However, Sonic DL bSSFP sequences significantly reduced acquisition times: long-axis views (38 vs 61 sec, $p < 0.001$) and short-axis stack (125 vs 227 sec, $p < 0.001$). Similarly, LGE image quality was comparable between 2D-SS PS LGE and 2D-MS PS LGE (Likert 4.60 vs 4.51, $p = 0.235$). Acquisition times were significantly reduced with 2D-MS: long-axis (25 vs 77 sec, $p < 0.001$) and short-axis stack (78 vs 302 sec, $p < 0.001$). Overall, a "fast" protocol integrating Sonic DL bSSFP and 2D-MS PS LGE sequence reduced total acquisition time by nearly 60% (266 vs 667 sec, $p < 0.001$).

Conclusions: A deep learning-based 'fast' CMR protocol significantly reduces scan time without compromising volumetric accuracy or image quality, thus resulting a feasible option for routine clinical practice.

IMAGING CARDIOVASCOLARE 635
ISCHEMIA, STUDI SPERIMENTALI (CARDIOPATIA ISCHEMICA)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT)
(IMAGING CARDIOVASCOLARE)

BLOOD-BASED TRASCRIPTIONAL SIGNATURES IN PATIENTS ASSESSED WITH CARDIAC COMPUTED TOMOGRAPHY ANGIOGRAPHY AND STRESS COMPUTED TOMOGRAPHY PERFUSION

Andrea Baggiano (a), Lodovico Buonamici (a, b), Francesco Cannata (a), Mattia Chiesa (a), Gualtiero Colombo (a), Del Torto Alberico (a), Fabio Fazzari (a), Laura Fusini (a), Riccardo Maragna (a), Manuela Muratori (a), Saima Mushtaq (a), Luca Piacentini (a), Laura Pisani (a), Kamil Stankowski (a), Luigi Tassetti (a), Chiara Vavassori (a), Andrea Zamboni Radic (a), Gianluca Pontone (a, b)
(a) CENTRO CARDIOLOGICO MONZINO IRCCS; (b) UNIVERSITÀ DEGLI STUDI DI MILANO

Background: Stress computed tomography perfusion (Stress-CTP) is a functional technique that can be added to coronary computed tomography angiography (CCTA) to improve management of patients with suspected coronary artery disease (CAD). Genome-wide profiling of gene expression in peripheral blood, which reflects key atherothrombotic processes, has proven to be a promising tool for detecting patterns predictive of coronary stenosis severity, haemodynamic significance, and related adverse events. The aim of this study was to identify blood-based transcriptional biomarkers distinguishing CAD subtypes in a population of patients undergoing CCTA and Stress-CTP.

Methods: One-hundred and fifty consecutive patients with intermediate to high risk of suspected CAD or known disease underwent clinically indicated CCTA+Stress-CTP examination and, by consent, peripheral blood sampling for transcriptome assessment. Blood was collected in RNA-stabilizing Tempus tubes and stored at −80°C. Total RNA was isolated using a Promega Maxwell RSC semi-automated system, globin-depleted, quantified by spectrophotometry and fluorimetry, and assessed for integrity (i.e., RIN score) with an Agilent Bioanalyzer. RNA-sequencing libraries were prepared using Illumina TruSeq Stranded Total RNA kits, deep-sequenced on NovaSeq 6000 (≥ 150M reads/sample), aligned to GRCh38 with STAR/Bowtie2, quantified, and normalized with DaMiRseq. For differential expression (DE) analysis patients were stratified as follows: obstructive (obCAD, n=81) and nonobstructive CAD (non-obCAD, n=69); obCAD subgroup was then split in CTPpos (n=42) and CTPneg (n=36) patients. DE was assessed with DESeq2, functional inferences were made using Gene Ontology (GO - Biological Processes) gene set enrichment analysis. Adjustments for multiple comparisons were applied using the false discovery rate (FDR).

Results: After quantification and filtering, 27,896 genes were retained and deemed expressed in at least 50% samples. Between-group DE comparisons showed the following results: (i) 43 genes were differentially expressed in obCAD vs non-obCAD: 10 were higher in obCAD and 33 higher in non-obCAD; (ii) 47 DE genes were identified in CTPpos obCAD vs non-obCAD, of which 12 higher in CTPpos; (iii) 93 DE genes were detected in CTPneg obCAD vs non-obCAD, (46 higher in CTPneg); (iv) finally, CTPpos obCAD vs CTPneg obCAD: no gene withstood FDR correction, suggesting minimal transcriptional separation due to perfusion defect in obstructive disease. A Venn diagram highlighted 15 genes common to all 3 obCAD-vs-non-obCAD scenarios and the largest mutually exclusive gene set in the CTPneg obCAD group (n=63), suggesting biology linked to atherosclerotic burden independent of stress-induced perfusion defects. GO enrichment in obCAD vs non-obCAD

pointed to tissue remodelling pathways, cell-to-cell Wnt signalling, and calcification/ossification ($p<0.01$). The CTPneg obCAD-exclusive gene set was enriched for inflammatory/antigen-response and acute-phase processes, assembly of morphogenetic components, regulation of autophagy, and signalling via PI3K/AKT and IGF-like growth factor receptor pathways ($p<0.01$).

Conclusions: An in-depth, blood-based transcriptomic approach reliably distinguishes obstructive CAD from non-obstructive CAD, whereas the peripheral transcriptional difference induced by ischaemia within obstructive disease appears to be minimal.

IMAGING CARDIOVASCOLARE 184
IPERTENSIONE POLMONARE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE
(IMAGING CARDIOVASCOLARE)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)

THE ROLE OF ECHODYNAMIC FOR THE PREDICTION OF COMBINED PULMONARY HYPERTENSION AND VASOREACTIVITY TEST RESPONSE IN ADVANCED HEART FAILURE PATIENTS

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Background: Pulmonary arterial hypertension (PAH) in advanced heart failure (AdHF) poses significant challenges for patient management and prognosis, particularly when complicated by combined pre- and post-capillary pulmonary hypertension (CpcPAH). Advanced echodynamic assessments may offer predictive insights for identifying at-risk populations and guiding therapeutic interventions.

Objective: Our study aimed to evaluate echodynamic and invasive hemodynamic parameters to distinguish CpcPAH from isolated post-capillary pulmonary hypertension (IpcPAH) and assess predictors of response to vasoreactivity testing in AdHF patients.

Methods and Materials: In this retrospective, double-center study, 91 AdHF patients undergoing right heart catheterization (RHC) and echocardiographic evaluation were stratified into CpcPAH and IpcPAH groups. Comprehensive echodynamic assessments included right ventricular (RV) function, speckle-tracking analyses with myocardial work and derived parameters of ventriculo-arterial coupling and hemodynamic indices. Vasoreactivity testing was performed using sodium nitroprusside (SNP), with response defined as a reduction in pulmonary vascular resistance (PVR) to <3 WU.

Results: Patients with CpcPAH exhibited significantly elevated pulmonary pressures (sPAP, mPAP and PVR; all p<0.001), greater RV dilation (p=0.01), reduced RV free-wall strain (fwGLS: -12.86±5.73 vs. -16.92±7.30; p=0.005) and lower atrial strain (PALS: 8 [5–12] vs. 14 [9–18]; p<0.001). Echodynamic parameters, including reduced TAPSE/sPAP (p<0.001) and RV free wall longitudinal strain fwGLSLS/sPAP (p<0.001), effectively distinguished CpcPAH from IpcPAH. Pulmonary acceleration time (AcT) was the strongest independent predictor of CpcPAH (OR=0.001; p=0.037). SNP testing revealed vasoreactivity in 62% of patients, with responders demonstrating a significant reduction in PVR (from 4.3±1.1 WU to 2.1±0.6 WU, p<0.001). Tricuspid regurgitation velocity (TRV: OR=6.180; p=0.030) and left ventricular global longitudinal strain (LV-GLS: OR=0.809; p=0.027) were independent predictors of SNP response. ROC analysis revealed an optimal cutoff of -5.85% for LV-GLS (AUC=0.754; p=0.007), possibly indicating preserved left myocardial contractile reserve as a significant determinant of SNP response.

Conclusion: this study underscores the utility of advanced echodynamic assessments for distinguishing CpcPAH from IpcPAH in AdHF patients. Reduced fwGLS, PALS, impaired ventriculo-arterial

coupling, and shortened AcT were pivotal predictors of CpcPAH. SNP testing demonstrated that reversible PVR elevation was achievable in most patients, with LV-GLS being the independent predictor of response, emphasizing the potential for targeted vasodilatory therapy. These findings may refine risk stratification and optimize therapeutic strategies, highlighting the role of echodynamics in contemporary heart failure management.

IMAGING CARDIOVASCOLARE 406
ECOCARDIOGRAFIA 3-D (IMAGING CARDIOVASCOLARE)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)

IL RUOLO DELLA LEFT ATRIAL EMPTYING FRACTION TRIDIMENSIONALE (3D LAEF) PER LA VALUTAZIONE DELLA FUNZIONE DIASTOLICA NEL PAZIENTE CON SCOMPENSO CARDIACO CRONICO

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(a) UNIVERSITA' DEGLI STUDI DI BARI "ALDO MORO", AOUC POLICLINICO DI BARI, BARI, ITALIA

Introduzione: L'ecocardiografia transtoracica è uno strumento fondamentale per la valutazione della Disfunzione Diastolica (DD), soprattutto nei pazienti con Scompenso Cardiaco Cronico (SCC). La diagnosi è multiparametrica basata sui criteri forniti delle linee guida ASE/EACVI. Al fianco dei tradizionali parametri stanno emergendo nuovi strumenti che potrebbero fornire un valido supporto diagnostico. Tra questi, la Left Atrial Emptying Fraction valutata con il 3D (3D LAEF) rappresenta uno dei più innovativi. Tuttavia, il suo ruolo nella valutazione della funzione diastolica deve essere ulteriormente approfondito.

Materiali e metodi: È stato condotto uno studio osservazionale, trasversale e monocentrico arruolando 53 pazienti ambulatoriali con SCC in un centro di riferimento terziario nel periodo da settembre 2024 a dicembre 2024. Sono stati adottati i seguenti criteri di esclusione: presenza di fibrillazione atriale o aritmie atriali durante l'esame, frequenza cardiaca>100 bpm, rigurgito mitralico severo o stenosi mitralica moderata/grave, sostituzione mitralica con valvola protesica, scarsa qualità dell'imaging. Per ciascun paziente sono stati raccolti i dati clinici ed è stata eseguita una valutazione con ecocardiografia transtoracica mediante 2D, Doppler continuo, pulsato e tissutale, 3D e speckle-tracking.

Risultati: L'età media della popolazione era di 66±11 anni con una netta prevalenza del sesso maschile (83%). Circa la metà dei pazienti aveva uno SCC con ridotta frazione d'eiezione (43%), il 32% dei casi aveva una forma mid-range e nella restante percentuale era preservata (25%). Il valore mediano del Left Atrial Volume Index (LAVI) era 32 (IQR 12). Secondo i criteri ASE/EACVI, la maggior parte della popolazione aveva una disfunzione diastolica (DD) di grado 1 (90%), mentre un grado 2 e 3 sono stati riscontrati rispettivamente nel 6% e nel 4% dei casi. Sono state evidenziate correlazioni statisticamente significative tra 3DE LAEF e 3D LAVI (ρs= -0,47; p<0,001), 2D LAVI (ρs= -0,46; p = 0,001), E/E' (ρs= -0,55; p< 0,001) e 2D LAEF (r= 0,74; p<0,001). Inoltre, è stata riscontrata una correlazione statisticamente significativa tra la 3DE LAEF e i parametri di speckle- tracking atriale [PALS (r = 0,69; p<0,001) - PACS (r = -0,52; p<0,001)]. Un confronto diretto tra la misurazione LAEF ottenuta con il metodo 3D e con quello 2D ha rivelato una buona concordanza tra le due metodiche con un ICC di 0,74 (0,56-0,85; p<0,001) e una differenza media tra le misurazioni del 4%. Inoltre, i pazienti sono stati classificati in due gruppi in base alla gravità della DD (grado 1 vs grado 2-3) ed è stata riscontrata una differenza statisticamente significativa per quanto riguarda il valore medio di 3DE LAEF (55±13% vs 31±9%; p<0,001).

Conclusioni: I nostri dati evidenziano una buona correlazione della 3D LAEF con i parametri convenzionali (LAVI e E/E') e con gli strumenti più recenti (PALS-PACS) utilizzati nella valutazione della funzione diastolica nel paziente con SCC. Ulteriori studi sono necessari per confermare questi risultati preliminari.

IMAGING CARDIOVASCOLARE 472
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE (IMAGING CARDIOVASCOLARE)
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)

THE IMPACT OF SGLT2 INHIBITORS ON VALVULAR FUNCTION IN PATIENTS WITH CHRONIC HEART FAILURE

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Background: Sodium-Glucose coTransporter 2 inhibitors (SGLT2i) have become an essential therapeutic tool in patients with chronic heart failure (CHF) due to their positive effects on mortality and other adverse cardiovascular events. Furthermore, a direct potential role on adverse cardiac remodeling has been observed. Patients with CHF often have an associated valve dysfunction, but the consequences of SGLT2i treatment in this condition have not yet been adequately explored. With this study were investigated the effects on mitral and tricuspid valve function after 6 months of treatment with SGLT2i in patients with CHF.

Materials and Methods: We conducted an observational, perspective, monocentric study enrolling 169 patients with CHF from December 2020 to March 2024 in a tertiary referral hospital. The prescription of SGLT2i was made according to the current European guidelines. For each patient were collected anamnestic, laboratory, clinical and echocardiographic data. A transthoracic echocardiography was performed at baseline and after 6 months of treatment with SGLT2i focusing on the evaluation of mitral and tricuspid valve regurgitation using a semi-quantitative rating scale and biventricular volumes and function.

Results: The median age of the study population was 66 years (IQR 17) with a marked prevalence of male sex (82% of cases). The most common phenotype was a dilated left ventricle (70% of cases), with an ischaemic aetiology in more than one third of patients. After 6 months of treatment with SGLT2i was observed a statistically significant reduction of Body Mass Index ($p<0.001$), an improvement in NYHA class ($p=0.006$), an increase of haemoglobin levels ($p=0.001$) and a decrease in loop diuretics usage for symptoms control ($p=0.003$). Regarding echocardiographic parameters, the left ventricular ejection fraction improved from 35% (IQR 12) to 38% (IQR 14) ($p<0.001$), the left ventricular end-diastolic volume decreased from 142 ml (IQR 67) to 135 ml (IQR 75) ($p<0.001$) together with the reduction of the left ventricular end-systolic volume from a value of 94 ml (IQR 56) to a 82 ml (IQR 55) ($p<0.001$). In about one quarter of cases mitral valve regurgitation was decreased, with a statistically significant reduction of moderate and severe regurgitation from 27% at baseline to 22% in the follow-up ($p=0.035$). Regarding the right cardiac sections there were no variations in the degree of tricuspid valve regurgitation (13% of cases with moderate and severe grade at baseline vs 14% in the follow-up, $p=0.774$) and no relevant changes were observed in the systolic function of the right ventricle ($p=0.675$).

Conclusions: SGLT2i may have a beneficial effect on mitral regurgitation. This could be due to the known effects of these drugs in promoting diuresis together with a positive role on adverse remodeling of the left ventricle. Further studies are needed to confirm these preliminary results.

IMAGING CARDIOVASCOLARE 561
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
PROGNOSI (SCOMPENSO CARDIACO)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
BIOMARCATORI DELLO SCOMPENSO (SCOMPENSO CARDIACO)

LONGITUDINAL CHANGES IN ECHOCARDIOGRAPHIC ESTIMATE OF PULMONARY CAPILLARY WEDGE PRESSURE IMPROVE OUTCOME PREDICTION IN CHRONIC HEART FAILURE WITH REDUCED EJECTION FRACATION

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(c) FONDAZIONE TOSCANA "GABRIELE MONASTERIO" - PISA

Background: A novel echocardiographic algorithm for estimating pulmonary capillary wedge pressure (ePCWP) and pulmonary vascular resistance (ePVR) has been recently validated against right heart catheterization, demonstrating optimal diagnostic accuracy and strong prognostic value in a large cohort of patients with the suspicion of pulmonary hypertension, including heart failure (HF) patients with left ventricular ejection fraction (LVEF) <50%.

Purpose: This study aimed to assess the clinical and prognostic relevance of longitudinal changes in ePCWP over time among HF patients with LVEF <50%.

Methods: A total of 254 HF outpatients (mean age 71±12 years, 76% male, 35% with atrial fibrillation, baseline LVEF 34±9%, baseline ePCWP 16±5 mmHg) who underwent two echocardiographic assesments 12±3 months apart were included. Patients were classified into three groups based on ePCWP changes at the second echocardiographic study: increased (n=22, 9%), decreased (n=54, 21%), or stable (ePCWP ≤15 mmHg [n=89, 35%] or >15 mmHg [n=87, 34%] at both assessments). The primary endpoint was a composite of cardiac death or HF hospitalization.

Results: Patients with increased ePCWP exhibited worse NYHA class, more pronounced adverse cardiac remodelling, greater systolic-diastolic dysfunction, and higher neurohormonal activation compared to those with decreased or stable ePCWP (all p<0.05). No significant association was observed between ePCWP changes and HF therapy optimization (including diuretic therapy), although a slight worsening of ePCWP was noted in those with ACEi/ARNI and MRA downtitration (p<0.05). Over a median follow-up of 57 (34-72) months, changes in ePCWP stratified patients according to their risk of the primary endpoint (Log-Rank 42, p<0.001). A 3-mmHg increase in ePCWP retained prognostic significance in the overall cohort (p<0.001) and among patients with persistently elevated ePCWP at both time points (p=0.022). At adjusted regression analysis, both baseline ePCWP values and an increase >3 mmHg over time resulted independent predictors of the primary endpoint (p=0.016 and p=0.024, respectively). A predictive model including basal ePCWP and its longitudinal increase over 3 mmHg outperformed LVEF, natriuretic peptides, and current diastolic dysfunction grading reassessments over time in outcome prediction (p<0.001).

Conclusion: Longitudinal changes in ePCWP provide incremental clinical and prognostic information beyond baseline values in a cohort of HF patients with LVEF <50%.

CardioSic

IMAGING CARDIOVASCOLARE 565
INFARTO STEMI (CARDIOPATIA ISCHEMICA)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)

SUCCESSFUL SURGICAL MANAGEMENT OF LEFT VENTRICULAR PSEUDOANEURYSM FOLLOWING ANTERIOR MYOCARDIAL INFARCTION: A CASE REPORT

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Left ventricular pseudoaneurysm (LVP) is a rare but potentially fatal complication of myocardial infarction (MI), arising from a contained rupture of the ventricular wall. While early post-MI pseudoaneurysms typically warrant urgent surgery due to high rupture risk, management of chronic cases remains debated and must balance rupture risk, thromboembolic potential, and functional impairment.

We describe the case of a 78-year-old man with a history of heavy smoking and chronic obstructive pulmonary disease, admitted for progressive dyspnea and peripheral edema. Electrocardiography revealed signs of a prior anterior infarction. Transthoracic echocardiography showed severe left ventricular (LV) systolic dysfunction (ejection fraction 20%), apical aneurysmal dilatation, and suspected mural thrombus. Coronary angiography documented two-vessel coronary artery disease, including an occluded diagonal branch. Cardiac magnetic resonance confirmed extensive chronic transmural ischemic injury of the anterior and septal walls, with a large pseudoaneurysm and stratified thrombus, and an ejection fraction of 16%.

Given the high risk of thromboembolic events and unfavorable risk–benefit profile of anticoagulation, the patient underwent elective surgical correction. An endoventricular circular patch plasty (Dor procedure) was performed, with successful resection of the pseudoaneurysm and ventricular reconstruction. Postoperatively, recovery was uneventful. Two-week follow-up echocardiography demonstrated restored LV geometry, reduced end-diastolic volume (from 230 to 150 ml), and a substantial improvement in ejection fraction (from 20% to 39%), alongside a reduction of mitral regurgitation.

This case highlights the diagnostic importance of multimodality imaging in differentiating pseudoaneurysm from true aneurysm and guiding management. It further emphasizes that surgical restoration of ventricular geometry through patch plasty can be effective not only in preventing rupture but also in improving systolic performance and functional status, even in chronic presentations without signs of imminent rupture.

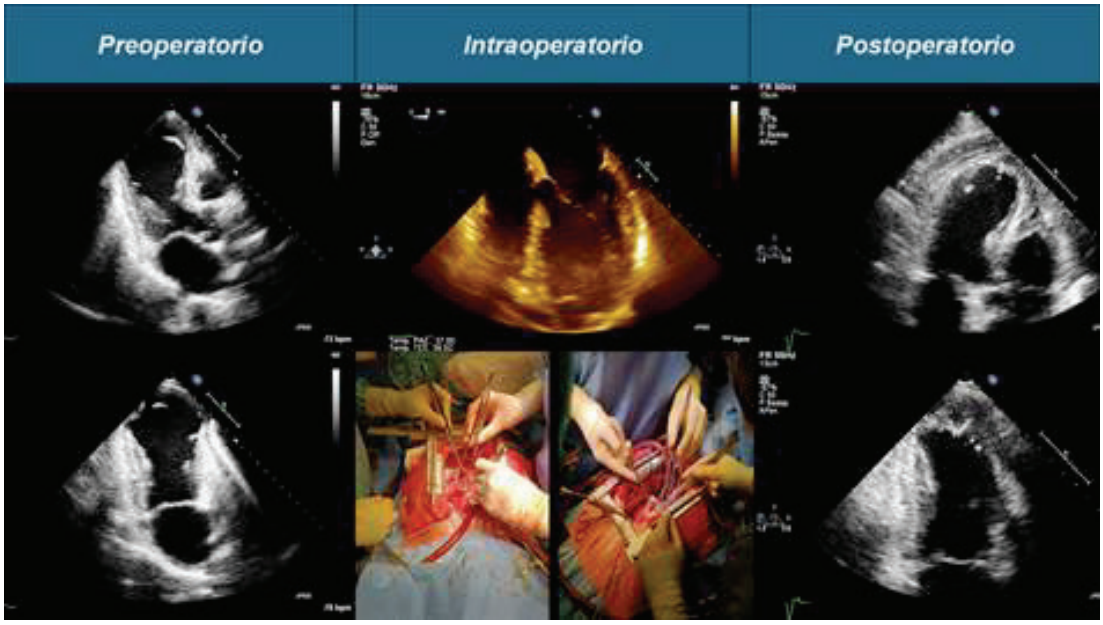


Figure 1

CardioSic

IMAGING CARDIOVASCOLARE 676
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)

SPAP THRESHOLD TO DEFINE PULMONARY CONGESTION IN ACUTE HEART FAILURE IN ABSENCE OF SEVERE TRICUSPID REGURGITATION

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(a) SPEDALI CIVILI DI BRESCIA

Background and aims: Pulmonary and/or peripheral venous congestion defines the clinical diagnosis of acute heart failure (AHF). However, the systolic pulmonary arterial pressure (sPAP) thresholds at which pulmonary (chest x-ray) and inferior vena cava (IVC) congestion occur are not well established. This study aimed to identify a cut-off value of sPAP that reliably indicates AHF.

Methods and results: We retrospectively included 380 consecutive patients hospitalized for AHF at an Italian referral centre, after excluding those with severe tricuspid regurgitation. Receiver operating characteristic (ROC) curve analysis and Youden's J statistic identified a threshold of sPAP ≥ 48.75 mmHg as the most accurate in predicting both pulmonary (sensitivity = 89.9%, specificity = 73%) and peripheral (sensitivity = 88.3%, specificity = 82.5%) fluid overload. The association between this sPAP threshold and both pulmonary and peripheral congestion was confirmed by chi-square testing ($p < 0.001$) and multivariate logistic regression ($p < 0.001$). After adjustment for confounders, sPAP ≥ 49 mmHg was independently associated with all-cause death or heart failure (HF) hospitalization (HR = 1.713; 95% CI 1.127–2.602; $p = 0.012$).

Conclusions: sPAP threshold of 49 mmHg identifies AHF with clinically useful accuracy—pulmonary (chest X-ray) congestion

IMAGING CARDIOVASCOLARE 772
IMAGING MIOCARDICO-PERICARDICO
(MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)
CARDIOMIOPATIE
(MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
ARITMIE VENTRICOLARI (ARITMIE)

PROGNOSTIC ROLE OF QUANTITATIVE ASSESSMENT OF LATE GADOLINIUM ENHANCEMENT FOR THE ESTIMATION OF ARRHYTMIC RISK IN PATIENTS WITH NDLVC

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(b) CARDIOVASCULAR DIVISION, TERRITORIAL SPECIALIST DEPARTMENT, TRIESTE;
(c) CARDIOTHORACOCASCULAR DEPARTMENT, DIVISION OF CARDIOLOGY, TRIESTE

Background: Non-dilated left ventricular cardiomyopathy (NDLVC) is a recently recognized entity in which non-ischemic myocardial scar represents the central pathophysiological substrate. However, the prognostic role of quantitative late gadolinium enhancement (LGE) assessment in NDLVC remains unknown.

Objective: To evaluate the prognostic role of the extent of LGE in predicting ventricular arrhythmic risk in patients with NDLVC.

Methods: We conducted a multicenter, retrospective, observational study enrolling patients with NDLVC from ten Italian referral centers. LGE quantification was performed by two independent observers using semi-automatic software with the 5-SD method. The primary endpoint was the occurrence of sudden cardiac death or major ventricular arrhythmias (MVA).

Results: The cohort included 300 patients (49±17 years; 66% males; left ventricular ejection fraction [LVEF] 55±8%). LGE was detected in 260 patients (87%, septal involvement in 24%). The mean LGE extent was 7.9±8.5% of left ventricular mass, with a median of 3 segments involved (Q1–Q3:1–5) At multivariable Cox analysis, the presence of LGE (HR 1.10, 95% CI 1.06–1.13, P <0.001) was associated with MVA. Additionally, the extent of LGE was strongly and non-linearly associated with MVA (P <0.001 and P =0.029 for non-linearity). Receiver operating characteristic (ROC) analysis identified LGE ≥7% of left ventricular mass (AUC 0.81, 95% CI 0.75–0.86, P <0.001) as the best discriminating cut-off for predicting MVA. Finally, the worst arrhythmic outcome was observed for LGE ≥7% and LVEF<50%, otherwise best outcome was observed for patients with LGE <7%, independently to LVEF (P global = 0.0020).

Conclusions: In NDLVC, LGE quantification provides powerful prognostic information. An LGE burden ≥7% of left ventricular mass accurately identifies patients at high arrhythmic risk.

CardioSic

IMAGING CARDIOVASCOLARE 995
TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT)
(IMAGING CARDIOVASCOLARE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

EXPERIENCE WITH VIRTUAL REALITY FOR PRE-PROCEDURAL ASSESSMENT IN TAVI PATIENTS

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(a) MAGNA GRAECIA UNIVERSITY OF CATANZARO;
(b) DEUTSCHES HERZZENTRUM DER CHARITE', BERLIN, GEMANY

Background: Accurate anatomical assessment is essential for pre-procedural planning in structural heart disease. In this field, advanced 3D imaging could offer improved visualization of complex anatomy and more accurate reconstruction, surpassing the limitations of traditional 2D or multiplanar approaches.

Methods: To optimize procedural planning, cardiac-gated contrast-enhanced CT scans were analyzed using a novel 3D virtual reality platform (VEA) comparing the results with two widely used reconstruction tools: 3Mensio and Horos. Two cardiac imaging experts examined 50 CT scans from patients with severe aortic stenosis referred for transcatheter aortic valve implantation (TAVI).

Results: 50 consecutive patients were included. The aortic annulus and LVOT were analyzed with VEA and standard CT software. Annular and LVOT measurements obtained with VEA were strongly correlated with those derived from standard CT analysis. The intraclass correlation coefficient (ICC) confirmed excellent consistency for annular measurements (ICC = 0.87 for single measures, 0.93 for average measures), while

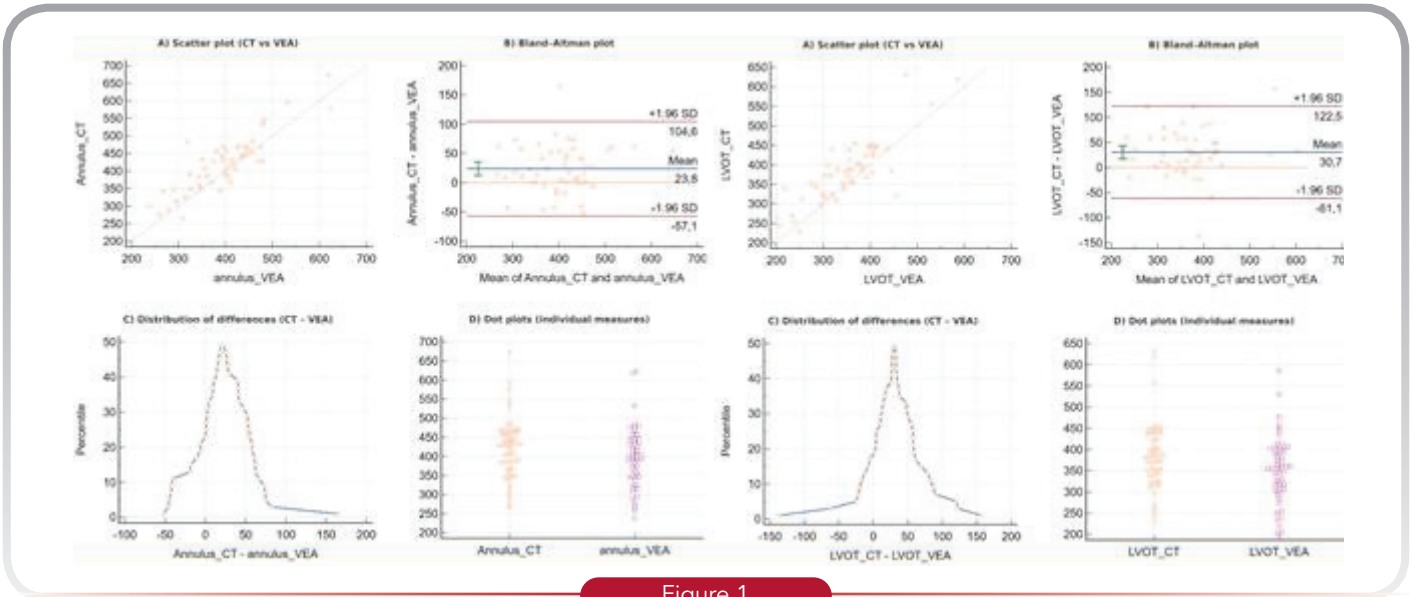


Figure 1

the concordance correlation coefficient indicated very good overall agreement (CCC = 0.83, 95% CI 0.73–0.90). Similarly, LVOT measurements obtained with VEA showed strong correlation with CT values, with good consistency (ICC = 0.83 for single measures, 0.90 for average measures), and good overall agreement (CCC = 0.77, 95% CI 0.64–0.86). (Figure)

Conclusions: VEA-derived annular and LVOT measurements showed strong agreement with standard CT, confirming their reliability for TAVI planning. This novel 3D software provides accurate, patient-specific reconstructions of the aortic root and surrounding structures, that may optimize valve sizing, improve procedural safety and enhance procedural outcomes.

IMAGING CARDIOVASCOLARE 37
SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IPERTENSIONE POLMONARE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)

DERIVATION OF A NEW ECHOCARDIOGRAFIC MODEL FOR NON-INVASIVE ESTIMATION OF PULMONARY CAPILLARY WEDGE PRESSURE

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Introduction: Pulmonary capillary wedge pressure (PCWP) is crucial for assessing left ventricular filling pressures and guiding heart failure management. Traditionally measured invasively via right heart catheterization (RHC), its risks have driven interest in non-invasive echocardiographic alternatives. Despite several proposed formulas, limitations in accuracy or complexity persist, warranting improved predictive models.

Purpose: This study aimed to evaluate the correlation between invasively measured PCWP and echocardiographic parameters, assess the accuracy and correlation of existing non-invasive formulas, and derive a novel predictive model for PCWP estimation.

Methods: A prospective, single-center study was conducted on 72 patients undergoing RHC for heart failure, pulmonary arterial hypertension (PAH), and post-heart transplant follow-up. All participants underwent echocardiographic evaluation within 24 hours of RHC (30 minutes in the acute setting). Several established PCWP estimation formulas were analyzed in terms of accuracy and correlation with the collected data. Excluding patients with PAH, in whom pulmonary pressures do not reflect increased left-sided filling pressures, and those in whom the peak tricuspid regurgitation gradient (pTRG) could not be sampled, a novel model integrating pTRG and the E/DT ratio was derived in 47 patients (65% of the population) through forward stepwise linear regression.

Results: The proposed MoliWP formula (0.35 x pTRG + 9 x E/DT) demonstrated excellent predictive accuracy (AUC: 0.960, $p<0.001$) and a strong correlation with invasive PCWP (Pearson $R=0.919$, $p<0.001$) in the derivation cohort. Existing formulas showed varying accuracy and correlation depending on population characteristics. Echocardiography also strongly correlated with invasive hemodynamic parameters, including right atrial pressure ($R=0.869$), cardiac index ($R=0.836$), pulmonary vascular resistance ($R=0.821$), systolic pulmonary artery pressure ($R=0.936$), and mean pulmonary artery pressure ($R=0.878$), the latter derived from the mean gradient of tricuspid regurgitation. All findings were statistically significant ($p<0.001$).

Conclusions: This pilot study introduces the MoliWP formula as a promising approach for non-invasive PCWP estimation, demonstrating strong correlation and high predictive accuracy within the derivation cohort. Its key strength lies in the use of easily obtainable parameters, making it accessible via standard transthoracic echocardiography. However, meticulous sampling and operator expertise remain crucial to avoid misestimations. External validation is required to confirm its broader applicability. Future research should focus on multicenter validation, assessment in acute and chronic settings, and integration with advanced imaging techniques and artificial intelligence to enhance non-invasive hemodynamic profiling.

IMAGING CARDIOVASCOLARE 534
INTERVENTISTICA STRUTTURALE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE) (IMAGING CARDIOVASCOLARE)
PATOLOGIA DELLA VALVOLA TRICUSPIDE (VALVULOPATIE)

PLATYPNEA-ORTHODEOXIA SYNDROME DUE TO "STRETCHED" PATENT FORAMEN OVALE AFTER TRANSCATHETER TRICUSPID EDGE-TO-EDGE REPAIR

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Introduction: Platypnea–orthodeoxia syndrome (POS) is an uncommon condition characterized by objective evidence of hypoxemia when upright, defined by a drop in PaO2 > 4 mmHg or SaO2 >5%, that resolves in the supine position. The most frequent underlying mechanism is the presence of a right-to-left interatrial shunt, often subclinical until changes in intracavitary pressure gradients or atrial geometry occur - as in the case presented herein.

Case presentation: We report the case of an 82-year-old woman with a history of prior coronary artery bypass grafting (CABG) presenting with severe tricuspid regurgitation due to annular dilation, who successfully underwent percutaneous transcatheter edge-to-edge repair (T-TEER) with implantation of two Triclip G4-XTW devices between septal-anterior leaflet and septal-posterior leaflet, with a residual mild tricuspid regurgitation and a mean anterograde transvalvular gradient of 2 mmHg. After the procedure, the patient developed sudden desaturation, refractory to conventional oxygen therapy and non-invasive ventilation. Clinical and echocardiography examination was unremarkable, with normal blood pressure, no signs of lung congestion, normal laboratory findings, and no evidence of pneumonia, pulmonary embolism or other acute lung conditions on chest CT. Notably, a marked reduction in oxygen saturation was observed - from 92% in the supine position to 86% while seated on 4 L/min of oxygen - raising clinical suspicion of POS. A transesophageal echocardiography was performed and revealed a large patent foramen ovale (PFO) in the setting of a previously known septum primum aneurism, now associated with a significant right-to-left shunt under resting conditions. In light of these findings, we hypothesized that the traction exerted by the Triclip devices on the septal leaflet, and consequently on the interatrial septum, might have resulted in a "stretched" and opened PFO causing right-to-left shunt and subsequent desaturation. In this context, the dynamic changes in saturation with posture are consistent with the diagnosis of POS. Percutaneous PFO closure was performed using a 40 mm Amplatzer™ Multifenestrated Septal Occluder, which was correctly positioned. Post-procedural imaging confirmed a marked reduction in right-to-left shunting, with progressive clinical improvement and significant reduction of the desaturation episodes.

Discussion: Since the first reported case in 1949, there has been a series of documented cases with attempts to define precipitants for POS in the absence of a significant right-to-left pressure gradient. It is known that a prominent Eustachian valve or a highly mobile

aneurysmal septum may contribute to preferential streaming across the defect in the absence of an interatrial pressure gradient (flow-related shunting). This complication has been described as an effect of mediastinal geometry distortion following thoracic surgery, and more recently also following trancatheter aortic valve intervention. To the best of our knowledge, this is the first case reporting a new right-to-left shunt through PFO after a T-TEER procedure. We speculate that the atrial geometric alteration after T-TEER, leading to a clinically significant right-to-left shunt through PFO, was the cause of the sudden-onset POS. This case identifies POS as a novel complication after T-TEER. Pre-existing interatrial abnormalities such as PFO or septal aneurysm may predispose to clinically significant right-to-left shunting after atrial geometric changes. Awareness of this potential complication is essential, as timely recognition and closure can promptly restore oxygenation.

IMAGING CARDIOVASCOLARE 1063
GRAVIDANZA E CARDIOPATIA
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE
(IMAGING CARDIOVASCOLARE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

PERIPARTUM CARDIOMYOPATHY:ROLE OF GLOBAL LONGITUDINAL STRAIN AND MYOCARDIAL WORK

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Background: Peripartum cardiomyopathy (PPCM) is a rare but potentially life-threatening complication occurring toward the end of pregnancy or in the months following delivery, characterized by sign and symptoms of heart failure and reduced left ventricular (LV) ejection fraction. While approximately 50% of women experience a recovery of cardiac function, this condition remains associated with significant morbidity and mortality. To date, comprehensive knowledge of the clinical and echocardiographic predictors of LV function recovery is limited and there is a significant lack of data on the role of myocardial mechanics and performance parameters.

Methods: We retrospectively included 21 consecutive women (mean age 41,4 ±9.0 years) with confirmed diagnosis of PPCM enrolled in the Italian multicenter, observational registry of PPCM (NCT05878041) coordinated by Federico II University Hospital (Naples, Italy). Demographics were collected and myocardial mechanics were assessed using speckle tracking-derived global longitudinal strain (GLS), global work index (GWI), global constructive work (GCW), global wasted work (GWW), and global work efficiency (GWE). Patients were categorized according to the subsequent LV ejection fraction (LVEF): group A, LVEF≤35%; group B, 35%<LVEF<50%; group C, LVEF≥50%. The study population was compared with 12 healthy women matched for age (group D).

Results: LV recovery was observed in 10 women (48%, group C), with a mean LVEF of 55±3%. In 8 patients (38%) mild dysfunction still was observed (mean LVEF 45±3%, group B), while 3 patients (14%, group A) had persistent severe LV dysfunction (mean LVEF 26±7%), requiring cardioverter-defibrillator implantation. The three groups significantly differed for LV end-diastolic diameter (62.7 ± 9.5 vs 55.4 ± 4.4 vs 47.7 ±2.5 mm respectively in group A vs group B vs group C, p=0.001), LV volume (209.7 ± 110.6 vs 145.2 ±34.3 vs 97.6 ± 19.0 ml respectively, p<0.001), TAPSE (15.3 ± 5.8 vs 22.7 ± 2.0 vs 23.5 ± 2.5 mm respectively, p=0.002). Speckle tracking analysis revealed a significant improvement in myocardial performance from group A to C: GLS (9.7 ±5.4 vs 14.3 ± 2.9 % vs 19.9 ±1.2% respectively, p<0.001), GWI (854±674 vs 1228±390 vs 1869±466 mmHg%, p<0.001), GCW(1123±699 vs 1698±444 vs 2210 ± 485 mmHg%, p=0.001), GWW (166±81 vs 301±188 vs 100±33 mmHg%, p=0.018), GWE (84±10 vs 84±7 vs 95±2%, p=0.001). Additionally, atrial strain improved across the different groups (17±11 vs 28±8 vs 41±4%, p<0.001), even though left atrial volume showed no significant difference.

Conclusions: GLS and myocardial work measurements provide a more precise way to characterize myocardial performance in patients with PPCM who have experienced either partial or complete systolic recovery, offering a more comprehensive evaluation of systolic function.

IMAGING CARDIOVASCOLARE 1001
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE)
(IMAGING CARDIOVASCOLARE)
GESTIONE DELLA COMPLICANZE PM / ICD (ARITMIE)
ENDOCARDITI (VALVULOPATIE)

ENDOCARDITE CIED-RELATA: UN APPROCCIO MULTIDISCIPLINARE COMPLESSO

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Una donna di 62 anni, portatrice di pacemaker con stimolazione hissiana per pregresso blocco atrio-ventricolare di III grado e blocco di branca sinistro, si presentava in Pronto Soccorso per comparsa di astenia ingravescente e puntate febbrili ricorrenti con brivido. Gli esami ematici mostravano anemizzazione e rialzo degli indici di flogosi, mentre le emocolture eseguite al picco febbrile risultavano negative. Veniva pertanto iniziata terapia antibiotica empirica e seguiva l'esecuzione di ecocardiogramma transtoracico con riscontro di voluminosa massa peduncolata e mobile adesa all'elettrocatetere ventricolare, compatibile con vegetazione endocarditica. Tale reperto veniva confermato all'ecocardiogramma transesofageo, che evidenziava inoltre forame ovale pervio a livello del setto interatriale con shunt destro-sinistro moderato già in condizioni basali. Nel corso della degenza si assisteva ad un progressivo deterioramento clinico con incremento della proteina C-reattiva (344 mg/dl), della procalcitonina (19.8 βg/L) ed ulteriore anemizzazione (Hb 8.3 g/dl). Alla TC toraco-addominale compariva inoltre tromboembolia settica, mentre la coronaro-TC non mostrava lesioni a carico dei vasi coronarici epicardici. Infine, all'interrogazione del dispositivo, i parametri elettrici risultavano nella norma con sottostante blocco atrio-ventricolare completo. Secondo i criteri di Duke modificati il quadro clinico era compatibile con endocardite CIED-relata su elettrocatetere e complicata da embolizzazione settica (1 criterio maggiore e 3 criteri minori) con emocolture negative (EBCN). Venivano quindi eseguiti test sierologici per i principali patogeni associati a endocardite a emocolture negative, risultati anch'essi negativi. Il peggioramento dei valori clinico-laboratoristici nonostante terapia antibiotica ad ampio spettro e l'evidenza di embolizzazione settica costituivano due indicazioni ad intervento urgente (entro 3-5 giorni). Secondo le attuali linee guida l'approccio terapeutico di prima scelta sarebbe stato quello di tromboaspirazione della vegetazione con estrazione degli elettrocateteri per via percutanea. Tuttavia, questo tipo di procedura avrebbe determinato un elevatissimo rischio tromboembolico in relazione alla pervietà del forame ovale, con possibile passaggio di emboli settici nel circolo sistemico. Dopo discussione collegiale, si era deciso di eseguire in regime d'urgenza l'intervento cardiochirurgico di chiusura del forame ovale, impianto di pacemaker bicamerale in ipocondrio sinistro con elettrocateteri epicardici e rimozione di cateteri endocardici. Nonostante le linee guida raccomandino l'attesa di almeno 14 giorni dalla rimozione del dispositivo infetto prima del reimpianto, mediante un bridge con pacing transvenoso temporaneo, si era deciso di evitare tale passaggio e di reimpiantare direttamente gli elettrocateteri epicardici

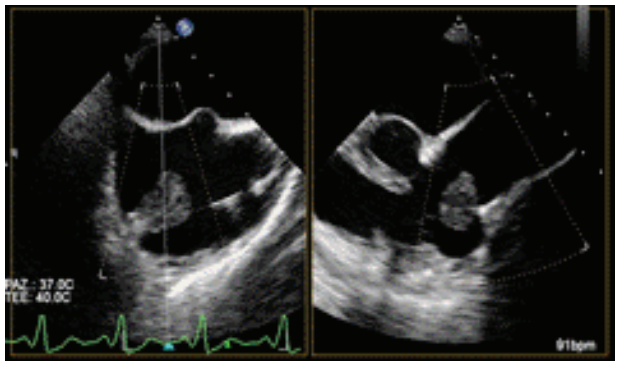


Figura 1

poiché la Paziente era pacamker-dipendente in blocco atrio-ventricolare completo con emocolture negative ed assenza di tessuto visibilmente infetto. Tale caso clinico mostra la complessità gestionale delle endocarditi CIED-relate e la necessità di un approccio multidisciplinare mediante la collaborazione di tutto l'Endocarditis Team, grazie al quale possono essere affrontati tutti i punti cruciali del management diagnostico-terapeutico, che spesso richiede un iter individualizzato.

IMAGING CARDIOVASCOLARE 865
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)

WHEN RARITIES COLLIDE: UNUSUAL ASSOCIATIONS OF RARE DISEASE

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Case report: A 21-year-old female patient was admitted to the Hospital with nausea and fatigue appeared immediately after a verbal and physical aggression. She reported a story of pediatric long QT and a family medical history of long QT syndrome.
The electrocardiogram (ECG) recorded negative T waves from V1 to V4 (figure n.1). The blood sample analysis revealed a slight rise in TNI (peak 0,7 ng/ml, range of normality 0 - 0.034). The patient was transferred to the Intensive Cardiac Care Unit, where a Transtoracic Echocardiogram (TTE) showed moderate systolic dysfunction with a left ventricular ejection fraction (LVEF) of 45%, hypercontractility of the apical segments and mid-basal segments akinesia associated with moderate functional mitral regurgitation. Global longitudinal strain was abnormally low at −22% and was mainly impaired in the basal segments (figure n.2). A cardiac magnetic resonance imaging (MRI) showed native T1 and T2 increased in relation to edema of the basal segments, confirming the diagnosis of Reverse Takotsubo. We observed a prolonged corrected QT interval at 499 ms and a mild hypokalemia, which was corrected. During the rest of hospitalization no rhythm disorder was recorded, cardiac biomarker levels decreased and we observed the normalization of the T waves. On the six day of the hospitalization, TTE revealed an improvement in basal wall contraction (LVEF 58%) and a reduction of mitral regurgitation. The patient left the hospital in good clinical condition with a scheduled follow-up visit. Take home message: Reverse Takotsubo syndrome (rTTS) is a variant of the Takotsubo syndrome (TTS) characterized by the basal akinesis/hypokinesis associated with apical hyperkinesis.
The assocation between Congenital Long QT and TTS is rare and few cases are reported in the literature. The prevalent arrhythmic complication described was torsade de pointes. Diagnostic criteria of TTS include transient regional wall motion abnormalities, absence of angiographic evidence of obstructive coronary disease, presence of ECG abnormalities or troponin elevation and exclusion of pheochromocytoma or myocarditis. In this case the age of the patient, the topography of the wall motion abnormality and the MRI-results were not evocative of an ischemic process and we diagnosed a reverse TTS without using coronary angiography. Moreover, the echocardiographic follow-up of wall motion abnormalities, LVEF and strain pattern allowed us to confirm the rTTS by showing a full recovery.



Figure 1

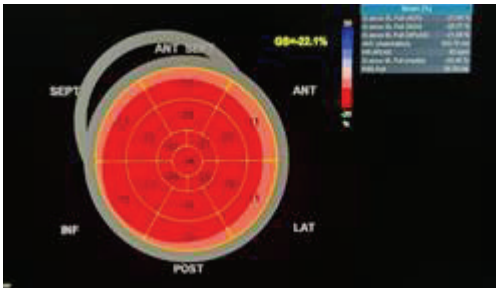


Figure 2

IMAGING CARDIOVASCOLARE 252
ENDOCARDITI (VALVULOPATIE)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE) (IMAGING CARDIOVASCOLARE)
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE (IMAGING CARDIOVASCOLARE)

SURGICAL VERSUS MEDICAL MANAGEMENT IN PATIENTS WITH INFECTIVE ENDOCARDITIS ACCORDING TO CURRENT GUIDELINES: CASE SERIES

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Introduction: We report three cases of patients hospitalized for Infective Endocarditis (IE) assessed with a multimodality imaging: two cases of left- sided IE, one on the Native Valve IE (NVE) and one on Prosthetic Valve Endocarditis (PVE), and one case of right-sided IE in People Who Inject Drugs (PWID).

Case 1: A 35-year-old patient showed persistent fever after antibiotic therapy with Ampicillin and Ceftriaxone; chest X-ray showed no inflammatory consolidation. Staphylococcus Lugdunensis was isolated from blood cultures and treated with Cefazolin. Bicuspid aortic valve (BAV) and severe aortic regurgitation (AR) by TransThoracic Echocardiography (TTE) and Transoesophageal Echocardiography (TOE), were detected. Furthermore, two vegetations one on the aortic valve (9 x 12 mm) and one on the anterior mitral leaflet (AML;14 x 7 mm) were also appreciated. Total body CT revealed splenic infarct. Considered the severity of AR in BAV, the distal embolization and the large size of vegetation ≥ 10 mm, all ESC class I indications for surgery, the patient underwent surgical aortic valve replacement and excision of mitral vegetation.

Case 2: A 64-year-old patient who underwent mitral valve surgery for previous IE in association with severe mitral regurgitation, came to our attention for recurrent fever eight months after surgery. Enterococcus Faecalis was isolated from blood cultures and treatment with Ampicillin and Ceftriaxone was started. TOE showed severe dysfunction of bioprosthetic mitral valve with elevated mean transprosthetic gradient (22 mmHg). Multiple vegetations on the prosthetic valve, the biggest one 13 x 10 mm, were also depicted. According to the recommendation of the recent guideline on IE, the patient was scheduled for urgent surgery to prevent new embolic events.

Case 3: A 41-year-old patient with previous bioprosthetic tricuspid valve implantation for right-sided IE in PWID, came to our attention for dyspnea and fever. TTE revealed a 16 mm vegetation on prosthetic leaflet. From blood cultures Meticillin Sensible Staphylococcus Aureus was isolated leading to diagnosis of recurrent endocarditis. The patient was successfully treated with antibiotic therapy (Vancomycin, Gentamycin and Penicillin) and progressive reduction of the dimension of the vegetation was appreciated during echocardiographic follow up.

Discussion: IE is often considered a challenging clinical condition characterized by high morbidity and mortality. Our case series confirm that multimodality imaging plays a crucial role in diagnosis and in the choice of the appropriate therapeutic (medical/surgical) treatment of IE. Size of the vegetations, severity of valvular dysfunction and complications such as abscess or pseudoaneurysm, are fundamental information to select patient requiring cardiac surgery. An aggressive surgical strategy has been associated to favorable outcome in two patients. Conversely, in right-sided IE in PWID case, antibiotic therapy has been the correct therapeutic strategy to avoid cardiac surgery.

IMAGING CARDIOVASCOLARE 759
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)

SPECKLE TRACKING ECHOCARDIOGRAPHY DERIVED RIGHT VENTRICLE-PULMONARY ARTERY COUPLING AND ADVERSE IN-HOSPITAL EVENTS AFTER CARDIAC SURGERY

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Background: Right Ventricle-Pulmonary Artery (RV-PA) coupling plays a critical role in the pathophysiology of cardiovascular diseases. RV-PA uncoupling occurs when right ventricular (RV) contractility cannot increase to match RV afterload. Surgical procedures such as cardiopulmonary bypass, aortic cross-clamping, and cardioplegia can induce variations in RV afterload potentially leading to RV dysfunction whose clinical and prognostic implications are still unknown.

Purpose: Our study aims to evaluate the prognostic value of RV-PA coupling in patients scheduled for cardiac surgery.

Methods: 108 patients (mean age 67.58 ± 9.03 years; 75.9% males) underwent cardiac surgery in our referral center [coronary artery bypass grafting (CABG 41), mitral valve replacement (MVR 11), aortic valve replacement (AVR 11) and combined surgery 45] were retrospectively enrolled. Study population was divided into two subgroups based on the presence (62 patients) or absence (46 patients) of adverse in-hospital events, defined as a composite endpoint including new-onset of atrial fibrillation (AF), acute or worsening heart failure (HF), pericardial effusion, stroke or transient ischemic attack (TIA), acute coronary syndrome (ACS) and in-hospital mortality. A comprehensive echocardiographic evaluation before surgery was performed, with a thorough assessment of left ventricular systolic and diastolic function, as well as valvular heart disease. TAPSE, RVs', RV global longitudinal strain (RV GS), and RV free wall longitudinal strain (RVFWLS) by Speckle Tracking Echocardiography (STE) were used to assess RV systolic function. TAPSE/PAPs and RVFWLS/PAPs ratios have been calculated and considered a not invasive index of RV-PA coupling. Continuous normally distributed variables are compared by using the Student t-test. A probability value < 0.05 is considered statistically significant. Statistical analyses were performed with SPSS version 25 (IBM Corporation, Somers, New York).

Results: Patients with adverse in-hospital events exhibited baseline comparable values of standard RV systolic function parameters (TAPSE: 20.60 ± 3.44 vs 21.15 ± 3.20, p-value: 0.39; RVS':12.32 ± 2.80 vs 13.04 ± 1.95, p-value: 0.25), reduced values of RV systolic function assessed by STE (RVGS: 17.43 ± 4.87 vs 19.29 ± 4.60, p-value: 0.15; RVFWLS: 19.87 ± 6.74 vs 23.25 ± 6.24, p-value: 0.06). Noteworthy, although no

difference was detected in TAPSE/PAPs ratio (0.70 ± 0.19 vs 0.75 ± 0.29, p-value: 0.33); RVFWLS/PAPs ratio was significantly reduced in patients with adverse in-hospital events (0.65 ± 0.17 vs 0.79 ± 0.29, p-value: 0.05).

Conclusions: Preoperative non-invasive assessment of RV-PA coupling by STE in patients undergoing cardiac surgery may provide valuable insights for early identification of high-risk patients, to optimize treatment strategies and to stratify prognosis.

IMAGING CARDIOVASCOLARE 854
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT) (IMAGING CARDIOVASCOLARE)

MDCT AND AORTIC STENOSIS: THE EMERGING POTENTIAL OF BRIDGING MORPHOLOGY AND SEVERITY GRADING

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Background: Echocardiography is the reference standard for grading aortic stenosis (AS) but may yield discordant severity estimates in up to 40% of patients. Hybrid Doppler–MDCT approaches, incorporating planimetric LVOT measurements, may improve diagnostic agreement; however, validation against invasive hemodynamics and the role of LVOT morphology remain underexplored.

Objectives: To compare hybrid and corrected MDCT-derived aortic valve area (AVA) with standard echocardiographic AVA for diagnosing severe AS, assess correlation with invasive and non-invasive parameters, and evaluate the impact of LVOT size on severity grading.

Methods: We retrospectively studied 307 patients with normal-flow, high-gradient calcific AS who underwent echocardiography, MDCT, and cardiac catheterization. AVA was calculated using: (1) echocardiographic LVOT diameter; (2) hybrid Doppler–MDCT planimetric LVOT area; and (3) corrected echocardiographic LVOT diameter (×1.13). Agreement, correlation, and diagnostic performance were assessed using Bland–Altman, Pearson correlation, ROC analysis, and McNemar's test. Subgroups defined by diagnostic concordance and by LVOT size on MDCT were compared using ANOVA.

Results: Hybrid AVA correlated strongly with echocardiographic AVA ($r=0.749$, $p<0.001$), with a mean difference of $+0.11\pm0.15$ cm². When used alongside echocardiography, the hybrid method increased concordant severe AS classification by 8%, without loss of accuracy in invasive correlation. Corrected AVA performed significantly worse, yielding more discordant classifications. LVOT size was associated with significant variability in AVA and Doppler velocity index, independent of flow status.

Conclusions: Hybrid MDCT-derived AVA is diagnostically equivalent to echocardiography and can improve concordance in selected patients. LVOT size influences key echocardiographic parameters and may warrant tailored diagnostic thresholds. Selective integration of hybrid assessment into multimodality imaging pathways could enhance accuracy and confidence in AS grading.

CardioSic

IMAGING CARDIOVASCOLARE 363
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
ECO-CONTRASTO (IMAGING CARDIOVASCOLARE)

A GIANT PSEUDOANEURYSM OF THE LEFT VENTRICLE

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Background. Left ventricular (LV) pseudoaneurysm is an uncommon but life-threatening mechanical complication of myocardial infarction (MI) that results from a contained rupture of the ventricular free wall.

Case. We report a 70-year-old woman who, about one month after a subacute MI treated with percutaneous revascularization of a totally occluded right coronary artery, developed a giant LV pseudoaneurysm involving the basal and mid-segments of the inferior septum and the inferior wall.

Imaging. Transthoracic echocardiography (TTE) revealed a large, saccular cavity with a narrow neck communicating with the LV, consistent with a pseudoaneurysm. Parasternal long- and short-axis views demonstrated disruption of the inferior septal and inferobasal walls with the rupture contained by localized pericardial adhesions.
The lesion extended to the posteromedial mitral valve apparatus, causing severe mitral regurgitation.

Management and outcome. The patient underwent surgical repair with LV ventriculoplasty and mitral valve replacement using a bioprosthesis, with favorable early postoperative course.

Conclusion. This case highlights the diagnostic value of TTE in promptly identifying LV pseudoaneurysm after MI, especially when a narrow-necked cavity and contained rupture are present, and underscores the need for timely surgical management when the mitral apparatus is involved or significant regurgitation coexists.

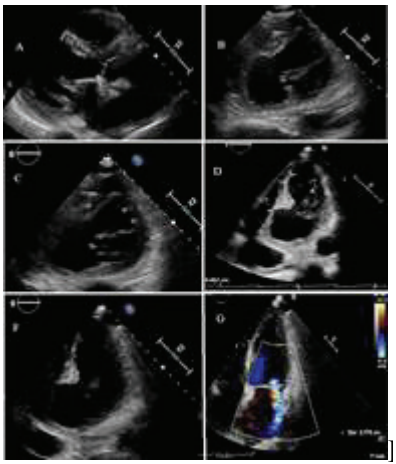


Figure 1

Figure legend
Transthoracic echocardiographic images showing: (A) parasternal long-axis view of the left ventricle, left atrium, and proximal ascending aorta. (B, C) Parasternal short-axis views depicting the giant pseudoaneurysm involving the inferior portion of the septum and the inferior LV wall, with extension to the posteromedial mitral valve apparatus. A narrow neck is visible (white arrow); the ventricular free-wall rupture is contained by localized pericardial adhesions (double white arrow). (D, F) Apical four-chamber views showing the pseudoaneurysm of the mid and basal inferior septum. (G) Color Doppler demonstrating severe mitral regurgitation due to disruption of the mitral valve apparatus.

IMAGING CARDIOVASCOLARE 396
CARDIOPATIE CONGENITE NELL´ADULTO (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE) (IMAGING CARDIOVASCOLARE)
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE (IMAGING CARDIOVASCOLARE)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)

CONGENITAL COMPLEX: BAV + AORTO-ATRIAL FISTULA + SINGLE CORONARY

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Background: The coexistence of a bicuspid aortic valve (BAV), an aorto-atrial/ventricular fistula, and a single coronary artery is exceptionally rare. Multimodal imaging is pivotal for anatomical definition, hemodynamic assessment, and surgical planning.

Case & Methods: A 35-year-old man presented with recurrent palpitations. Transthoracic echocardiography showed eccentric left-ventricular hypertrophy with mild systolic dysfunction, suspected ventricular septal defect with bidirectional shunt, and right-ventricular (RV) dilation with preserved function. The trans-shunt gradient was 45 mmHg; RV pressure was 75 mmHg with systemic arterial pressure of 120 mmHg. The aortic valve was bicuspid without stenosis or regurgitation. Transesophageal echocardiography demonstrated aneurysmal dilation of the right coronary sinus with a discontinuity producing a left-to-right shunt into the right atrium (a). Contrast-enhanced coronary CT angiography with 3D reconstruction confirmed a right-sided aorto-atrial/ventricular fistula with a 17 mm juxta-tricuspid communication and ectasia of the right coronary sinus (b-d). Coronary angiography revealed a single coronary artery with left dominance, a high-origin left main, and absence of the right coronary artery (e - functionally replaced by a diminutive branch from the mid-LAD). There were no clinical, laboratory, or imaging signs of infective endocarditis.

Intervention & Outcomes: Surgical aortotomy with closure of the anterior coronary-sinus perforation was performed. Intraoperative TEE confirmed complete shunt closure; mild aortic regurgitation was noted post-repair. At 3 and 12 months, echocardiography showed normalization of chamber size and function; BAV regurgitation was stable at a moderate grade, and myocardial perfusion SPECT was normal. Extended genetic testing (including NOTCH1, SMAD6, GATA5) was negative.

Conclusions: Multimodal imaging (TTE/TEE, CT angiography, and coronary angiography) enabled accurate characterization of complex congenital anomalies and guided successful surgery, with reversal of adverse remodeling. Given persistent BAV and a single coronary artery, structured follow-up—and when appropriate, family screening—is recommended.

Figure legend
a. Transesophageal echocardiography: aneurysmal dilation of the right coronary sinus with a fistulous tract and a continuous left-to-right jet into the right atrium; bicuspid aortic valve morphology without stenosis. b. Coronary CT angiography with 3D reconstruction: single coronary artery with high-origin left main and left-dominant circulation. c. CT angiography (axial/oblique planes): 17-mm juxta-tricuspid communication from the ectatic right coronary sinus to the right-sided chambers; high-origin common trunk evident. d. CT angiography (MPR): course of the right-sided aorto-atrial/ventricular fistula relative to the tricuspid annulus and aortic root. e. Coronary angiography: absent right coronary ostium; left-dominant system with a diminutive branch from the mid-LAD supplying the right territory.

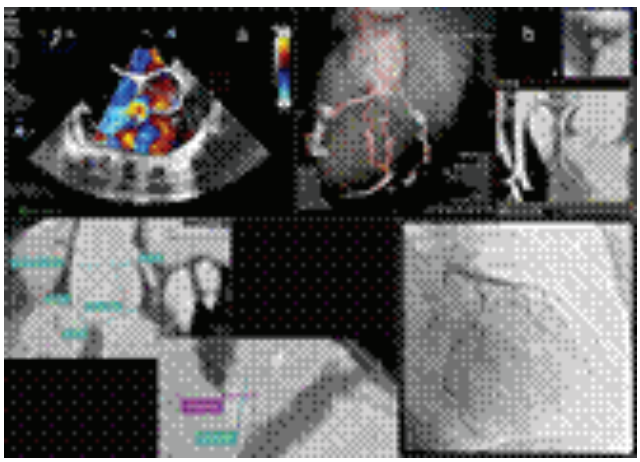


Figure 1

IMAGING CARDIOVASCOLARE 423
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE)
(IMAGING CARDIOVASCOLARE)
ENDOCARDITI (VALVULOPATIE)
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)

MITRAL CORDAL VEGETATION WITH AORTIC IE INVOLVEMENT

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A 77-year-old man with prior aortic valvuloplasty was admitted for persistent fever (38.5 °C), a positive SARS-CoV-2 swab, and preliminary blood cultures growing Streptococcus spp., raising suspicion of infective endocarditis (IE). Transthoracic echocardiography showed severe aortic stenosis (mean gradient 42 mmHg) and a mobile valvular mass. Empirical intravenous ceftriaxone 2 g once daily plus daptomycin 500 mg once daily was initiated while awaiting definitive cultures and transesophageal echocardiography (TEE). TEE revealed a 16 × 5 mm vegetation on the left coronary cusp and a 7 × 3 mm vegetation on the posterior mitral leaflet. Final cultures isolated Streptococcus salivarius; ceftriaxone was continued for three weeks. On day 21, repeat TEE identified a new 15 × 3 mm vegetation attached to the chordae of the posteromedial papillary muscle. Given the rarity and high embolic/rupture risk of chordal vegetations—with potential for abrupt severe mitral regurgitation—expedited surgery was undertaken. The patient underwent aortotomy, left atriotomy, excision of the infected mitral chord, and aortic valve replacement with a 21-mm Magna EASE bioprosthesis. The postoperative course was complicated by a pericardial effusion requiring drainage on day 2. At discharge, the patient was afebrile with sterile blood cultures, preserved prosthetic function, and planned infectious-disease and cardiology follow-up. This case underscores the value of serial TEE to detect dynamic IE complications and supports early surgical intervention when chordal involvement emerges, even in the setting of concomitant COVID-19 infection.

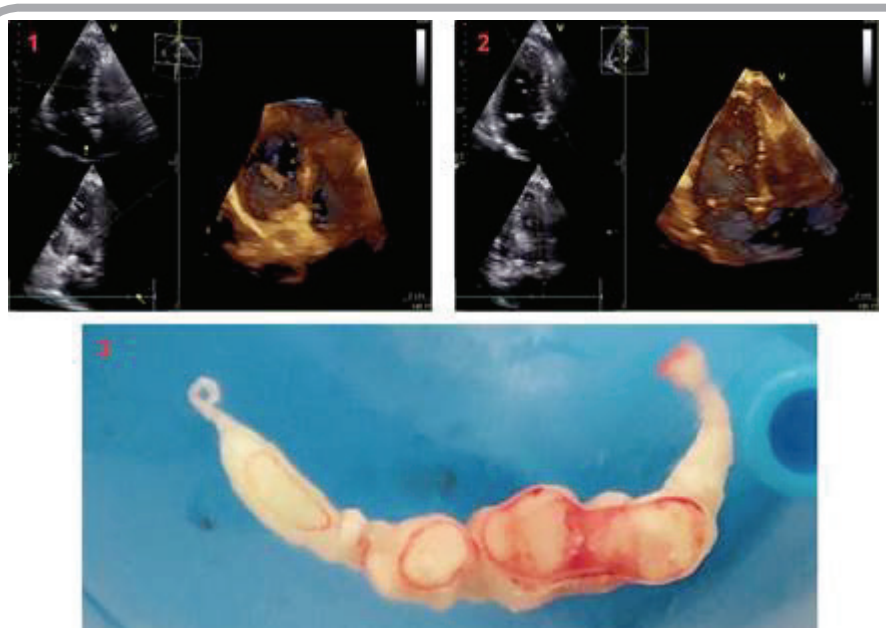


Figure 1. (TEE, apical 5-chamber). A) 16 × 5 mm vegetation on left coronary cusp; B) 7 × 3 mm vegetation on posterior mitral leaflet. 2. (TEE, apical 5-chamber; day 21). A) New 15 × 3 mm vegetation on chordae of the posteromedial papillary muscle; B) marked mobility of the lesion. 3. (Surgery). A) Excised infected mitral chordae (posteromedial papillary muscle); B) specimen detail.

Figure 1

IMAGING CARDIOVASCOLARE 437
ECOSTRESS (IMAGING CARDIOVASCOLARE)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)

CLINICAL IMPLICATIONS OF EXERCISE STRESS ECHOCARDIOGRAPHY IN A CONTEMPORARY COHORT: A SINGLE-CENTER PROSPECTIVE STUDY

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Introduction: Exercise Stress Echocardiography (ESE) is a cornerstone in the functional assessment and risk stratification of patients with suspected or known coronary artery disease (CAD). Nevertheless, its diagnostic accuracy is often challenged by technical limitations, particularly when the analysis relies exclusively on regional wall motion abnormalities (RWMA). In recent years, growing attention has been given to the addition of other echocardiographic parameters that may capture complementary aspects of myocardial function and improve the clinical utility of ESE. Among these, the concept of "force" has emerged as a promising marker of left ventricular contractile reserve (LVCR).

Aims: The study aimed to characterize the contemporary population of patients undergoing clinically indicated ESE, examine the incidence of a positive test result and the incidence of major adverse cardiovascular events (MACE), and evaluate the clinical implications associated with conventional and novel stress-induced echocardiographic markers, specifically the role of change in force in predicting MACE, both in the entire population and in patients with CAD.

Methods: We conducted a prospective, single-center study including 353 patients referred for clinically indicated ESE. Data were collected on baseline characteristics and follow-up outcomes. Standard echocardiographic parameters and stress-induced changes in LV force were assessed. Force was calculated as the ratio between systolic blood pressure (SBP) and end-systolic volume (ESV). The primary endpoint was the occurrence of MACE during follow-up.

Results: 332 (94%) tests were negative and 21 (6%) were positive for inducible RWMA, and/or obvious ECG changes, and/or onset of typical limiting chest pain. Over a median follow-up of 19 months, 20 patients (5.7%) experienced MACE (i.e., 1 acute myocardial infarction (MI), 2 periprocedural MI, 17 revascularizations). The incidence of MACE in patients with negative ESE was low (3.6%), with a negative predictive value of 96.4%. A positive ESE was a strong predictor of MACE (HR 16.3, 95% CI 6.5–41.1, p<0.0001). Among stress echocardiographic parameters, force emerged as an independent prognostic marker: a relative increase <45.6% identified by ROC analysis (AUC 0.703, sensitivity 84%, specificity 66%, p=0.0137) was associated with a more than 4-fold higher risk of MACE (HR 4.24, 95% CI 1.41–12.81, p=0.013). Stratified by CAD, the strong association between force and MACE maintained statistical significance in the subgroup of patients with CAD (HR 12.4 [95%CI 1.62-94.93], p = 0.0153).

Conclusion: In a contemporary cohort, ESE confirmed its strong prognostic value, with positive results independently predicting adverse outcomes, especially revascularization. These results support the value of a multiparametric approach to ESE, which integrates traditional and novel indices of myocardial function. Future studies involving larger cohorts that are not influenced by the test result are needed to confirm the prognostic value of ESE and force and to refine risk stratification strategies in both CAD and non-CAD populations undergoing ESE.

IMAGING CARDIOVASCOLARE 533
TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT) (IMAGING CARDIOVASCOLARE)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
INTELLIGENZA ARTIFICIALE (TELECARDIOLOGIA ED E-HEALTH)

ON-SITE CORONARY CT FRACTIONAL FLOW RESERVE ANALYSIS: VALIDATION OF A NOVEL TOOL BASED ON FLUIDODYNAMICS AND DEEP LEARNING AND COMPARISON WITH INVASIVE FFR AND STRESS COMPUTED TOMOGRAPHY PERFUSION

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(a) CENTRO CARDIOLOGICO MONZINO; (b) UNIVERSITÀ DEGLI STUDI DI MILANO

Background: Non-invasive computed tomography-derived fractional flow reserve (FFR-CT) has emerged as a promising alternative to invasive FFR (iFFR). However, the current reliance on off-site analysis at the core laboratories and the time-consuming nature of FFR-CT pose logistical challenges, especially in the emergency setting, highlighting the need for on-site tool to derive FFR-CT.

Purpose: This prospective, single-center study evaluated the diagnostic performance of an on-site mixed deep learning and fluido-dynamic-based fractional flow reserve derived from computed tomography algorithm in assessing the functional significance of coronary artery disease (CAD), using iFFR as the reference standard. Additionally, the accuracy of xFFR was compared stress computed tomography perfusion (CTP).

Methods: The study included 289 intermediate to high risk symptomatic patients for CAD who were scheduled for non-emergent ICA. According to the exclusion criteria, 250 patients (mean age 65±9 years, 76% male) were enrolled in the final cohort. All patients received coronary computed coronary angiography (CCTA), stress CTP and xFFR by using ICA+iFFR as reference

Results: Obstructive CAD (≥50% stenosis) was identified in 71.6% of patients via CCTA and 48% through iFFR. Functionally significant CAD was detected by xFFR and stress CTP in 56.6% and 58% of patients, respectively. xFFR showed sensitivity, specificity, and diagnostic accuracy of 98%, 81%, and 89%, respectively, and an area under the curve (AUC) of 0.89. xFFR showed a strong correlation with iFFR (Cohen's Kappa: 0.78; 95% CI: 0.70–0.85) outperforming CCTA alone (AUC: 0.75, $p < 0.001$) and stress CTP (AUC: 0.82, p 0.033) (AUC: 0.87, p 0.509) in diagnostic accuracy. The xFFR analysis time averaged 8 ± 3.4 minutes, demonstrating its practicality and feasibility for clinical application.

Conclusions: This study establishes xFFR as a robust and efficient on-site tool for assessing CAD, demonstrating high diagnostic accuracy and good agreement with invasive methods, superior to CCTA or CTP. Its rapid processing and integration into clinical workflows position xFFR as a promising alternative to off-site FFR-CT solutions. Further studies are warranted to confirm its generalizability and optimize its implementation.

IMAGING CARDIOVASCOLARE 539
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
INTELLIGENZA ARTIFICIALE (TELECARDIOLOGIA ED E-HEALTH)
TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT) (IMAGING CARDIOVASCOLARE)
BIG DATA (TELECARDIOLOGIA ED E-HEALTH)

PERFORMANCE OF AN ON-SITE CT-FFR TOOL COMPARED TO OFF-SITE CT-FFR AND INVASIVE FFR

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Background: On-site CT-derived fractional flow reserve (CT-FFR) solutions are increasingly needed to reduce delays, costs, and reliance on external platforms.

Objectives: This single-center prospective study evaluated the diagnostic performance of an on-site deep learning and fluid dynamic-based CT-FFR algorithm (xFFR, GE Healthcare) against off-site HeartFlow CT-FFR (FFRct) and invasive FFR (iFFR) for coronary artery disease (CAD) assessment.

Methods: In this single-center prospective study, 250 symptomatic patients at intermediate-to-high CAD risk (mean age, 65 ± 9 years; 76% male) underwent coronary CT angiography (CCTA), xFFR, FFRct, and invasive coronary angiography with iFFR. Areas under the curve (AUCs) were calculated for xFFR and FFRct, with Pearson's and Spearman's correlations and Cohen's κ used to assess agreement with iFFR.

Results: Functionally significant CAD was detected in 56.6% (xFFR), 54% (FFRct), and 48% (iFFR) of cases. xFFR showed sensitivity, specificity, and accuracy of 95%, 81%, and 88%, respectively. Overall diagnostic accuracy was comparable to FFRct (AUC, 0.91 vs 0.89; p = 0.274), superior only for LAD assessment (AUC, 0.96 vs 0.84, p = 0.001). Correlation analysis showed good agreement with iFFR (r = 0.67) and FFRct (r = 0.62). Mean xFFR analysis time was 8 ± 3.4 minutes.

Conclusions: This study establishes xFFR as a robust and efficient on-site tool for assessing CAD, demonstrating high diagnostic accuracy, reproducibility, and agreement with invasive methods. Its rapid processing and integration into clinical workflows position xFFR as a promising alternative to off-site FFRct solutions. Further studies are warranted to confirm its generalizability and optimize its implementation.

IMAGING CARDIOVASCOLARE 685
GRAVIDANZA E CARDIOPATIA
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE
(IMAGING CARDIOVASCOLARE)
DIABETE E MALATTIE CARDIOVASCOLARI
(DIABETE E MALATTIE DEL METABOLISMO)

PROFILO CARDIOVASCOLARE VALUTATO TRAMITE ECOCARDIOGRAFIA TRANSTORACICA IN PAZIENTI CON DIABETE GESTAZIONALE RISPETTO A PAZIENTI SANE A 31-34 SETTIMANE DI GRAVIDANZA

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Intoduzione: Il profilo cardiovascolare valutato mediante ecocardiografia transtoracica rappresenta un sensibile strumento di valutazione dell'adattamento cardiaco alla gravidanza. Deviazioni dell'adattamento cardiovascolare fisiologico si possono verificare in presenza di patologie metaboliche come il diabete gestazionale.

Obiettivo: L'obiettivo dello studio è stato quello di valutare il profilo cardiovascolare materno mediante valutazione ecocardiografica ed analisi di speckle tracking ventricolare ed atriale, morfologia cardiaca ed emodinamica materna in pazienti in gravidanza affette da diabete gestazionale confrontandole con pazienti in gravidanza sane alla 31-34 settimana di gravidanza.

Metodi: E' stato condotto uno studio prospettico di coorte in 65 pazienti donne in gravidanza, suddivise in due gruppi in base alla presenza (n±43) o assenza (n±22) di diabete gestazionale. Tutte le pazienti sono state sottoposte a ecocardiografia transtoracica con analisi dei valori di speckle tracking ventricolare (LV GLS) ed atriale (globale, conduit e contraction, rispettivamente LA GLS, LA conduit e LA ctr), massa miocardica indicizzata per altezza (LVMi), spessore relativo di parete del ventricolo sinistro (SRP), resistenze vascolari periferiche totali sulla base della portata cardiaca e della pressione arteriosa media (TPVR). Tali parametri sono presentati come media ± deviazione standard e sono stati analizzati mediante ANOVA per valutare la significatività statistica.

Risultati: Il valore medio di LA GLS è risultato significativamente più basso nel gruppo delle pazienti diabetiche vs il gruppo delle pazienti sane (33,16± 5,49 vs 36,42 ± 4,97, rispettivamente; p= 0,023). LA conduit ha mostrato analogamente differenze significative tra i due gruppi (22,39 ± 4,00 vs 24,66 ± 4,44; p=0,042), mentre LA ctr non ha evidenziato significative differenze tra i due gruppi (10,76 ± 4,54 vs 11,75 ± 2,92; p= ns). Il valore di SRP è risultato significativamente più alto nel gruppo delle pazienti diabetiche vs il gruppo delle pazienti sane (0,37± 0,06 vs 0,31± ± 0,037, rispettivamente; p< 0,001) a parità di massa miocardica (35,21 ± 7,81 vs 32,02 ± 5,88, rispettivamente; p= ns). Il valore di LV GLS è risultato significativamente più basso nel gruppo delle pazienti diabetiche vs il gruppo delle pazienti sane (-20,82 ± 7,36 vs -24,41± 3,09, rispettivamente; p=0,033). Il valore di TPVR ha mostrato valori significativamente più alti nelle pazienti diabetiche vs il gruppo delle pazienti sane (1196,93 ± 252,01 vs 945,81 ± 146,52, rispettivamente; p<0,001).

Conclusioni: Le pazienti affette da diabete gestaziona-

le hanno mostrato nel terzo trimestre di gravidanza una disfunzione atriale e ventricolare subcliniche evidenti dai valori di strain associate ad una emodinamica materna meno favorevole rispetto alle pazienti con gravidanze fisiologiche.
Questi dati devono essere confrontati su gruppi più ampi anche per valutarne l'impatto clinico.

IMAGING CARDIOVASCOLARE 840
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE)
(IMAGING CARDIOVASCOLARE)

A RARE BUT NOT IMPOSSIBLE FINDING

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(a) AZIENDA OSPEDALIERA SAN GIOVANNI ADDOLORATA;
(b) FONDAZIONE POLICLINICO UNIVERSITARIO CAMPUS BIOMEDICO

A 68-year-old woman was referred to our attention due to dyspnea on exertion. She denied cardiovascular risk factors, chest pain, syncope, and palpitations. 2D-transthoracic echocardiography (TTE) showed normal systolic and diastolic function of the left ventricle with mild aortic regurgitation and a partially vacuolated mass (31x33 mm) attached to the interatrial septum. The hypothesis of atrial myxoma was assessed by transesophageal echocardiography (TEE), which revealed an echo-dense and partially liquified structure at the level of the non-coronary sinus of Valsalva, compressing and deviating the interatrial septum. 3D analysis showed an aneurysmal sac originating from the non-coronary sinus of Valsalva, suggesting the hypothesis of a pseudoaneurysm. Negative inflammatory markers and blood cultures ruled out the aneurysmal evolution of a septic abscess. Thoracic CT confirmed a large pseudoaneurysm (34x28mm) of the non-coronary sinus, with eccentric thrombotic stratification, impinging on the interatrial septum; additionally, a small and focal outpouching was noted both at the level of the left sinus of Valsalva and the aortic isthmus. The case was evaluated by the Heart Team, which recommended the surgical exclusion of the pseudoaneurysm. A large defect was detected in the aortic wall, at the level of the non-coronary sinus of Valsalva, resulting in a huge pseudoaneurysm with extensive thrombus. Exclusion of the pseudoaneurysm was performed, followed by reconstruction of the aortic wall with a heterologous pericardial patch. The postoperative course was uncomplicated. Since no secondary causes were observed, genetic evaluation has been indicated, but results are still ongoing. Aneurysms of the sinus of Valsalva are rare, with an estimated prevalence of 0.09% in the general population. The right coronary sinus is the most frequently involved, followed by the non-coronary and left coronary sinus. Endocarditis and acute aortic syndromes are responsible for acquired aneurysms. Congenital aneurysms result from an incomplete fusion

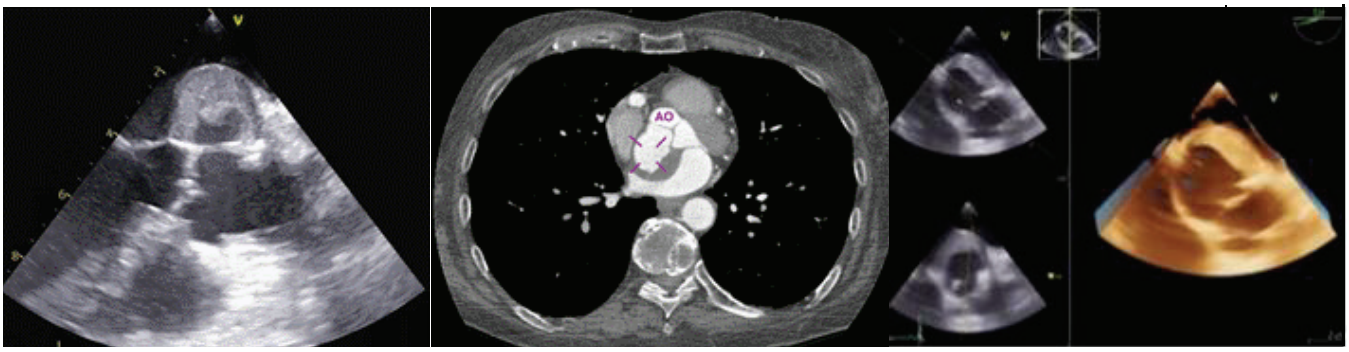


Figure 1

of the aortopulmonary septum with the interventricular septum and are often associated with Marfan syndrome or other genetically determined connective tissue disorders. This clinical case highlights that spontaneous pseudoaneurysms are a rare but not impossible finding. After ruling out infectious or traumatic cause, a genetic origin should be considered even in patients without clear features of collagen disease.

IMAGING CARDIOVASCOLARE 85
MIOCARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT)
(IMAGING CARDIOVASCOLARE)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)

CONCORDANCE BETWEEN CLINICAL PRACTICE AND ESC GUIDELINES IN THE MANAGEMENT OF ACUTE MYOCARDITIS: A RETROSPECTIVE SINGLE-CENTER STUDY

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(a) ASST SANTI PAOLO E CARLO MILANO

Myocarditis is an inflammatory disease that primarily affects the myocardium, associated with myocyte necrosis or degeneration. It can present with a wide range of clinical manifestation, from minimal symptoms to cardiogenic shock and sudden cardiac death. Definitive diagnosis requires endomyocardial biopsy, a methodical but not risk-free procedure. It is also recommended to exclude coronary artery disease (CAD), either through coronary angiography or coronary CT angiography. Cardiac magnetic resonance imaging (CMR) enables tissue characterization using a non-invasive technique that employs non-ionizing radiation and a non-iodinated contrast agent. However, the availability and accessibility of these diagnostic modalities are not guaranteed in all hospitals. The principal aim of our retrospective study is to evaluate compliance with ESC diagnostic pathways in consecutive patients discharged with suspected acute myocarditis and to identify clinical factors driving the choice of imaging strategy. Our study population included 39 patients (mean age 39.9 ± 17.9 years; 84.6 % male) discharged from ASST Santi Paolo e Carlo between January 2023 and May 2025 with a diagnosis of myocarditis. We recorded presenting phenotype, baseline ECG/echo/laboratory data and analyzed the path that led to the diagnosis noting the importance of CMR beyond the exclusion of CAD even for an unexpected reclassification of the admission diagnosis. Initial work-up (ECG, echocardiography, troponins, NT-proBNP, hs-CRP) was uniformly applied. CMR was performed in 87.2 % of cases; noninvasive strategies (CMR alone or with CT) accounted for 63.5 % of pathways. Clinicians relied predominantly on patient age ($H(3)=12.54$, $p=0.006$) and ESC phenotype ($\chi^2(16)=34.75$, $p=0.004$; $V=0.472$) to choose imaging, whereas biomarker levels, ECG/echo abnormalities, and systemic symptoms did not influence pathway selection. Our retrospective single center study on the diagnostic work up of myocarditis demonstrates that real-world practice is guided chiefly by age and presentation phenotype. Better-defined, evidence-based decision thresholds (e.g., age cut-offs, phenotype-driven flowcharts) should be incorporated into future guidelines to standardize pathways, minimize unnecessary invasive testing, and ensure each patient receives the most appropriate diagnostic work-up. The findings of this analysis emphasize the diagnostic challenges of myocarditis and underscore the pivotal role of CMR imaging.

IMAGING CARDIOVASCOLARE 573
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)

A "CCTA-DRIVEN INVASIVE CORONARY ANGIOGRAPHY" APPROACH IN PATIENTS WITH PRIOR CABG: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Objectives: To evaluate whether performing CCTA prior to ICA improves procedural metrics and safety compared to ICA alone.

Methods and Materials: Studies comparing the 'CCTA prior to ICA' approach with ICA alone in patients with a history of CABG who are candidates for ICA were included in the quantitative analysis. The pooled effect of the estimated outcomes was calculated according to a random-effects model with a generic inverse variance weighting approach. The primary endpoint was the total volume of contrast agent administered. The secondary endpoints were procedure time, fluoroscopy time, total radiation dose, the number of catheters used during ICA, periprocedural complications and contrast-induced nephropathy.

Results: Four studies were included, with a total of 1,804 patients who had undergone prior CABG and were candidates for ICA. Of these patients, n = 504 received CCTA-guided ICA and n = 1234 underwent ICA alone. CCTA prior to ICA was associated with a trend towards lower ICA contrast volumes (mean difference (MD) -85.9 mL, 95% confidence interval (CI) -176 to 4.62, p-value 0.06), but similar total contrast volumes among the groups (MD -19.91 mL, 95% CI -75.3 to 35.5, p-value 0.34). Compared with ICA alone, CCTA guidance was associated with reduced fluoroscopy time (MD -3.75, 95% CI -6.65 to -0.85, p-value 0.03), fewer catheters used (MD -1.05, 95% CI -1.41 to -0.69, p-value 0.003), and higher success in graft localization (RR 4.35, 95% CI 2.18 to 6.51, p-value 0.02). No significant differences were observed among the groups in terms of total and effective ICA dose, procedural complications, or contrast-induced nephropathy.

Conclusion: CCTA guidance prior to invasive angiography in patients with a history of CABG appears to improve procedural efficiency, particularly about fluoroscopy time, graft localization and the number of catheters used.

IMAGING CARDIOVASCOLARE 385
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MIOCARDICO-PERICARDICO
(MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

L'IMPATTO PROGNOSTICO DELLA FIBROSI ATRIALE RILEVATA MEDIANTE RISONANZA MAGNETICA CARDIACA NEI PAZIENTI AFFETTI DA AMILOIDOSI CARDIACA

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Introduzione: L'amiloidosi cardiaca (AC) è una malattia da accumulo caratterizzata dalla deposizione extracellulare progressiva di proteine mal ripiegate nel miocardio. La fibrosi atriale è un parametro facilmente rilevabile mediante risonanza magnetica cardiaca (RMC), con buona riproducibilità. L'associazione di tale parametro con eventi avversi è stata dimostrata nel contesto di varie cardiopatie. Il suo valore prognostico nell'amiloidosi cardiaca rimane invece ancora incerto.

Obiettivo: Scopo di questo studio è stato valutare la correlazione tra la fibrosi atriale rilevata con RMC e i parametri demografici, clinici e strumentali nei pazienti affetti da AC.
Inoltre, lo studio ha cercato di analizzare il significato prognostico della fibrosi atriale nel prevedere eventi avversi, tra cui mortalità, scompenso cardiaco acuto (AHF) e aritmie.

Metodi: Una coorte di 80 pazienti con AC è stata divisa in due gruppi in base alla presenza di fibrosi atriale rilevata tramite RMC, per un totale di 39 pazienti senza fibrosi atriale e 41 con fibrosi atriale, con un follow-up mediano di 154 settimane (IQR 157). Sono stati confrontati i parametri demografici, clinici, ecocardiografici e di RMC di base tra i due gruppi. Inoltre, è stata eseguita un'analisi di regressione di Cox multivariata per identificare i predittori di mortalità per tutte le cause, mortalità cardiovascolare (CVM) e AHF.

Risultati: L'età mediana della coorte era di 73 anni, con una prevalenza maggiore del sesso maschile (78,8%). La presenza di fibrosi atriale è risultata associata a peggiore stato funzionale (classe NYHA III/IV) e a livelli più elevati di biomarcatori come creatinina e troponina ad alta sensibilità. I parametri ecocardiografici hanno mostrato differenze significative nella funzione ventricolare destra e un'area atriale sinistra maggiore nel gruppo con fibrosi. La fibrosi atriale è risultata inoltre associata a maggiore massa ventricolare sinistra e a compromissione della frazione di eiezione del ventricolo sinistro. Durante il follow-up, i pazienti con fibrosi atriale hanno sperimentato tassi più elevati di eventi avversi, inclusi AHF, sincope e CVM. L'analisi di regressione di Cox ha rivelato che la fibrosi atriale (HR: 2,66; IC 95%: 1,11–6,36; p=0,028) era un predittore indipendente di mortalità per tutte le cause, insieme ad età (p<0,001), ictus (p=0,024) e classe NYHA (p=0,030). Per la CVM, il diabete mellito (p=0,002) è stato identificato come predittore significativo.

Conclusioni: La fibrosi atriale rilevata mediante CMR nei pazienti con AC è associata a eventi clinici sfavorevoli, tra cui un aumento della mortalità e AHF. La presenza di fibrosi atriale è risultata un predittore indipendente di mortalità per tutte le cause. Secondo questi risultati, la valutazione di routine della fibrosi atriale dovrebbe essere incoraggiata durante l'esecuzione di RMC nei pazienti con AC, sospetta o confermata.

IMAGING CARDIOVASCOLARE 810
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE) CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO) MINOCA (MYOCARDIAL INFARCTION WITH NORMAL CORONARY ARTERIES) (CARDIOPATIA ISCHEMICA)

AN UNUSUAL CASCADE OF EVENTS IN A YOUG PATINET: FROM CARDIAC ARREST, CARDIOGENIC SHOCK, HCM TO MINOCA

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Description of Clinical Presentation:
A 17-year-old male athlete with no prior cardiac history suffered cardiac arrest during a basketball game. Cardiopulmonary resuscitation was initiated with five shocks delivered. Subsequently, PEA and pulseless VT were documented, with ROSC achieved after adrenaline, amiodarone, and defibrillation. On admission, rapid hemodynamic deterioration required ECMO support. Initial echocardiography suggested non-obstructive HCM, confirmed by 2D echocardiography showing marked anterior and septal hypertrophy (maximum 38 mm at mid-anterior wall) with severe mitral regurgitation due to restricted posterior leaflet motion. Coronary angiography showed no significant stenosis (Figure 1). Haemodynamic stability enabling ECMO weaning was achieved only after surgical mitral valve repair.

Diagnostic Techniques and Their Most Important Findings:
A comprehensive cardiac magnetic resonance (CMR) study was performed eight weeks after the acute event, including cine, T2 mapping and LGE images. The study revealed asymmetric LVH (maximum 22 mm at basal anterior wall) with no LVOT obstruction or septal anterior motion (SAM) at rest. There was extensive myocardial oedema and LGE in the basal-to-mid hypertrophied septum with a large hypointense core, along with papillary muscle LGE. The mitral valve ring was in situ with no residual regurgitation. Overall, CMR findings were consistent with HCM phenotype with extensive acute myocardial infarction in the proximal LAD/septal territory and a large intramyocardial haemorrhage core (Figure 2). At one-year follow-up, CMR showed reduced septal and anterior wall thickness (maximum 16 mm) and improved systolic function (EF 55%) with nearly transmural LGE of basal-mid anterior and septal walls, in keeping with non-obstructive HCM with anterior infarction (Figure 3).

Learning Points from this Case:
Acute myocardial infarction with non-obstructed coronary arteries (MINOCA) has been described in patients with HCM, having multiple underlying mechanisms such as small-vessel disease, septal perforator compression, myocardial bridging, inadequate capillary density, and coronary spasm. This

case highlights the pivotal role of CMR in this setting: from accurate assessment of the maximal wall thickness to identify the causes for the acute presentation and the extent of myocardial injury, once the patient is stabilised. Beyond confirming asymmetric hypertrophy, CMR delineated the extent of the infarction and intramyocardial haemorrhage. In addition, CMR showed papillary muscle displacement and infarction, causing posterior mitral leaflet restricted motion, resulting in haemodynamic instability that prevented weaning from mechanical support. Interestingly, the large septal infarction ultimately served a similar role to alcohol septal ablation, resulting in reduced wall thickness on follow-up CMR. Nevertheless, it remains unclear if the cause of the cardiac arrest was arrhythmias from HCM with the acute infarction representing a complication of the resuscitation.

IMAGING CARDIOVASCOLARE 424
PATOLOGIA DELL´AORTA (MALATTIE DEI VASI)
INTELLIGENZA ARTIFICIALE (TELECARDIOLOGIA ED E-HEALTH)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)

DEFINING REFERENCE RANGES FOR ASCENDING AORTA DIAMETERS USING TWO-DIMENSIONAL TRANSTHORACIC COLOR DOPPLER ECHOCARDIOGRAPHY IN HEALTHY SUBJECTS: A MACHINE LEARNING-BASED MODEL

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Background: Establishing normal AscAo diameter rangesthataccountfordemographicandanthropometric factors remains an unresolved challenge, even with the advancements in artificial intelligence.

Aims: To define normal ascending aortic diameters (AscAo) ranges according to demographic and anthropometric factors through a machine learning (ML) model; to develop an Aortic Diameter Assessment Model (ADAM) web application.

Methods: AscAo diameter ranges in healthy subjects (n=788; 57% women; mean age 43, range 16-92 years-old) were analyzed. AscAo diameters were measured at four levels (aortic annulus [AA], sinus of Valsalva [SV], sinotubular junction [STJ], and proximal ascending aorta [ASC]) using transthoracic echocardiography with both diastolic leading edge-to-leading edge (DLE) and systolic inner edge-to-inner edge (SIE) techniques. Unsupervised Random Forest (RF)-based clustering was performed independently for DLE and SIE technique and for absolute, height and body surface area (BSA) normalized AscAo diameters. For practical clinical application, a web-based clinical decision support system (CDSS) was developed with R/shiny.

Results: The cohort's study was divided into 3 groups of age: i) group 1: ≤32 (n=206), ii) group 2: 33-53 (n=373); iii) group 3: >53 years old (n=209). Overall, non-normalized as well as BSA and height normalized AscAo diameters increased significantly across the three age groups, for both measurement techniques. Notably, AscAo diameters were significantly greater in males compared to females across non normalized as well as BSA and height normalized values. Through ML, two clusters (A and B) were identified for each dataset, differing in AscAo diameters ($p<0.005$), demographic, anthropometric and echocardiographic characteristics. Significant differences in AscAo diameters measured using DLE and SIE methods were observed across clusters and age subgroups, and these differences persisted irrespective of data normalization. Notably,

normalization, particularly BSA adjustment diminished the clarity of cluster distinctions.
Features importance varied according to the normalization method and age group. Sex exhibited low weight across all models, playing a minor role in driving cluster separation. ADAM web application compared new subjects' aortic diameters to the identified clusters, providing personalized normal values to aid clinical decision-making, and achieved high classification performance (accuracy up to 93%, sensitivity 0.97, specificity 0.91).

Conclusion: Unsupervised clustering techniques identified distinct groups of AscAo diameters reflecting normal variations across different age groups and body characteristics. ADAM web-app may represent a practical tool for clinicians aiming to improve the accuracy of AscAo diameters assessment.

IMAGING CARDIOVASCOLARE 494
IPERTENSIONE POLMONARE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
ECOSTRESS (IMAGING CARDIOVASCOLARE)
INTELLIGENZA ARTIFICIALE (TELECARDIOLOGIA ED E-HEALTH)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)

PREDICTING EXERCISE PULMONARY HYPERTENSION: THE RIGHT-NET MACHINE LEARNING MODEL

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The purpose of this study was to develop a Machine Learning (ML) model predicting exercise transthoracic echocardiogram (TTE) -derived mean pulmonary artery pressure (mPAP)/ cardiac output (CO) slope >3 mmHg/L/min in a population at risk of PH. (Figure 1)
The study population [221 healthy adults and 196 patients with connective tissue disease; age = 54.56± 14.73 years; female = 293 (70.3%)] extracted from the RIGHT heart international NETwork (RIGHT-NET) database, was divided into two groups: 222 patients with mPAP/CO slope ≤ 3 and 195 patients with mPAP/CO slope >3 mmHg/L/min. The dataset was split into training (60%) and test sets (40%) to develop and evaluate themodels.

Three different ML models, namely Elastic-Net (EN) Regularized Generalized Linear Model, classification and regression tree (CART) and Logitboost, were trained, validated, and tested to automatically predict patients with mPAP/CO > 3 mmHg/L/min based on clinical and resting TTE parameters.
The final ML model was chosen on achieving the highest area under the curve (AUC) performance on the test set (Figure 2).
The Elastic NET model achieved the best performance with an AUC of 92%. Lower tricuspid annularplane systolic excursion (TAPSE)/systolic pulmonary artery pressure (sPAP) ratio (mm/mmHg), female sex and smaller left ventricular outflow tract (LVOT) diameter

were the most important features predicting abnormal TTE-derived mPAP/CO slope > 3 mmHg/L/min (Figure 3).

The present ML model automatically predicted abnormal TTE derived-mPAP/CO slope > 3 mmHg/L/min with very good diagnostic accuracy in a population at risk of pulmonary hypertension (PH). Further studies are needed to explore additional adaptive or data-driven mPAP/CO slope thresholds to enhance risk stratification on larger and different populations at risk of PH.



Figure 1



Figure 2

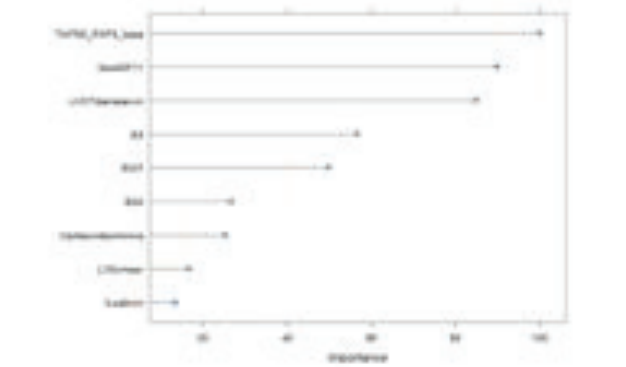


Figure 3

IMAGING CARDIOVASCOLARE 502
ECOSTRESS (IMAGING CARDIOVASCOLARE)
IPERTENSIONE POLMONARE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE
(IMAGING CARDIOVASCOLARE)

REFERENCES RANGES OF EXERCISE DOPPLER ECHOCARDIOGRAPHY DERIVED PULMONARY PRESSURES IN HEALTHY SUBJECTS: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Background: Exercise pulmonary hypertension (Ex-PH) was invasively defined as mean pulmonary artery pressure (mPAP)/ cardiac output (CO) slope >3mmHg/L/min between rest and exercise. Supine/semi-recumbent exercise transthoracic Doppler echocardiography (Ex-TTE) (noninvasive, widely available and sustainable) is increasingly used for the detection of Ex-PH and prognostication. However, upper limits of normal (ULN) of Ex-TTE- derived pulmonary pressures are not well established.

Purpose: The present systematic literature review and meta-analysis aims to comprehensively explore the reference ranges of the Ex-TTE derived-pulmonary pressures in healthy subjects.

Methods: We performed a comprehensive search strategy for MEDLINE, MEDLINE In-Process & Other Non-Indexed Citations, Web Of Science, and Scopus from 1st January 1999 to 3st December 2024, according to PRISMA guidelines. Studies were included if they reported tricupid regurgitation velocity (TRV)- derived systolic pulmonary artery pressure (sPAP), mean pulmonary artery pressure (mPAP) and mPAP/cardiac output (CO) slope. Data were extracted by 1 reviewer and then reviewed by 2 independent reviewers.

Conflicts were resolved through consensus. The random effect summary means estimate and the corresponding 95% confidence intervals (95% CI) were calculated according to the restricted maximum likelihood random-effects method. ULN were calculated by using the 95th percentile. Between-studies' heterogeneity was quantified using the inconsistency index (I2) with >50% suggest substantial heterogeneity. The quality of the included studies and publication bias were assessed.

Results: Data on 1230 healthy subjects from 14 eligible studies were included. The estimated average peak sPAP was 39 mmHg (95% CI:35-43; ULN: 60 mmHg) (Figure 1a), mPAP was 28 mmHg (95% CI: 23-32; ULN = 40mmHg) (Figure 1b), mPAP/CO slope was 1.5 mmHg/L.min (95% CI: 1-4-1.7; ULN: 3 mmHg/L.min), E/e' was 7.1 (95% CI: 6.6 - 7.6; ULN: 11.5), TAPSE/sPAP was 0.8 mm/mmHg (95% CI: 0.7 - 1.0; LLN 0.4 mm/mmHg).

Conclusions: The above ULN of Ex-TTE derived pulmonary pressures may represent the reference standard todetect Ex-PH. Further Ex-TTE studies with same methodological robust approach are needed to reduce the variability of the non-invasive measurements.

IMAGING CARDIOVASCOLARE 190
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)
IMAGING MIOCARDICO-PERICARDICO
(MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI
(PREVENZIONE E RIABILITAZIONE)

ASSOCIATION BETWEEN FINE PARTICULATE AIR POLLUTION EXPOSURE AND SUBCLINICAL MYOCARDIAL FIBROSIS IN STRUCTURALLY NORMAL HEARTS: A CMR BASED STUDY

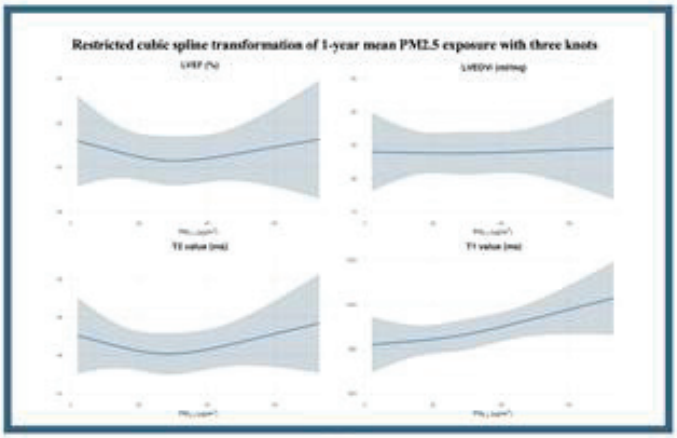
Gaia Filiberti (a, b), Stefano Figliozzi (a, b), Dario Donia (a, b), Lorenzo Cambini (b), Elena Locatelli (a, b), Silvana Di Maio (a, b), Costanza Lisi (a, b), Federica Catapano (a, b), Marco Francone (a, c), Renato Maria Bragato (a), Georgios Georgiopoulos (d), Andrea Laghi (a), Giulio Giuseppe Stefanini (a, b), Gianluigi Condorelli (a, b)
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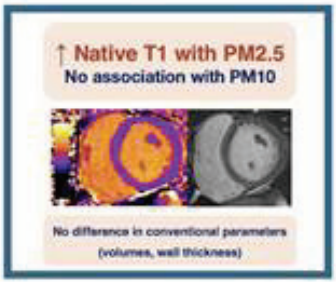
Background. Air pollution is a major global health concern, but its role in the earliest stages of myocardial remodeling in individuals without overt cardiovascular disease is not fully defined.

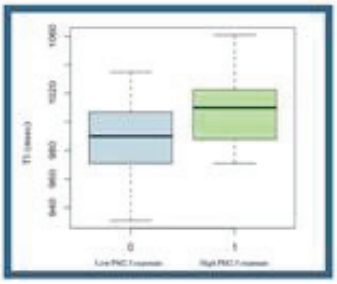
Methods. We retrospectively evaluated 231 consecutive patients (age 45 ± 21 years, 53% male) who underwent clinically indicated CMR between May 2020-November 2024 at a tertiary referral center. All subjects had structurally normal hearts, preserved function, and no evidence of LGE. Individual long-term exposure PM2.5 and PM10 was estimated using data from the nearest European Environment Agency monitoring sites. CMR measures included LVEDVi, LVEF, native T1, and T2. Associations with pollutant exposure were tested using multivariable linear and logistic regression adjusted for demographic, clinical, and socioeconomic variables.

Results. After adjustment, higher PM2.5 exposure was independently associated with increased native T1 values (β = 0.285 ms per 1 μg/m³; 95%CI 0.05–0.52; p = 0.020), while no associations were observed for T2, LVEDVi, LVEF, or PM10 exposure. Restricted cubic spline models demonstrated a linear dose–response relationship between PM2.5 and T1. Patients with higher PM2.5 exposure had significantly greater T1 compared with those with lower exposure (1007.2 ± 23.8 vs. 987.8 ± 27.0 ms; p = 0.020). In multivariable logistic regression, PM2.5 was associated with abnormal T1 (OR 1.03 per μg/m³; 95% CI 1.00–1.06; p = 0.020), while male sex and diabetes were also independent predictors.

Conclusions. In individuals with structurally normal hearts, chronic exposure to PM2.5 was independently linked to higher native T1 and pathological T1, consistent with early diffuse myocardial fibrosis. Air pollution may represent a cofactor in myocardial remodeling that precedes heart failure, underscoring the need for confirmation in larger prospective studies.







Univariable and multivariable linear regression analysis between PM2.5 and PM10 exposure and CMR parameters

PM2.5

Variable	β coefficients (95% CI)	*p*-value	β coefficients (95% CI)	p_{adj}-value
	Univariable linear regression		Multivariable linear regression	
T1 (msec)	0.170 (-0.07,0.41)	0.168	0.285 (0.05, 0.52)	**0.020**
T2 (msec)	0.005 (-0.03,0.04)	0.802	0.006 (-0.03,0.04)	0.750
LVEDVi (mL/m2)	0.032 (-0.09,0.16)	0.619	0.007 (-0.10,0.12)	0.899
LVEF (%)	-0.02 (-0.06, 0.02)	0.401	-0.002 (-0.04,0.04)	0.938

PM10

Variable	β coefficients (95% CI)	*p*-value	β coefficients (95% CI)	p_{adj}-value
	Univariable linear regression		Multivariable linear regression	
T1 (msec)	0.069 (-0.04,0.17)	0.194	0.086 (-0.02,0.19)	0.104
T2 (msec)	0.003 (-0.01,0.02)	0.685	0.006 (-0.01,0.02)	0.513
LVEDVi (mL/m2)	0.021 (-0.03,0.08)	0.448	0.007 (-0.04,0.06)	0.781
LVEF (%)	-0.014 (0.03,0.00)	0.105	-0.017 (-0.03, 0.004)	0.144

Logistic regression models for PM2.5 exposure and *pathological T1 values**

Model	Effect size	95%CI	*p*-value
Logistic regression (continous PM2.5)	OR **1.03**	1.00 – 1.06	0.020
Logistic regression (WHO ≥ 5 μg/m³)	OR **0.53**	0.06 – 11.29	0.596
Logistic regression (WHO ≥ 10 μg/m³)	OR **0.64**	0.16 – 2.54	0.523
Logistic regression (ROC ≥ 30.5 μg/m³)	NA	NA	NA

Figure 1

CardioSic

IMAGING CARDIOVASCOLARE 290
TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT)
(IMAGING CARDIOVASCOLARE)
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)

CANCER IN COMPUTED TOMOGRAPHY ANGIOGRAPHY FOR TAVI PLANNING

Francesco Fiore (a), Virginia Sambuceti (b), Matteo Vercellino (c), Carlo Gabriele Tocchetti (a), Italo Porto (d, e), Pietro Ameri (d, e)

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Background: CT angiography (CTA) of the thoraco-abdominal aorta and iliofemoral axes is routinely performed before transcatheter aortic valve implantation (TAVI).

Objective: We sought to assess the prevalence, type, and clinical impact of cancer, as detected on pre-procedural CTA, in patients undergoing TAVI at a regional hub.

Methods: We retrospectively reviewed the medical records and CTA images of all TAVI candidates between Jan 2022 and Oct 2024, who underwent pre-procedural CTA at our center. Cancer was defined as a tumor with malignant features found in CTA for TAVI planning. The frequency and distribution of cancer types in the study population were compared with those in national cancer registries (AIOM/AIRTUM). The characteristics of patients with vs without cancer were compared by chi-square test, t test, or Mann-Whitney test. The relationship of incidental cancer with in-hospital mortality was examined by logistic regression.

Results: Out of 650 included patients, 44 (6.8%) had cancer in pre-TAVI CTA (Figure). This prevalence exceeded the prevalence reported in the Italian population of similar age (4%). Moreover, the frequency of breast, lung, and renal cancer was greater than the one in national registries (Figure). There was a trend for younger age in patients with than without cancer (82.8 vs 84.5 years, p=0.09). The former also had lower bilirubin concentrations (0.51 vs 0.70 mg/dL, p=0.003), and faced higher in-hospital mortality (11.8% vs 1.2%, p=0.00012) than the latter. Body weight was 72.1 vs 70.0 kg (p=0.17) in cancer vs non-cancer patients, cerebrovascular disease was reported in 14.3% vs 4.9% (p=0.10), and hemoglobin levels were 116.9 vs 121.0 g/L (p=0.12). The other assessed features were comparable between the two patient groups (all p>0.2). Logistic regression did not confirm the association of CT-detected cancer with in-hospital mortality (HR 6.1, 95%CI 0.8-45.3).

Conclusions: CTA before TAVI creates the opportunity, but also the challenge, to highlight the presence cancer in a typically frail patient population.
Additional studies are needed to determine whether cancer in pre-TAVI CTA has prognostic implication.

650 candidates to TAVI with available pre-procedural planning CTA:
- mean age 84 years
- males 47%
- 44 (6.8%) had cancer on revision of CTA images



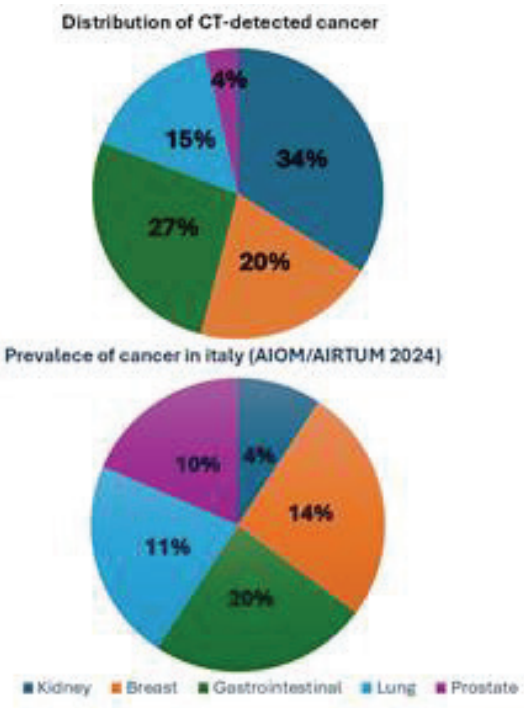


Figure 1

IMAGING CARDIOVASCOLARE 725
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)
PATOLOGIA DELLA VALVOLA TRICUSPIDE (VALVULOPATIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
ECOCARDIOGRAFIA 3-D (IMAGING CARDIOVASCOLARE)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)

IS THE DOMINANT E WAVE OF THE TRICUSPID INFLOW A RELIABLE MARKER FOR SEVERE TRICUSPID REGURGITATION

Samantha Fisicaro (a), Luigi P. Badano (a, c), Marco Penso (a), Michele Tomaselli (a, c), Alexandra S. Buta (b), Yuka Kavada (a, d), Noela Radu (a), Paolo Springhetti (a), Cinzia Pece (a), Denisa Muraru (a, c)
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The current guidelines for assessing heart valve regurgitation issued by the American Society of Echocardiography (ASE) and the European Association of Cardiovascular Imaging (EACVI) include the presence of a dominant E wave (greater than 100 cm/s) of the tricuspid inflow, as measured by pulsed-wave Doppler, as one of the semiquantitative criteria for identifying patients with severe tricuspid regurgitation (TR). However, the ASE guidelines do not provide any references to support it, while the EACVI guidelines cite previous EACVI, ASE and British Society of Echocardiography guidelines. Therefore, there is no evidence to recommend a tricuspid E wave velocity ³ 100 cm/s as a metric of severe TR.

To address this, we used pulsed-Doppler echocardiography to measure the tricuspid E-wave velocity in consecutive patients with at least mild TR who underwent clinically indicated echocardiography between December 2024 and March 2025. We enrolled 137 patients (77±12 years, 85 women) with varying degrees of TR: mild (n= 39), moderate (n= 43), severe (n= 34), massive (n= 9), and torrential (n= 12). Among these patients, 62 were identified as having secondary atrial TR, 27 as secondary ventricular TR, 9 as cardiac implantable electronic device related TR, and 3 as primary TR. In 36 patients, primarily those with mild TR and normal cardiac structures, the etiology could not be categorized.

The average tricuspid E-wave velocity for the entire cohort was 56±17 cm/s. When broken down by severity of TR, the average tricuspid E-wave velocities were as follows: mild 47±9 cm/s, moderate 50±11 cm/s, severe 63±15 cm/s, massive 74±20 cm/s, and torrential 80±23 cm/s.

The tricuspid E-wave velocity showed a progressive increase as the severity of TR worsened. However, only four patients—two with massive TR and two with torrential TR—exhibited tricuspid E-wave velocities greater than 100 cm/s. When compared to the guideline-directed multiparametric approach, E wave velocity demonstrated a sensitivity of 16.7%, specificity of 100%, and a Kappa concordance of 0.25, indicating poor agreement and limited ability to detect severe TR.

As expected, the tricuspid E-wave velocity was more closely correlated with the regurgitant volume (r = 0.542) and the regurgitant fraction (r = 0.51) than with the effective regurgitant orifice area (r = 0.443). In patients with atrial secondary TR, the correlation

between tricuspid E-wave velocity and regurgitant volume was stronger (r = 0.61) compared to that with ventricular secondary TR (r = 0.46).

Conclusions. While the tricuspid E-wave velocity increased with worsening TR severity, the guideline-recommended threshold value of 100 m/s to identify severe TR is largely inaccurate.

CardioSic

IMAGING CARDIOVASCOLARE 259
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE) INFARTO STEMI (CARDIOPATIA ISCHEMICA) INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

THROMBUS ASPIRATION REDUCES MYOCARDIAL INFARCT SIZE IN PATIENTS WITH STEMI AND HIGH THROMBUS BURDEN

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Background: Microvascular obstruction (MVO) represents a major determinant of prognosis in patients with ST-segment elevation myocardial infarction (STEMI) undergoing primary percutaneous coronary intervention (PPCI). Despite the notable advancements in reperfusion strategies, MVO remains a critical challenge, contributing to unfavorable left ventricular remodeling and elevated long-term mortality. Thrombus aspiration (TA) has been proposed as a potential strategy to minimize distal embolization and reduce MVO, but its effect on myocardial scar and cardiac remodeling remains debated.

Purpose: The objective of this study was to investigate whether TA influences myocardial tissue characteristics and left ventricular remodeling in patients with STEMI. To this end, changes in myocardial scar, edema, and MVO were assessed on cardiac magnetic resonance (CMR) scans performed during the acute phase and at a 6–24 months follow-up.

Methods: A retrospective analysis was conducted on STEMI patients treated with PPCI at a single high-volume center from January 2011 to July 2019. Patients who underwent index and follow-up CMR scans were enrolled. CMR assessments included left ventricular function, infarct size (late gadolinium enhancement, LGE), myocardial edema (T2-weighted imaging), and MVO. The primary endpoint was the reduction in infarct size.

Results: A total of 130 patients were enrolled; 84 patients underwent TA, while 46 received PPCI alone. As expected, patients undergoing TA had worse baseline clinical characteristics, including a significantly higher thrombus burden (Thrombus Scale 5 [5;5] vs. 3 [2;5], p<0.001) and a greater frequency of pre-procedural TIMI 0 flow (79.8% vs. 41.3%, p<0.001). Additionally, MVO was more frequently observed in the TA group (44.6% vs. 25%, p=0.03). Baseline CMR scans revealed a larger infarct size (LGE: 24.2% vs 17.5%, p=0.001) and more extensive myocardial edema (38% vs 27%, p=0.04) in patients undergoing TA. During follow-up, those in the TA group experienced a greater reduction in myocardial scar (-5.49g [-23.98; 1.5] vs. -1.59g [-8.7; 2.21], p=0.05) and myocardial edema (-54.4g [-78; -39.2] vs. -47.3g [-57.9; -19.5], p=0.05). The reduction in LGE was particularly evident among individuals with a high thrombus burden (Thrombus Scale >3) and baseline MVO (-11.28g [-27.03; -0.20] vs. -1.78g [-6.50; 0.25], p=0.09), although statistical significance was not reached.

Conclusions: Follow-up CMR scans demonstrated favorable reductions in infarct size and myocardial edema in STEMI patients treated with TA, particularly

among those with high thrombus burden, despite their poor clinical baseline characteristics. These findings suggest that TA may contribute to improved myocardial tissue recovery in high-risk STEMI patients. These observations underscore the necessity for additional prospective studies to refine patient selection and ascertain whether TA can provide long-term benefits in this population.

IMAGING CARDIOVASCOLARE 610
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
MECCANISMI DELLE ARITMIE (ARITMIE)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)

INTEGRATION OF ECHOCARDIOGRAPHIC LEFT ATRIAL COUPLING INDICES ENHANCES RISK STRATIFICATION FOR ATRIAL FIBRILLATION IN EMBOLIC STROKE OF UNDETERMINED SOURCE

Giacomo Gamberini (a), Andrea Faggiano (b), Paolo Fabio D´andria (a), Laura Garau (a), Chiara Giordano (a), Giulia Conti (a), Giulio Mallardi (b), Elisa Gherbesi (b), Massimo Saviano (b), Massimiliano Ruscica (b, d), Francesca Bursi (e, f), Gloria Santangelo (b), Stefano Carugo (b, c)

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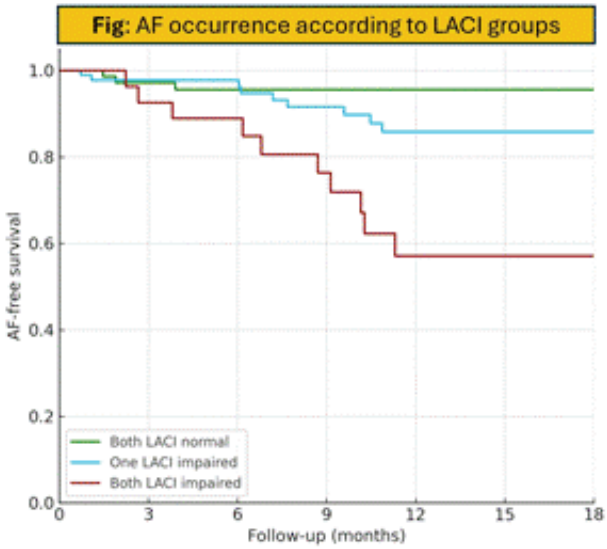
Background and Aim: Embolic stroke of undetermined source (ESUS) remains a heterogeneous condition in which recognition of a cardioembolic origin, particularly occult atrial fibrillation (AF), is crucial for secondary prevention. The Left Atrioventricular Coupling Index (LACI), based on the ratio of left atrial to left ventricular end-diastolic volume, and the Left Atrial Volumetric/Mechanical Coupling Index (Mechanical LACI), defined as left atrial volume index divided by tissue Doppler a' velocity, are two novel echocardiographic indices. Despite similar names, they capture different domains: LACI reflects structural atrioventricular remodelling, while Mechanical LACI integrates atrial size with contractile function, identifying early mechanical dysfunction. We aimed to evaluate whether their combined assessment predicts AF detection in ESUS patients.

Methods: We retrospectively analysed consecutive single-centre ESUS patients without prior AF, admitted between 2022 and 2024 and evaluated with transthoracic echocardiography. The primary endpoint was new-onset AF detected by continuous in-hospital ECG monitoring, Holter monitoring, implantable loop recorders, or outpatient evaluations. Analyses included univariate and multivariate logistic regression, ROC curve analysis, and Kaplan–Meier survival curves. A two-sided p-value <0.05 was considered statistically significant.

Results: Among 260 patients (mean age 69.8±14.1 years, 43.0% female), AF was newly identified in 23 (11.5%) over a mean follow-up of 10.3±6.4 months. Both impaired LACI (≥0.47) and impaired Mechanical LACI (≥3.11) were independently associated with increased risk of AF detection (OR 4.6 and 4.3, respectively, p<0.05). Stratification into three groups—preserved, single, or combined uncoupling—identified distinct risk categories, with AF risk ranging from 4.9% to 35.7%, confirmed by Kaplan–Meier analysis (log-rank p=0.001, Figure and Table).

Conclusions: Integration of LACI and Mechanical LACI—two indices capturing complementary aspects

of atrioventricular interaction, namely structural remodelling and mechanical dysfunction—may enhance the echocardiographic identification of ESUS patients at higher risk of AF, improving risk stratification and guiding secondary prevention strategies.



LACI status	Definition	No AF	AF	% AF	OR (95% CI)	p-value
Preserved coupling	Both LACI normal → no index ≥ cut-off	77	4	4.9%	Reference	–
Single uncoupling	One LACI impaired → only one index ≥ cut-off	82	9	9.9%	2.11 (1.09–5.14)	0.044
Combined uncoupling	Both LACI impaired → both indices ≥ cut-off	18	10	35.7%	10.69 (3.01– 8.01)	<0.001

Figure 1

IMAGING CARDIOVASCOLARE 1037
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
ENDOCARDITI (VALVULOPATIE)
CARDIOPATIE CONGENITE NELL´ADULTO
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT)
(IMAGING CARDIOVASCOLARE)
TOMOGRAFIA AD EMISSIONE DI POSITRONI (PET)
(IMAGING CARDIOVASCOLARE)

UNMASKING THE INFECTION: THE VALUE OF MULTIMODAL IMAGING IN COMPLEX CONGENITAL ANATOMY

Bianca Maria Gattari (a), Giulia Andolina (a), Eleonora Lassandro (a), Gabriele Cordoni (a), Maria Martina Palmisano (a), Giorgio De Conti (d), Raffaella Motta (d), Domenico Galzerano (b, c), Maria Teresa Savo (a), Valeria Pergola (a)
(a) DEPARTMENT OF CARDIO-THORACO-VASCULAR SCIENCES AND PUBLIC HEALTH, UNIVERSITY OF PADUA, PADUA, ITALY; (b) HEARTH CENTRE, KING FAISAL SPECIALIST HOSPITAL & RESEARCH CENTRE, RIYADH, SAUDI ARABIA; (c) COLLEGE OF MEDICINE, ALFAISAL UNIVERSITY, RIYADH, SAUDI ARABIA; (d) RADIOLOGY UNIT, UNIVERSITY OF PADUA, PADUA, ITALY

Background. Infective endocarditis (IE) involving prosthetic material in adults with complex congenital heart disease remains a diagnostic and therapeutic challenge, particularly when standard echocardiographic imaging is inconclusive. Multimodal imaging and coordinated multidisciplinary management are critical in guiding treatment decisions.

Case presentation. We report the case of a 42-year-old man with complex congenital heart disease (transposition of the great arteries, ventricular septal defect, and pulmonary stenosis) palliated by the Rastelli procedure in childhood and subsequent right ventricle-pulmonary artery (RV–PA) conduit revision. At 37 years, he developed atrial flutter and heart failure and underwent percutaneous pulmonary Melody valve implantation for conduit obstruction. Over the following years, he experienced recurrent IE, initially due to Enterococcus faecalis and later to Streptococcus anginosus, complicated by sustained ventricular tachycardia requiring transvenous ICD implantation. After one year, he was admitted with septic shock and right-sided pleural effusion, with cultures again positive for E. faecalis. Transoesophageal echocardiography showed suspected lead infection but limited conduit assessment. Positron Emission Tomography (PET) scan and a Computed Tomography (CT) revealed intense uptake in the RV–PA conduit, and CT confirmed vegetations with septic pulmonary emboli. After multidisciplinary evaluation, the patient underwent surgical removal of the infected RV–PA conduit, pulmonary prosthesis, and ICD system, with implantation of a 25 mm Avalus pulmonary bioprosthesis. The postoperative course was uneventful, with preserved left ventricular function but persistent right ventricular dysfunction. The new prosthesis demonstrated normal function. Given unsuccessful subcutaneous ICD screening, device re-implantation was deferred. Following six weeks of antibiotic therapy, the patient was discharged asymptomatic and haemodynamically stable.

Conclusion. This case underscores the pivotal role of multimodality imaging—particularly PET-CT—in diagnosing prosthetic endocarditis when echocardiography is limited. The integration of

advanced imaging, multidisciplinary decision-making, and tailored surgical strategies proved essential in achieving a favourable outcome in this high-risk adult with congenital heart disease.

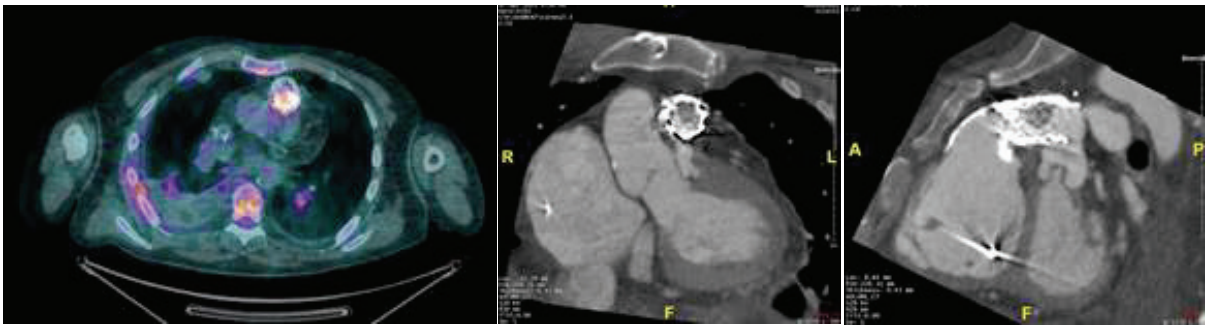


Figure 1. (A) PET-CT with intense glucose uptake in the lateral and posterior walls of the RV-PA conduit, highly suggestive of endocarditis. **(B) and (C)**. Cardiac CT revealed a rounded, hypodense, highly mobile mass within the conduit lumen, up to 16 mm in diameter, pedunculated and attached to the superior wall - findings consistent with endocarditic vegetation.

Figure 1

IMAGING CARDIOVASCOLARE 572
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
TROMBOSI E COAGULAZIONE (ATEROTROMBOSI)
ECOCARDIOGRAFIA 3-D (IMAGING CARDIOVASCOLARE)

LEFT ATRIOVENTRICULAR COUPLING INDEX PREDICTS NEW-ONSET ATRIAL FIBRILLATION IN PATIENTS WITH EMBOLIC STROKE OF UNDETERMINED SOURCE

Chiara Giordano (a), Andrea Faggiano (b), Giacomo Gamberini (a), Paolo D´andria (a), Laura Garau (a), Giulia Conti (a), Giulio Mallardi (b), Elisa Gherbesi (b), Massimo Saviano (b), Massimiliano Ruscica (b, d), Francesca Bursi (e, f), Gloria Santangelo (b), Stefano Carugo (b, c)

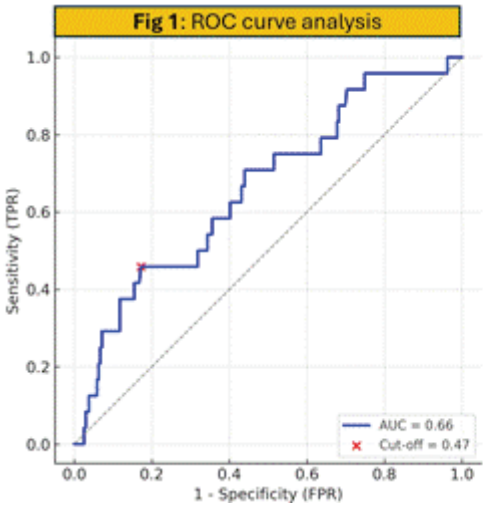
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Background and Aim: Embolic stroke of undetermined source (ESUS) represents a clinically relevant entity, in which the identification of a cardioembolic origin, particularly occult atrial fibrillation (AF), is crucial for tailoring secondary prevention strategies. The Left Atrioventricular Coupling Index (LACI), defined as the ratio of left atrial to left ventricular volume at end-diastole, reflects atrial–ventricular coupling and has been proposed as a marker of atrial dysfunction. We aimed to evaluate whether echocardiographic LACI may help identify AF in ESUS.

Methods: We conducted a retrospective single-centre analysis of consecutive ESUS patients, without previously known AF, admitted between 2022 and 2024 who underwent transthoracic echocardiography during hospitalization. The primary outcome was subsequent new-onset AF detected by continuous in-hospital ECG monitoring, Holter monitoring, implantable loop recorder, or outpatient clinical evaluations. Statistical analyses included univariate and multivariate logistic regression, ROC curve analysis, and Kaplan–Meier survival analysis. A two-sided p-value <0.05 was considered statistically significant.

Results: A total of 263 consecutive ESUS patients (mean age 70.3±14.4 years, 45.6% female) were included. During a mean follow-up of 10±6.3 months, new AF was identified in 24 patients (9.1%). Patients with AF had significantly higher LACI values (0.46 ± 0.19 vs 0.36 ± 0.21, p<0.001, univariate OR: 3.99, 95%CI:1.18-17.34, p=0.042). ROC analysis demonstrated a satisfactory discriminative capacity for LACI (AUC:0.66, Figure 1), with an optimal cut-off of 0.47. Patients with LACI ≥0.47 had a four-fold increased risk of AF detection (OR:4.00, 95%CI 1.71-9.52, p=0.002), a finding consistently supported by Kaplan–Meier survival analysis (log-rank p=0.001, Figure 2). In multivariate analysis, LACI remained an independent predictor of AF even after adjustment for left atrial volume index, left ventricular mass index, age, left ventricular ejection fraction, and body mass index (OR: 3.91, 95%CI:1.32-11.54, P=0.014).

Conclusions: LACI, as a simple echocardiographic parameter of atrial–ventricular coupling, independently predicts new-onset AF in ESUS patients. Its systematic assessment may support early identification of individuals at higher risk of cardioembolic substrate, improving risk stratification and guiding secondary prevention strategies.


Fig 1: ROC curve analysis
Sensitivity (TPR)
1 - Specificity (FPR)
AUC = 0.66
Cut-off = 0.47

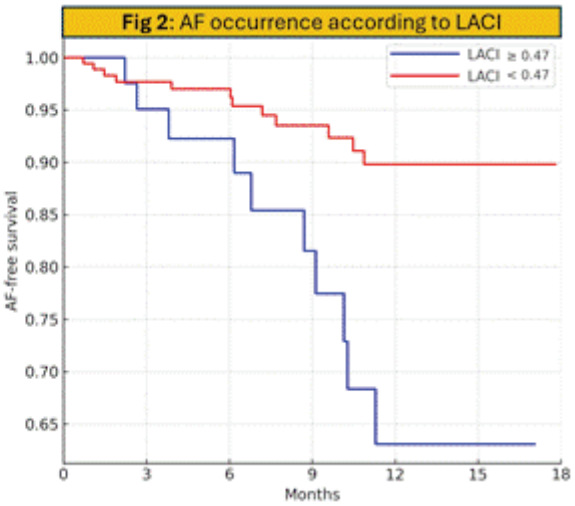

Fig 2: AF occurrence according to LACI
AF-free survival
Months
LACI ≥ 0.47
LACI < 0.47

Figure 1

IMAGING CARDIOVASCOLARE 578
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
TROMBOSI E COAGULAZIONE (ATEROTROMBOSI)
ECOCARDIOGRAFIA 3-D (IMAGING CARDIOVASCOLARE)

LEFT ATRIAL VOLUMETRIC/MECHANICAL COUPLING INDEX IDENTIFIES NEW-ONSET ATRIAL FIBRILLATION IN PATIENTS WITH EMBOLIC STROKE OF UNDETERMINED SOURCE

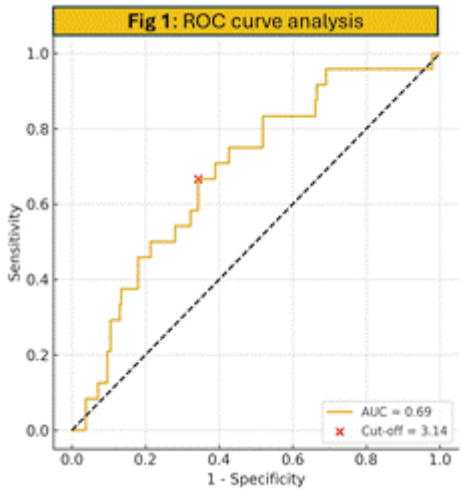
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Background and Aim: Embolic stroke of undetermined source (ESUS) remains a heterogeneous condition in which recognition of a cardioembolic origin, particularly occult atrial fibrillation (AF), is critical for secondary prevention. Beyond left atrial size, atrial–ventricular mechanical interaction may provide deeper insights into atrial vulnerability. The Left Atrial Volumetric/Mechanical Coupling Index (Mechanical LACI)—defined as the ratio of left atrial volume index to tissue Doppler a' velocity—integrates atrial volumetric load with its mechanical function. We aimed to assess whether echocardiographic Mechanical LACI predicts AF detection in ESUS patients.

Methods: We retrospectively analysed consecutive single-centre ESUS patients without prior AF, admitted between 2022 and 2024 and evaluated with transthoracic echocardiography. The primary endpoint was new-onset AF detected by continuous in-hospital ECG monitoring, Holter monitoring, implantable loop recorders, or outpatient evaluations. Analyses included univariate and multivariate logistic regression, ROC curve analysis, and Kaplan–Meier survival curves. A two-sided p-value <0.05 was considered statistically significant.

Results: Among 263 patients (mean age 70.1±13.9 years, 43.3% female), AF was newly identified in 24 (9.1%) over a mean follow-up of 10.6±6.7 months. Patients with AF exhibited higher Mechanical LACI values (4.33±2.31 vs. 3.44±3.18, p=0.045). ROC analysis showed good discriminatory ability (AUC: 0.69, Figure 1), with an optimal cut-off of 3.14. Patients with LACI ≥3.14 carried a more than three-fold higher risk of AF (OR 3.19, 95%CI 1.34–7.61, p=0.009), confirmed by Kaplan–Meier analysis (log-rank p=0.009, Figure 2). In multivariate models, LACI remained an independent predictor of AF after adjustment for age, left ventricular mass index, left ventricular ejection fraction, hypertension, and body mass index (OR: 2.92, 95%CI: 1.06–8.05,p=0.038).

Conclusions: Mechanical LACI, by coupling left atrial volumetric load with its residual contractile performance, captures the mechanical substrate underlying atrial vulnerability. This simple echocardiographic index independently predicts AF detection in ESUS patients and may enhance early identification of those with a concealed cardioembolic mechanism, supporting more refined risk stratification and tailored prevention strategies.


Fig 1: ROC curve analysis
Sensitivity
1 - Specificity
AUC = 0.69
Cut-off = 3.14

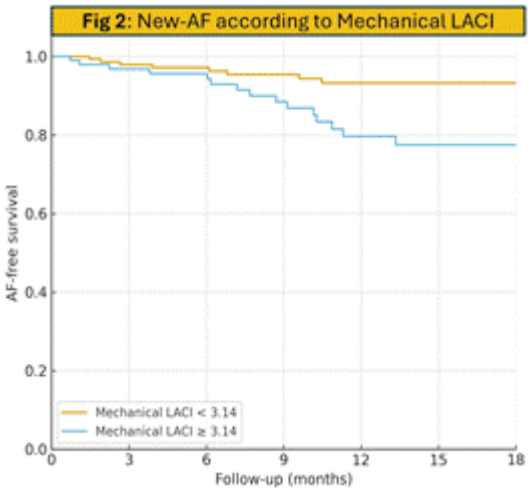

Fig 2: New-AF according to Mechanical LACI
AF-free survival
Follow-up (months)
Mechanical LACI < 3.14
Mechanical LACI ≥ 3.14

Figure 1

IMAGING CARDIOVASCOLARE 282
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE) (IMAGING CARDIOVASCOLARE)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)
TOMOGRAFIA AD EMISSIONE DI POSITRONI (PET) (IMAGING CARDIOVASCOLARE)
TUMORI CARDIACI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)

ACUTE STROKE AS INITIAL PRESENTATION OF CARDIAC MASS: ROLE OF MULTIMODALITY IMAGING

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Clinical Presentation. A 46-year-old overweight patient with no prior cardiovascular history was admitted to the emergency department for sudden right hemibody paralysis and aphasia. On admission, the patient was hemodynamically stable (BP 140/75 mmHg, HR 75 bpm). NIHSS score was 14/42. Physical examination showed rhythmic cardiac activity with clear heart sounds and no murmurs; radial pulses were symmetrical.

Diagnostic work-up. Brain MRI revealed acute ischemic lesions with multiple infarcts in the left cerebral hemisphere. The patient was managed conservatively with subcutaneous low-molecular-weight heparin (LMWH). Chest X-ray was unremarkable. EKG showed sinus rhythm, normal r conduction, and T-wave inversion in the anterior leads. Transthoracic echocardiogram (TTE) revealed a normal sized left ventricle, with preserved systolic function and mild hypokinesia of the mid-apical septum. A large mass was incidentally detected, attached to the interatrial septum and protruding into the left atrium, partially prolapsing into the mitral valve. Measuring approximately 2 x 3 cm, it was initially suspected to be a recently formed thrombus. Considering the predominant clinical suspicion of a newly formed intracardiac thrombus, the anticoagulant regimen was modified, starting intravenous unfractionated heparin titrated according to aPTT. Transesophageal echocardiogram (TEE) was performed for better lesion characterization. Findings included: a mobile, pedunculated, multilobulated mass, arising from the mid-anterior interatrial septum, measuring up to 35 mm and prolapsing into the mitral valve orifice during diastole, without significant stenosis (mean gradient 2 mmHg) or infiltration. Echocardiographic features were highly suggestive of a benign cardiac mass (DEM score<3), ruling out the initial hypothesis of a thrombus. Intravenous anticoagulation was suspended, and subcutaneous enoxaparin was resumed.
Contrast-enhanced chest CT ruled out obstructive CAD. Cardiac MRI completed the diagnostic work-up, confirming the presence of an atrial mass with a broad-based on the infero-posterior interatrial septum. The lesion was multilobulated, measuring 35 x 13 x 14 mm, extending into the left ventricle through the mitral valve and abutting the anterior leaflet. The mass showed no significant enhancement on first-pass perfusion or late gadolinium enhancement sequences. The findings were consistent with a diagnosis of left atrial myxoma. Given the clinical and imaging findings, a cardiac surgery consultation confirmed the need for surgical

removal; however, surgery was postponed because of the acute neurological event, as cardiopulmonary bypass requires systemic heparinization, without which the circuit would thrombose.

Conclusion. Four weeks later, the patient underwent surgical resection of the atrial myxoma via right mini-thoracotomy. A parasternal left atriotomy was performed, and the mass was excised from the atrial wall near the mitral valve. The procedure was completed without complication and postoperative TTE showed normal LV/RV function without valvular heart disease.
Discussion Multimodality imaging plays a crucial role in diagnosing cardiac masses by detecting malignancy red flags, minimizing delays, optimizing resources and improving patient outcomes.

IMAGING CARDIOVASCOLARE 249
ECO-CONTRASTO (IMAGING CARDIOVASCOLARE)
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE (IMAGING CARDIOVASCOLARE)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

ULTRASOUND ESTIMATE OF PULMONARY PRESSURE FACILITATED BY AGITATED SALINE INJECTION: A CASE SERIES

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(a) UNIVERSITA' DEGLI STUDI DELL'INSUBRIA

Introduction: Echocardiographic estimate of systolic pulmonary artery pressure (sPAP) is an essential prognostic parameter. Yet it can be challenging to obtain, particularly when tricuspid regurgitation is minimal and Doppler signals are weak or suboptimal. While agitated saline may enhance signal quality, its reliability is not well established.

Objective: To determine whether agitated saline administration enhances the Doppler signal quality of tricuspid regurgitation without affecting flow velocities, and thus enables a more reliable and reproducible estimate of sPAP, compared to the conventional approach.

Methods: In five patients with cardiac diseases of different etiologies, 25 echocardiographic measurements of sPAP and tricuspid regurgitation were obtained with the conventional method and compared, during the same examination, with 25 measurements after a 10 cc agitated saline injection. Doppler signal quality, peak tricuspid regurgitant velocity, and estimated sPAP were assessed (Fig. 1). Paired t-tests were performed for each patient and on aggregated pre- and post-contrast means. Variance differences were evaluated, and a linear mixed-effects model was applied to estimate the effect of agitated saline on sPAP, adjusting for intra- and inter-patient variability.

Results: In one case reliable measurement was possible only after contrast injection. Agitated saline improved Doppler signal quality in all the other cases. Values obtained with contrast were comparable to baseline but with clearer Doppler profiles. Paired t-tests showed significant differences in 2 of 4 patients. On aggregate analysis, mean sPAP increased by ±7 mmHg after contrast compared to baseline ($p=0.0454$). Measurement dispersion was not significantly different ($p=0.2$). The mixed-effects model demonstrated a mean increase of 7.92 mmHg (SE 1.23; $p<0.001$; 95% CI 5.51–10.33), with adjusted means of 17.32 mmHg (pre) and 25.24 mmHg (post). The intraclass correlation coefficient (ICC) was 0.8, indicating that most variability was attributable to inter-patient differences, with only 20% intra-patient variability.

Conclusions: Consistent with limited prior reports, agitated saline injection represents a useful tool to enhance Doppler signal quality of tricuspid regurgitation, improving the feasibility of sPAP estimate without affecting reproducibility. Statistical analysis also showed a significant mean increase in sPAP after administration, which may reflect a methodological artifact but also raises interesting research perspectives. Although preliminary and based on a small sample, these findings support the potential clinical role of this technique, which should be validated in larger studies to better define its impact and consolidate its use.

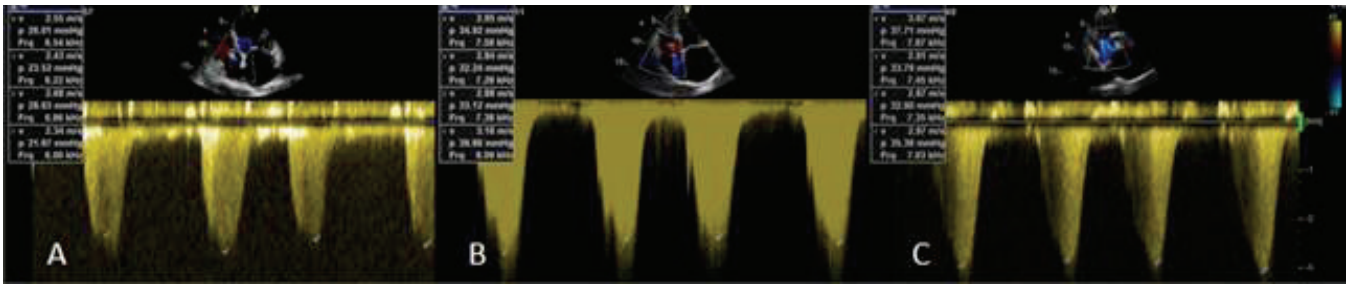


Fig. 1: (A) At baseline, high gain. (B): Early phase after injection, low gain. (C):Late phase after injection, low gain.

Figure 1

IMAGING CARDIOVASCOLARE 277
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE (IMAGING CARDIOVASCOLARE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
PROGNOSI (SCOMPENSO CARDIACO)

STRATEGIE TERAPEUTICHE GUIDATE DAI SINTOMI NELL'INSUFFICIENZA AORTICA: IL PESO DELLE COMORBIDITÀ

Lorenzo Guarino (a), Mauro Bagli (a), Myriam Carpenito (a), Federica Coletti (a), Christian Santella (a), Gaetano Castaldo (a), Massimo Chello (a), Simona Mega (a), Francesco Grigioni (a)
(a) FONDAZIONE POLICLINICO UNIVERSITARIO CAMPUS BIO-MEDICO

Background: L'insufficienza aortica (IA) è una patologia valvolare progressiva la cui prevalenza aumenta con l'età. Le attuali linee guida raccomandano un intervento chirurgico precoce al manifestarsi dei sintomi, indipendentemente da ulteriori indicatori di severità della malattia. Il nostro studio mira a identificare i fattori determinanti cardiaci e non cardiaci dei sintomi in pazienti con IA severa sottoposti a sostituzione della valvola aortica (SVA).

Metodi: Questo studio retrospettivo ha coinvolto 101 pazienti sottoposti a SVA per IA severa e isolata presso la nostra struttura tra il 2015 e il 2021. I criteri di esclusione includevano dissezione aortica, endocardite, cardiopatia congenita, altra valvulopatia severa o concomitante intervento di by-pass aorto-coronario.

Risultati: Alla valutazione preoperatoria, un terzo dei pazienti era sintomatico. I pazienti sintomatici erano più anziani (68±11 vs 63±12 anni) e più frequentemente affetti da malattia coronarica (CAD) e insufficienza mitralica moderata (IM) (p = 0,01). L'indice di comorbidità di Charlson (CCI) con punteggio ≥3 ha mostrato una forte associazione con i sintomi (p < 0,01). Nell'analisi multivariata, IM moderata, CAD e CCI ≥3 sono emersi come predittori indipendenti dei sintomi. Il modello predittivo che include sia i fattori cardiaci (clinici ed ecografici) che le comorbilità ha mostrato un'accuratezza superiore rispetto a quello basato sui soli parametri cardiaci (AUC 0,82 vs 0,73).

Conclusioni: I sintomi nell'IA severa derivano sia dal sovraccarico volumetrico secondario alla valvulopatia sia dalla presenza di comorbilità. Un elevato carico di comorbilità influenza fortemente la percezione dei sintomi e complica la stratificazione del rischio. L'integrazione di valutazioni multimodali nel processo decisionale clinico può affinare la selezione dei pazienti e ottimizzare i risultati chirurgici, particolarmente in questo contesto clinico.

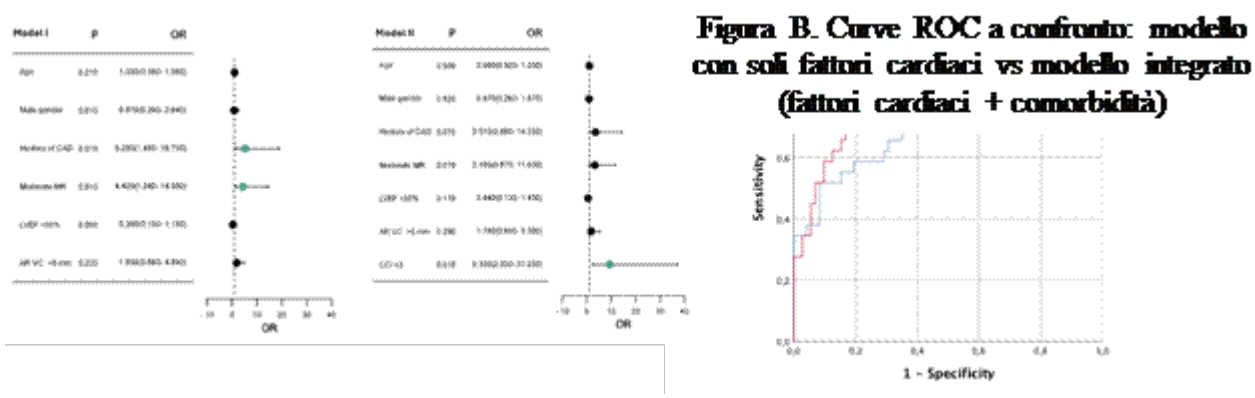


Figure 1

IMAGING CARDIOVASCOLARE 119
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE)
(IMAGING CARDIOVASCOLARE)
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE
(IMAGING CARDIOVASCOLARE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)

DEVELOPMENT OF AORTIC REGURGITATION FOLLOWING HEARTMATE III IMPLANTATION: CLINICAL AND ECHOCARDIOGRAPHIC PREDICTORS

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Background: Aortic regurgitation (AR) is a clinically significant complication in patients with advanced heart failure supported by left ventricular assist devices (LVADs), contributing to both morbidity and mortality. While predictors of AR have been extensively studied in patients with continuous-flow LVADs (CF-LVADs), specific data on the HeartMate III (HM III)—a next-generation device that integrates an artificial pulse into a continuous-flow system—remain limited.

Purpose: To identify pre-implantation clinical and echocardiographic predictors of significant AR in patients with advanced heart failure receiving HM III.

Methods: All patients underwent HM III implantation were examined with echocardiography at pre-implantation, peri-discharge, and at 6, 12, and 24 months post HM III implantation. AR severity was assessed using both standard multiparametric criteria and with novel Doppler-based method at the outflow cannula according to the guidelines. Significant AR was defined as more than mild. Clinical and echocardiographic variables were analyzed using univariate and multivariate logistic regression to identify independent predictors of the development of significant aortic regurgitation (AR).

Results: A total of 91 consecutive patients (mean age 53 ± 13 years, 63% male) who underwent HeartMate III (HM III) LVAD implantation between 2016 and 2023 at the University Medical Center Utrecht, the Netherlands, were included. During a 24-month follow-up period, 36 patients (39.6%) developed significant aortic regurgitation (AR), including 27 (30%) with moderate

AR, 6 (7%) with moderate-to-severe AR, and 3 (3%) with severe AR. In univariable analysis, the development of significant AR was associated with female sex (OR 3.66, p = 0.004), lower body surface area (BSA) (OR 0.11, p = 0.023), larger indexed aortic root diameter (OR 1.43, p = 0.004), larger ascending aorta (OR 1.39, p = 0.004), aortic valve (AoV) degeneration (OR 2.42, p = 0.018), and the presence of at least mild AR at baseline (OR 6.67, p = 0.007). In multivariable logistic regression, the following variables emerged as independent predictors of significant AR: female sex (OR 4.15, p = 0.015), smaller indexed sinotubular junction (OR 0.43, p = 0.013), larger indexed ascending aorta (OR 2.01, p = 0.031), and aortic valve degeneration (OR 2.94, p = 0.022) at baseline.

Conclusions: In advanced heart failure patients supported with the HeartMate III, baseline predictors independently associated with significant aortic regurgitation are female sex, smaller indexed sinotubular junction, larger indexed ascending aorta and aortic valve degeneration, highlighting the importance of intensified follow-up imaging in those high risk patients.

IMAGING CARDIOVASCOLARE 193
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)
PROGNOSI (SCOMPENSO CARDIACO)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

ADDITIONAL PREDICTIVE ROLE OF CARDIAC MAGENTIC RESONANCE FEATURE-TRACKING RIGHT VENTRICULAR GLOBAL LONGITUDINAL STRAIN IN PATIENTS WITH REDUCED EJECTION FRACTION: RESULTS FROM THE DERIVATE REGISTRY

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Background: The left ventricular global longitudinal strain (GLS) is recognized as an additional prognostic marker in patients with reduced ejection fraction on top of traditional imaging parameters. However, less is known about the role of right ventricular global longitudinal strain (RV GLS) assessed with cardiac magnetic resonance feature tracking (CMR-FT).

Purpose: The aim of this study is to assess the prognostic value of CMR-FT derived RV GLS in a cohort of patients with ischemic (ICM) and non-ischemic cardiomyopathy (NICM) and reduced left ventricular ejection fraction (LVEF).

Methods: Patients from the DERIVATE registry, an international, multicenter, and multivendor study (CarDiac MagnEtic Resonance for Primary Prevention Implantable CardioVerter DebrillAtor ThErapy; NCT03352648) with LVEF <50% were included. All patients underwent CMR with RV GLS assessment. Major adverse cardiac events (MACE) were defined as all-cause mortality (ACM) or heart failure (HF). Univariable and multivariable Cox regression models were used to estimate adjusted hazard ratio (aHR) with 95% confidence intervals (95% CI) for RV GLS to predict MACE. Time-dependent receiver operating characteristic analysis was performed to identify the

best cutoff for predicting 5-year outcomes.

Results: 1810 patients (mean age 60 ± 14 years, male 76%) were included. The median follow-up was 1006 days (578 – 1577 days). 455 patients (25%) experienced MACE. Mean RV GLS was - 19.6 ± 6%. Patients who experienced MACE had a higher RV GLS in comparison with patients without events (- 18.4 ± 6% vs - 19.9 ± 6%, $p < 0.001$). The best cut-off in the prediction of MACE was RV GLS > - 23.2%, with an area under curve (AUC) of 0.6. After adjustment for clinical (age, diabetes, atrial fibrillation, NYHA class III-IV) and standard CMR parameters (RV dimensions, LVEF and presence of late gadolinium enhancement), RV GLS > - 23.2% remained as an independent predictor of MACE (aHR 1.27, 95% CI 1.00 – 1.61, $p < 0.049$).

Conclusions: CMR-FT RV GLS is an independent predictor of ACM or HF on top of standard clinical and imaging parameters in both NICM and ICM. A cut-off of > - 23.2% identifies high-risk patients that may require further clinical evaluation.

IMAGING CARDIOVASCOLARE 236
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
TERAPIA DI RESINCRONIZZAZIONE (ARITMIE)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)

LATERO-SEPTAL STRENGTH HEMODYNAMIC FORCE PREDICTS RESPONSE TO CARDIAC RESYNCHRONIZATION THERAPY

Roberto Tarantini (a), Willem Gerrits (b), Cheyenne Chiu (b), Sophie Rier (b), Maarten Jan Cramer (b), Mariachiara Ciarlantini (c), Stefano Frittella (d), Ilaria Torre (e), Frebus Van Slochteren (b), Rene´ Van Es (b), Ivo Van Der Bilt (b), Pim Van Der Harst (b), Mathias Meine (b), Marco Guglielmo (b)
(a) DEPARTMENT OF MOLECULAR MEDICINE, UNIVERSITY OF PAVIA, PAVIA, ITALY; (b) DIVISION HEART AND LUNG, UNIVERSITY MEDICAL CENTER UTRECHT, UTRECHT, THE NETHERLANDS; (c) DEPARTMENT OF MEDICAL AND SURGICAL SCIENCES, ALMA MATER STUDIORUM, UNIVERSITY OF BOLOGNA, BOLOGNA, ITALY; (d) DEPARTMENT OF BIOMEDICAL SCIENCES, HUMANITAS UNIVERSITY, MILAN, ITALY; (e) DEPARTMENT OF CARDIOVASCULAR MEDICINE, FONDAZIONE POLICLINICO UNIVERSITARIO A. GEMELLI IRCCS, ROME, ITALY

Background: Haemodynamic forces (HDFs) measured with echocardiography offer a non-invasive alternative for measuring intraventricular pressure gradients. Specifically, latero-septal (LS) strength becomes more prominent in the presence of ventricular dyssynchrony. Preliminary data shows that HDFs in cardiac resynchronization therapy (CRT) recipients may reflect the effect of left ventricular (LV) reverse remodeling on intraventricular pressure gradients. However, the role of HDFs in predicting response to CRT has not been yet investigated.

Purpose: The aim of this study is to evaluate echo-derived HDFs as predictors of CRT response.

Methods: All patients underwent echocardiography with HDFs assessment before (baseline) and 12 months after receiving CRT. Responders to CRT were defined as those with a ≥ 15% relative reduction in LV indexed end-systolic volume (LVESV) at 12 months. Receiver operating characteristic (ROC) curves were used to assess the predictive performance for CRT response. Optimal cut-off values were determined using the Youden test.

Results: 44 consecutive patients were enrolled (mean age 64 ± 11 years, 59% male), 38 patients (86,4%) were classified as responders. ROC curve analyses showed area under the curves (AUCs) of 0.74 (CI 95%: 0.52–0.96) for LS strength, 0.60 (CI 95%: 0.27–0.93) for apical-basal (AB) strength, and 0.61 (CI 95%: 0.31 – 0.91) for systolic thrust in predicting CRT response. The optimal cut-off of LS strength to predict CRT response was 1.15 %, with a 76% sensitivity, a 67% specificity, a 94% positive predictive value, and a 30.5% negative predictive value. Patients were divided in two groups based on LS strength (low ≤1.15 %; high > 1.15 %). Patients with LS strength > 1.15 % have higher AB strength (5,1% vs 2,8%, p-value < 0,001), higher systolic thrust (7,2% vs

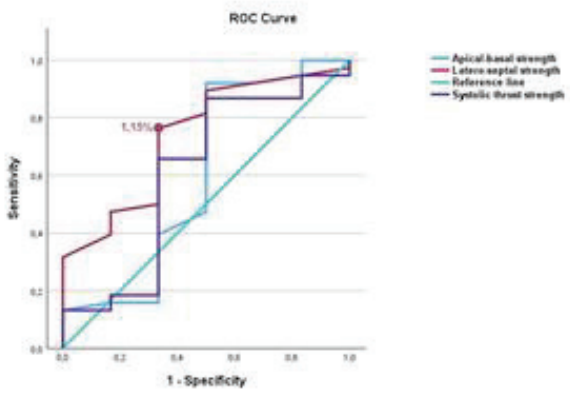


Figure 1

3,9%, p-value = 0,001), and more favorable LV reverse remodeling with significative relative LVESVi reduction (mean reduction, - 43% vs - 23%, p-value=0,009) and improvement of left ventricular ejection fraction (LVEF) (median relative difference, + 63% vs + 25%, p value= 0,03) at 12 months of follow-up compared to patients with low LS strength.

Conclusion: With an AUC of 0.74, baseline LS strength showed the best overall performance in predicting CRT response at 12 months. In patients receiving CRT, LS strength may serve as an additional marker of mechanical dyssynchrony and patients with higher values of LS strength showed more favorable LV reverse remodeling at 12 months.

IMAGING CARDIOVASCOLARE 262
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

ASSESSING DIATOLIC DYSFUNCTION IN CARDIAC AMYLOIDOSIS: A COMPARATIVE EVALUATION OF LEFT ATRIAL COUPLING INDEX AND LEFT ATRIAL RESERVOIR STRAIN

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Background: Left atrioventricular coupling index (LACI) and left atrial strain during the reservoir phase (LASr) calculated with transthoracic echocardiography (TTE) and cardiac magnetic resonance (CMR) have emerged as markers of diastolic dysfunction (DD) associated with poor prognosis in different clinical scenarios. However, data on the role of LACI as a marker of DD in cardiac amyloidosis (CA) are limited, and no direct comparison between LACI and LASr has been performed so far.

Purpose: The aim of this study was to evaluate the role of LACI and LASr as markers of diastolic dysfunction in patients with CA using both TTE and CMR.

Methods: All patients underwent both TTE and CMR at the time of CA diagnosis. LACI —defined as the ratio between end-diastolic left atrial volume and end-diastolic left ventricular volume—and LASr were assessed using both TTE (LACI-TTE and LASr-TTE) and CMR (LACI-CMR and LASr-CMR). DD was graded according to the recommendations of the European Association of CardioVascular Imaging. Significant diastolic dysfunction was defined as DD grade >1 in patients with sinus rhythm, or as either a monophasic filling pattern with deceleration time <160 ms or E/e' ratio >11 in those with atrial fibrillation. Correlation coefficients were calculated to evaluate the relationship between LACI and other imaging parameters. Receiver operating characteristic (ROC) curve analysis was used to determine the areas under the curves (AUCs) for LACI and LASr and to assess their diagnostic accuracy in detecting significant diastolic dysfunction. Optimal cut-off values for both were determined using the Youden index, while the DeLong test was used to compare the ROC curves.

Results: A total of 52 consecutive patients were included in the study (median age 71 years [IQR: 64–76]; 77% male). A moderate correlation was observed between LACI-CMR and LACI-TTE ($\rho = 0.58$, $p < 0.001$), as well as between LACI-TTE and LASr-TTE ($\rho = -0.62$, $p < 0.001$), and between LACI-CMR and LASr-CMR ($\rho = -0.64$, $p < 0.001$). LACI-TTE showed a moderate correlation with the grade of diastolic dysfunction ($\rho = 0.57$, $p < 0.001$), whereas LACI-CMR was not correlated ($\rho = 0.29$, $p = 0.09$). In ROC curve analysis for the detection of significant DD, the diagnostic performance of LACI-TTE (AUC = 0.837, CI

95%: 0.7 - 0.9) was not significantly superior to that of LASr-TTE (AUC = 0.713, CI 95%: 0.5 - 0.9; p = 0.2). The optimal cut-off values for predicting significant diastolic dysfunction were 0.45 for LACI-TTE, with 84% sensitivity and 72% specificity, and 8.6% for LASr-TTE, with 60% sensitivity and 83% specificity.

Conclusion: In patients with CA, LACI derived from echocardiography—but not from CMR—is associated with the grade of diastolic dysfunction (DD). Although no statistically significant difference was observed between LACI-TTE and LASr-TTE in diagnostic performance for detecting significant DD, LACI-TTE demonstrated comparable accuracy, with the added advantages of being simple, feasible, and noninvasive. These findings support its potential role as a complementary marker for assessing diastolic function in patients with cardiac amyloidosis.

IMAGING CARDIOVASCOLARE 711
GRAVIDANZA E CARDIOPATIA
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE
(IMAGING CARDIOVASCOLARE)
IMAGING MIOCARDICO-PERICARDICO
(MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

ADAPTIVE CHANGES IN LEFT VENTRICULAR FUNCTION DURING PREGNANCY: INSIGHTS FROM MYOCARDIAL WORK ANALYSIS

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(a) DEPARTMENT OF CLINICAL AND EXPERIMENTAL MEDICINE - CARDIOLOGY UNIT - UNIVERSITY OF MESSINA, MESSINA, ITALY; (b) DEPARTMENT OF OBSTETRICS AND GYNAECOLOGY - UNIVERSITY OF MESSINA, MESSINA, ITALY; (c) DEPARTMENT OF INTERNAL MEDICINE - SAN GIOVANNI DI DIO HOSPITAL, AGRIGENTO, ITALY

Background. Pregnancy induces profound cardiovascular adaptations, including increased plasma volume, cardiac output, and reduced systemic vascular resistance. These hemodynamic changes affect left ventricular (LV) mechanics. Myocardial work (MW), derived from the integration of global longitudinal strain (GLS) and arterial blood pressure, provides a load-adjusted index of LV performance. However, the impact of pregnancy and postpartum on MW parameters remains unclear.

Objectives. This study aimed to evaluate maternal LV function during pregnancy and in the postpartum period by assessing myocardial work indices, and to explore the relationship between gestational hemodynamic changes and myocardial performance.
Methods. We prospectively enrolled 33 healthy pregnant women. Each participant underwent comprehensive transthoracic echocardiography, including speckle-tracking strain analysis, during the last trimester and at postpartum follow-up. Blood pressure was measured with a validated oscillometric device. Myocardial work indices—global work index (GWI), global constructive work (GCW), global wasted work (GWW), and global work efficiency (GWE)—were calculated using non-invasive LV pressure–strain loops. Statistical analysis included paired t-tests and Spearman's correlation, with significance set at $p<0.05$.

Results. During pregnancy, patients showed higher LV systolic performance compared with postpartum. LVEF increased (61.8% vs. 58.8%), and GLS was significantly improved (-20.1% vs. -17.8%, $p<0.03$). GWE was significantly higher in pregnancy (96.0% vs. 94.9%), while GWW was lower (70.1 vs. 99.8 mmHg, $p<0.05$).

Conclusion. Pregnancy is associated with a favorable adaptation of LV function, characterized by improved efficiency and reduced wasted work. These findings suggest that myocardial work indices may provide sensitive markers of physiological cardiac remodeling during gestation. Their clinical use could enhance monitoring of women at risk for peripartum cardiomyopathy.

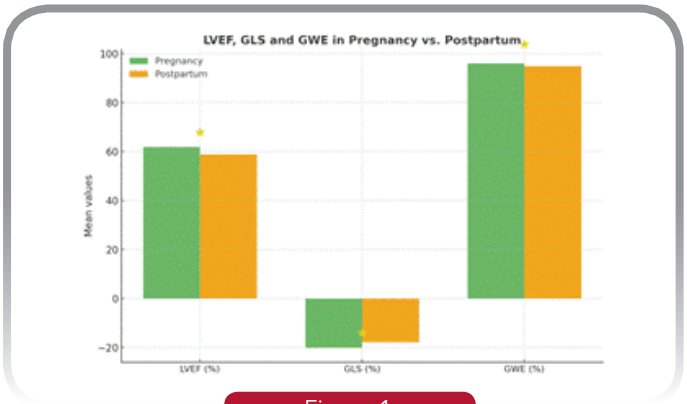


Figure 1

IMAGING CARDIOVASCOLARE 876
TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT) (IMAGING CARDIOVASCOLARE) INFIAMMAZIONE E IMMUNITÀ (ATEROTROMBOSI) CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)

DYNAMIC CHANGES IN PERICORONARY FAT ATTENUATION INDEX PREDICT CAV PROGRESSION AND OUTCOMES IN HEART TRANSPLANT RECIPIENTS: A PILOT STUDY

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(a) DIPARTIMENTO DI SCIENZE CARDIO-TORACO-VASCOLARI E SANITÀ PUBBLICA, UNIVERSITÀ DEGLI STUDI DI PADOVA

Background: Growing evidence supports the use of pericoronary adipose tissue (PCAT) density, expressed as the perivascular fat attenuation index (pFAI), as a marker of coronary inflammation and a predictor of outcomes in heart transplant recipients. However, data on the relationship between coronary allograft vasculopathy (CAV) progression, clinical cardiovascular status, and longitudinal changes in pFAI remain limited.

Methods: Proximal, pancoronary and plaque pFAI were retrospectively assessed in 86 heart transplant recipients at baseline [median 6.9 years (IQR 4.9–13) after transplantation] and at follow-up coronary CT angiography (CCTA) [median 2.1 years (IQR 2.0–2.2) after baseline]. Pericoronary CT density values were compared across subgroups and time points using the Mann–Whitney U test and paired Wilcoxon test. Event incidence was analyzed with Fisher's exact test and McNemar's test. Risk prediction was evaluated using univariable and multivariable logistic regression models.

Results: Application of the previously established −70.1 HU cut-off to define vascular inflammation did not identify subgroups (persistent negative inflammation, persistent positive, remitting, or incident inflammation) at significantly higher risk of clinical or radiological events.
In the overall cohort, neither the presence nor absence of CAV lesions was reliably identified by static pFAI measurements. However, among patients with radiological CAV progression at follow-up (ISHCAV classification), proximal pFAI values increased significantly over time. Mean and median proximal pFAI performed similarly, whereas pancoronary pFAI showed no significant differences.
In the subgroup experiencing composite clinical cardiovascular endpoints (NYHA class worsening, hospitalization for ACS or HF), both proximal and pancoronary pFAI demonstrated a progressive and significant increase from baseline, therefore resulting significantly higher at follow-up compared to healthy controls. This association remained significant after adjustment for confounders [multivariable OR per 10 HU increase: 7.35; 95% CI 1.1–48.9; p = 0.039].
Dynamic proximal pFAI ratio (baseline/follow-up) was significantly higher in patients with either radiological or clinical deterioration [multivariable OR per 0.1 increase: 26; 95% CI 1.51–447; p = 0.025].

Conclusion: Proximal and pancoronary PCAT density appear to reflect overall disease activity. Static and dynamic pFAI measurements may identify active CAV independently of conventional plaque visualization and predict adverse cardiovascular outcomes in heart transplant recipients. Further studies are required to validate these findings for clinical application.

IMAGING CARDIOVASCOLARE 161
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MIOCARDICO-PERICARDICO
(MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)

DIAGNOSTIC ROLE OF WALL THICKNESS HETEROGENEITY IN HYPERTROPHIC CARDIOMYOPATHY AND IN CARRIERS OF SARCOMERIC GENE MUTATIONS

Roberto Licordari (b), Giovanni Donato Aquaro (a), Giancarlo Todiere (c), Umberto Ianni (d), Carmelo De Gori (c), Marco Merlo (e), Andrea Barison (c), Antonio De Luca (e), Crysanthos Grigoratos (c), Francesca Raimondi (f), Lamia Ait Ali (c), Pierluigi Festa (c), Francesco Negri (e), Calogero Falletta (g), Francesco Bianco (h), Fabrizio Ricci (i), Nicoletta Botto (c), Lapo Taddei (a), Mattia Alberti (a), Andrea Italiano (a), Luna Gargani (a), Lorenzo Faggioni (a), Dania Cioni (a), Riccardo Lencioni (a), Michele Emdin (c), Emanuele Neri (a), Gianfranco Sinagra (e), Raffaele De Caterina (a), Gianluca Di Bella (b)
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Background: Hypertrophic cardiomyopathy (HCM) is characterized by variable left ventricular hypertrophy, but current diagnostic criteria rely on absolute wall thickness thresholds that may miss early or subtle phenotypic expressions, especially in sarcomere mutation carriers.

Objectives: This study aimed to assess whether wall thickness standard deviation (WTSD), as a marker of wall thickness heterogeneity, improves the identification of HCM and mutation carriers.

Methods: We evaluated 382 healthy controls, 297 patients with guideline-based HCM diagnosis, and 82 sarcomere mutation carriers without overt hypertrophy using cardiac magnetic resonance imaging. End-diastolic wall thickness (WT) was measured across 16 myocardial segments, and WTSD was calculated. Diagnostic performance of WTSD and other wall thickness-derived parameters was assessed using age- and sex-specific thresholds.

Results: WTSD was significantly higher in HCM patients (4.3 ± 1.1 mm) and mutation carriers (2.3 ± 0.3 mm) compared to healthy controls (1.3 ± 0.3 mm; $p<0.0001$). WTSD identified 97% of HCM patients and 64% of mutation carriers, with excellent specificity (99%). In females, WTSD achieved a sensitivity of 98.9% and specificity of 100% for HCM diagnosis, and identified 74% of female mutation carriers. WTSD outperformed demographic-based personalized thresholds and BSA-indexed maximal WT in all subgroups. Mutation carriers exhibited increased heterogeneity due to the coexistence of hypertrophic and thinned segments, despite normal absolute WT.

Conclusions: WTSD is a robust imaging biomarker that detects early and overt manifestations of sarcomeric HCM with high accuracy. Incorporating WT heterogeneity into diagnostic algorithms may enhance early identification, particularly in women and mutation carriers.

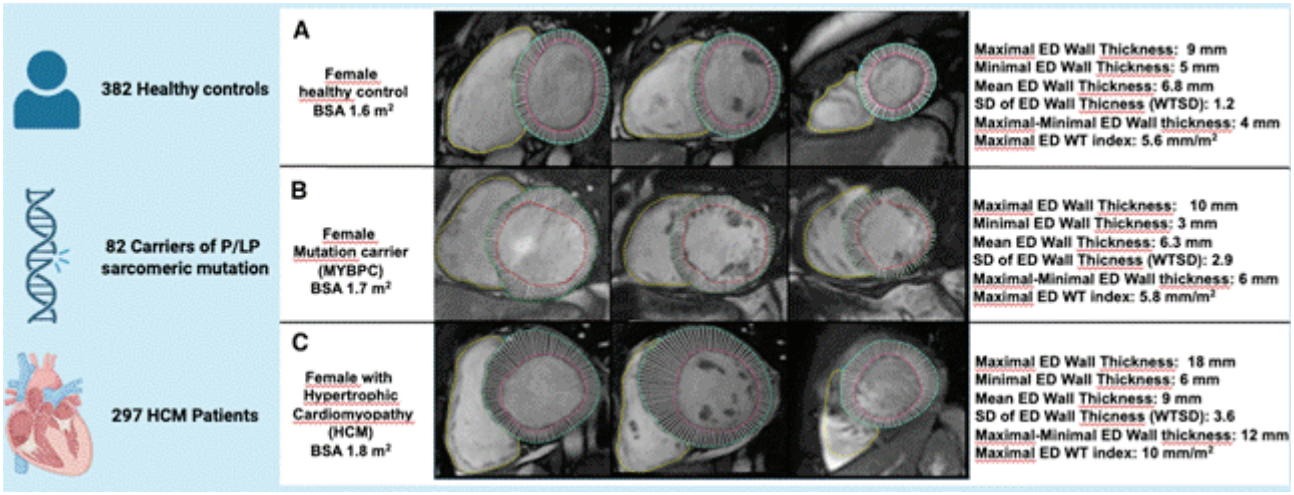

382 Healthy controls
82 Carriers of P/LP sarcomeric mutation
297 HCM Patients
A
Female healthy control BSA 1.6 m²
Maximal ED Wall Thickness: 9 mm
Minimal ED Wall Thickness: 5 mm
Mean ED Wall Thickness: 6.8 mm
SD of ED Wall Thicness (WTSD): 1.2
Maximal-Minimal ED Wall thickness: 4 mm
Maximal ED WT index: 5.6 mm/m²
B
Female Mutation carrier (MYBPC) BSA 1.7 m²
Maximal ED Wall Thickness: 10 mm
Minimal ED Wall Thickness: 3 mm
Mean ED Wall Thickness: 6.3 mm
SD of ED Wall Thicness (WTSD): 2.9
Maximal-Minimal ED Wall thickness: 6 mm
Maximal ED WT index: 5.8 mm/m²
C
Female with Hypertrophic Cardiomyopathy (HCM) BSA 1.8 m²
Maximal ED Wall Thickness: 18 mm
Minimal ED Wall Thickness: 6 mm
Mean ED Wall Thickness: 9 mm
SD of ED Wall Thicness (WTSD): 3.6
Maximal-Minimal ED Wall thickness: 12 mm
Maximal ED WT index: 10 mm/m²

Figure 1

IMAGING CARDIOVASCOLARE 712
MALATTIE DEL METABOLISMO (DIABETE E MALATTIE DEL METABOLISMO)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)

ASSOCIAZIONE TRA TESSUTO ADIPOSO EPICARDICO E FUNZIONE ATRIALE SINISTRA: RUOLO DELL'IMAGING ECOCARDIOGRAFICO AVANZATO

Stefania Lo Giudice (a), Concetta Zito (a), Simona Giacalone (a), Giustina Iuvara (a), Asya Cautela (a), Michela Navarra (a), Graziella Agnelli (a), Mariaconcetta Catanoso (a), Salvatore La Carrubba (b), Antonio Micari (a), Gianluca Di Bella (a), Scipione Carerj (a)
(a) DIPARTIMENDO DI MEDICINA CLINICA E SPERIMENTALE-MALATTIE DELL'APPARATO CARDIOVASCOLARE-UNIVERSITA' DEGLI STUDI DI MESSINA, MESSINA, ITALIA; (b) OSPEDALE SAN GIOVANNI DI DIO-MEDICINA INTERNA-AGRIGENTO-ITALIA

Il tessuto adiposo epicardico (EAT, epicardial adipose tissue) è emerso come un potenziale biomarker di rischio cardiovascolare che, mediante meccanismi paracrini e vasocrini, interagisce direttamente con la camera atriale, contribuendo allo sviluppo di processi infiammatori e fibrotici che possono influenzarne la funzione.

Lo studio si propone di studiare l'EAT come marker di compromissione subclinica della funzione atriale sinistra; è stata valutata la relazione tra lo spessore del grasso epicardico e le alterazioni della funzione atriale sinistra, analizzata con la tecnica ecocardiografica speckle-tracking (STE).

Sono stati arruolati 102 pazienti (68 uomini e 34 donne, età media 64,4 anni) sottoposti ad ecocardiografia trans-toracica. Sono stati misurati parametri antropometrici, come l'indice di massa corporea (BMI) e la superficie corporea (BSA), e raccolte informazioni sui fattori di rischio cardiovascolare (es. ipertensione, diabete, dislipidemia). I pazienti sono stati divisi in due gruppi in base allo spessore dell'EAT: <8 mm e ≥8 mm.
I risultati, così come riportato nei grafici sottostanti, hanno dimostrato che l'aumento dello spessore dell'EAT è correlato con una riduzione significativa della reservoir triale (strain atriale di reservoir ,LAS-r), suggerendo che il grasso epicardico influenzi negativamente la capacità di serbatoio dell'atrio sinistro.

Inoltre, l'EAT è associato a pressioni di riempimento ventricolare più elevate (E/e') e ad una maggiore stiffness atriale (E/e'/LAS-r), indicando una maggiora rigidità dell'atrio sinistro. Il volume atriale sinistro (LAV max) risulta pressoché conservato, mostrando solo un lieve trend in aumento non statisticamente significativo.

In merito all'interazione dell'EAT con i fattori antropometrici ed i fattori di rischio cardiovascolare, non sono state evidenziate correlazioni statisticamente significative , probabilmente per l'esiguità del campione di studio analizzato.
Questi dati suggeriscono che l'EAT possa essere un marker precoce di disfunzione atriale subclinica, senza necessariamente causare un rimodellamento anatomico significativo. La disfunzione atriale potrebbe rappresentare una fase iniziale di una cardiomiopatia atriale, che può favorire eventi aritmici come la fibrillazione atriale. Studi futuri su casistiche più ampie sono necessari per confermare questi risultati.

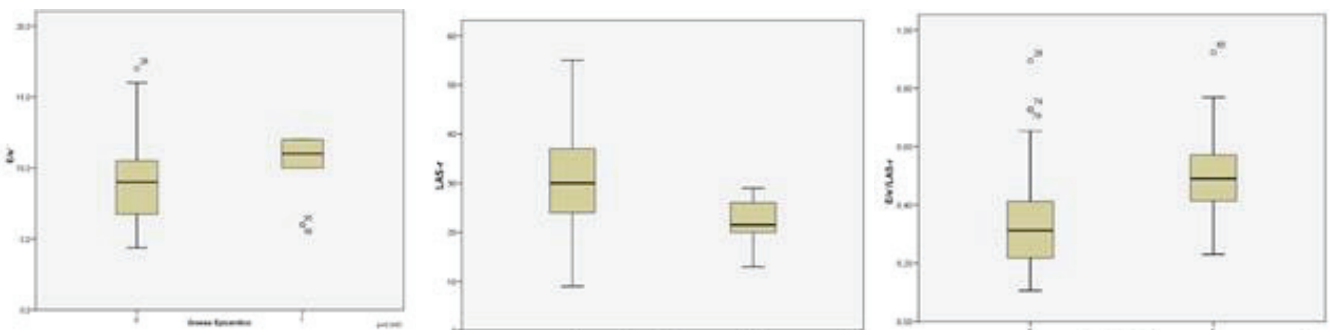


Figure 1

IMAGING CARDIOVASCOLARE 713
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
MALATTIE DEL METABOLISMO (DIABETE E MALATTIE DEL METABOLISMO)

IMPATTO DEL TESSUTO ADIPOSO EPICARDICO SULLA DISFUNZIONE PRECOCE DEL VENTRICOLO DESTRO:ANALISI MEDIANTE STRAIN E INDICI FUNZIONALI

Stefania Giudice (a), Concetta Zito (a), Salvatore Baio (a), Giustina Iuvara (a), Graziella Agnelli (a), Michela Navarra (a), Asya Cautela (a), Maurizio Cusmà Piccione (a), Mariaconcetta Catanoso (a), Salvatore La Carrubba (b), Gianluca Di Bella (a), Antonio Micari (a), Scipione Carerj (a)
(a) MEDICINA CLINICA E SPERIMENTALE-MALATTIE DELL'APPARATO CARDIOVASCOLARE-UNIVERSITA' DEGLI STUDI DI MESSINA-MESSINA-ITALIA; (b) OSPEDALE SAN GIOVANNI DI DIO-MEDICINA INTERNA-AGRIGENTO-ITALIA

Il tessuto adiposo epicardico (EAT, epicardial adipose tissue) è emerso come un potenziale biomarker di rischio cardiovascolare, che interagisce direttamente con la funzione cardiaca attraverso meccanismi paracrini e vasocrini, contribuendo a processi infiammatori e fibrotici che la possono influenzare.
Lo studio si è focalizzato sul potenziale ruolo dell'EAT come marker precoce di disfunzione cardiaca ventricolare destra ed ha coinvolto 85 pazienti (55 uomini e 30 donne, età media 66 anni), con misurazioni di parametri antropometrici e dello spessore dell'EAT effettuate tramite ecocardiografia transtoracica.
I pazienti sono stati suddivisi in due gruppi in base allo spessore dell'EAT (≤ 7 mm vs > 7 mm), con un'analisi della correlazione tra EAT e i vari parametri ecocardiografici.
Nel campione esaminato, così come espresso nei grafici sottostanti, i pazienti con uno spessore dell'EAT >7 mm hanno mostrato una riduzione significativa di alcuni parametri ecocardiografici relativi alla funzione del ventricolo destro. I pazienti con EAT >7 mm hanno mostrato valori significativamente più bassi di RV-GS (Right ventricle-global strain) rispetto a quelli con EAT ≤7 mm, suggerendo che il RV-GS potrebbe essere un indice precoce di disfunzione ventricolare destra.
Il RV-FWS (Right ventricle, free wall strain), ha dimostrato una riduzione significativa nel gruppo con EAT >7 mm rispetto al gruppo con EAT ≤7 mm, confermando una compromissione della deformazione della parete libera del ventricolo destro.
Anche la FAC (fractional area change) è risultata significativamente inferiore nei pazienti con EAT >7 mm rispetto a quelli con EAT ≤7 mm, supportando ulteriormente il ruolo dell'EAT come possibile modulatore della funzione del ventricolo destro.
Per quanto concerne il TAPSE (Tricuspid Annular Plane Systolic Excursion) non sono state riscontrate differenze significative tra i due gruppi (p = 0.454), suggerendo

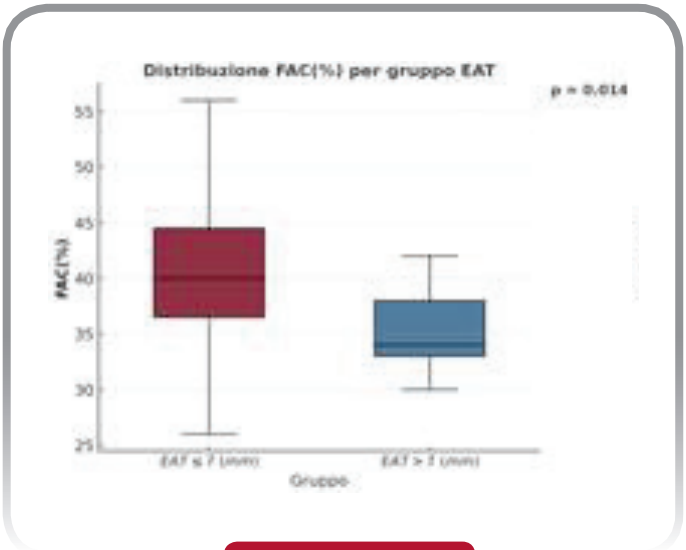


Figure 1

che non sia sufficientemente sensibile per rilevare alterazioni subcliniche della funzione ventricolare destra.

In conclusione, l'EAT si delinea come un marker cardiovascolare utile per l'identificazione precoce della compromissione subclinica del ventricolo destro.

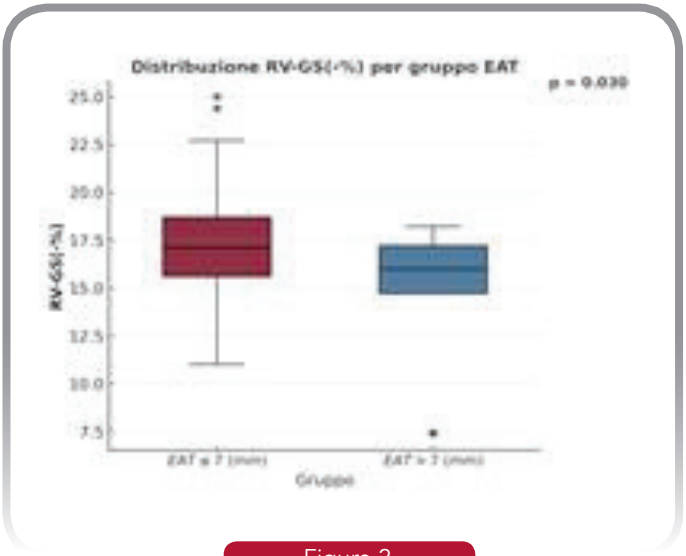


Figure 2

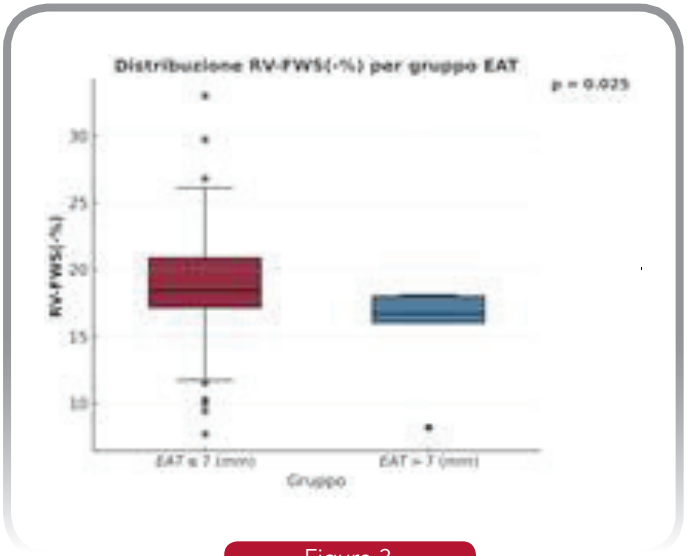


Figure 3

IMAGING CARDIOVASCOLARE 992
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE)
(IMAGING CARDIOVASCOLARE)
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE
(IMAGING CARDIOVASCOLARE)
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)

PAPILLARY FIBROELASTOMA: AN UNUSUAL CAUSE OF TRANSIENT ISCHEMIC ATTACK

Beatrice Lorenzini (a, b), Franco De Remigis (b), Luigi Sciarra (a), Silvio Romano (a)
(a) UNIVERSITA' DEGLI STUDI DELL'AQUILA; (b) OSPEDALE G. MAZZINI TERAMO

Papillary fibroelastomas (PFE) are small, avascular benign tumors. Despite that, PFEs have the potential for devastating clinical consequences such as transient ischemic attack and myocardial infarction.

A 65-year-old female patient was admitted to our ER presenting a transient ischemic attack characterized by retrograde amnesia lasting about an hour. She had a history of systemic scleroderma and left breast cancer treated with local radiotherapy.

In our hospital she underwent a neurological examination and a head CT which were negative for ongoing acute pathologies. An electrocardiogram was performed which showed sinus rhythm at 65 bpm. A transthoracic echocardiogram was also performed revealing a floating mass arising from left ventricular outflow tract between aortic and mitral valves. The transesophageal echocardiogram confirmed a solitary lesion approximately 2 centimeters long localized between A2 and A3 mitral valve scallops. The patient was therefore referred for surgery. During surgery the mass was found to arise from anterior mitral annulus and was resected. The histopathological examination of the mass confirmed the morphologic diagnosis of papillary fibroelastoma.

Histologically PFEs are made up of a single layer of endocardial cells covering a matrix of collagen. The main risk factors for the development of PFEs are iatrogenic causes, such as radiotherapy, and autoimmune diseases such as systemic scleroderma.

In 54% of cases PFEs are asymptomatic at the time of diagnosis. Since over 95% of PFEs present on the left side of the heart, systemic embolism is the most frequent presentation typically as transient ischemic attacks.

Initial evaluation is accomplished with echocardiography. PFEs appear as echo-dense and pedunculated masses. Cardiac computed tomography and magnetic resonance imaging are second line modalities in PFEs evaluation. Definitive diagnosis of PFE requires pathological confirmation.

Surgical resection remains the treatment of choice for all symptomatic patients. For symptomatic patients who are not surgical candidate, long term antiplatelets or anticoagulation therapy should be initiated. Asymptomatic patients should have surgical resection if the size of the tumor is > 1 cm.

PFEs are associated with significant morbidity and mortality. Echocardiography remains the most utilized diagnostic modality. Surgical treatment should always be considered. Antithrombotic therapy should be considered in non-surgical candidates.

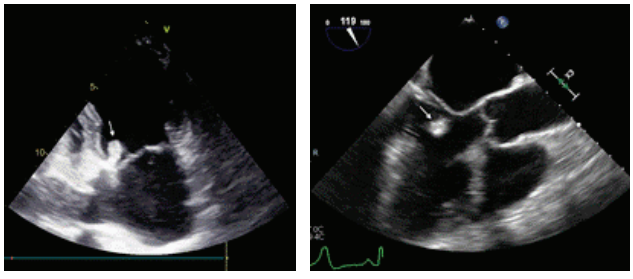


Figure 1

CardioSic

IMAGING CARDIOVASCOLARE 1005
DISFUNZIONE DEL MICROCIRCOLO (CARDIOPATIA ISCHEMICA)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)

CHARACTERISATION OF CORONARY MICROVASCULAR DYSFUNCTION WITH LEFT ATRIAL AND LEFT VENTRICULAR STRAIN ASSESSED WITH 2D SPECKLE-TRACKING ECHOCARDIOGRAPHY

Martina Magistri (a), Leonardo Portolan (a), Sofia Piana (a), Adriana Bartuccio (a), Giorgia Alberti (a), Roberto Scarsini (a)
(a) DIVISION OF CARDIOLOGY, DEPARTMENT OF MEDICINE, UNIVERSITY OF VERONA, VERONA, ITALY

Coronary microvascular dysfunction (CMD) plays a major role in the occurrence of ischaemia and non-obstructive coronary artery disease (INOCA). Moreover, CMD has been observed in several other clinical settings ranging from acute coronary syndromes to heart failure, cardiomyopathies, and valvular heart disease. It is characterised by functional and/or structural abnormalities of the microvasculature. Endothelial dysfunction and inflammation, acting on a pre-existing substrate of individual susceptibility, represent two of the main mechanisms leading to CMD. The haemodynamic hallmarks of CMD are coronary flow reserve (CFR) and the index of microvascular resistance (IMR). Functional CMD is defined by the presence of impaired CFR <2 and normal IMR, whereas structural CMD is defined in presence of high IMR >25, regardless of whether CFR is reduced or not. Recent studies support the correlation between CMD and alterations in left atrial strain (LAS), assessed using 2D speckle-tracking echocardiography (2D-STE), especially in peak atrial longitudinal strain (PALS). However, the impact of different endotypes of CMD on LAS remains unexplored. Moreover, other components of LAS, such as the left atrial conduit strain peak (LACS), have not been investigated in this clinical context.

Methods: Seventy-seven patients with ejection fraction >35% of the Verona Coronary Physiology Register underwent coronary angiography with the assessment of microvascular function according to the #FullPhysiology approach, and transthoracic echocardiography with atrial strain analysis. Coronary flow reserve (CFR) and the index of microcirculatory resistance (IMR) were assessed with invasive thermodilution-based technique. 2D-speckle tracking strain analysis was performed to measure PALS and LACS.

Results: Fifty patients (65%) were diagnosed with CMD (42 structural and 8 functional). Among 28 patients who underwent an Ach vasoreactivity test, 14 (50%) were diagnosed with vasospastic angina. Patients with both functional and structural CMD showed significantly lower values of PALS (24.4±6.3 vs. 25.1±8.1 vs. 31.2±6.3, $p<0.01$) and LACS (13.1±2.6 vs. 11.7±5.4 vs. 16.7±4.9, $p<0.01$) compared with patients with normal CFR and IMR values. CFR was directly correlated with PALS ($r=0.4$, $p<0.01$) and LACS ($r=0.4$, $p<0.01$) and IMR was inversely correlated with PALS ($r=-0.4$, $p<0.01$).

Conclusions: CMD is associated with early functional atrial impairment even in the absence of structural abnormalities on conventional echocardiography. PALS and LACS may represent potential non-invasive predictors of early diastolic dysfunction in patients with INOCA.

IMAGING CARDIOVASCOLARE 530
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
PATOLOGIA DELLA VALVOLA TRICUSPIDE (VALVULOPATIE)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)

TERAPIA ANTI-INTERLEUCHINICA PER ASMA GRAVE E MIGLIORAMENTO DELLA FUNZIONE ATRIALE SINISTRA: UNO STUDIO PILOTA

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Background: L'asma è una patologia infiammatoria con conseguenze a livello sistemico. Per i pazienti con malattia severa, le nuove terapie mirate verso IL-5, IL-4 e IL-13 offrono benefici respiratori. Abbiamo precedentemente dimostrato come pazienti con asma severo presentino dimensioni e funzionalità del ventricolo destro (RV) simili a una popolazione di controllo per età e sesso, ma una peggiore funzione longitudinale dell'atrio sinistro (LA).

Obiettivo: Valutare i possibili effetti benefici della terapia per l'asma severo sugli indici ecocardiografici rispetto al basale.

Metodi: abbiamo rivalutato dopo 12 mesi di terapia i pazienti adulti con asma severo, privi di fattori di rischio cardiovascolare, che erano afferiti al nostro laboratorio di ecocardiografia per una valutazione cardiologica pre-trattamento biologico. Sono stati sottoposti a una valutazione cardiaca completa, inclusa ecocardiografia bi- e M-mode, Doppler tissutale e analisi con ecocardiografia speckle tracking (STE). Il test di Kolmogorov-Smirnov è stato utilizzato per verificare la distribuzione normale delle variabili. Le variabili continue sono state confrontate usando il t-test per dati a distribuzione normale e il test non parametrico di Mann-Whitney U per quelli non a distribuzione normale.

Risultati: Tra i 46 pazienti che hanno iniziato la terapia anti-IL, 11 hanno completato un follow-up a 12 mesi (età media 58±12 anni, 54% donne). Le terapie includevano: omalizumab, mepolizumab, dupilumab e benralizumab. La Tabella 1 confronta i parametri ecocardiografici nei due diversi momenti (T0 vs T12). Abbiamo confermato una funzionalità sisto-diastolica del ventricolo sinistro entro i limiti di normalità, senza variazioni significative rispetto al basale. Anche gli indici dimensionali e funzionali del RV sono rimasti stabili o sono leggermente migliorati rispetto al T0. Per quanto riguarda l'analisi della deformazione, lo strain longitudinale della parete libera del RV e lo strain longitudinale globale hanno mostrato un lieve miglioramento non significativo. È interessante notare come abbiamo rilevato un aumento significativo della funzione dell'atrio sinistro, sia in termini di reservoir (strain longitudinale di picco, PALS, 31,1±8,6% vs 35,1±8,3%, p=0.02) sia di contrazione (strain di contrazione di picco, PACS, -16,8±4,7% vs -20,7±3,8%, p=0.02), ma anche nello strain longitudinale globale (GLS) del ventricolo sinistro.

Conclusioni: Questo studio pilota su una piccola popolazione di pazienti ha rivelato possibili effetti positivi della terapia anti-interleuchina sulla funzionalità dell'atrio sinistro. L'atrio sinistro appare particolarmente sensibile ai trigger pro-infiammatori

anche in altre patologie come l'insufficienza cardiaca, predisponendo possibilmente alla fibrillazione atriale. I nostri dati preliminari possono aprire a nuove relazioni fisiopatologiche tra asma e tachiaritmie sopraventricolari.

Parametro	Basale (T0)	Follow-up a 12M (T12)	p
Frazione di eiezione del ventricolo sinistro (%)	59,2 ± 3,3	59,8 ± 2,9	ns
Diametro telediastolico del ventricolo destro (mm)	28,1 ± 2,0	27,2 ± 1,7	ns
RVFAC (%)	50,2 ± 8,8	51,7 ± 2,9	ns
s' TDI del ventricolo destro (m/sec)	0,14 ± 0,03	0,14 ± 0,01	ns
TAPSE (mm)	22,5 ± 3,0	24,0 ± 1,9	ns
sPAP (mmHg)	26,0 ± 5,5	25,9 ± 6,4	ns
Volume atriale sinistro indicizzato (ml/m²)	25,2 ± 4,9	25,1 ± 6,2	ns
E/e'	7,1 ± 2,6	7,2 ± 2,7	ns
Strain longitudinale globale (%)	-18,3 ± 3,1	-20,8 ± 1,7	0,03
Strain longitudinale di picco atriale sinistro (%)	31,1 ± 8,6	35,1 ± 8,3	0,02
Strain contrazione atriale sinistra (%)	-16,8 ± 4,7	-20,7 ± 3,8	0,02
Strain longitudinale della parete libera (%)	-24,3 ± 6,5	-24,8 ± 5,7	ns
Strain longitudinale globale del ventricolo destro (%)	-20,3 ± 4,4	-21,7 ± 3,8	ns

Tabella 1

IMAGING CARDIOVASCOLARE 923
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
DIAGNOSI, PREVENZIONE E TRATTAMENTO DELLA CARDIOTOSSICITA' (CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')

LEFT VENTRICULAR DEFORMATION ANALYSIS IN PATIENTS WITH EXTRA-CARDIAC ADVERSE EVENTS DURING IMMUNE CHECKPOINT INHIBITORS THERAPY

Giulia Elena Mandoli (a), Laura Spaccaterra (a), Maria Concetta Pastore (a), Andrea Marchese (a), Alessio Pecere (a), Anna Maria Di Giacomo (b), Michele Maio (b), Marta Focardi (a), Nicolò Ghionzoli (a), Matteo Cameli (a)
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Background: Immune checkpoint inhibitors (ICIs) may cause cardiac and extracardiac immune-related adverse events (irAEs). While the prognostic relevance of ICI-induced myocarditis is established, the potential impact of extracardiac irAEs on subclinical myocardial function remains unclear. The primary aim of this study was to investigate whether extracardiac immune-related adverse events may induce subclinical myocardial injury detectable by strain imaging.

Methods: prospective single-center study including patients treated with ICIs who developed irAEs. Adverse events were systematically classified by organ system and graded. Patients underwent baseline and follow-up cardiological evaluation whenever an irAE occurred, in addition to scheduled time points. Global longitudinal strain (GLS) was the primary endpoint, with a relative reduction >15% considered clinically significant.

Results: among 66 patients experiencing extracardiac irAEs, GLS remained stable during follow-up (baseline –21.3 ± 2.9% vs –20.7 ± 3.0%; p = ns; Figure 1). Even in the subgroup with grade ≥3 toxicities (n=11), GLS changes were minimal (Δ relative variation 1.9%), well below the threshold of clinical significance (Figure 2). In contrast, three patients developed ICI-associated myocarditis exhibiting an early and marked GLS reduction (>25% relative decline) despite preserved left ventricular ejection fraction, confirming evidence reported in literature regarding ICI-related myocarditis.

Conclusions: our findings indicate that extracardiac irAEs, even when severe, are not associated with occult myocardial dysfunction detectable by GLS.

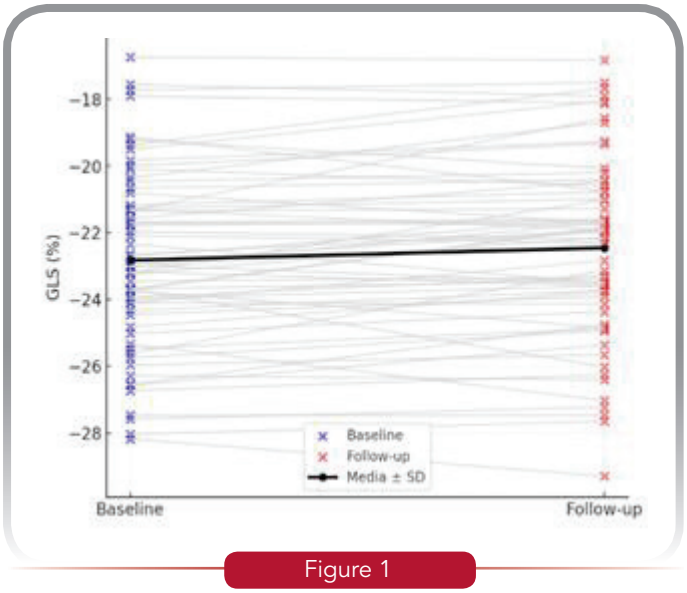


Figure 1

Conversely, ICI-induced myocarditis is characterized by a pronounced and early strain reduction, preceding any decline in ejection fraction. These results reinforce GLS as a sensitive and actionable biomarker for the surveillance of cardiac involvement during ICI therapy, while providing reassurance that extracardiac toxicities alone do not appear to impair subclinical myocardial function.

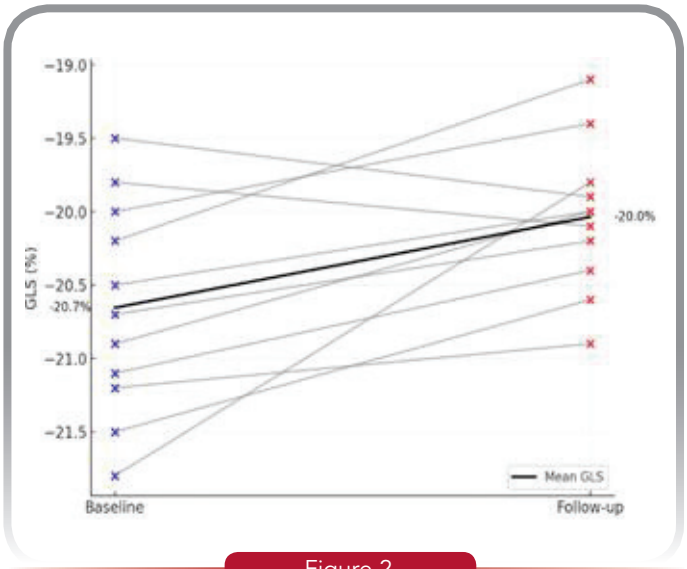


Figure 2

IMAGING CARDIOVASCOLARE 350
PLACCA VULNERABILE (ATEROTROMBOSI)
TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT)
(IMAGING CARDIOVASCOLARE)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)

ASSOCIATION BETWEEN HAPTOGLOBIN PHENOTYPE AND CORONARY ARTERY PLAQUE PHENOTYPE: A CARDIAC COMPUTED TOMOGRAPHY STUDY

Riccardo Maragna (a), Vincenzo De Peppo (a, b), Andrea Baggiano (a), Francesco Cannata (a), Alberico Del Torto (a), Fabio Fazzari (a), Laura Fusini (a), Manuela Muratori (a), Saima Mushtaq (a), Kamil Stankowski (a), Luigi Tassetti (a), Cristina Banfi (a), Gianluca Pontone (a, b)
(a) CENTRO CARDIOLOGICO MONZINO IRCCS; (b) UNIVERSITA' DEGLI STUDI DI MILANO

Objectives: This study aimed to evaluate the association between the haptoglobin (Hp) phenotype and the presence of obstructive coronary artery disease (CAD) and high-risk plaque (HRP) features on coronary computed tomography angiography (CCTA), and to assess its incremental predictive value beyond the ESC 2024 risk factor–weighted clinical likelihood (RF-CL) score.

Background: The Hp 2-2 phenotype is associated with reduced antioxidant capacity and increased cardiovascular risk. Whether Hp phenotyping can improve clinical risk stratification for CAD and identify HRP features beyond validated clinical models remains unknown.

Methods: We prospectively enrolled 150 patients referred for CCTA due to suspected CAD. Hp phenotyping was performed using sodium dodecyl sulfate–polyacrylamide gel electrophoresis. Obstructive CAD was defined as ≥50% luminal stenosis, and HRP features were assessed according to Society of Cardiovascular Computed Tomography criteria. The independent and incremental predictive value of the Hp phenotype was evaluated using multivariable logistic regression and receiver operating characteristic (ROC) curve analysis.

Results: The Hp 2-2 phenotype was independently associated with the presence of obstructive CAD (OR: 2.13; 95% CI: 1.01–4.49; p = 0.046) and HRP features (OR 5.05, 95% CI: 1.003–25.44; p=0.049) at CCTA, after adjustment for the RF-CL score. Adding Hp phenotyping to the RF-CL score improved model discrimination for obstructive CAD (AUC from 0.65 to 0.68 with Integrated Discrimination Improvement – IDI - 0.03, p=0.016) and HRP (AUC from 0.64 to 0.75, IDI 0.005, p=0.024).

Conclusions: Hp 2-2 is independently associated with both obstructive CAD and HRP on CCTA and provides incremental predictive value beyond the RF-CL score. Hp phenotyping could complement existing risk stratification tools to better identify patients at risk of anatomically significant CAD and morphologically vulnerable plaques.

CardioSic

IMAGING CARDIOVASCOLARE 734
ECO-CONTRASTO (IMAGING CARDIOVASCOLARE)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)

DATI MORFO-FUNZIONALI DEL VENTRICOLO SINISTRO: UNO STUDIO A CONFRONTO TRA CMR ED ECO-CONTRASTO

Michele Marcoli (a), Corinna Bergamini (a), Gabriele Bertani (a), Laura Bariselli Maffignoli (a), Elvin Tafciu (a), Caterina Maffeis (a), Giovanni Benfari (a), Flavio Luciano Ribichini (a)
(a) UNIVERSITÀ DEGLI STUDI DI VERONA

Background. la risonanza magnetica cardiaca (CMR) è considerata dalla letteratura come il gold standard per l'analisi della volumetria ventricolare sinistra e il calcolo della frazione d'eiezione ventricolare sinistra (LVEF). Tuttavia, l'esame più utilizzato per ottenere questi dati nella pratica clinica è l'ecocardiografia transtoracica (TTE) e, nei casi di scadente finestra acustica, l'ecocardiografia con mezzo di contrasto (contrast-TTE) è in grado di ottimizzarne la misurazione. Lo scopo di questo lavoro è confrontare i dati volumetrici ottenuti attraverso queste tre metodiche imaging e, inoltre, comparare la capacità di riscontrare la possibile presenza di fibrosi miocardica del contrast-TTE rispetto a CMR.

Metodi. Studio monocentrico retrospettivo. Sono stati analizzati i dati ecocardiografici, ottenuti al TTE basale e al contrast-TTE dopo somministrazione di mezzo di contrasto Sonovue, e CMR. Volume telediastolico (LVED) e telesistolico (LVES) e LVEF sono stati ottenuti con metodo Simpson biplano all'ecocardiogramma e tramite sequenze cine-SSFP in CMR. Lo stroke volume (SV) è stato ottenuto tramite sottrazione volumetrica (SV-vol) nelle diverse metodiche e, negli esami ecografici, anche derivato attraverso il flusso doppler attraverso LVOT (SV-VTI). Sono stati inoltre raccolti dati di ESCAR in finestra 4 camere al contrast-TTE e di LGE in CMR.

Risultati. Sono stati analizzati i dati di 27 pazienti (età media di 64.7 anni) sottoposti ad esecuzione di contrast-TTE presso il nostro centro, che avevano eseguito almeno una CMR. L'indicazione all'esecuzione di contrast-TTE riguardava esclusione di trombosi in 10 casi (37%), valutazione di cinetica segmentaria e LVEF in 15 casi (56%), altra indicazione in 2 casi (7%). Si è riscontrata correlazione significativa tra SV-vol ottenuto al contrast-TTE e in CMR (Pearson r= 0.44 (95% IC 0.08 - 0.7); p=0.019), mentre non è emersa correlazione tra SV in CMR e SV-vol e SV-VTI ottenuti al TTE basale (P=ns). Si è, inoltre, evidenziata correlazione lineare tra contrast-TTE e CMR di LVED (Pearson r= 0.76 (95% iC 0.53 - 0.88); p<0.0001), LVES (Pearson r= 0.8 (95% IC 0.61 - 0.9); p<0.0001) e LVEF (Pearson r= 0.71 (95% IC 0.46 - 0.86); p<0.0001). I valori medi di volumetria ventricolare erano superiori in CMR rispetto a contrast-TTE (mean LVED-vol CMR= 186 ml + 74 ml; mean LVED-vol contrast= 156 ml + 46 ml; mean LVES-vol CMR= 112 ml + 60 ml; mean LVES-vol contrast = 88 ml + 35 ml). Riproducibili invece i valori di LVEF tra le due metodiche (mean LVEF CMR = 43.8% + 18%); mean LVEF contrast = 44.9% + 9.6%; p = 0.4). Per quanto riguarda il confronto tra presenza di ESCAR e di LGE a livello del ventricolo sinistro, non è risultata concordanza in 1/3 dei casi (discordanza in 6 casi su 18 analizzati).

Conclusioni. Come già noto in letteratura, i valori di volumetria ventricolare sinistra sono maggiori in CMR quando confrontati con le metodiche ecocardio-

grafiche, compreso contrast-TTE, pur presentando una correlazione significativa con i dati raccolti con quest'ultimo. Con i limiti di questo studio, contrast-TTE pare essere una valida alternativa alla CMR nella valutazione della volumetria ventricolare sinistra, della LVEF e SV, ad esempio per i casi in cui CMR non è praticabile per controindicazioni o scarsamente disponibile per motivi logistici. Altresì, non risulta essere un'opzione affidabile nell'identificare la presenza di fibrosi miocardica rispetto a CMR.

IMAGING CARDIOVASCOLARE 1014
MIOCARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MIOCARDICO-PERICARDICO
(MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)

MIOCARDITE LUPICA E RISONANZA MAGNETICA CARDIACA: UN BINOMIO POSSIBILE?

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La miocardite lupica è una manifestazione clinica del lupus rara e potenzialmente fatale che interessa il 5-10% dei pazienti affetti da questa patologia. L'insorgenza in età giovanile e la possibilità che questa si presenti come unica manifestazione d'esordio rendono necessario un alto livello di attenzione nel percorso diagnostico. La RM cardiaca costituisce una metodica di imaging ad elevata sensibilità e specificità per la diagnosi di miocardite, che attualmente, tuttavia, presenta limitazioni nell'applicazione in corso di miocardite lupica, a motivo del frequente riscontro di compromissione della funzione renale in questi pazienti e delle difficoltà tecniche di esecuzione, in presenza di condizioni generali gravemente compromesse o di disturbi del ritmo.
Nel caso in esame viene riproposto il percorso clinico-strumentale che ha permesso il riconoscimento precoce dell'interessamento miocardico in una giovane donna di 30 anni, di origine africana. La paziente, con anamnesi patologica remota muta per patologie cardiache, accedeva in ospedale con un corredo sintomatologico eterogeneo e non specifico, caratterizzato da insorgenza di tosse stizzosa con striature ematiche, associata a comparsa, inizialmente, di dolore retro-nucale e alle ginocchia, e, successivamente, di cefalea e febbre fino a 40°C con intensa astenia. L'esame obiettivo non evidenziava segni di scompenso cardiaco e l'ECG non presentava reperti specifici. Durante il ricovero sono state riscontrate la presenza di pancitopenia, linfoadenomegalie diffuse, multipli addensamenti parenchimali polmonari a vetro smerigliato ed insufficienza renale con proteinuria. In una prima fase è stato quindi avviato il percorso di diagnosi differenziale tra eziologia infettiva, patologia onco-ematologica e patologia autoimmune. Durante l'attesa dei risultati laboratoristici definitivi, la paziente ha presentato episodi parossistici di dispnea e dolore toracico, associati ad incremento significativo della troponina, per cui è stata eseguita una risonanza magnetica cardiaca, risultata decisiva per il riscontro di patologia infiammatoria acuta (2/2 criteri di Lake Louise). L'esame ha documentato aree estese di edema miocardico a pattern di distribuzione subepicardico e mesomiocardico, confermato nelle sequenze STIR e dai valori elevati di T1 e T2 mapping. L'esame ecocardiografico, inizialmente negativo, si è modificato nei giorni successivi con comparsa di moderata riduzione della funzione sistolica globale del ventricolo sinistro (FE 45%). La paziente è stata quindi sottoposta in tempi brevi a terapia cortisonica ad alte dosi con somministrazione di bolo endovenoso, permettendo di mantenere stabile il quadro cardiologico, e rendendo possibile procedere all'esecuzione della biopsia renale per la conferma della diagnosi di LES ed il successivo inizio della terapia con micofenolato. Il caso clinico in esame dimostra come l'applicazione della RM cardiaca e del T1/T2 mapping se utilizzata tramite attenta valutazione multidisciplinare del rapporto rischio-beneficio ed in fase diagnostica precoce, permette un rapido accesso alla terapia e può risultare determinante per la prognosi del paziente.



Figure 1

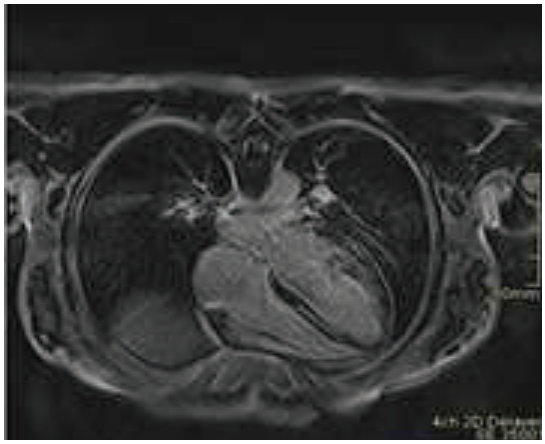


Figure 2

IMAGING CARDIOVASCOLARE 556
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
MINOCA (MYOCARDIAL INFARCTION WITH NORMAL CORONARY ARTERIES)
(CARDIOPATIA ISCHEMICA)
ARITMIE VENTRICOLARI (ARITMIE)
CARDIOLOGIA DELLO SPORT
(ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)

DILATED CARDIOMYOPATHY, ATHLETE'S HEART OR MINOCA. ONE CMR TO RULE THEM ALL!

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Erberto Carluccio (a), Andrea Cardona (b)
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A 56-year-old Caucasian male master cyclist engaging in high-intensity training (8 hours/day) underwent routine exercise testing for competitive eligibility. During recovery, he exhibited polymorphic ventricular premature complexes, predominantly with a right bundle branch block morphology and inferior axis. Baseline electrocardiography showed sinus bradycardia, first degree atrioventricular block and T wave inversion in the inferior and lateral leads. A 24 hour Holter ECG monitoring documented a brief asymptomatic episode of non sustained ventricular tachycardia lasting 4 seconds. A prior cardiac magnetic resonance (CMR), performed in 2023 following an echocardiographic finding of left ventricular dilation, revealed mild global left ventricular systolic dysfunction and a subtle mid-myocardial area of late gadolinium enhancement (LGE) at the inferior septal insertion. Comprehensive genetic testing identified a heterozygous potentially pathogenic variant in the TTN gene. Given persistent arrhythmias and considering prior findings, comprehensive CMR was repeated. Cine imaging evaluation confirmed dilation of all cardiac chambers and mildly reduced left ventricular systolic function, corroborated by feature tracking strain analysis (left ventricular ejection fraction = 47%, left ventricular global longitudinal strain= -12%). For tissue characterization, native T1 mapping values resulted diffusely and slightly elevated (global T1 = 990 ms, reference values 911-983 ms) and black-blood-T1W sequences excluded fatty infiltration. LGE sequences confirmed focal enhancement at the inferior septal insertion and, notably, highlighted a novel area of subendocardial enhancement in the mid inferolateral wall with local markedly elevated native T1 mapping value (local T1 = 1186 ms). Notably, the circumferential strain value in this area was reduced compared to the other areas. Given the ischemic pattern of the newly detected LGE, the patient underwent coronary computed tomography angiography, which excluded obstructive coronary artery disease. These findings, together with the patient's history as a master cyclist and the genetic analysis, are consistent with a diagnosis of dilated cardiomyopathy (DCM) with a newly occurred myocardial infarction with non-obstructive coronary arteries (MINOCA), potentially related to strenuous endurance effort and with anginal symptoms potentially masked by autonomic adaptations and ischemic preconditioning. This case underscores the importance of multiparametric CMR to discriminate overlapping phenotypes of athlete's heart, DCM and MINOCA, entities that can coexist and require tailored therapeutic strategies.

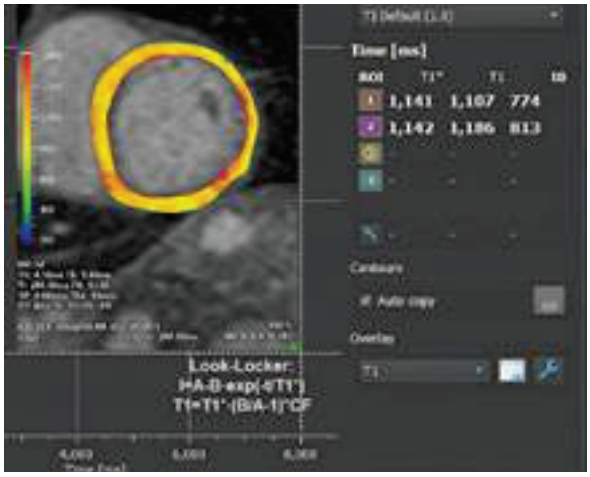


Figure 1

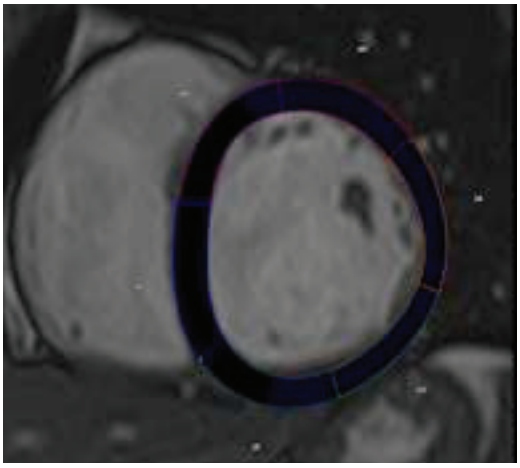


Figure 2

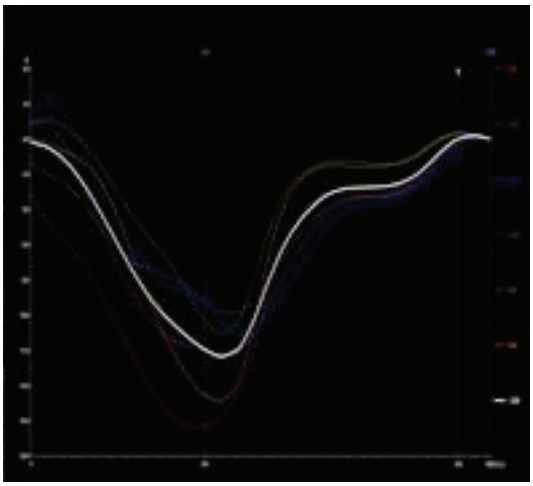


Figure 3

IMAGING CARDIOVASCOLARE 7
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
MECCANISMI DELLE ARITMIE (ARITMIE)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)

PREVALENCE AND PROGNOSTIC IMPACT OF CARDIAC MAGNETIC RESONANCE ABNORMALITIES IN MYOTONIC DYSTROPHY PATIENTS

Alfredo Mauriello (d), Adriana Correra (a), Roberta Bottino (e), Antonio Giordano (f), Michal Marchel (g), Theo Pezel (h), Gerardo Nigro (c, e), Antonello D´andrea (b), Santo Dellegrottaglie (i), Vincenzo Russo (c, e)
(a) UOC CARDIOLOGIA CON UTIC - OSPEDALE "S.G. MOSCATI" - AVERSA; (b) UOC CARDIOLOGIA CON UTIC - OSPEDALE "UMBERTO I" - NOCERA INFERIORE; (c) UOC CARDIOLOGIA CON UTIC - OSPEDALE "V. MONALDI" - NAPOLI; (d) S.C. CARDIOLOGIA - ISTITUTO NAZIONALE TUMORI - IRCCS "FONDAZIONE "G. PASCALE" - NAPOLI; (e) UNIVERSITÀ DELLA CAMPANIA "LUIGI VANVITELLI"; (f) SBARRO INSTITUTE - PHILADELPHIA - USA; (g) MEDICAL UNIVERSITY OF WARSAW; (h) UNIVERSITY HOSPITAL OF LARIBOISIERE - PARIS - FRANCE; (i) UO DI IMAGING AVANZATO - OSPEDALE "VILLA DEI FIORI" - ACERRA

Background: Myotonic dystrophy (DM) is an autosomal dominant inherited neuromuscular disorder characterized by progressive muscular weakness and multisystem involvement. DM1 is characterized by early cardiac involvement, including conduction system disorders, atrial fibrillation (AF), and left ventricular (LV) dysfunction; in contrast, among DM2 patients, the cardiac manifestations are less prevalent and appear at older ages. Cardiovascular magnetic resonance (CMR) provides useful information about the potential risk of myocardial involvement in the early stage of several cardiomyopathies. We performed a systematic review aiming to describe the prevalence of disease-related CMR abnormalities in patients with DM; moreover, we investigated the association between CMR abnormalities and arrhythmias to detect predisposing and/or influencing prognostic factors.

Matherials and methods: We performed a systematic review in accordance with 2009 guidelines from the PRISMA. We identify original research reports in peer-reviewed journals between January 1, 2009, and December 31, 2024, that assessed the prevalence of CMR abnormalities and their prognostic role in DM patients.

Results: Our combined systematic search strategy identified 1199 reports; of those, 538 duplicates, 110 simples review, 137 case reports, 289 reports not focused on the association between CMR and DM. 109 were excluded during the full-text screening phase because they did not focus on the CMR abnormalities in DM patients. Finally, a total of 16 reports were included in our systematic review. The main findings of our systematic review are the following: the prevalence of CMR-detected LV dysfunction, defined as LVEF≤ 50%, ranged from 2% to 29% in DM1 population, and was higher than in healthy controls; conversely, it has not been described among DM2 populations. The overall LGE positivity ranged from 13% to 42% among DM1 patients and did not correlate to the LVEF as detected by echocardiography. LGE positivity was an independent predictor of AF among DM1 patients. Focal myocardial fibrosis and fat infiltration have been

reported respectively in 27% and 32% of DM2 patients and seem to be associated with a high prevalence of conduction system defects. There is no available data on fat infiltration in DM1. The myocardial ECV was higher among DM1 compared to healthy subjects and DM2 patients; however, no data about the correlation with clinical outcome events are currently available. DM patients showed a non-ischemic LGE pattern characterized by mid-myocardial and subepicardial enhancement, in the septum and within the basal inferolateral segments of the LV wall.

Conclusion: The prevalence of CMR-detected LV dysfunction ranges up to one-third of DM1 patients; in contrast, it was not described among DM2 patients. LGE myocardial areas can be detected up to 42% of DM1 patients and 32% of those with DM2. A non-ischemic LGE pattern, characterized by mid-myocardial and subepicardial wall distribution in the septum and within the basal inferolateral segments of the LV wall, is the most prevalent among overall DM population. Myocardial LGE is an independent predictor of AF in DM1 patients; and it was associated with an increased prevalence of cardiac disorders among DM2 patients. DM1 patients showed an increased global ECV compared with healthy subjects and DM2 patients.

IMAGING CARDIOVASCOLARE 779
TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT) (IMAGING CARDIOVASCOLARE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
PATOLOGIA DELL´AORTA (MALATTIE DEI VASI)

FROM BICUSPID VALVE TO ARCH DISSECTION: A CASE OF LOEYS-DIETZ SYNDROME WITH REPEATED AORTIC INTERVENTIONS

Federica Meringolo (a), Rossella Quarta (a, b), Adriana Gravina (a, b), Rubens Calandruccio (a, b), Pierangelo Calvelli (b), Cosima Cloro (b), Alberto Polimeni (a, b), Antonio Curcio (a, b)
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Loeys-Dietz Syndrome (LDS) is a rare, autosomal dominant connective tissue disorder characterized by vascular aneurysms, arterial tortuosity, and a predisposition to arterial dissections and ruptures, often at a young age. LDS is primarily caused by mutations in genes encoding components of the transforming growth factor-beta (TGF-β) signaling pathway, leading to abnormal connective tissue architecture and increased fragility of the vascular wall.

A 20-year-old male presented to the Emergency Department of our academic hospital, with chest pain. On admission, he was hemodynamically stable. Medical history was notable for a bicuspid aortic valve, previously treated with a David procedure, involving replacement of aortic root, bulb, and ascending aorta with a Dacron graft, followed by reimplantation of the native aortic valve and coronary arteries, plus ligation of the ductus arteriosus.

In 2021, he underwent a second cardiac surgery procedure for aortic valve replacement with a mechanical prosthesis (23 mm) and reinforcement of the distal ascending aortic dilation using the "wrapping" technique. In 2022, brain MRI revealed a type I Arnold-Chiari malformation.

A CT scan of the chest performed on admission showed a dissecting aneurysm of the aortic arch, with a maximal diameter of 42 mm and an intimal flap extending for 70 mm from the origin of the left subclavian artery, consistent with a dissection. A non-occlusive dissection of the origin of the left subclavian artery was also noted. The patient was evaluated by vascular surgeons, who opted for medical management and excluded the need for emergent surgical intervention. He was admitted to the Coronary Care Unit for close monitoring of vital parameters including blood pressure.

During hospitalization, the patient remained hemodynamically stable, afebrile, with an average heart rate of approximately 70 bpm. His medications included metoprolol 100 mg twice daily, low molecular weight heparin (6,000 IU twice daily), amlodipine (5 mg once daily), and losartan (100 mg once daily).

A color Doppler echocardiogram showed a mildly increased left ventricular end-diastolic diameter (LVEDD 57 mm) and increased wall thicknesses (interventricular septum 12 mm; posterior wall 11 mm). There was post-surgical interventricular septal motion, no significant segmental wall motion abnormalities, and a mild reduction in left ventricular ejection fraction (roughly 50%). The mechanical aortic valve prosthesis was functioning normally. No pericardial effusion was present. Right heart chambers were within normal limits in size and motion. The ascending aorta measured between 33 and 39 mm.

A follow-up chest CT scan confirmed the aneurysmal dilation with dissection of the posterior aortic arch, and described a "kinked" configuration at the thoracoabdominal junction, with only minimal luminal narrowing. A Kommerell diverticulum was also identified.

A final diagnosis of LDS was made. The patient was then transferred to the Cardiothoracic Surgery Unit, where he underwent a left carotid-subclavian bypass and embolization of the left subclavian artery. Last follow up reported clinical stability.

IMAGING CARDIOVASCOLARE 342
TUMORI CARDIACI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE) (IMAGING CARDIOVASCOLARE)
TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT) (IMAGING CARDIOVASCOLARE)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)

FROM SHADOWS TO SIGNALS: ECHOCARDIOGRAPHY-GUIDED MANAGEMENT OF RARE LATE-STAGE RIGHT ATRIAL ANGIOSARCOMA

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MEMBER OF ERN GUARD-HEART

Primary cardiac tumours are exceedingly rare within the annals of medical literature (1); among malignant forms, angiosarcoma is the most aggressive (1) and may masquerade as systemic inflammatory disease, delaying diagnosis. In this context, echocardiography, by its immediacy and capacity to define site, extent, and anatomic relationships, swiftly steers Heart-Team deliberations and permits close surveillance of complications.

A 40-year-old healthy woman developed low-grade fever and migratory arthritis in June 2024, refractory to anti-inflammatory and immunosuppressive therapy. On 29 December 2024 she presented with diffuse pain, asthenia, dyspnoea, and palpitations; examination disclosed hypotension and sinus tachycardia, with raised C-reactive protein and normal troponin and natriuretic peptides. Urgent CT pulmonary angiography excluded pulmonary embolism and revealed a left pleural effusion, a small pericardial effusion, and a right-atrial mass with multiple pulmonary nodules and mediastinal adenopathy. Transthoracic and transoesophageal echocardiography depicted a heterogeneous hypoechoic lesion of 40 by 34mm, adherent to the interatrial septum and right-atrial roof, with an intact, unobstructed tricuspid valve, features suspicious for a malignant process potentially amenable to resection; negative autoimmune tests retrospectively suggested a paraneoplastic aetiology. With no subdiaphragmatic spread on whole-body CT, the Heart Team elected primary surgery, led by the clinically instability of the patient with persistent, worsening dyspnea and unconquerable pain, refractory to medical therapy. Left thoracentesis drained 1,850 mL of serosanguineous fluid (cytology negative), and coronary angiography demonstrated rich tumoural supply from the circumflex artery.

Radical resection with right-atrial reconstruction using a bovine pericardial patch was undertaken; histology confirmed epithelioid angiosarcoma infiltrating beyond the pericardium into the interatrial and interventricular septa. The postoperative course was complicated by bilateral apical pneumothoraces, a hemothorax, likely from rupture of a pleural metastasis, causing pulseless electrical activity with return of spontaneous circulation

after emergent drainage, and effusive–constrictive pericarditis on serial echocardiography.

Cardiac angiosarcoma, though exceedingly rare, is highly aggressive and often presents with nonspecific symptoms. In this epithelioid case, echocardiography proved decisive across the care pathway infact, it flagged malignant features early, defined size and extent, guided urgent stabilizing surgery despite CTA-confirmed pulmonary metastases, and enabled prompt postoperative complication detection. Overall, the case reinforces echocardiography's primacy within a multimodality strategy for diagnosing cardiac masses, directing acute therapy, and managing long-term sequelae.

IMAGING CARDIOVASCOLARE 346
TUMORI CARDIACI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT) (IMAGING CARDIOVASCOLARE)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)

A COMPLETE UNKNOWN: INTIMAL SARCOMA, A RARE DISEASE WITH MAJOR CLINICAL IMPACT

Davide Miglietta (a, c), Flavia Tomao (a, c), Mattia Biber (a, c), Alberto Guarnaccia (a, c), Valentina Jahnsen (a, c), Rocco Andrico (a, c), Ambra Fabbro (a, c), Alessio Della Mattia (b), Rita Belfiore (b), Daniela Pavan (b), Massimo Maiani (c), Marco Merlo (c), Gianfranco Sinagra (c)
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MEMBER OF ERN GUARD-HEART

Primary cardiac tumors are exceptional, and sarcomas display aggressive biological behavior with a strong tendency to recur.

This case shows a 77-year-old woman with atrial fibrillation, previous ischemic stroke, and calcific aortic stenosis, who presented with dyspnea and profound asthenia. Echocardiography documented a rounded mass of approximately five centimeters in the left atrium, with hemodynamic impact on left-ventricular filling; cardiac magnetic resonance confirmed its solid, non-thrombotic nature and involvement of the left atrial appendage, while coronary angiography revealed a significant mid-segment stenosis of the left anterior descending artery and basal vascular supply to the mass arising from the circumflex artery. The patient underwent removal of the lesion with reconstruction of the posterior wall of the left atrium using a bovine patch, aortic and mitral valve replacement with bioprostheses, and a left internal mammary artery graft to the left anterior descending artery. Histology demonstrated an intimal sarcoma. Ten days after surgery, echocardiography showed a recurrence of about three centimeters

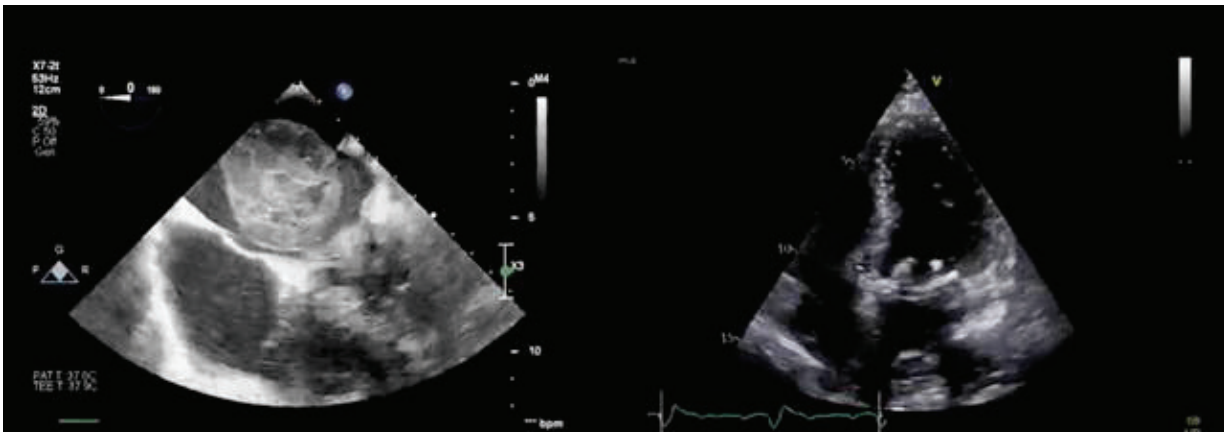


Figure 1

adherent to the atrial roof, with normally functioning valve prostheses and preserved left-ventricular ejection fraction.

The subsequent strategy entailed close monitoring, optimization of medical therapy, and multidisciplinary discussion of possible adjuvant treatment. This case highlights the importance of multimodal imaging in decision-making and the need for close follow-up when the natural history suggests high aggressiveness.

IMAGING CARDIOVASCOLARE 555
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE)
(IMAGING CARDIOVASCOLARE)
CARDIOPATIE CONGENITE NELL´ADULTO
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
EMBOLIA POLMONARE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)

WHEN DYSPNEA HAS A POSTURE: DELAYED DIAGNOSIS OF PLATYPNEA-ORTHODEOXIA SYNDROME

Massimo Valenti (a), Jacopo Giulio Rizzi (a), Serena Rakar (a), Alessandro Altinier (a), Giuseppe Santoro (b), Gianfranco Sinagra (a), Antonio De Luca (a)
(a) CARDIOTHORACOVASCULAR DEPARTMENT, AZIENDA SANITARIA UNIVERSITARIA GIULIANO ISONTINA, UNIVERSITY OF TRIESTE, ITALY. MEMBER OF ERN GUARD-HEART; (b) PAEDIATRIC CARDIOLOGY AND GROWN-UP CONGENITAL HEART PATIENTS UNIT, FONDAZIONE TOSCANA "GABRIELE MONASTERIO" ISTITUTO DI FISIOLOGIA CLINICA-CONSIGLIO NAZIONALE DELLE RICERCHE, MASSA, ITALY

A 66-year-old man was referred to our outpatient clinic by the pneumologist team for a worsening dyspnea over the last two years.
He had a remote history of ischemic stroke.
His recent clinical history started in March 2023 when he was admitted for segmentary PE in the absence of deep vein thrombosis, presenting with paroxysmal acute dyspnea.
Short episodes of acute dyspnea persisted, and a few months later the patient was admitted for mild acute respiratory failure promptly resolved spontaneously, with no clear cause found.
In January 2024 he was re-admitted for recurrent acute respiratory failure: CT angiography and ventilation-perfusion (V/Q) scintigraphy were negative for acute or chronic PE. Transthoracic echocardiography showed normal biventricular dimensions and function and no relevant valvulopathies, but presence of a hypermobile interatrial septum with positive bubble study.
Physical stress echocardiography was stopped for muscle exhaustion without pathological findings. Right heart catheterization (RHC) proved normal hemodynamics. Cardiopulmonary exercise test was stopped early for dyspnea, with slightly increased VE/VCO2 slope, but no desaturation.
We first saw the patient in our clinic in January 2025, a few days after further admission for dyspnea with repeated normal CT angiography, V/Q scintigraphy and RHC. At our evaluation the patient complained of paroxysmal dyspnea, absent during exertion and frequently present in a position-dependent change fashion. SpO2 improved in the change from a standing (88%) to a supine position (93%). On suspicion of platypnea-orthodeoxia syndrome (POS), a TOE was performed showing an atrial septal aneurysm partially fenestrated and a large patent foramen ovale (PFO) with right-to-left shunt and positive bubble test. A prominent Eustachian valve and dilation of the aortic root were also present.
A device closure procedure was successfully performed in a high-volume Center. After the procedure the patient has been asymptomatic with no signs of desaturation at our last evaluation.
POS is a rare clinical condition characterized by platypnea (dyspnea that worsens when sitting or standing upright) and orthodeoxia (hypoxemia that worsens in the upright position), due to right-to-left intracardiac or intrapulmonary shunt that becomes more pronounced in the upright position.
This case highlights the importance of considering POS in patients with unexplained positional dyspnea, despite normal pulmonary investigations, as shunt closure can resolve the clinical condition.

IMAGING CARDIOVASCOLARE 740
IMAGING DELLE CARDIOPATIE CONGENITE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)
CARDIOPATIE CONGENITE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
FUNZIONE VENTRICOLARE, RIMODELLAMENTO E DANNO D'ORGANO
(IPERTENSIONE ARTERIOSA)

VESSELS TAKING A DIFFERENT TURN IN A PATIENT WITH DILATED CARDIOMYOPATHY

Jacopo Giulio Rizzi (a, b), Angela Elhyka (a, c), Ana-maria Poenar (a), Chiara Bucciarelli-ducci (a, d)
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A 35-year-old hypertensive male was referred to our Cardiovascular Magnetic Resonance (CMR) Unit to investigate potential secondary causes of hypertension. He also had a background of left ventricular systolic dysfunction. CMR demonstrated dilated cardiomyopathy with severe biventricular dysfunction (LVEF 29%, RVEF 39%). No secondary causes of hypertension were identified, including aortic coarctation, renal artery stenosis or adrenal masses.

An incidental finding was noted: a right-sided aortic arch (RSAA) with the left carotid artery arising first, followed by the right carotid and right subclavian arteries. An aberrant left subclavian artery (LSA) [arrowhead] with retroesophageal course originated from a bulbous dilation measuring up to 26mm in diameter, known as the 'Kommerell diverticulum' [star]. Additionally, a persistent left superior vena cava (PLSVC) [arrow] drained into a markedly dilated coronary sinus.

According to Edwards' classification, RSAA is divided into three types: type I (mirror-image branching, often associated with complex congenital heart disease), type II (RSAA with aberrant LSA), and type III (isolation of the LSA). Our patient's anatomy corresponded to type II, with an estimated prevalence

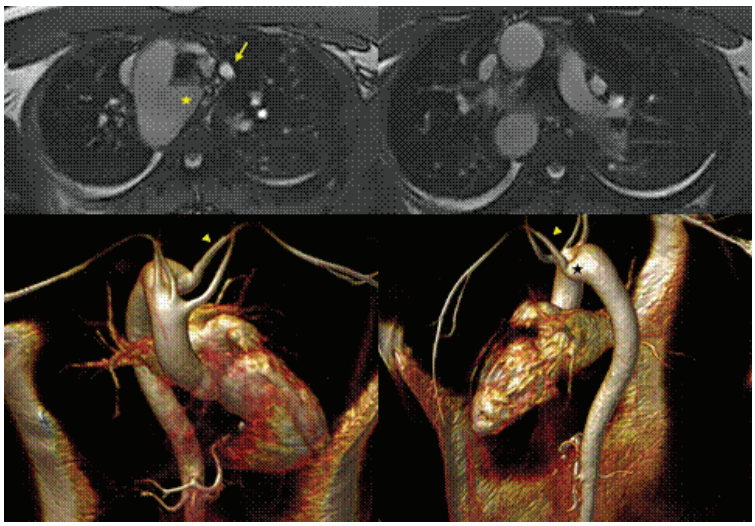


Figure 1

of 0.04-0.05% in the general population. This variant is generally asymptomatic and discovered incidentally. In rare cases, the incomplete vascular ring formed by the aortic arch and aberrant LSA may compress the trachea or esophagus, leading to respiratory symptoms or dysphagia.

In our case, both RSAA and the PLSVC were incidental findings and unrelated to the patient's biventricular dysfunction or hypertension. Nevertheless, it is important to recognize these abnormalities which may carry clinical implications later in life.

IMAGING CARDIOVASCOLARE 954
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
INTERVENTISTICA STRUTTURALE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
ECOCARDIOGRAFIA 3-D (IMAGING CARDIOVASCOLARE)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)

THE OTHER SIDE OF PFO CLOSURE: PREDICTORS AND IMPACT OF POST-PROCEDURAL AF

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Introduction: Patent foramen ovale (PFO) is associated with cryptogenic stroke and other embolic conditions. Percutaneous closure is an established strategy for preventing cerebrovascular events, but its effects on atrial function and the risk of post-procedural atrial fibrillation (AF) remain unclear.

Methods: One hundred and fifty patients undergoing percutaneous PFO closure were enrolled at the Policlinico "G. Martino" in Messina (July 2020 – June 2024). All patients were evaluated clinically, electrocardiographically, and echocardiographically at baseline, at 1 month, and at 6 months. In a subgroup (n=44), atrial strain was analysed using speckle tracking.

Results: The median age was 52 years (IQR 45–59), with a female prevalence (59.7%). Previous ischaemic events were frequent (stroke 57.1%, TIA 48.3%). During follow-up:

- Post-procedural AF: 6.7%, associated with increased P wave duration, higher CHADSVASC score, and left atrial dilatation (HR 12.5, p=0.013).
- Recurrent ischaemic events: rare (stroke 1.1%; TIA 1.1%).
- Mortality: 1.1%.
- Residual shunt: 30% (mostly mild/moderate).
- Atrial strain: significant reduction in LASr (from 35.1% to 31.0%; p=0.026) and LAScd (from –20.3% to –16.0%; p=0.004), with stable LAEF.

Conclusions: Percutaneous PFO closure confirms a very high safety and efficacy profile, with minimal incidence of ischaemic recurrence and mortality. Atrial fibrillation remains the main post-procedural complication, identifiable prior to surgery through clinical and echocardiographic parameters. The selective impact on atrial function (reduction in strain reserve, preserved LAEF) suggests adaptive remodelling of the left atrium. These data support the need for personalised follow-up, especially in patients with atrial dilatation, to balance ischaemic prevention and arrhythmic risk. Larger multicentre studies are desirable to validate the predictors that have emerged and refine risk stratification.

IMAGING CARDIOVASCOLARE 153
CARDIOLOGIA DELLO SPORT
(ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)
ATTIVITÀ FISICA E PREVENZIONE CARDIOVASCOLARE
(ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)

THE UPPER LIMIT OF PHYSIOLOGICAL CARDIAC REMODELLING IN ELITE ATHLETES BY CMR

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(a) ISTITUTO DI MEDICINA E SCIENZA DELLO SPORT, CONI, ROMA

Background: Elite athletes, especially endurance, often exhibit a high level of cardiac adaptation. Cardiac magnetic resonance (CMR) use for this scope is growing rapidly; however, cohorts enrolled to define normal values are not explicitly selected for the absence of cardiovascular (CV) abnormalities. The aim of this work is to explore the highest spectrum of cardiac adaptation in elite athletes by CMR and provide their reference values. Methods: 320 Olympic athletes of all the ESC sports categories were enrolled (mean age 26±4 years, 58% males, 13% skill, 18% power, 29% mixed, 40% endurance). They underwent a CV evaluation (ECG, a maximal stress test, and echocardiography) which did not reveal any abnormalities. Subsequently, they all voluntarily underwent CMR without contrast. CMR cine-loops were post-processed to obtain left ventricular (LV) and right ventricular (RV) volumes, mass and ejection fraction (EF). Differences between sports categories and males and females were investigated. Results: Main parameters for males and females are shown in the Tables. Endurance athletes, as expected, showed the greatest LV and RV volumes (p<0.001 for both males and females). No differences in LV and RV EF were found among different sports categories

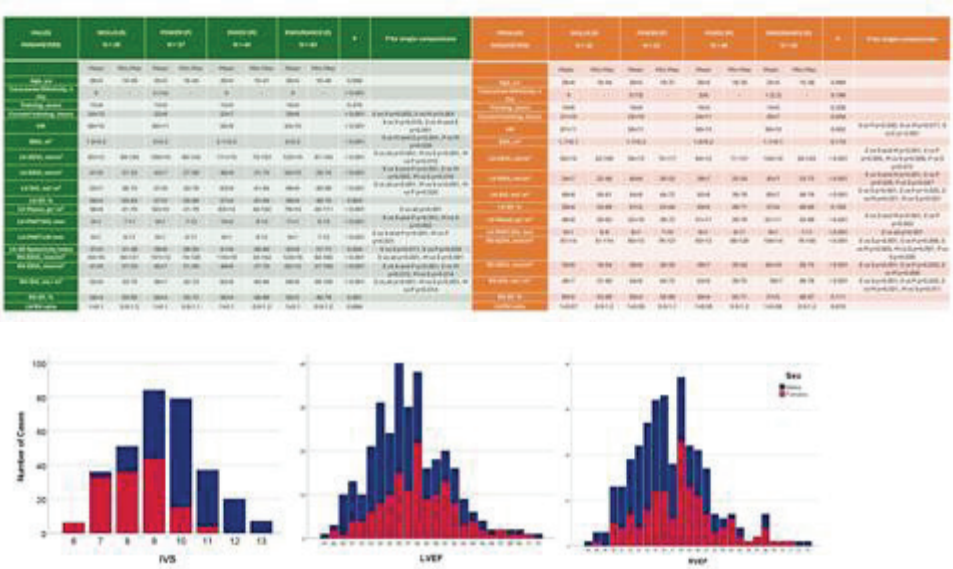


Figure 1

(males: p= 0.953 and p= 0.981; females: p= 0.159 and p= 0.111). Endurance showed higher LV mass and interventricular septum (IVS) than others. Still, none of the athletes showed an IVS greater than 13 mm for males and 11 mm for females (Figure). Finally, none of the athletes showed a biventricular EF lower than 46%, and only 1% and 2% of them showed an LVEF and an RVEF < 50%, most of whom were cyclists. Conclusion: Our work describes CMR-derived cardiac adaptation in a population of Olympic athletes of all the ESC sports disciplines, specifically selected without CV abnormalities, providing reference values for the first time. None of the athletes had a biventricular EF lower than 46%, and the majority of those showing an EF < 50% were cyclists. The highest myocardial thickness was lower than currently known, suggesting that the definition of the grey zone should be revised, at least in Caucasian athletes.

IMAGING CARDIOVASCOLARE 1101 TROMBOSI E COAGULAZIONE (ATEROTROMBOSI) INFARTO STEMI (CARDIOPATIA ISCHEMICA) TOMOGRAFIA AD EMISSIONE DI POSITRONI (PET) (IMAGING CARDIOVASCOLARE)

RARO CASO DI TROMBOSI MEDIOVENTRICOLARE

Roberta D´elia (a), Costanza Morea (a), Maria Rosa Liccese (a), Emanuela Clemente (c), Nicoletta Eletto (a), Michele Antonio Clemente (a), Antonio Rosario Pisani (b), Giandomenico Tarsia (a)
(a) MATERA; (b) UNIVERSITA DEGLI STUDI DI BARI; (c) UNIVERSITA DEGLI STUDI DI FOGGIA

Descriviamo un raro caso di trombosi ventricolare sinistra a localizzazione medio-ventricolare in un giovane paziente affetto da cardiopatia ischemica cronica ad evoluzione dilatativa. CASO CLINICO Nel 2023, il paziente di 40 anni dislipidemico, tabagista con familiarità per cardiopatia ischemica veniva ricoverato per SCA STEMI inferiore per cui praticava angioplastica primaria su arteria coronaria destra. In seguito, veniva sottoposto a completamento della rivascolarizzazione su arteria discendente anteriore. L'ecocardiogramma pre dimissione mostrava un ventricolo sinistro di normali dimensioni con frazione di eiezione moderatamente ridotta (FE 40%). A marzo 2025, il paziente veniva nuovamente ricoverato per STEMI anterolaterale da occlusione trombotica intrastent di IVA trattato mediante tromboaspirazione e pallone medicato. L'ecocardiogramma mostrava un ventricolo sinistro dilatato con severa riduzione della funzione sistolica globale (FE 20%) con acinesie di apice in toto e dei segmenti medio apicali di tutte le pareti. Le sezioni destre apparivano nella norma per morfologia e cinesi con insufficienza tricuspidalica di grado lieve. Il paziente veniva dimesso in terapia antiscompenso ottimizzata con indicazione a nuova rivalutazione ecocardiografica a 40 giorni per valutare l'eventuale indicazione ad impianto di ICD in prevenzione primaria. All'ecocardiogramma di controllo effettuato a maggio 2025 persisteva la severa disfunzione sistolica ventricolare sinistra (FE 20%) per cui veniva proposto l'impianto di defibrillatore, il quale però veniva rifiutato dal paziente. Ad agosto 2025, il paziente accedeva nuovamente in pronto soccorso per dispnea ingravescente. Per valori elevati di D dimero (1119 mcg/L) e per la disfunzione ventricolare destra con ipertensione polmonare sistolica di nuovo riscontro veniva posto il sospetto di embolia polmonare acuta. All'ecocardiogramma veniva segnalata anche una massa rotondeggiante iperecogena, a larga base di impianto, di diametro pari a 3 cm, adesa al segmento medio della parete anteriore. L'Angio TC polmonare praticata in urgenza escludeva l'embolia polmonare acuta; rimaneva, dunque, da definire la natura della massa endoventricolare. A causa della mancanza di disponibilità della RMC (il gold standard per la valutazione non invasiva delle masse cardiache), il paziente veniva sottoposto a PET/TC con 18-FDG che non evidenziava lesioni patologiche ad elevato metabolismo glucidico nei segmenti corporei esaminati, escludendo così la natura maligna della neoformazione e concludendo per massa trombotica. Dopo l'impianto di defibrillatore bicamerale veniva così avviata terapia con warfarin. L'ecocardiogramma di controllo praticato dopo 10 giorni di TAO mostrava una notevole riduzione delle dimensioni del trombo. CONCLUSIONI La localizzazione della massa cardiaca a livello del segmento medio della parete anteriore faceva porre il sospetto di lesione neoplastica, considerando che la trombosi ventricolare è più frequentemente localizzata a livello dell'apice ventricolare sinistro. E' stato necessario, dunque, ricorrere alla PET/TC con 18-FDG per definire la natura della formazione ed escludere la patologia di carattere neoplastico.

IMAGING CARDIOVASCOLARE 323
GRAVIDANZA E CARDIOPATIA
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
DIABETE E MALATTIE CARDIOVASCOLARI
(DIABETE E MALATTIE DEL METABOLISMO)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE
(IMAGING CARDIOVASCOLARE)

ALTERAZIONI EMODINAMICHE E DELLA FUNZIONE MIOCARDICA NELLE PAZIENTI CON DIABETE GESTAZIONALE A 31-34 SETTIMANE CON COMPLICANZE MATERNO-FETALI

Valerio Marongiu (b), Diego De Angelis (b), Giorgia Di Bartolomeo (b), Giovanni Albano (b), Federico Moretti (b), Gaetano Chioccolo (b), Giuseppe Stifano (a), Gian Paolo Novelli (a), Andrea Natale (b)
(a) UOC DI CARDIOLOGIA POLICLINICO TOR VERGATA; (b) SCUOLA DI SPECIALIZZAZIONE IN MALATTIE DELL'APPARATO CARDIOVASCOLARE UNIVERSITÀ DI ROMA TOR VERGATA

Background: Il diabete gestazionale (GD) rappresenta un fattore di rischio indipendente per esiti avversi materni e feto-neonatali.I dati sulla funzione miocardica e sull'assetto emodinamico delle pazienti affette da GD sono ancora scarsi. In particolare sarebbe utile comprendere se funzione miocardia ed assetto emodinamico siano utili per identificare le pazienti a maggior rischio di complicanze materno-fetali. Scopo del nostro studio è stato quello di analizzare le possibili differenze a 31-34 settimane di gravidanza del global longitudinal strain (GLS) e delle resistenze vascolari periferiche sistemiche (TPVR) nella pazienti affette da GD che sviluppano complicanze materno-fetali rispetto alle pazienti senza complicanze.

Metodi: 43 pazienti normotese con GD sono state sottoposte a ecocardiografia a 31-34 settimane di gravidanza. Le pazienti sono state seguite sino al termine di gravidanza e sono state annotate le complicanze. Le pazienti sono state suddivise in 2 gruppi a seconda o meno dello sviluppo di complicanze. L'analisi statistica è stata condotta mediante l'ANOVA ad una via (dati distribuiti normalmente) o il Krustal-Wallis test (distribuzione non normale dei dati). L'analisi di correlazione è stata effettuata mediante l'analisi di regressione lineare. fra TPRV (indicizzate e non) e GLS mediante il coefficiente di correlazione di Pearson.

Risultati: 35 pazienti non hanno presentato complicanze materno-fetali, mentre 8 pazienti hanno sviluppato complicanze entro il termine di gravidanza. Il gruppo GD con complicanze ha mostrato valori significativamente più elevati di TPVR rispetto alle pazienti non complicate (1553 [range 1317-1684] vs 1089 [range 572-1806] dyn·s·cm-5, rispettivamente; $p<0.05$) e TPVR indicizzate (2585 [range 2219-3089] vs 1838 [range 982-2880] dyn·s·cm-5/ m2, rispettivamente; $p<0.05$). I valori di GLS erano meno negativi (complicate -18,9 ± 1,42% vs -23,35 ± 3,24%, rispettivamente; $p<0.05$).
Il GLS ha mostrato una correlazione moderata positiva con TPVR ($\rho= 0.48$, $p< 0.001$), e una correlazione più debole con TPVRi ($\rho=0.32$, $p= 0.034$).

Conclusioni: Le pazienti con diabete gestazionale che a termine di gravidanza sviluppano complicanze sembrano mostrare un'emodinamica alterata e una funzione miocardica ridotta rispetto alle pazienti che non sviluppano complicanze. La funzione miocardica e il profilo emodinamico delle pazienti sembrano essere correlate tra loro, con valori di funzione miocardica tanto più compromessi quanto maggiore è la compromissione emodinamica.
I dati dovranno essere confermati su numeri più ampi e andranno confrontati con coorti di donne con gravidanze fisiologiche.

IMAGING CARDIOVASCOLARE 513
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
ARITMIE VENTRICOLARI (ARITMIE)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
DIAGNOSI, PREVENZIONE E TRATTAMENTO DELLA CARDIOTOSSICITA' (CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')

COCAINE-INDUCED CARDIOMYOPATHY PRESENTING WITH CARDIAC ARREST: INSIGHTS FROM CARDIAC MAGNETIC RESONANCE IMAGING

Francesco Mori (a), Mattia Alberti (a, c), Simona Chiusolo (a), Gabriele Masini (a), Valentina Barletta (b), Emanuele Neri (c), Lorenzo Faggioni (c), Doralisa Morrone (a), Raffaele De Caterina (a), Giovanni Donato Aquaro (c)
(a) CARDIOLOGY DIVISION, UNIVERSITY OF PISA; (b) SECOND CARDIOLOGY DIVISION, UNIVERSITY OF PISA; c) RADIOLOGY DIVISION, UNIVERSITY OF PISA

BACKGROUND: Cocaine use is increasingly recognized as a cause of both acute and chronic myocardial injury, yet it often remains clinically silent until the occurrence of severe cardiovascular events.

CASE REPORT: We report the case of a 49-year-old man with a history of recreational cocaine use who was admitted after an out-of-hospital cardiac arrest due to ventricular fibrillation. Early evaluation with point-of-care ultrasound suggested mildly reduced left ventricular systolic function, while coronary angiography excluded obstructive coronary artery disease. Subsequent echocardiography showed preserved biventricular function and no regional wall motion abnormalities. High-sensitivity troponin T was elevated, and toxicology confirmed cocaine exposure. Cardiovascular magnetic resonance imaging provided key diagnostic insights, revealing myocardial edema and focal mid-wall late gadolinium enhancement in the basal and mid inferoseptal junctional segments, consistent with non-ischemic myocardial fibrosis. These findings supported a diagnosis of cocaine-induced cardiomyopathy. A subcutaneous implantable cardioverter-defibrillator was implanted for secondary prevention, and guideline-directed medical therapy was initiated.

CONCLUSIONS: This case highlights the role of cardiovascular magnetic resonance as the gold standard for myocardial tissue characterization, offering a unique ability to detect subclinical tissue alterations.

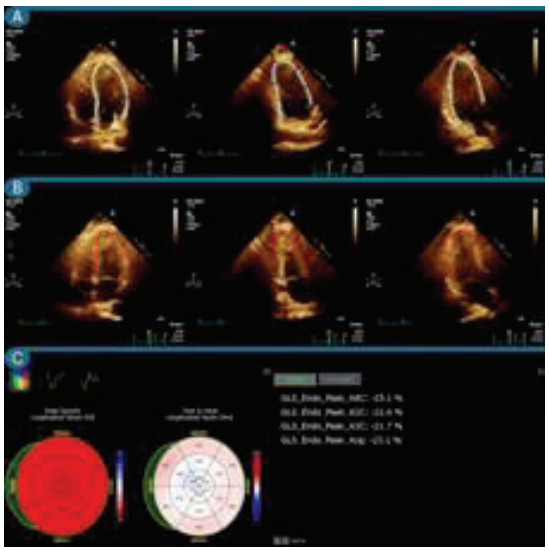


Figure 1

Chronic cocaine exposure can result in irreversible fibrotic changes, which are potential substrates for malignant arrhythmias and sudden cardiac death. Importantly, the imaging pattern identified in this patient has been previously associated with cocaine use, and its recognition has significant diagnostic and prognostic implications.

Given the rising prevalence of cocaine consumption worldwide, clinicians should maintain a high index of suspicion for cocaine-induced cardiomyopathy in young patients presenting with unexplained ventricular arrhythmias or cardiac arrest.

This case reinforces the value of systematic application of advanced imaging techniques in identifying silent myocardial damage and underscores the need for preventive strategies in populations at risk.

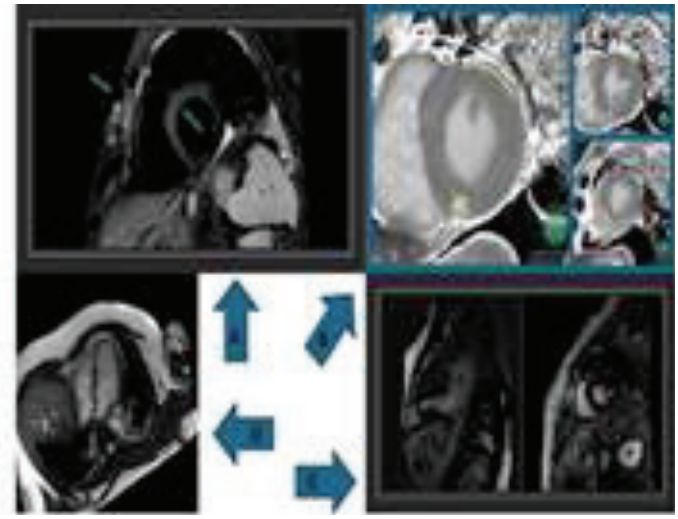


Figure 2

IMAGING CARDIOVASCOLARE 226
TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT) (IMAGING CARDIOVASCOLARE)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
ANGINA INSTABILE (CARDIOPATIA ISCHEMICA)

BREAKING THE WIRES: FEASIBILITY OF CORONARY CT ANGIOGRAPHY WITHOUT ECG LEADS

Saima Mushtaq (a), Amedeo Pellizzon (b), Fabio Fazzari (a), Andrea Baggiano (a), Francesco Cannata (a), Alberico Del Torto (a), Laura Fusini (a), Manuela Muratori (a), Kamil Stankowski (a), Manuela Muratori (a), Nicola Cosentino (a), Riccardo Maragna (a), Luigi Tassetti (a), Gianluca Pontone (a)
(a) DIPARTIMENTO DI CARDIOLOGIA PERIOPERATORIA ED IMAGING CARDIOVASCOLARE, CENTRO CARDIOLOGICO MONZINO IRCCS, MILANO; (b) UNIVERSITÀ DEGLI STUDI DI MILANO, MILANO

Background: Coronary computed tomography angiography (CCTA) is conventionally performed with electrocardiogram (ECG) gating to synchronize image acquisition and reduce cardiac motion artifacts. However, modern CT scanners with wide detector coverage, rapid gantry rotation, automated phase selection, and motion correction may allow acquisition without ECG leads, potentially improving workflow and patient comfort with potential applications in emergency and high-throughput settings.

Methods: We prospectively enrolled 43 adult patients undergoing clinically indicated CCTA in Centro Cardiologico Monzino, Milan. Scans were performed on a 16-cm coverage scanner (Revolution Apex, GE HealthCare) with gantry rotation times of 230–280 ms. No ECG leads were applied; instead, a simulated ECG signal based on pre-scan pulse assessment enabled virtual gating of the entire cardiac cycle. Image quality was independently assessed by three blinded readers using a 6-point Likert scale, comparing standard reconstruction (SR) and motion-corrected reconstruction (MCR). Signal-to-noise ratio (SNR) and contrast-to-noise ratio (CNR) were measured in the ascending aorta and coronary arteries

Results: The cohort included 51% men, mean age 62 ± 12 years, with mean heart rate 85 ± 9 bpm. All scans were diagnostic. MCR significantly improved image quality compared with SR (4.60 ± 0.66 vs 4.04 ± 0.95, $p < 0.001$). Objective image analysis confirmed higher SNR with MCR: ascending aorta 15.7 ± 4.3 vs. 11.9 ± 5.5, left main coronary artery 18.9 ± 10.9 vs. 13.4 ± 7.3, left anterior descending 24.5 ± 13.2 vs. 16.2 ± 10.4, and right coronary artery 32.1 ± 19.4 vs. 17.1 ± 10.4 (all $p < 0.05$). CNR values improved consistently across coronary segments with motion correction, supporting superior vessel-to-background contrast.

Conclusion: ECG-less CCTA using wide-coverage scanners and automated motion correction is feasible and provides diagnostic-quality imaging with significantly improved SNR and CNR across major coronary arteries. across a range of heart rates. This approach may simplify workflow, reduce patient preparation time, and broaden access to high-quality coronary CT imaging, with potential applications in emergency and high-throughput settings.

IMAGING CARDIOVASCOLARE 228
DIABETE E MALATTIE CARDIOVASCOLARI (DIABETE E MALATTIE DEL METABOLISMO)
TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT) (IMAGING CARDIOVASCOLARE)
PLACCA VULNERABILE (ATEROTROMBOSI)

CARDIOVASCULAR RISK ASSESSMENT AND ATHEROSCLEROSIS PHENOTYPE BY CORONARY COMPUTED TOMOGRAPHY ANGIOGRAPHY IN A COHORT OF TYPE 1 DIABETES MELLITUS PATIENTS: THE CARDT1 STUDY

Saima Mushtaq (a), Amedeo Pellizzon (b), Mariangela Murgante (c), Andrea Baggiano (a), Francesco Cannata (a), Alberico Del Torto (a), Fabio Fazzari (a), Laura Fusini (a), Riccardo Maragna (a), Nicola Cosentino (a), Manuela Muratori (a), Luigi Tassetti (a), Stefano Genovese (c), Chiara Molinari (c), Gianluca Pontone (a)
(a) DIPARTIMENTO DI CARDIOLOGIA PERIOPERATORIA ED IMAGING CARDIOVASCOLARE, CENTRO CARDIOLOGICO MONZINO IRCCS, MILANO; (b) UNIVERSITÀ DEGLI STUDI DI MILANO, MILANO; (c) CENTRO CARDIOLOGICO MONZINO IRCCS, MILANO

OBJECTIVE: Mortality rates are 2- to 4-fold higher in people with type 1 diabetes mellitus (T1DM) than in the general population. Cardiovascular disease (CVD) is the main cause of such excess mortality, with CVD events occurring over a decade earlier than expected. However, while epidemiological studies on CVD and type 2 diabetes mellitus are numerous, less information is available on the prevalence of CVD in patients with T1DM. The primary aim of the study was to evaluate the prevalence of CAD at coronary CT angiography (CCTA) in consecutive T1DM patients referred to our diabetic center and to assess the characteristics of coronary plaques in this population.

MATERIALS AND METHODS: We prospectively enrolled 109 consecutive T1DM patients referred to our diabetic unit center in CARDT1 study.
Patients underwent a non-contrast CT for calculation of Calcium Score and a CCTA.
Patients were stratified into three risk groups according to the STENO T1 RISK ENGINE and the ESC score. After the finding of CCTA patients were also divided into three groups: normal (no coronary plaques), non-obstructive CAD (lesions <50%), and obstructive CAD (lesions >50%). The number of segments with any obstructive plaque also was recorded. Each coronary segment was evaluated for the presence of calcified and mixed plaques. In patients with more than 30% of stenosis at CTCA a stress CT perfusion (CTP) was performed. to calculate the myocardial blood flow.
RESULTS: The analytic study population consisted of 88 patients. Fourty-seven were male (53%) and the mean age was 46.42±13.09 years old with a mean duration of diabetes of 24 years.
According to the Steno Type 1 Risk Engine, the mean estimated risk of CVD events over 5 years was 5.1% and 10% over 10 years. Thirty-five patients (48%) and 15 (20%) were classified as low and high Steno Risk, respectively. Moreover 45 (51%) patients have completely normal coronary arteries, 32 (36%) non obstructive CAD and 11 (12%) obstructive CAD. 52.3% of patients classified at very high risk for ESC score have completely normal coronary arteries at CTCA
In patients with obstructive CAD the duration of diabetes was significantly higher than in those with no CAD and not obstructive CAD (40 years vs 17 years and 27 years, respectively, p<0.0001).
Eighty-three% of low risk Steno Score T1DM have normal coronary arteries while 21% of high risk Steno score patients had obstructive CAD and 14% of high Steno risk have no plaque at CTCA. 52.3% of patients classified at very high risk for ESC score have completely normal coronary arteries at CTCA
The number of coronary segments diseased was 1.5

(median) in non-obstructive CAD patients and 4 in obstructive CAD patients (p<0.0001).
Among 118 coronary segments diseased, in 51 segments there was a calcified disease and in 65 there was a non prevalent calcified atherosclerotic disease

CONCLUSIONS

CCTA is able to restratify the risk of CAD in T1DM according to the presence or absence of CAD
In contrast with T2 diabetic patients who have a prevalent calcified and diffuse disease, T1DM patients have a more focal and fibrolipidic pattern of CAD.

IMAGING CARDIOVASCOLARE 1011
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE) (IMAGING CARDIOVASCOLARE)
ENDOCARDITI (VALVULOPATIE)
PERICARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

UNMASKING DEVICE-RELATED ENDOCARDITIS: THE ROLE OF MULTIMODALITY IMAGING

Brigida Napolitano (a), Paolo Springhetti (b), Michele Tomaselli (b), Noela Radu (b), Cinzia Pece (b), Francesca Heilbron (b), Francesca Ciambellotti (b), Denisa Muraru (b), Maria Angela Losi (a), Luigi Badano (b)
(a) AOU FEDERICO II; (b) IRCCS ISTITUTO AUXOLOGICO SAN LUCA

CASE PRESENTATION

A 66-year-old woman presented to the emergency department with low-grade fever and chest pain. Her medical history included prior substance abuse, chronic hepatitis B and C infections, multiple cardiovascular risk factors, and non-ischemic hypokinetic dilated cardiomyopathy with a cardiac resynchronization therapy–defibrillator (CRT-D) implanted for primary prevention. Clinical examination and electrocardiography were unremarkable. Laboratory testing was within normal limits except for an elevated C-reactive protein (CRP, 85.4 mg/L). Transthoracic echocardiography revealed a mild pericardial effusion, which was managed conservatively with medical therapy. Ten days later, she re-presented with fever (38 °C), posteriorly radiating chest pain, dyspnea at rest, and asthenia. Repeat echocardiography demonstrated progression of the pericardial effusion to a severe degree, now associated with hemodynamic compromise. Left ventricular ejection fraction was mildly reduced (46%) but unchanged from prior studies. CRP had risen to 160.4 mg/L, accompanied by neutrophilic leukocytosis (absolute neutrophil count 14.6 $\times 10^9$/L). She was admitted to the cardiac intensive care unit, where a right internal jugular central venous catheter was placed. Pericardiocentesis drained 450 mL of exudative fluid, of which 200 mL was sent for analysis. Immuno-rheumatologic screening was performed, and empiric antibiotics with Ceftriaxone was initiated. Given the suspicion for infective endocarditis, a transesophageal echocardiogram was performed but showed no vegetations. Blood cultures were also negative. Despite antimicrobial therapy, CRP levels remained elevated. A repeat TEE one week later demonstrated a filamentous, mobile mass (2–3 mm) attached to the ventricular surface of the non-coronary cusp of the aortic valve, suspicious for endocarditis. Following infectious disease consultation, antibiotic therapy was escalated with ceftriaxone and vancomycin. Fungal infection was considered but excluded by negative cultures. Non-infective endocarditis was also ruled out. A subsequent TEE one week later documented a new vegetation (12 mm) on the ventricular surface of the right coronary cusp, without macroscopic involvement of intracardiac device leads. Whole-body ^18F-FDG PET-CT was performed for diagnostic clarification and demonstrated focal uptake along the electrode lead and central venous catheter, consistent with an inflammatory–infectious process. Multidisciplinary evaluation recommended device extraction. During hospitalization, the patient remained afebrile, and inflammatory markers normalized. Cultures from explanted leads and pocket swabs were negative, whereas cultures from the midline catheter placed during her ICU stay grew S. haemolyticus. Post-procedural echocardiography revealed right atrial masses of uncertain significance, raising the differential diagnosis of residual vegetations versus post-extraction "ghosts." Serial peripheral blood cultures remained negative, although repeat cultures from the midline catheter again confirmed S. Haemolyticus. In the absence of further microbiological evidence

and with normalization of inflammatory indices, antibiotic therapy was discontinued. On follow-up, echocardiography demonstrated partial regression of the aortic cusp abnormalities. A mobile right atrial mass persisted but was considered more consistent with post-extraction ghosts in the setting of clinical stability. Post-discharge, a repeat PET-CT was negative. The patient was referred for reassessment regarding potential CRT-D re-implantation.

CONCLUSION

This case highlights the inherent diagnostic complexity of infective endocarditis, particularly when clinical, biochemical, and imaging findings are discordant. Initial investigations were misleading, and reliance on the first working diagnosis would have risked mismanagement. Only through integration of multimodality imaging, repeated reassessment and multidisciplinary collaboration was active endocarditic involvement and device infection ultimately identified, informing the therapeutic strategy. Consistent with current ESC guidelines, this case underscores the importance of a multimodal approach and vigilance against diagnostic anchoring to ensure optimal outcomes.

IMAGING CARDIOVASCOLARE 517
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE) IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO) CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

DISTINZIONE TRA AMILOIDOSI AL E ATTR: IL RUOLO DEL T2 MAPPING. UNO STUDIO RETROSPETTIVO

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OBIETTIVO: individuare parametri di risonanza magnetica cardiaca (CMR) capaci di differenziare tra cardiopatia amiloidotica da catene leggere (AL) e cardiopatia amiloidotica da transtiretina (ATTR).

METODI E RISULTATI: studio retrospettivo. In totale abbiamo arruolato 78 pazienti, 41 con diagnosi di amiloidosi (21 con AL e 20 con aTTR) e 37 pazienti senza amiloidosi che hanno eseguito CMR per riscontro di caratteristiche clinico-strumentali sospette per amiloidosi dal 2022 ad oggi presso il centro di amiloidosi cardiaca dell' ospedale di Siena. Abbiamo analizzato retrospettivamente i parametri CMR tra cui i valori di T1 e T2 mapping. Il volume extracellulare (ECV), il pattern di late gadolinium enhancement (LGE), la presenza e la localizzazione di edema miocardico, la massa ventricolare sinistra e la funzione ventricolare sinistra. Per l'analisi statistica abbiamo utilizzato il test Anova a una via e l'analisi ROC (Receiver Operating Characteristics). Il T2 mapping è risultato essere il parametro migliore nel differenziare i pazienti con AL da quelli con ATTR (AL 61.6 ± 4.9 ms, ATTR 55.4± 2.9 ms, P<0.001, AUC 0.86, 95% CI:0.74-0.97, cut-off >59 ms).

CONCLUSIONI: i valori di T2 mapping nella nostra popolazione differenziano con buona accuratezza tra AL e ATTR.

IMAGING CARDIOVASCOLARE 920
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)

REPRODUCIBILITY OF RIGHT VENTRICULAR SYSTOLIC INDICES: TAPSE VS TDI S'

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Background: Right ventricular (RV) assessment is crucial but it can be operator-dependent. We compared the inter-operator reproducibility of Tricuspid Annular Plane Systolic Excursion (TAPSE) and Tissue Doppler Imaging (TDI S') annular systolic velocity.

Methods: One hundred consecutive patients with systemic sclerosis undergoing screening echocardiography for pulmonary hypertension were included in the study. For each subject, TAPSE (M-mode) and TDI S' (PW-TDI) images were acquired using a standardized protocol. Five experienced operators, who were mutually blinded, measured both variables on archived images. Interrater agreement was assessed using a two-way random ICC for absolute agreement. The mean, standard deviation and 95% confidence interval were reported.

Results: TAPSE showed moderate agreement (ICC 0.47), while TDI S' showed excellent agreement (ICC 0.891; both $p<0.001$). Inter-operator means were 23.5-24.0 mm for TAPSE and 12.16-12.35 cm/s for TDI S', with narrower confidence intervals for TDI S'. Bland-Altman analysis confirmed greater variability for TAPSE.

Conclusions: In the echocardiographic assessment of right ventricular (RV) function, TDI S' shows significantly higher reproducibility than TAPSE. This supports its preferential use when minimizing inter-operator variability and ensuring more reliable monitoring over time is desired.

Keywords: right ventricle; echocardiography; TAPSE; TDI S'; reproducibility.

CardioSic

IMAGING CARDIOVASCOLARE 1043
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
CARDIOPATIE CONGENITE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

AN OBSTRUCTVE CONSPIRACY

Marcello Maria Panunzi (a), Matteo Fabrizi (a), Vittoria Zuardi (a), Angelo Mazzei (a), Antonio Prencipe (a), Umberto Benedetto (c), Giulia Renda (a), Sabina Gallina (a), Fabrizio Ricci (a, b)
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A 68-year-old woman presented with recurrent syncope precipitated by hot environments and physical exertion. Transthoracic echocardiography disclosed a left ventricular outflow tract gradient of 150 mm Hg during the Valsalva maneuver, attributable to three obstructive substrates: a subaortic fibrous ridge, a 10-mm thick apico-basal muscular bundle inserting into the interventricular septum and pronounced systolic anterior motion of the mitral valve. Collectively, these abnormalities created a complex geometry that mimicked a double-chambered left ventricle. Cardiac magnetic resonance imaging refined the anatomic definition, demonstrated the combined dynamic effect of the lesions on outflow obstruction, and delineated the aberrant muscular bundle with clarity. The patient underwent surgical correction with excision of the subaortic ridge and septum myectomy. Postoperative echocardiography and magnetic resonance imaging confirmed substantial reduction of the gradient and normalization of hemodynamics. This unusual confluence of structural abnormalities illustrates the diagnostic challenges of complex outflow obstruction and underscores the indispensable role of multimodality imaging in defining mechanisms and guiding surgical therapy.

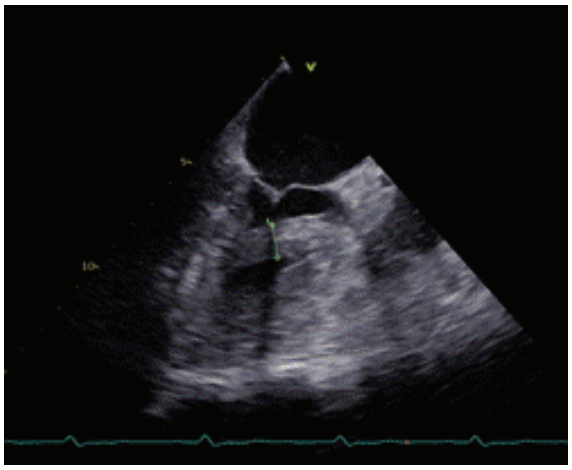


Figure 1

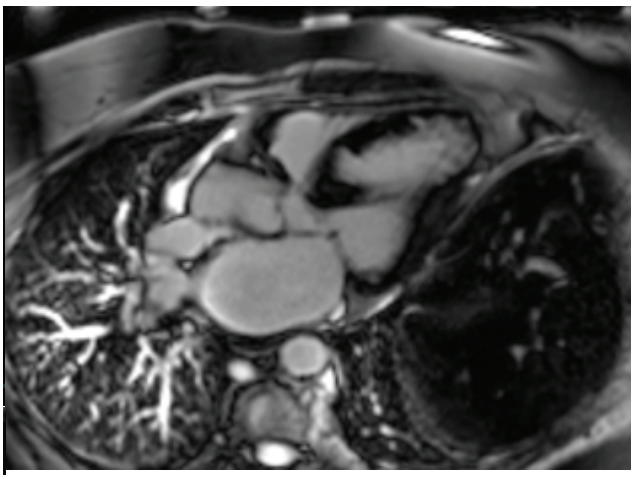


Figure 2

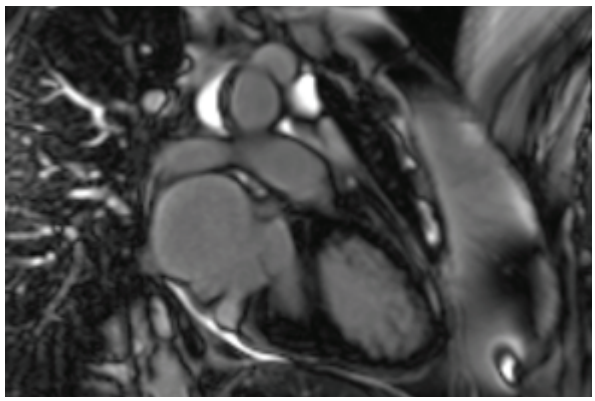


Figure 3

IMAGING CARDIOVASCOLARE 118
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)

MEASURING THE SAME, DIFFERENTLY? ECHO AND CMR GLOBAL LONGITUDINAL STRAIN IN COMPARISON

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Background. Speckle-tracking echocardiography (STE) and cardiac magnetic resonance (CMR) strain—via feature tracking (FT) or tissue tagging (TT)—both quantify left-ventricular (LV) global longitudinal strain (GLS). Despite widespread use, how closely STE-GLS and CMR-GLS agree in real-world settings remains uncertain: software pipelines, myocardial layer handling, image quality, and disease-related factors (remodeling, fibrosis, device artifacts) may introduce systematic differences. Clarifying the magnitude and direction of any discrepancy is relevant as GLS is increasingly applied for diagnosis, risk stratification, and treatment monitoring.

Methods. We conducted a systematic review and meta-analysis (PubMed, Scopus, CENTRAL to May 2025). Eligible studies enrolled adults (≥18 years) with GLS measured by both STE and CMR in the same cohort, with extractable mean and standard deviation (SD). CMR strain by FT and TT was included. The final dataset comprised 45 cohorts (N=1,467): Healthy (13 cohorts, N=268), Athletes (2, N=93), Acute ischemia (3, N=303), Chronic ischemia (1, N=10), Non-ischemic cardiomyopathies incl. HCM (10, N=241), Valvular disease (7, N=245), Congenital (3, N=61), Miscellaneous (e.g. heart transplant) (6, N=246). Median age was 48 years (IQR 35.9–54.5), 56.5% male (IQR 44.1–70.0). Correlations pooled with Fisher-z random-effects; ΔGLS = Echo − CMR was summarized as sample-size–weighted mean and study-level medians/IQRs.

Results. Echo–CMR agreement was moderate and context-dependent. In 18 studies reporting correlation (N=624), pooled r = 0.57 (95% CI 0.35–0.73) with high heterogeneity ($I^2 \approx 90\%$); the 95% prediction interval spanned −0.42 to 0.94, indicating wide between-setting variability. Healthy cohorts did not show clearly higher correlation than Patients (Healthy ~0.38 with wide uncertainty vs Patients ~0.62). By subgroup (random-effects r, 95% CI, k/N): acute ischemia 0.79 (0.66–0.88; 3/303), valvular 0.66 (0.47–0.79; 2/58), NICM/HCM 0.52 (−0.52–0.94; 4/84), other 0.35 (0.14–0.54; 3/82); no "r" was extractable for congenital or athletes. On scale, STE yielded less-negative GLS than CMR: across 43 cohorts (N=1,326), ΔGLS sample-size–weighted mean was +1.10 percentage points (median +0.8; IQR −0.9 to +2.85)—i.e., Echo values averaged ~1.1 points closer to zero (e.g., −20% vs −21%). Era analysis (2006–2014; 2015–2020; 2021–2024) showed no consistent improvement—pooled correlations and ΔGLS distributions were similar, 95% CIs overlapped, heterogeneity remained high—suggesting gains from newer techniques have not translated into higher cross-modality agreement at study level.

Conclusions. STE-GLS and CMR-GLS (FT/TT) provide broadly similar but not identical information. Differences are disease-specific, with opposite bias directions across subgroups, and substantial heterogeneity—cautioning against unqualified interchangeability. Findings support cautious, context-aware interpretation when modalities are compared or combined. Future work should emphasize prospective paired imaging using shared protocols, larger balanced cohorts, and transparent reporting of software, and layer conventions enabling calibration and harmonization for clinical use.

IMAGING CARDIOVASCOLARE 691
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
ECOSTRESS (IMAGING CARDIOVASCOLARE)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)

UTILITÀ DELLO SPECKLE TRACKING NELL'ECOCARDIOGRAFIA DA STRESS PER PREDIRE OUTCOME CLINICI A LUNGO TERMINE

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Introduzione: L'ecocardiografia da stress fisico o farmacologico risulta fondamentale importanza nell'individuazione precoce e non invasiva di ischemia inducibile e della vitalità miocardica. L'ecocardiografia speckle tracking echocardiography (STE) ed il myocardial work (MW) hanno permesso una valutazione della funzione ventricolare sinistra più accurata che è possibile integrare nei vari step dell'ecostress. L'obiettivo dello studio è stato esplorare il potere predittivo sugli outcome a lungo termine dello STE e dei parametri del MW in pazienti sottoposti ad ecostress.

Metodi: Sono stati arruolati pazienti sottoposti ad ecocardiografia da stress per la valutazione di sindromi coronariche croniche. Sono stati esclusi i pazienti con valvole protesiche, trapianto di cuore e fibrillazione atriale cronica. Sono stati raccolti i dati clinici, ECG e l'ecocardiografia al basale e durante lo stress nelle fasi di bassa dose, picco e recupero, completata da analisi STE. Infine, è stato eseguito il follow up a lungo termine attraverso l'analisi di cartelle cliniche o contatto telefonico, registrando gli eventi di morte per tutte le cause o cardiovascolare e gli eventi cardiovascolari maggiori. L'endpoint primario è stato la valutazione del miglior predittore prognostico tra i parametri STE e MW durante l'eco stress; l'endpoint secondario è stato la valutazione dei markers prognostici maggiormente accurati in pazienti con ecostress negativo.

Risultati: Sono stati inclusi 100 pazienti (età media 71 ± 11 anni) sottoposti ad ecocardiografia da stress, di cui 69 con dobutamina, 29 con dipiridamolo, 2 con stress fisico, risultato positivo in 19 pazienti. Al basale, i pazienti presentavano una frazione di eiezione, FE=55±5 %, global longitudinal strain del ventricolo sinistro, LV GLS= -16±4%) e normali parametri di lavoro miocardico al basale (global work index, GWI=1616 ± 400mmHg%, global constructive work, GCW=2028±424 mmHg%, global wasted work, GWW=221±141 mmHg%, global work efficiency, GWE= 89±6%). Lungo un follow up medio di 2.6 ± 1.1 anni, sono stati registrati 26 eventi (1 morte, 14 ospedalizzazioni per cause cardiovascolari, 6 rivascolarizzazioni coronariche tra cui 4 sindromi coronariche acute, 3 episodi di fibrillazione atriale, 2 aritmie ventricolari). I parametri di MW risultano predittori di rivascolarizzazione a distanza (GCW a bassa dose<1763 mmHg%, AUC=0.75 [0.51-0.99], p= 0.03, Fig.1) e di sindromi coronariche acute (GWI al picco<1333 mmHg%, AUC=0.86 [0.67-1], p=0.016, Fig.2). Lo strain ventricolare sinistro (LV GLS)<-14% al picco dello stress si è mostrato un accurato predittore di un endpoint combinato comprensivo di morte ed ospedalizzazione per cause cardiovascolari in pazienti con ecostress negativo (n=10, AUC=0.75 [0.58-0.91], p= 0.012).

Conclusioni: I risultati del presente studio suggeriscono un ruolo prognostico dei parametri di lavoro miocardico (GCW, GWI) durante ecocardiografia da stress nel predire lo sviluppo futuro di sindromi coronariche necessitanti di rivascolarizzazione e del LV GLS nel predire outcome clinici maggiori (morte ed ospedalizzazione per cause cardiovascolari) anche in pazienti con ecostress negativo.

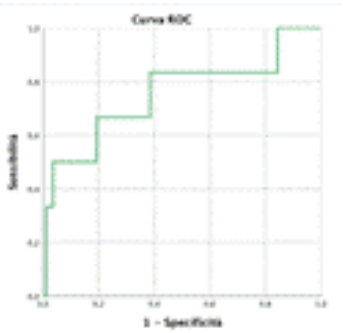


Figura 1

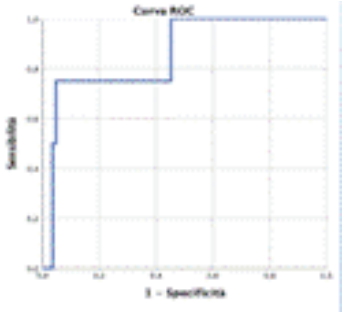


Figura 2

IMAGING CARDIOVASCOLARE 48
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
CARDIOPATIE CONGENITE NELL´ADULTO (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
IMAGING DELLE CARDIOPATIE CONGENITE (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)

DIAGNOSTIC DOUBT RESOLVED WITH MULTIMODALITY IMAGING: RARE CASE OF A GIANT PERICARDIAL CYST

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(c) OSPEDALE DIMICCOLI - BARLETTA

Le cisti pericardiche sono rare lesioni intratoraciche, di natura benigna e spesso asintomatiche. La loro prevalenza è di circa 1:100 000 e sono più frequentemente localizzate nell'angolo costo-frenico destro. La scoperta della maggior parte delle cisti pericardiche è un incidentaloma ed avviene durante esami strumentali eseguiti per altri motivi. Il contenuto fluido delle cisti pericardiche può trarre in inganno l'ecocardiografista e per questo, a volte, possono essere mal interpretate come versamento pericardico. Per tale motivo, l'utilizzo dell'imaging multimodale risulta fondamentale per una corretta diagnosi e gestione terapeutica. Presentiamo il caso di una donna di 60 anni, affetta da dislipidemia. Per episodi sporadici di cardiopalmo esegue una visita cardiologica comprensiva di ecocardiogramma che inaspettatamente segnala uno "spazio ecoprivo pericardico di dubbia interpretazione (versamento pericardico? altro?)". All'ECG dinamico sec. Holter si descrivono alcune salve di extrasistoli sopraventricolari, in assenza di aritmie ventricolari maggiori. Giunta alla nostra attenzione, si evidenzia ecocardiograficamente la presenza di una formazione voluminosa pericardica, ovalare, a margini regolari, a contenuto anecogeno, a livello dell'apice del ventricolo sinistro e delle pareti antero-laterale medioapicali, in assenza di flussi. I restanti reperti risultano nei limiti della norma. Come approfondimento diagnostico, in prima istanza, viene eseguita una TC torace con m.d.c. che descrive una formazione, a livello dell'angolo cardiofrenico sinistro, ipodensa, a margini netti, saccata, a contenuto fluido, verosimilmente cistica, di dimensioni 12x3,5x6,6 cm, che impronta lievemente il parenchima polmonare della regione lingulare inferiore sx. Per una migliore definizione del quadro si esegue infine una RMN cardiaca che conferma il quadro di cisti pericardica congenita non complicata, con contenuto fluido e pareti sottili e prive di significativo enhancement dopo mdc. Per tale motivo, la paziente, asintomatica, viene dimessa a domicilio con indicazione a continuare il follow-up cardiologico semestrale. Il caso presentato sottolinea in maniera significativa come l'imaging multimodale possa essere d'aiuto per giungere ad una diagnosi esatta, grazie ai reperti descritti alla TC e alla RMN che integrano quanto segnalato ecocardiograficamente. Ciò è essenziale per una corretta gestione terapeutica. Infatti, esclusa la diagnosi di versamento pericardico, si è optato per un approccio non invasivo e di solo follow-up semestrale, in assenza di sintomi. Vi è indicazione all'intervento chirurgico nei casi di

sintomi legati alla cisti (solitamente da compressione delle strutture circostanti) e di marcata crescita della stessa, quando l'escissione completa è possibile. Infatti, se l'escissione risulta incompleta, vi è il rischio di recidive. La particolarità del caso, inoltre, risiede non solo nella rarità delle cisti pericardiche ma anche nella localizzazione della stessa e nelle dimensioni elevate (circa 12 cm). Nel 50-71% dei casi le cisti pericardiche sono localizzate nell'angolo costofrenico destro, mentre nella nostra paziente si trova a livello dell'angolo costofrenico sinistro. Generalmente hanno un decorso benigno, sebbene tra le complicanze si annoverino anche la rottura spontanea ed il tamponamento cardiaco.

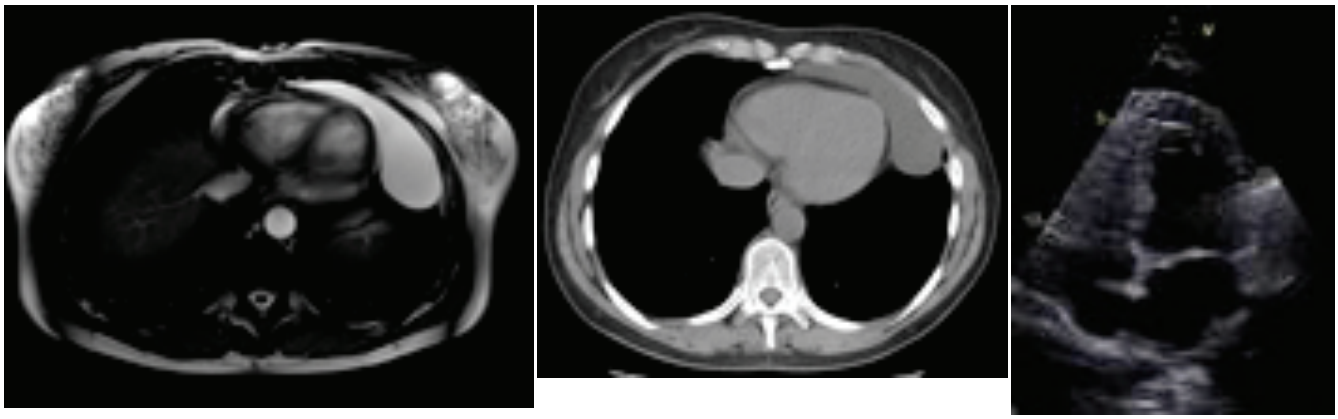


Figure 1

IMAGING CARDIOVASCOLARE 466
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)

UNMASKING THE HIDDEN CLUE: MULTIPARAMETRIC CMR AS THE KEY TO EARLY AMYLOID DETECTION IN A COMPLEX CLINICAL SCENARIO

Gianluca Pontone (a, b), Andrea Baggiano (a, b)
(a) UNIVERSITA' DEGLI STUDI STATALE DI MILANO; (b) CENTRO CARDIOLOGICO MONZINO

Dati clinici del paziente:
Uomo, 80 anni.
FdrCV: ipertensione arteriosa sistemica, assente familiarità per cardiopatia ischemica e morte cardiaca improvvisa.
APR: Dal 2023 palpitazioni con riscontro allÕHolter ECG delle 24h di moderata extrasistolia ventricolare isolata, polimorfa, talora ripetitiva sotto forma di TVNS e TVS. 11/2023 Ricovero presso altro Centro per approfondimenti; CGF: Assenti lesioni angiograficamente significative. Alla RMN cardiaca: focale area di LGE infero-laterale basale intramiocardico e LGE subendocardico sul versante destro del setto, esteso anche a entrambe le giunzioni atrio-ventricolari e alle trabecole del ventricolo destro.

APP: Paziente persistentemente sintomatico per cardiopalmo ed episodio pre-lipotimico; in data 9/11/2024 eseguiva Holter ECG 24h: 3648 BEV isolati e una TVNS di 5 battiti. Plurimi episodi di TPSV. Si ricoverava presso il nostro Centro per approfondimenti clinico-strumentali. TD: Bisoprololo 5mg/die, Amiodarone 200 mg/die.

Approccio diagnostico:
Ecocardiografia transtoracica:
Lieve ipertrofia concentrica del ventricolo sinistro con normali dimensioni cavitarie. Frazione di eiezione conservata in assenza di alterazioni segmentarie. Strain longitudinale globale normale. Disfunzione diastolica lieve (E/e' borderline: 11). Funzione del ventricolo destro conservata (TAPSE 27 mm). Assenti valvulopatie significative.

Risonanza magnetica cardiaca: Normale funzione biventricolare. Lieve ipertrofia settale basale. Presenza di infiltrazione adiposa inferolaterale basale a distribuzione subepicardica, modesta quota di edema miocardico a livello inferolaterale basale (a distribuzione non ischemica) e presenza di LGE a distribuzione non ischemica a carico di tutti i segmenti basali. Espansione diffusa dellÕECV senza significativo aumento del T1 mapping globale.

Studio elettrofisiologico intracavitario: Normali parametri di conduzione intracavitaria in assenza di inducibilità di aritmie ventricolari sostenute. Al termine della procedura posizionato dispositivo loop-recorder sottocutaneo (Medtronic Reveal Linq II).

Biopsia endomiocardica mirata al setto basale guidata da CMR: Alla diagnosi istologica riscontro di amiloidosi cardiaca da transtiretina (ATTR).
Per il follow-up sono stati programmati: Holter ECG 24 ore entro 2-3 mesi, per valutare la frequenza e la gravitˆ delle aritmie ventricolari. Esami ematochimici, inclusa la funzione tiroidea, a 15 giorni dalla dimissione e prima della visita cardiologica successiva, per monitorare gli effetti collaterali dell'amiodarone. RMN cardiaca di controllo a 6 mesi, per monitorare la progressione della malattia, valutare l'espansione dell'ECM e ricercare nuova fibrosi o fisiologia restrit-

tiva. Ecocardiogramma con strain longitudinale e rivalutazione della funzione diastolica. Dato il riscontro di amiloidosi ATTR in fase precoce, il paziente è stato avviato a test genetici e valutazione per terapie modificanti la malattia. E' stato previsto anche un follow-up neurologico periodico per identificare segni di coinvolgimento extracardiaco.
Conclusioni: Questo caso clinico mette in evidenza il ruolo fondamentale e trasformativo della risonanza magnetica cardiaca "nella diagnosi precoce, nella stratificazione del rischio e nella gestione delle cardiomiopatie infiltrative, in particolare dell'amiloidosi da transtiretina (ATTR). Grazie alla sua capacità multiparametrica avanzata, la CMR ha rilevato segnali subclinici ma decisivi, come l'espansione diffusa del volume extracellulare anche in assenza di un aumento significativo del T1 mapping. Oltre alla diagnosi, la CMR ha avuto un ruolo chiave nel guidare in modo mirato la biopsia endomiocardica. L'adozione diffusa della CMR nei casi sospetti di cardiomiopatia infiltrativa sarà fondamentale per anticipare le diagnosi e migliorare gli esiti clinici, accompagnando il paziente in ogni fase: dal sospetto iniziale alla diagnosi definitiva fino alla pianificazione terapeutica.

IMAGING CARDIOVASCOLARE 473
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT)
(IMAGING CARDIOVASCOLARE)
ISCHEMIA, STUDI SPERIMENTALI (CARDIOPATIA ISCHEMICA)

CARDIAC CT AT THE FOREFRONT: THE ONE-SHOT IMAGING TOOL FOR COMPLEX ISCHEMIC HEART DISEASE

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Presentazione del paziente: Un uomo di 68 anni si è presentato in Pronto Soccorso con edema progressivo e dolore alla gamba destra; ha riferito un precedente episodio di dolore toracico oppressivo a riposo, lieve e di breve durata (2–3 minuti). Negava sincope, palpitazioni o dispnea da sforzo, senza variazioni significative del suo stato funzionale recente.

Storia cardiaca: IMA (NSTEMI) nel 2007 trattato con PCI + impianto di DES nell'arteria discendente anteriore sinistra (Taxus 4.5 x 28 mm). L'ecocardiogramma di follow-up mostrava FE conservata e nessuna significativa alterazione cinetica segmentaria; i successivi test da sforzo erano negativi per ischemia inducibile. Nessuna storia di aritmie, scompenso o valvulopatie.

Storia non cardiaca: Mielofibrosi primaria con mutazione JAK2 (diagnosi 2020) in follow-up ematologico con terapia antiproliferativa. Nello stesso anno, diagnosi di ipertensione portale, cavernoma portale e trombosi dei rami intraepatici, inizialmente trattata con eparina a basso peso molecolare e successivamente con anticoagulazione orale (Coumadin). L'endoscopia evidenziava varici esofagee. Nel 2022, in corso di terapia anticoagulante (TAO), il paziente ha avuto sanguinamento massivo da varici esofagee con shock emorragico, richiedendo trasfusioni urgenti e legatura endoscopica. Per l'elevato rischio emorragico, l'anticoagulazione è stata sospesa su indicazione epatologica, iniziando programma profilattico anti-sanguinamento (carvedilolo + terapia endoscopica). Terapia all'ingresso: Carvedilolo 6,25 mg BID, Oncocarbide 1 cp QD.

Valutazione iniziale: All'ingresso i parametri vitali erano normali: PA 130/80 mmHg, FC 63 bpm, FR 16 atti/min, SpO_2 96% in aria ambiente, TC 36,7 °C. L'esame obiettivo cardiaco, respiratorio e addominale risultava nella norma. ECG: ritmo sinusale, inversioni T in V1-V2, nessuna alterazione del tratto ST, nessun disturbo di conduzione né fibrillazione atriale. Biomarcatori: troponina I ad alta sensibilità e CK-MB negativi; NT-proBNP lievemente elevato (strain ventricolare subclinico senza scompenso). Data la storia di mielofibrosi e trombosi spleno-portale, il rischio trombotico era elevato; D-dimero aumentato, emocromo con lieve piastrinopenia e anemia cronica normocromica/normocitica, aPTT normale. Eco-Doppler arti inferiori: vena femorale destra non comprimibile, assenza di flusso al color Doppler → trombosi venosa profonda acuta estesa a vena poplitea e tibiali prossimali. Ecocardiogramma: FE conservata ma leggermente ridotta rispetto al passato, aneurisma apicale con marcato assottigliamento di parete e trombo endocavitario. Nessuna valvulopatia significativa né versamento pericardico. Rx torace: lieve cardiomegalia, assenza di congestione, versamenti o infezioni acute.

Diagnosi e gestione: Eco transtoracico di controllo: ipertrofia moderata del setto interventricolare medio-apicale, acinesia apicale completa, rimodellamento aneurismatico post-ischemico. Struttura ipereco-

gena mobile (8–10 mm) in parete apicale inferiore → trombo intracavitario ad alto rischio embolico. CCTA: materiale ipodenso nello stent della LAD prossimale (trombosi + restenosi significativa). LAD distale occlusa (52 mm) con scarso run-off, suggestivo di eziologia embolica. Confermato grande aneurisma apicale con assottigliamento di parete e assenza di contrattilità. LIE (late iodine enhancement) → cicatrice ischemica transmurale (miocardio non vitale). CMR: ampio LGE transmural apicale e medio-inferiore → danno irreversibile. Aneurisma apicale con trombo stabile e non captante contrasto, margini netti → processo trombotico cronico ad alto rischio embolico. Discussione multidisciplinare: terapia secondo linee guida ESC. Carvedilolo titolato, gastroprotezione. Per alto rischio embolico → iniziata enoxaparina 6000 UI BID, poi 8000 UI BID dopo stabilità emoglobinica. Triple therapy controindicata per rischio emorragico → PCI differita, follow-up CCTA programmato.

Follow-up: La discussione multidisciplinare ha confermato: area miocardica non vitale, trombo endocavitario, subocclusione LAD distale da trombo. Programmato controllo CCTA a 2 mesi per rivalutare trombo e restenosi intra-stent, con eventuale indicazione a PCI elettiva. Alla dimissione: paziente asintomatico, stabile emodinamicamente (PA 110/80 mmHg), senza scompenso né eventi trombotici. Esami ematici nella norma. Follow-up consigliato: emocromo settimanale fino a valutazione presso Centro Trombosi, ecodoppler arti inferiori a 30 giorni + visita chirurgia vascolare, CCTA a 2 mesi per riesame trombo e restenosi, valutazione cardiologica dopo CCTA per decisione su prosecuzione anticoagulazione/PCI elettiva
Terapia alla dimissione: Carvedilolo 25 mg QD + 12,5 mg QD, Amlodipina 5 mg QD (con aggiustamento secondo PA),Enoxaparina 8000 UI BID fino a valutazione Centro Trombosi.

Conclusioni: Questo caso evidenzia il ruolo cruciale dell'imaging multimodale nella gestione della cardiopatia ischemica complessa, con la CCTA come strumento centrale per diagnosi, stratificazione del rischio e decisioni terapeutiche. Il LIE alla CCTA corrispondeva al LGE della CMR, confermando infarto miocardico transmurale con miocardio non vitale: ciò ha supportato la scelta di differire la rivascolarizzazione, in accordo con le linee guida ESC 2024.La capacità della CCTA di rilevare simultaneamente patologia trombotica e ischemica in un'unica acquisizione rafforza il suo ruolo nella gestione delle sindromi coronariche croniche. La restenosi significativa intra-stent LAD, con possibile componente trombotica, ha richiesto approccio conservativo (assenza di ischemia, miocardio non vitale, alto rischio emorragico). Come raccomandato dalle linee guida, la valutazione di vitalità è cruciale prima di rivascolarizzazione.

IMAGING CARDIOVASCOLARE 331
MINOCA (MYOCARDIAL INFARCTION WITH NORMAL CORONARY ARTERIES) (CARDIOPATIA ISCHEMICA)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)

SINDROME DI TAKOTSUBO FOCALE IN UNA DONNA ANZIANA CON SINCOPE

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Una donna di 78 anni si è presentata al nostro Pronto Soccorso per un episodio di sincope a riposo, non preceduto da prodromi, che ha determinato un trauma cranico. In anamnesi: disturbo bipolare in trattamento con litio, senza precedenti cardiovascolari.
All'elettrocardiogramma (ECG) d'ingresso si è riscontrata bradicardia sinusale, senza altre anomalie significative. Agli esami ematochimici: Hs-TnI 1556→2150 ng/mL, BNP 45 pg/mL, D-dimero 1153 ng/mL; restanti esami nella norma. La TC torace e la TC encefalo hanno escluso embolia polmonare ed eventi neurologici acuti.
All'ecocardiogramma transtoracico sono risultate normali dimensioni e funzione globale biventricolare, con acinesia inferolaterale medio-basale; non sono state rilevate valvulopatie significative. Nel sospetto di sincope aritmica in corso di infarto miocardico acuto silente, è stata eseguita coronarografia che ha documentato coronarie epicardiche indenni da ostruzioni significative, con evidenza di ballooning della parete laterale alla ventricolografia. Vista la diagnosi di MINOCA, è stata richiesta una risonanza magnetica cardiaca che ha confermato il ballooning focale senza fibrosi miocardica nei segmenti interessati.
Alle sequenze STIR (T2 pesate) si è riscontrata iperintensità di segnale nelle zone acinetiche, con valori elevati omosede di T1 nativo (1159 ± 35 msec; T1 setto-basale 937 ± 36 msec; v.n. <1040 msec) e T2 nativo (59 ± 3 msec; T2 setto-basale 47 ± 2 msec; v.n. <52 msec).
I reperti sono risultati compatibili con una sindrome di Takotsubo (TTS) focale, diagnosi ulteriormente supportata dall'evoluzione del quadro ECG durante la degenza, con sviluppo di onde T negative profonde nelle derivazioni anteriori, inferiori e laterali e allungamento del QTc (470 msec). Lo score InterTAK è risultato pari a 67, corrispondente a una probabilità del 79,8% di TTS. La variante focale è la forma meno comune di TTS, con una prevalenza stimata dell'1,5% secondo l'InterTAK registry.
Il decorso ospedaliero è stato complicato dalla comparsa di blocco atrioventricolare avanzato (AVB) parossistico.
La relazione tra TTS e AVB rimane incerta: il disturbo di conduzione avrebbe potuto causare la sincope e costituire il trigger per lo sviluppo della TTS, oppure, meno verosimilmente, rappresentarne una complicanza. Considerata l'età della paziente e la distribuzione dell'edema, il disturbo è stato ritenuto non reversibile e attribuibile a probabile degenerazione del sistema di conduzione, pertanto è stato impiantato un pacemaker bicamerale prima della dimissione.

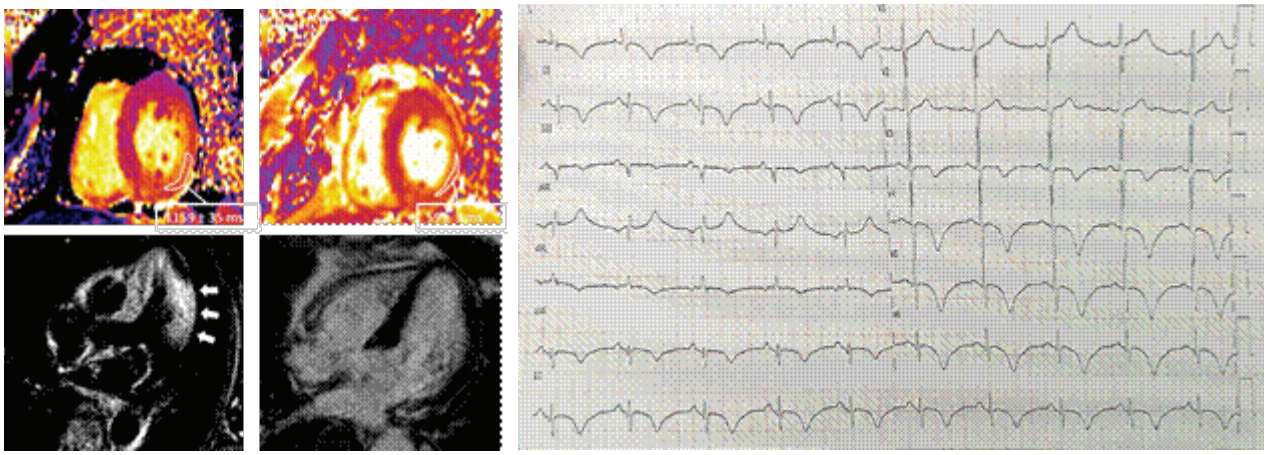


Figure 1

IMAGING CARDIOVASCOLARE 619
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE (IMAGING CARDIOVASCOLARE)

STAGING EXTRA-VALVULAR CARDIAC DAMAGE WITH SPECKLE-TRACKING IN PRIMARY MITRAL REGURGITATION: PROGNOSTIC IMPLICATIONS

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Background: Surgical referral in asymptomatic patients with severe primary mitral regurgitation (PMR) is currently guided by two-dimensional (2D) echocardiographic parameters. Although these indices are well-established prognostic markers, they may represent late signs of myocardial injury and fail to capture earlier, potentially reversible stages of cardiac dysfunction. Speckle-tracking echocardiography (STE) provides sensitive measures of myocardial and atrial deformation, but its role in clinical decision-making remains undefined.

Objectives: To assess whether a novel staging system of extra-valvular cardiac damage based on multi-chamber STE improves risk stratification in patients with severe PMR undergoing surgery.

Methods: We retrospectively analyzed patients with severe PMR undergoing surgery in two independent cohorts: derivation (n = 124; mean age 64 ± 12 years; 70% men) and validation (n = 90; mean age 63 ± 12 years; 53% men). ROC curve analysis identified optimal cut-off values associated with adverse outcomes: right ventricular longitudinal free-wall strain (RVLFWS) < 17%, peak atrial longitudinal strain (PALS) < 25%, and left ventricular global longitudinal strain (LVGLS) < 20%. Patients were hierarchically classified into four stages: Stage 0, no cardiac damage; Stage 1, partial left-sided damage (PALS < 25% or LVGLS < 20%); Stage 2, definite left-sided damage (PALS < 25% and LVGLS < 20%); Stage 3, right-sided damage (RVLFWS < 17%).

Results: The proposed staging system was independently associated with the composite of periprocedural adverse events (mortality, stroke, myocardial infarction, acute kidney injury, new-onset atrial fibrillation, severe bleeding requiring reintervention, sepsis) [HR 1.35; 95% CI 1.04–1.74; p = 0.024]. Predictive accuracy was higher compared with the staging system of Bernard et al. (AUC 0.63; 95% CI 0.54–0.73 vs. AUC 0.54; 95% CI 0.46–0.65), with consistent results in the validation cohort.

Conclusions: A novel STE-based multi-chamber staging system provides incremental prognostic information over conventional 2D echocardiography in patients with severe PMR undergoing surgery. This approach may allow earlier identification of cardiac damage, refine surgical timing, and improve perioperative.

IMAGING CARDIOVASCOLARE 838
TUMORI CARDIACI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MIOCARDICO-PERICARDICO
(MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)

DIAGNOSTIC ACCURACY OF AN INTEGRATED MULTIMODALITY IMAGING APPROACH IN PATIENTS WITH CARDIAC MASSES

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Background: The diagnostic evaluation of cardiac masses (CMs) remains challenging. A multimodality imaging approach is essential for accurate CMs characterization. However, a direct comparison of combined imaging strategies — including cardiac magnetic resonance (CMR), cardiac computed tomography (CCT), and 18F-Fluorodeoxyglucose positron emission tomography (18F-FDG PET) — has never been provided for CMs.

Objectives: To compare the diagnostic accuracy of multiparametric scores at CMR, CCT, and 18F-FDG PET, individually and in combination, in determining the presence and the malignant nature of suspected CMs compared to histology.

Methods: This prospective study included patients with suspected CMs who underwent echocardiography, CCT, CMR, and 18F-FDG PET within two months from first medical contact. Definite diagnosis was confirmed by histology or radiological resolution after anticoagulation for thrombi. Diagnostic performance was assessed using receiver operating characteristic (ROC) curves and compared with the DeLong test. A Classification Tree Analysis evaluated the incremental diagnostic value of PET after CMR or CCT.

Results: Among 142 patients, 77 (54%) had malignant CMs. Echocardiography had the lowest diagnostic accuracy (AUC, 0.77 [95% CI: 0.71–0.84]), missing 12.6% of CMs. CMR was the most accurate modality (AUC 0.94 [95% CI: 0.90–0.98]), significantly outperforming CCT (AUC 0.85 [95% CI: 0.80–0.91], p=0.008) and 18F-FDG PET (AUC 0.85 [95% CI: 0.79–0.91], p=0.016). The combination of CMR and 18F-FDG PET achieved the highest diagnostic accuracy (AUC 0.97 [95% CI: 0.94–1.00]; PPV, 95.1%; NPV, 100%). CCT combined with 18F-FDG PET also showed incremental diagnostic accuracy (AUC 0.92 [95% CI: 0.87–0.97]; PPV 91.2%; NPV 93.5%), comparable to standalone CMR but inferior to CMR-18F-FDG PET (p=0.04). Classification Tree Analysis confirmed that the integration of 18F-FDG

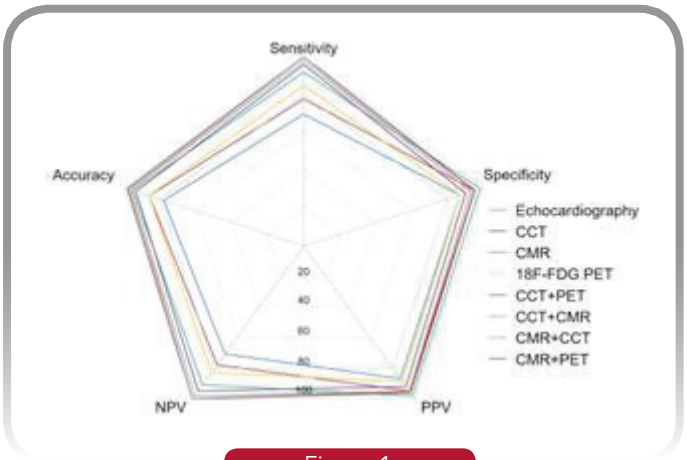


Figure 1

PET with CMR or CCT increased malignancy detection (97.2% and 92.3% correctly classified, respectively). Similarly, integrating CMR and CCT significantly improved accuracy (AUC 0.95 [95% CI: 0.91–0.99]; PPV 93.8%; NPV 96.8%) compared to CCT alone ($p<0.001$).

Conclusion: Although CMR is the most accurate imaging modality, its combination with 18F-FDG PET in inconclusive cases offers the best diagnostic performance for malignancy detection. When CMR is not feasible, combining CCT with PET offers a reliable alternative.

IMAGING CARDIOVASCOLARE 1013
MINOCA (MYOCARDIAL INFARCTION WITH NORMAL CORONARY ARTERIES)
(CARDIOPATIA ISCHEMICA)
PLACCA VULNERABILE (ATEROTROMBOSI)
TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT)
(IMAGING CARDIOVASCOLARE)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)

EARLY CORONARY COMPUTED TOMOGRAPHY ANGIOGRAPHY IN MINOCA PATIENTS: A MULTICENTER COHORT STUDY

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Background: Coronary computed tomography angiography (CCTA) non-invasively detects coronary lesions potentially causing myocardial infarction, but its early diagnostic role in myocardial infarction with non-obstructive coronary arteries (MINOCA) remains unclear.

Objectives: To assess the value of early CCTA combined with cardiac magnetic resonance (CMR) in a non-invasive approach to MINOCA.

Methods: In this prospective, multicentric study, MINOCA patients underwent invasive coronary angiography (ICA), followed within 7 days by CMR and CCTA. Non-ischaemic aetiologies were excluded. ICA evaluated coronary stenosis, myocardial bridges (MB), epicardial spasms, and non-obstructive spontaneous coronary artery dissections (SCAD). CCTA assessed high-risk plaques (HRP), MB, and non-obstructive SCAD. Patients were grouped as MINOCA-CT+ or MINOCA-CT– based on CCTA findings. Fat attenuation index (FAI) and CT fractional flow reserve (FFR-CT) were assessed per-vessel. The primary endpoint was concordance between CCTA-detected lesions and CMR-identified ischaemic damage within the same territory, compared with ICA. ROC analysis evaluated diagnostic performance.

Results: Among 77 confirmed MINOCA patients, 42 (54.6%) had coronary lesions on CCTA. HRP were found in 35 (45.5%) patients, MB in 7 (9%), and no non-obstructive SCAD was observed. MINOCA-CT+ patients exhibited greater total plaque volume, greater myocardial edema (9.2% vs 4.3% of the left ventricle; P=0.003), and infarct size (6% vs 2.4%; P=0.003). FAI ≥–70 HU or FFR-CT <0.80 correlated with edema and myocardial injury on CMR (all P<0.05). Concordance between CCTA lesions and CMR ischaemic pattern was 49.4% (vs 45.5% with ICA; P=0.084 per-patient, P=0.029 per-vessel). CCTA's positive predictive value for CMR ischaemia was 91% (per-patient) and 78% (per-vessel); negative predictive value was 49% and 89%, respectively—both exceeding ICA. ROC confirmed CCTA's strong performance (AUC 0.74 per-patient, 0.78

per-vessel) to detect concordant ischaemic damage at CMR.

Conclusions: Combined CCTA and CMR identified ischaemic injury and coronary abnormalities in many MINOCA patients. CCTA demonstrated strong diagnostic value elucidating underlying coronary mechanisms.

IMAGING CARDIOVASCOLARE 242
MINOCA (MYOCARDIAL INFARCTION WITH NORMAL CORONARY ARTERIES) (CARDIOPATIA ISCHEMICA)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)
MIOCARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

MIOCARDITE ACUTA MASCHERATA DA SINDROME DI KOUNIS: UN'INSIDIA DIAGNOSTICA NEL CONTESTO DI MINOCA

Lisa Portalone (a), Enrico Tadiello (a), Flavio Luciano Ribichini (a)
(a) UNIVERSITÀ DEGLI STUDI DI VERONA

Introduzione: La sindrome di Kounis rientra nel gruppo dei MINOCA (Myocardial Infarction with Non-Obstructive Coronary Arteries) ed è definita come una sindrome coronarica acuta innescata da reazione allergica, anafilattica o da ipersensibilità. Fisiopatologicamente il danno è spesso correlato a un vasospasmo coronarico, ragion per cui l'aspetto di imaging dovrebbe rispecchiare le alterazioni segmentarie tipiche del pattern ischemico.

Case report: Paziente maschio di 48 anni, senza fattori di rischio cardiovascolare, allertava i soccorsi per dolore toracico tipico; all'ECG sopraslivellamento del tratto ST in sede anterolaterale (Figura 1) associato ad importante danno miocardico (picco TnT 1502 ng/L, v.n. 0-17). La coronarografia urgente rilevava coronarie indenni da lesioni. Un successivo approfondimento anamnestico metteva in luce una remota reazione allergica ai farmaci beta-lattamici e una recente assunzione di amoxicillina per faringite. Tale dato poneva il sospetto di una sindrome di Kounis di tipo I, rafforzato dall'elevata positività del dosaggio delle IgE specifiche. Per corretta diagnosi differenziale veniva eseguita la RM cardiaca che evidenziava edema miocardico diffuso, più evidente a livello di setto basale e segmenti medio-distali del ventricolo sinistro e a livello della parete diaframmatica del ventricolo destro con contestuale iperintensità di segnale intramiocardico/subepicardico nelle sezioni tardive post contrastografiche (Figura 2). Alla rivalutazione del caso, l'aspetto tipico della risonanza cardiaca con edema e pattern LGE non ischemico deponeva per diagnosi di miocardite acuta ed escludeva l'iniziale sospetto di sindrome di Kounis; non veniva eseguita biopsia endomiocardica per la stabilità clinica del paziente.

Discussione: Il caso esemplifica la complessità diagnostica dei casi di MINOCA, in cui l'anamnesi riveste un ruolo fondamentale ma può, saltuariamente, trarre in inganno alterando la valutazione del quadro complessivo. L'esame gold standard nella diagnosi differenziale è la RM perché permette la caratterizzazione tissutale chiarendo spesso la genesi del danno miocardico. In questo caso specifico, la biopsia endomiocardica avrebbe permesso l'identificazione del meccanismo patogenetico: un danno diretto e monocitico, tipico della forma più comune post-infettiva oppure un danno mediato da eosinofili, come nelle forme rare di miocardite da ipersensibilità farmacologica.

Conclusione: Questo caso evidenzia la necessità dell'utilizzo di tecniche di imaging avanzate nella valutazione dei pazienti con sospetto infarto miocardico non causato da ostruzione coronarica. La risonanza magnetica in molti casi permette di riformulare la diagnosi iniziale, portando con sé rilevanti implicazioni prognostiche e terapeutiche.



Figura1

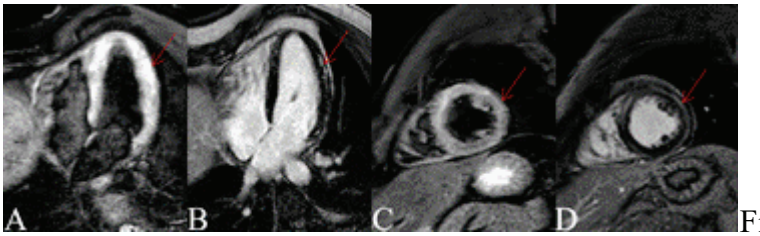


Figura 2

Figura 1: derivazioni V2-V3 dell'ECG di presentazione. Figura 2: sequenze RM cuore; A e C sequenze T2 pesate (iperintensità di segnale riferibile a edema del miocardio), B e D sequenze tardive post contrastografiche (LGE diffuso subepicardico a pattern non ischemico).

Figure

CardioSic

IMAGING CARDIOVASCOLARE 344
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE (IMAGING CARDIOVASCOLARE)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)

ECHOCARDIOGRAPHIC ACCURACY FOR AORTIC REGURGITATION QUANTIFICATION: A SYSTEMATIC REVIEW AND META-ANALYSIS USING MAGNETIC RESONANCE AS THE REFERENCE

Giordano M. Pugliesi (a, b), Eduardo Brenner-muslera (b), Denisa Muraru (a, c), Vidhu Anand (b), Luca Fazzini (b, d), Michele Tomaselli (c), Sorin V. Pislaru (b), Paolo Springhetti (c), Silvia Castelletti (c), Noela Radu (c), Cinzia Pece (c), Patricia A. Pellikka (b), Camilla Torlasco (c), Luigi P. Badano (a, c)

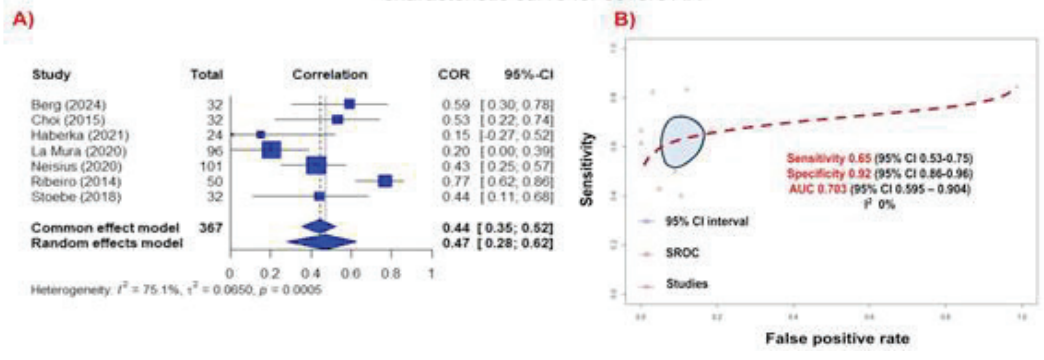
(a) DEPARTMENT OF MEDICINE AND SURGERY, UNIVERSITY OF MILANO-BICOCCA, MILAN, ITALY; (b) DEPARTMENT OF CARDIOVASCULAR MEDICINE, MAYO CLINIC, ROCHESTER, MINNESOTA, USA; (c) DEPARTMENT OF CARDIOLOGY, ISTITUTO AUXOLOGICO ITALIANO, IRCCS, MILAN, ITALY; (d) DEPARTMENT OF CARDIOVASCULAR MEDICINE, AZIENDA OSPEDALIERA PAPA GIOVANNI XXII, BERGAMO, ITALY

Background: Transthoracic echocardiography (TTE) is the first-line modality to quantify chronic aortic regurgitation (AR), with cardiac magnetic resonance (CMR) serving for all patients with inconclusive results. The current meta-analysis aimed to assess the agreement and correlation between the two modalities.

Methods: A systematic search was conducted on Pubmed, Cochrane and Embase for original studies published after 2000 comparing TTE and CMR for AR quantification in adult patients with native aortic valve. Heterogeneity was assessed using I^2 statistics, and a random-effects model was applied to all outcomes. CMR served as the reference method.

Results: A total of 26 studies were included, comprising 1491 adults. The pooled k-agreement for AR severity was 0.47 (95% CI 0.28 – 0.62) (Figure 1A), with a sensitivity of 0.65 (95% CI 0.53 – 0.75) and a specificity of 0.92 (95% CI 0.86 – 0.96) for severe AR (Figure 1B). The correlation between 2D TTE and CMR was 0.66 (95% CI 0.57 – 0.64) for regurgitant volume (RV) and 0.61 (95% 0.41– 0.75) for the regurgitant fraction. The correlation for RV was stronger in patients with central regurgitant

Figure 1. Agreement between 2D TTE and CMR for AR severity and summary receiver operating characteristic curve for severe AR



Figure

jets (0.86, 95% CI 0.73 – 0.93) or when using 3D TTE (0.81, 95% CI 0.57 – 0.93). In patients with moderate or greater AR, 2D TTE tended to slightly underestimate RV (mean difference 8 ml, 95% CI 5 – 12 ml).

Conclusion: TTE has a substantial sensitivity and an almost perfect specificity in detecting severe AR. The correlation for the RV is almost perfect in patients with central regurgitant jets or when the 3D TTE is used. Two-dimensional TTE tends to slightly underestimate RV. Consequently, RV between 45 and 60 ml should prompt for CMR, especially in patients with other qualitative or quantitative measurements suggesting severe AR.

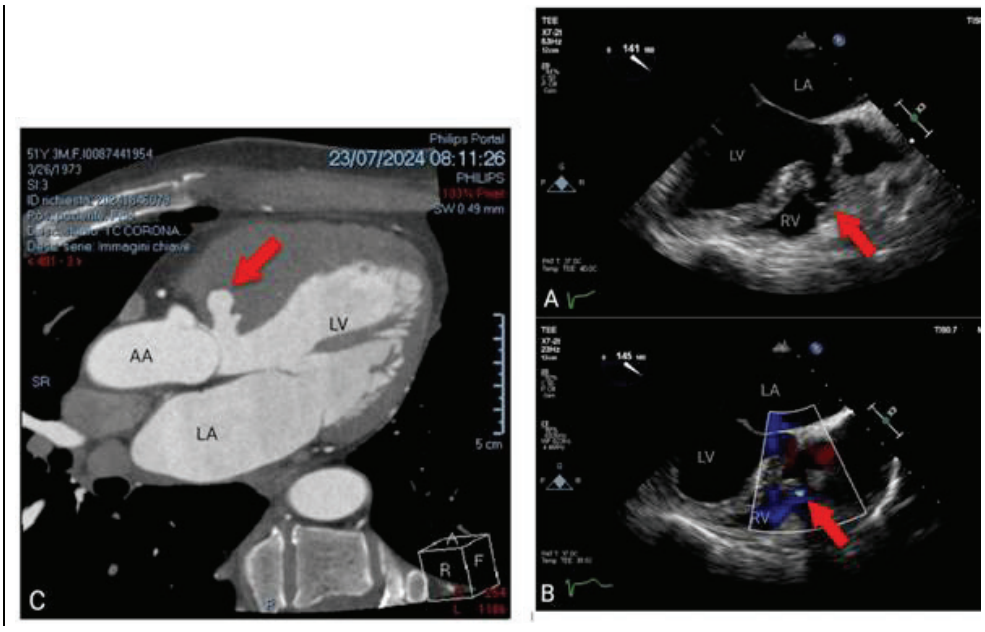
IMAGING CARDIOVASCOLARE 1020
CARDIOPATIE CONGENITE NELL´ADULTO
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
IMAGING DELLE CARDIOPATIE CONGENITE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)

IMAGING MULTIMODALE: DIFETTO INTERVENTRICOLARE O ANEURISMA DEL SETTO MEMBRANOSO?

Alessandro Ruggiero (b), Laura Ceriello (a), Tiziano Maria Mazza (b), Alessandro Lezzi (a),
Franco De Remigis (a), Silvio Romano (b)
(a) OSPEDLAE GIUSEPPE MAZZINI, TERAMO; (b) UNIVERSITÀ DEGLI STUDI DELL'AQUILA

L'aneurisma del setto interventricolare è una rara malformazione cardiaca congenita, tipicamente non sindromica, caratterizzata dalla presenza di un aneurisma della porzione membranosa del setto interventricolare. Alcuni case report associano l'aneurisma del setto interventricolare a rottura, tromboembolismo, difetti di conduzione, ma spesso è asintomatico. Presentiamo il caso clinico di un aneurisma del setto interventricolare membranoso in una donna di 51 anni con carcinoma della mammella in lista per intervento di mastectomia. Alla TC coronarica eseguita per escludere coronaropatia veniva rilevato un grosso DIV. La paziente si presentava totalmente asintomatica.

Per una migliore caratterizzazione anatomica del difetto in vista dell'intervento chirurgico alla mammella decidevamo di eseguire ecocardiogramma trans esofageo, ma l'eco mostrerà invece la presenza di un aneurisma del setto membranoso con un lieve shunt sinistro-destro. L'aneurisma protrudeva nel ventricolo destro senza alcuna ostruzione del tratto di efflusso e senza evidenza di trombi. Le camere destre apparivano di normali dimensioni in assenza di segni di sovraccarico. Data l'asintomaticità della paziente, assenza di storia clinica cardiologica e l'assenza di altri fattori di rischio concediamo il nullaosta all'intervento chirurgico è programmiamo un follow-up a 2 anni



Figure

IMAGING CARDIOVASCOLARE 509
TRATTAMENTO POST-INFARTO (CARDIOPATIA ISCHEMICA)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
PROGNOSI (SCOMPENSO CARDIACO)

PROGNOSTIC VALUE OF ECHOCARDIOGRAPHIC RIGHT VENTRICULO-ARTERIAL COUPLING INDICES IN PATIENTS WITH ACUTE MYOCARDIAL INFARCTION

Silvio Saraullo (a), Alessandro Meola (a), Rosangela Lomastro (a), Andrea Palermi (a), Fabrizio Ricci (a, b, c), Sabina Gallina (a, b), Giulia Renda (a, b)
(a) DIPARTIMENTO DI NEUROSCIENZE, IMAGING E SCIENZE CLINICHE (DNISC) - UNIVERSITA' DEGLI STUDI G. D'ANNUNZIO CHIETI-PESCARA; (b) DIPARTIMENTO CUORE - POLICLINICO SS ANNUNZIATA CHIETI ; (c) DIPARTIMENTO DI SCIENZE CLINICHE - UNIVERSITA' DI LUND MALMO

Background: Early non-invasive risk stratification in acute myocardial infarction (AMI) is critical to improve outcomes. Guideline-recommended tools (GRACE, GRACE 2.0) and left ventricular ejection fraction (EF) provide only a partial estimate of major adverse cardiovascular events (MACE). Right ventriculo-arterial coupling (RVAC) impairment increased mortality in patients admitted to cardiac care units. This study aims to investigate the prognostic value of echocardiographic RVAC indices (TAPSE/sPAP, RVS'/sPAP) in the setting of AMI.

Methods and results: A total of 142 patients with AMI admitted to Policlinico SS. Annunziata (Chieti) and undergoing coronary imaging, were prospectively enrolled. The cohort had a mean age of 72 ± 12 years; 66% were male, and 32% presented with STEMI. The primary endpoint was the prognostic value of RVAC indices for MACE (all-cause death, ventricular arrhythmias, cardiogenic shock); in-hospital acute heart failure (AHF) was the secondary. MACE occurred in 23% and AHF in 41% of patients. At univariate analysis, lower TAPSE/sPAP and RVS'/sPAP were significantly associated with MACE. ROC-derived cut-offs showed strongest discrimination for TAPSE/sPAP < 0.55 (OR = 3.85; 95% CI: 1.69–8.79; $p < 0.001$) and RVS'/sPAP < 0.35 (OR = 5.96; 95% CI: 2.49–14.26; $p < 0.001$). In multivariate analysis only RVS'/sPAP < 0.35 emerged as independent predictor of MACE. Adding RVS'/sPAP to a clinical model (age, HF, MAP, Killip class, GRACE 2.0, pre-imaging TnI peak, EF) improved discrimination (AUC 0.82 vs 0.75; $p = 0.004$). For the secondary endpoint, both TAPSE/sPAP and RVS'/sPAP were independent predictors of AHF, with optimal cut-offs < 0.0625 and < 0.33, respectively. Incorporating RVS'/sPAP < 0.33 into a clinical model (age, STEMI, HF, creatinine, BNP, troponin I, EF) yielded the highest accuracy (AUC = 0.903; $p = 0.03$) versus clinical variables alone (AUC = 0.853).

Conclusion: These findings suggest that RVAC parameters—particularly RVS'/sPAP—provide additive prognostic value when combined with clinical data, helping to identify high-risk patients for in-hospital MACE. RVS'/sPAP serve as early and sensitive markers of right ventricular uncoupling in acute myocardial infarction, highlighting its pivotal role in short-term outcomes in this setting.

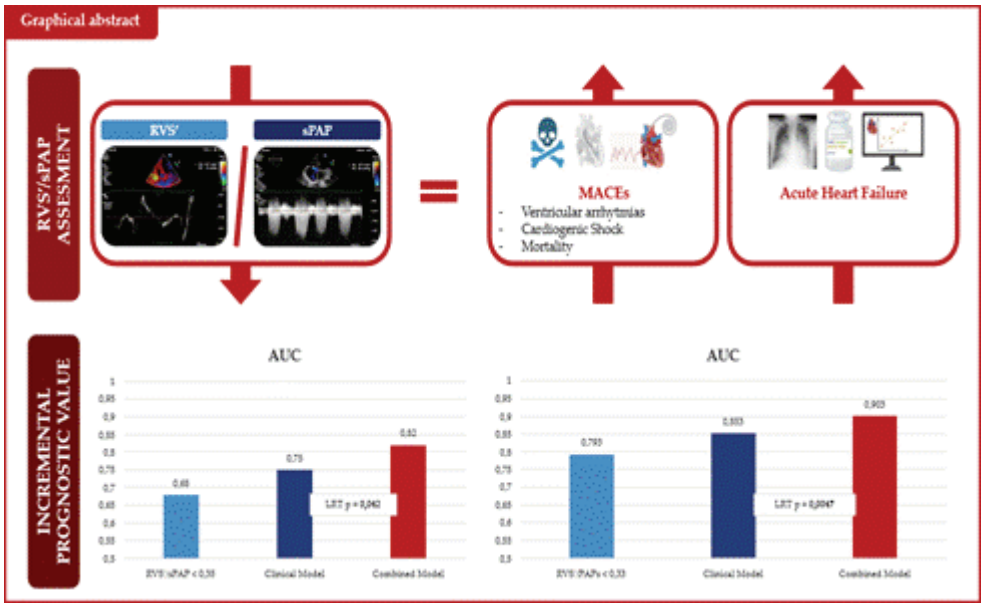

Graphical abstract
RVS'/sPAP ASSESMENT
RVS'
sPAP
MACEs
- Ventricular arrhythmias
- Cardiogenic Shock
- Mortality
Acute Heart Failure
INCREMENTAL PROGNOSTIC VALUE
AUC
AUC

Figure 1

IMAGING CARDIOVASCOLARE 590
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE) (IMAGING CARDIOVASCOLARE)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)

RIGHT ATRIAL PSEUDOMASS: CLINICAL RELEVANCE OF A PROMINENT CRISTA TERMINALIS CONFIRMED BY MULTIMODALITY IMAGING (TTE, TEE, CMR)

Francesco Sbarra (a), Gianluca Pagnoni (a), Daniela Aschieri (a), Valeria Dall´ospedale (a), Marta Nardinocchi (b), Stefano Vago (b), Dario Bondi (b), Benedetta Frassoni (b)
(a) AUSL PIACENZA; (b) UNIVERSITA DEGLI STUDI DI PARMA

The crista terminalis is a muscular bundle located in the postero-lateral portion of the right atrium. It hosts internodal connections and may serve as a potential site of focal atrial arrhythmias, thus representing a target for transcatheter ablation in electrophysiological procedures. Although its thickness normally ranges between 3 and 6 mm, in some cases it may appear enlarged, thereby entering the differential diagnosis with pathological masses such as thrombus or neoplasm; in these cases, the non-universal term "prominent crista terminalis" is used.

We describe the clinical case of a 52-year-old woman, with no cardiac history and no cardiovascular risk factors, who underwent transthoracic echocardiography during a pneumological follow-up for suspected interstitial lung disease. Transthoracic echocardiography [figure 1] incidentally revealed a pseudomass adherent to the lateral wall of the right atrium, approximately 1 cm in diameter,

slightly mobile, with regular margins, homogeneous, and with echogenicity similar to that of the cardiac muscle. Left ventricular ejection fraction was within normal limits (60%), as were chamber dimensions; no significant valvular disease or pericardial effusion was detected.

Transesophageal echocardiography [figure 2] confirmed the presence of the pseudomass near the orifice of the superior vena cava, showing slight synchronous movement with the cardiac cycle. Cardiac MRI [figures 3] demonstrated a mass measuring 12 × 8 mm, with



Figure 1



Figure 2

myocardial-like intensity on pre-contrast sequences and a cranio-caudal extension of 35 mm, without evidence of edema or pathological late enhancement, thus confirming the muscular nature of the suspected lesion. These findings were therefore consistent with a prominent crista terminalis.

A prominent crista terminalis is a benign anatomical variant that does not require specific clinical or instrumental follow-up.

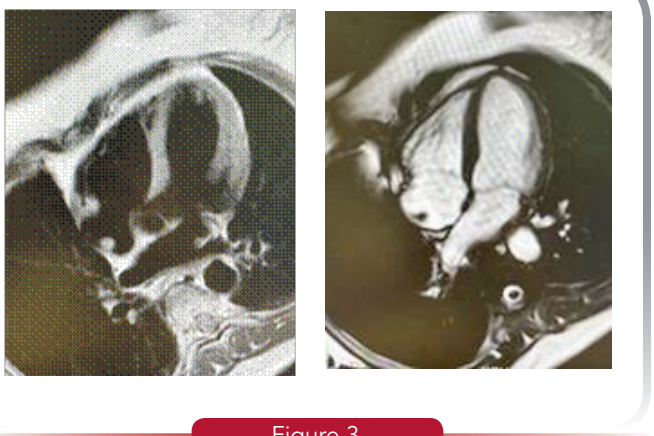


Figure 3

IMAGING CARDIOVASCOLARE 658
CARDIOPATIE CONGENITE NELL´ADULTO
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
DIAGNOSTICA INVASIVA INTRAVASCOLARE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT)
(IMAGING CARDIOVASCOLARE)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE)
(IMAGING CARDIOVASCOLARE)

DIAGNOSI MULTIMODALE DELLA FISTOLA AORTO-VENTRICOLARE DESTRA

Giulia Scalisi (a)
(a) IRCSS OSPEDALE GALEAZZI - SANT'AMBROGIO

Introduzione

La fistola aorto-ventricolare destra è una condizionate rara, ma potenzialmente letale che consiste in una comunicazione patologica tra l'aorta e il ventricolo destro. Può essere congenita, traumatica, iatrogena, conseguente a interventi chirurgici o procedure transcatetere come TAVR, o secondaria a processi infettivi. Dal punto di vista clinico, la fistola determina uno shunt sinistro-destro, con sovraccarico di volume e conseguente rischio di scompenso cardiaco, che rappresenta la manifestazione clinica più frequente.

Caso clinico

Donna di 73 anni, fumatrice, senza precedenti cardio-vascolari. In anamnesi riferisce noto soffio cardiaco riscontrato in giovane età, mai approfondito. Giunge in PS per dispnea ingravescente da cinque giorni, non correlata agli sforzi, associata a sensazione di oppressione epigastrica ed eruttazione. In PS si riscontrava quadro di insufficienza respiratoria ipocapnica, con incremento di BNP (1583 ng/L) e PCR (32.5 mg/L) e obliterazione bilaterale dei seni costo-frenici alla Rx torace. All'auscultazione cardiaca si descrive soffio sistolico aspro. L'ecoscopia cardiaca riscontrava la presenza di bicuspidia aortica senza vizio valvolare associato ed evidenza, al color-doppler, di verosimile shunt sinistro-destro localizzato tra il setto interventricolare perimebranoso/radice aortica e le camere destre. Una successiva TC dell'aorta toracica escludeva sindrome aortica acuta. La paziente veniva pertanto ricoverata e trattata con terapia diuretica endovenosa con conseguente miglioramento del quadro congestizio. L'iter diagnostico successivo ha previsto i seguenti approfondimenti strumentali: 1. ecocardiogramma transtoracico ha inizialmente documentato la presenza di DIV perimembranoso associato a moderata dilatazione delle camere sinistre e segni indiretti di ipertensione polmonare, normale funzione biventricolare e bicuspidia aortica (tipo 2 sinus L-L sec. Michelena) in assenza di valvulopatia; 2. ecocardiogramma transesofageo ha, invece, evidenziato soluzione di continuo a livello della giunzione ventricolo-arteriosa, in corrispondenza del seno di Valsalva destro comunicante con il ventricolo destro e determinante shunt sx-dx; 3. TC cardiaca ha confermato la presenza di fistola aorto-ventricolare destra, in assenza di coronaropatia associata. A completamento, è stato eseguito un cateterismo destro che ha dimostrato la presenza di shunt significativo in assenza di segni di ipertensione polmonare (Qp/Qs 1.35), normale portata cardiaca e indice cardiaco e salto ossimetrico significativo tra AD e VD. Pertanto, dopo valutazione multidisciplinare con colleghi cardiochirurghi è stata posta indicazione ad approccio chirurgico mininvasivo di obliterazione della fistola, poi rifiutato dalla paziente.

Conclusioni

La valutazione con imaging multimodale è fondamentale nella gestione della fistola aorto-ventricolare destra, data la sua rarità, la complessità diagnositica, l'ampio spettro eziologico e la presentazione clinica spesso aspecifica. Consente di caratterizzare la sede e l'estensione della fistola, di valutare il grado di sovraccarico ventricolare e la presenza di complicanze valvolari. Il cateterismo destro è utile a complemento diagnostico per definire la significatività dello shunt e l'appropriatezza dell'indicazione chirurgica. Infine, l'imaging multimodale permette di guidare la tempistica e la tipologia dell'intervento, riducendo la mortalità e migliorando gli outcome.

IMAGING CARDIOVASCOLARE 520
IPERTENSIONE POLMONARE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
ASSISTENZA INTENSIVA CARDIOVASCOLARE IN ACUTO
(ASSISTENZA CARDIACA IN ACUTO)
ASSISTENZA CARDIACA IN ACUTO NEL DIPARTIMENTO DI EMERGENZA
(ASSISTENZA CARDIACA IN ACUTO)
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE
(IMAGING CARDIOVASCOLARE)

ESTIMATION OF MEAN PULMONARY ARTERY PRESSURE BY ECOCARDIOGRAPHY: META-ANALYTIC DERIVATION AND PROSPECTIVE VALIDATION IN THE TECH REGISTRY

Riccardo Mazza (a, b), Carlo Gaspardone (a, b), Rosaria Sofia (a, b), Paolo Costa (a, b), Luca Iuliano (a, b), Andrea Tripoli (a, b), Fabrizio Fortunato (d), Alessandro Fasolino (c), Davide Romagnolo (e), Lorenzo Zaccaria (a, b), Damiano Cecchi (a, b), Riccardo Mager (a, b), Giuseppe Barone (a, b), Alberto Margonato (a, b), Chiara Intonti (f), Luca Baldetti (a, b), Cosmo Godino (a, b)
(a) UNIVERSITÀ VITA-SALUTE SAN RAFFAELE; (b) OSPEDALE SAN RAFFAELE; (c) UNIVERSITÀ DEGLI STUDI DI PAVIA; (d) AZIENDA OSPEDALIERA UNIVERSITARIA PAOLO GIACCONE; (e) UNIVERSITÀ HUMANITAS; (f) UNIVERSITÀ CAMPUS BIOMEDICO DI ROMA

Background: Accurate noninvasive estimation of mean pulmonary artery pressure (mPAP) remains an unmet need in the evaluation of pulmonary hypertension. Conventional transthoracic echocardiographic (TTE) methods are limited by feasibility and accuracy. Based on the physiological coupling between systolic (sPAP) and mean pulmonary pressures, we hypothesized that mPAP could be reliably estimated using a proportionality coefficient applied to sPAP.

Methods: We conducted a systematic review and meta-analysis of studies reporting paired right heart catheterization (RHC) data to derive a pooled weighted mPAP/sPAP ratio (coefficient K). A coefficient-based formula (Method D: mPAP = K × sPAP) was then developed and prospectively validated in the multicenter TECH registry (Testing Echocardiography vs Catheterization in Hemodynamics; ClinicalTrials.gov NCT06859047). Feasibility, correlation, and agreement of method D with invasive mPAP were assessed. For comparison, three conventional TTE methods for mPAP estimation were also evaluated: (A) tricuspid regurgitation–based, (B) pulmonary regurgitation–based, and (C) pulmonary acceleration time–based estimation.

Results: The meta-analysis included 105 studies with 18,880 patients, yielding a pooled mPAP/sPAP ratio of 0.65 (95% CI, 0.63–0.66). Based on this, we developed the K-based method (D), applying a coefficient of 0.68 (95% CI, 0.67–0.69) when post-capillary pulmonary hypertension was clinically suspected (or when any of the following were fulfilled: E/e' >14, heart rate >90 bpm, or stroke volume index <35 mL/m²) and 0.62 (95% CI, 0.61–0.64) otherwise. In the validation cohort, feasibility was 99% for method D compared with 99% (A), 76% (B), and 72% (C). Correlation with invasive mPAP was strong for methods A (r=0.77) and B (r=0.73), very strong for method D (r=0.82), and weak for method C (r=0.39). Bland–Altman analysis demonstrated excellent agreement for method D, with minimal bias (–0.33 mmHg) compared to method A (-2.03 mmHg), B (1.14 mmHg), and C (-9.16 mmHg).

Conclusions: The K-based method provides a universally feasible and physiologically grounded approach for noninvasive estimation of mPAP. By leveraging routinely available sPAP and adjusting for clinical or hemodynamic modifiers, this method overcomes the limitations of other TTE techniques and offers robust applicability across diverse clinical settings.

CardioSic

IMAGING CARDIOVASCOLARE 544
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
PROGNOSI (SCOMPENSO CARDIACO)

ECHOCARDIOGRAPHY-DERIVED STROKE VOLUME

Paolo Sciarrone (a, b), Francesco Gentile (a, b), Alberto Giannoni (a, b), Vincenzo Castiglione (a, b), Alberto Aimo (a, b), Lorenzo Bazan (c), Claudia Taddei (b), Elisa Poggianti (b), Christina Petersen (b), Vladyslav Chubuchny (b), Claudio Passino (a, b), Michele Emdin (a, b), Giuseppe Vergaro (a, b)
(a) SCUOLA SUPERIORE SANT'ANNA; (b) FONDAZIONE TOSCANA GABRIELE MONASTERIO;
(c) UNIVERSITÀ DI PISA

Background: Transthyretin cardiac amyloidosis (ATTR-CA) is an increasingly identified cause of heart failure. Risk stratification currently depends on the National Amyloidosis Centre (NAC) staging system, based on renal function and NT-proBNP levels. The prognostic role of cardiac hemodynamics, particularly assessed non-invasively via echocardiography, remains underexplored. Given the impracticality of routine right heart catheterization, echocardiography presents a valuable alternative for hemodynamic evaluation in ATTR-CA.

Aims: This study sought to determine the prognostic significance of echocardiography-derived hemodynamic parameters, specifically estimated left ventricular filling pressure (ePCWP) and forward stroke volume index (SVi), in patients with ATTR-CA.

Methods: We prospectively enrolled consecutive ATTR-CA patients undergoing comprehensive echocardiography. ePCWP was calculated using a validated algorithm (normal <15 mmHg). SVi (normal ≥35 mL/m²) was derived from the LV outflow tract velocity-time integral and area. Patients were followed for the composite endpoint of all-cause mortality and first heart failure hospitalization.

Results: Among 197 patients (96% wild-type, 86% male, mean age 79±6 years), 48%, 33%, and 19% were in NAC stages I, II, and III, respectively. Elevated ePCWP was present in 60% of patients, and reduced SVi was observed in 14%. Both elevated ePCWP and reduced SVi were associated with more advanced disease, including higher NYHA class, elevated NT-proBNP, and worse ventricular function. Over a median follow-up of 2.3 years, 47% reached the primary endpoint. Event rates were 27% for patients with normal parameters, 49% for isolated elevated ePCWP, and 80% for those with both abnormalities (log-rank p<0.001). In multivariable analysis, adjusted for age, NAC stage, atrial fibrillation, mitral regurgitation, LVEF, and TAPSE, reduced SVi (HR 1.9 [95% CI 1.1–3.3], p=0.02) was an independent predictor of the primary endpoint and improved risk prediction.

Conclusion: In ATTR-CA, elevated ePCWP and reduced SVi are prevalent and associated with adverse outcomes. Elevated ePCWP reflects restrictive physiology, while reduced SVi may stem from systolic dysfunction and mitral regurgitation. The independent and additive prognostic value of echocardiography-derived SVi could significantly enhance risk stratification and potentially inform therapeutic strategies in ATTR-CA.

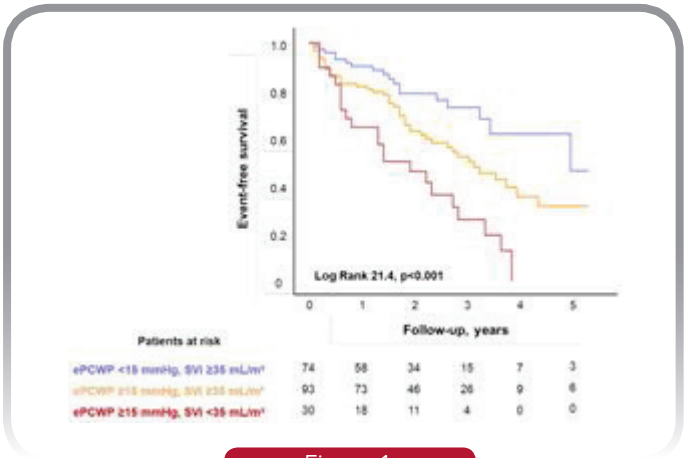


Figure 1

IMAGING CARDIOVASCOLARE 881
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)
MINOCA (MYOCARDIAL INFARCTION WITH NORMAL CORONARY ARTERIES) (CARDIOPATIA ISCHEMICA)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)

MULTIMODALITY IMAGING UNMASKS MID-VENTRICULAR TAKOTSUBO SYNDROME: A CHALLENGING CASE REPORT

Luca Ferdinando Scungio (a, b), Renato Maria Bragato (a, b), Gianluigi Condorelli (a, b), Stefano Figliozzi (a, b)
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Background: Takotsubo syndrome (TTS) is an acute, reversible cardiomyopathy often mimicking acute coronary syndromes. The mid-ventricular variant is rare, typically under-recognized, and requires a multimodality imaging approach for accurate diagnosis.

Case Presentation: A 69-year-old woman, with no major cardiovascular risk factors but a recent history of depression, presented with acute chest pain and elevated high-sensitivity troponin (peak 1393 ng/L). The initial ECG was unremarkable, leading to hospital admission with a working diagnosis of NSTEMI.

DiagnosticWork-up: Coronary angiography demonstrated normal epicardial vessels, defining the presentation as MINOCA, and acetylcholine provocation testing excluded epicardial coronary spasm. Following this, 3D transthoracic echocardiography revealed left ventricular systolic dysfunction with an ejection fraction of 40–42%, impaired GLS (–12%), and a striking pattern of mid-ventricular akinesia with sparing of basal and apical segments. Cardiac MRI subsequently confirmed these findings, showing a mildly reduced LVEF (41%) with basal and apical hyperkinesia, mid-segment akinesia, and diffuse myocardial edema of the mid-ventricular segments on T2 mapping—altogether consistent with mid-ventricular Takotsubo syndrome.
During hospitalization, the patient developed paroxysmal atrial fibrillation requiring electrical cardioversion and initiation of antiarrhythmic therapy. She was discharged on anticoagulation and heart failure therapy in stable clinical conditions.

Conclusion: This case underscores the pivotal role of multimodality imaging in differentiating mid-ventricular Takotsubo syndrome from MINOCA. The sequential use of coronary angiography, 3D echocardiography, and CMR provided complementary insights, avoided misdiagnosis, and guided appropriate management.

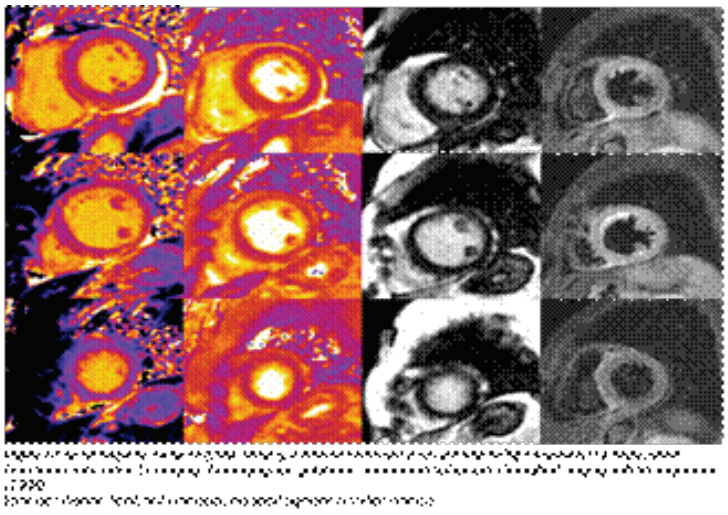


Figure 1

CardioSic

IMAGING CARDIOVASCOLARE 233
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
INTERVENTISTICA STRUTTURALE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

EFFECT OF TRANSCATHETER AORTIC VALVE IMPLANTATION ON NON-INVASIVE MYOCARDIAL WORK PARAMETERS: A SYSTEMATIC REVIEW AND META-ANALYSIS

Federico Sicilia (a), Isabella Leo (a, b), Jolanda Sabatino (a, c, d), Angelica Cersosimo (a), Nicole Carabetta (e), Antonio Strangio (a), Giuseppe Panuccio (a), Giovanni Canino (a), Jessica Ielapi (a), Nadia Salerno (a, b), Sabato Sorrentino (b, e), Daniele Torella (a, b), Salvatore De Rosa (b)

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Background/Objectives: Aortic stenosis (AS) leads to progressive left ventricular (LV) pressure overload, adverse myocardial remodeling, and eventual functional decline. While traditional parameters such as left ventricular ejection fraction (LVEF) may re-main preserved until advanced stages, they are insufficiently sensitive to early dysfunction. Global longitudinal strain (GLS) offers improved detection but remains load-dependent. In contrast, non-invasive myocardial work (MW)—derived from pressure-strain loops—offers a more load-independent assessment of myocardial function. This systematic review and meta-analysis aimed to evaluate the effects of transcatheter aortic valve implantation (TAVI) on MW indices in patients with severe AS.

Methods: We performed a systematic review and meta-analysis of studies reporting non-invasive myocardial work parameters before and after TAVI (PROSPERO ID: CRD420250517138). Databases were searched through March 31, 2025. Pooled mean differences in global work index (GWI), global constructive work (GCW), global wasted work (GWW), and global work efficiency (GWE) were calculated using random-effects models. Sensitivity analyses and meta-regression were conducted to explore heterogeneity and the influence of baseline characteristics.

Results: Eleven studies encompassing 1,493 patients were included. TAVI was associated with a significant reduction in GWI (−236.67 mmHg% [95% CI: −373.82 to −99.52]; I^2 = 97.0%; p = 0.002) and GCW (−243.71 mmHg% [95% CI: −407.38 to −80.03]; I^2 = 97.4%; p = 0.006). No significant changes were observed in GWW or GWE. Meta-regression showed age and baseline LVEF significantly influenced GWE changes but not other parameters.

Conclusions: TAVI leads to a significant reduction in GWI and GCW, reflecting decreased myocardial workload and afterload relief. These findings support the utility of MW indices as valuable tools for assessing myocardial adaptation post-TAVI and potentially guiding clinical decision-making.

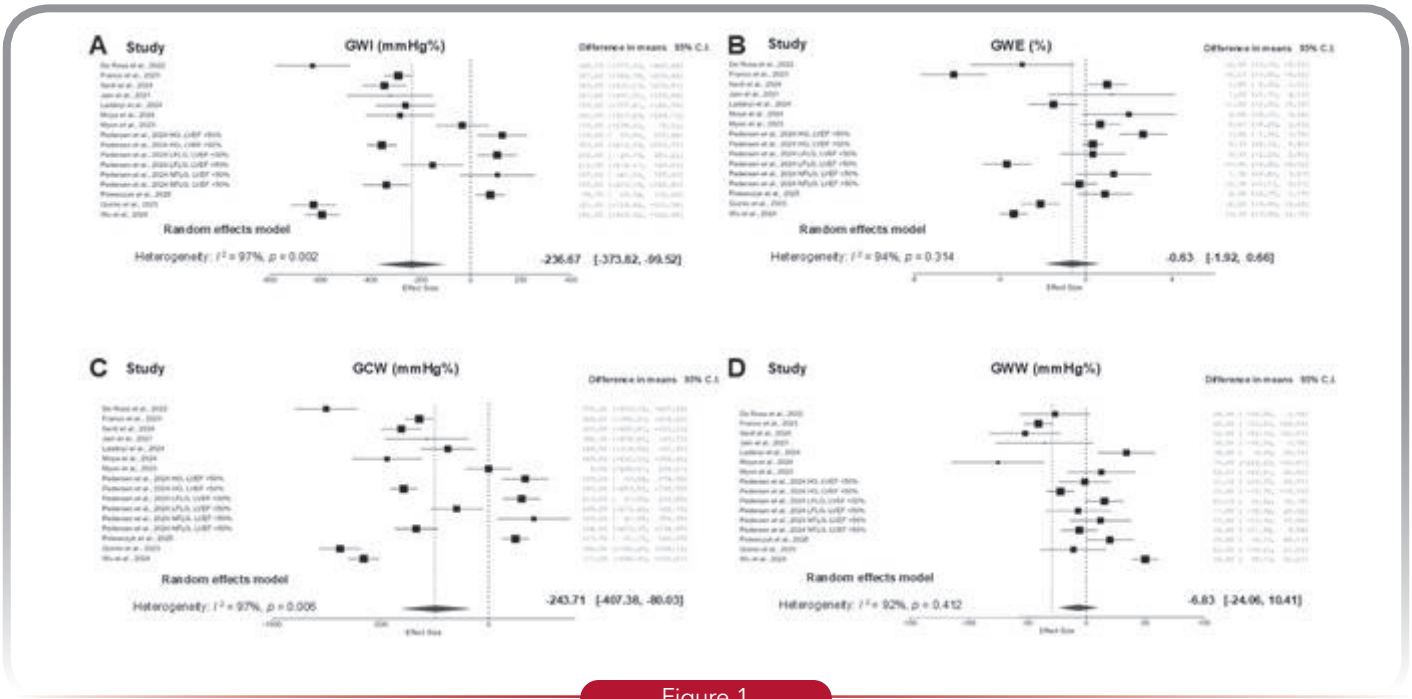

A
Study
GWI (mmHg%)
Random effects model
Heterogeneity: I^2 = 97%, p = 0.002
-236.67 [-373.82, -99.52]
B
Study
GWE (%)
Random effects model
Heterogeneity: I^2 = 94%, p = 0.314
-0.63 [-1.92, 0.66]
C
Study
GCW (mmHg%)
Random effects model
Heterogeneity: I^2 = 97%, p = 0.005
-243.71 [-407.38, -80.03]
D
Study
GWW (mmHg%)
Random effects model
Heterogeneity: I^2 = 92%, p = 0.412
-6.83 [-24.06, 10.41]

Figure 1

IMAGING CARDIOVASCOLARE 1040
MINOCA (MYOCARDIAL INFARCTION WITH NORMAL CORONARY ARTERIES)
(CARDIOPATIA ISCHEMICA)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)
DIAGNOSTICA INVASIVA INTRAVASCOLARE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

BEYOND THE BROKEN HEART: TAKOTSUBO SYNDROME UNVEILS HIDDEN MALIGNANCY

Federico Sicilia (a), Michele Dima (a), Isabella Leo (a, c), Petullà Maria (b), Sabato Sorrentino (c), Salvatore De Rosa (c), Daniele Torella (a, c)
(a) DEPARTMENT OF EXPERIMENTAL AND CLINICAL MEDICINE, MAGNA GRAECIA UNIVERSITY, CATANZARO; (b) DEPARTMENT OF RADIOLOGY, "ISTITUTO DI RADIODIAGNOSTICA", MAGNA GRAECIA UNIVERSITY, CATANZARO; (c) RESEARCH CENTER FOR CARDIOVASCULAR SCIENCE, MAGNA GRAECIA UNIVERSITY, CATANZARO

A 61-year-old woman presented to the emergency department with sudden-onset chest pain. Her medical history was unremarkable except for arterial hypertension. She reported a persistent cough and worsening hoarseness over the previous weeks. She denied any recent emotional or physical stress, including fever.

Electrocardiography at admission revealed sinus tachycardia with poor R-wave progression in the antero-lateral leads and ST-segment elevation in the lateral leads (DI, aVL, V5-V6).

Transthoracic echocardiography showed a reduced left ventricular ejection fraction (LVEF 40%) with apical akinesia. Based on these findings, the patient was diagnosed with lateral ST-elevation myocardial infarction, and then urgently transferred to the catheterization laboratory. Coronary angiography with intravascular ultrasound examination revealed a non-critical stenosis of the proximal left anterior descending artery (LAD); Cardiac magnetic resonance (CMR) images – mostly acquired during free breathing due to persistent cough and poor ability to breath-hold, showed apical hypokinesia with mildly reduced LVEF at 51%. There was also increased signal intensity in T2-weighted imaging and elevated T2-mapping values in the LV apex. After gadolinium injection, there was no late gadolinium enhancement in the same region, findings consistent with apical Tako-tsubo syndrome.

CMR also revealed a 3x4 cm nodular mass in the anterior mediastinum, displacing the trachea and significantly narrowing its lumen (Figure 1); a biopsy was later performed to further characterize the mass, as a bronchial squamous cell carcinoma. The patient was transferred to the oncology unit for further management, asymptomatic with ECG and TTE abnormalities resolved. The clinical understanding of TTS has evolved significantly, with increased awareness of its acute complications and potential triggers, including malignancy. In this case, the presence of coronary artery disease in the LAD territory did not exclude the TTS diagnosis.

CMR allowed confirmation of apical TTS and the simultaneous identification of the mediastinal mass as the underlying trigger.

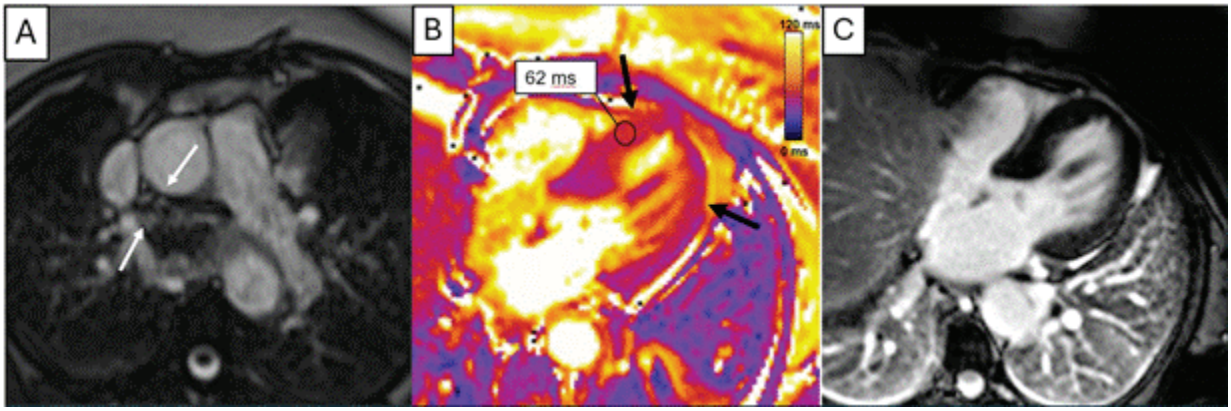


Figure 1. A Cine sequences showing mediastinic nodular mass (white arrows). **B** Quantitative T2 mapping confirming increased relaxation time (62 ms) in the affected regions (black arrows). **C** Late gadolinium enhancement sequence showing absence of significant enhancement.

Figures

IMAGING CARDIOVASCOLARE 532
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE (IMAGING CARDIOVASCOLARE)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
DIAGNOSTICA INVASIVA INTRAVASCOLARE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
IPERTENSIONE POLMONARE (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)

A SIMPLE FORMULA TO ESTIMATE PULMONARY CAPILLARY WEDGE PRESSURE FROM E/E′: META-ANALYTIC DERIVATION AND PROSPECTIVE VALIDATION IN THE TECH REGISTRY

Rosaria Sofia (a, b), Carlo Gaspardone (b), Luca Iuliano (a, b), Riccardo Mazza (a, b), Paolo Costa (c), Andrea Tripoli (a, b), Alessandro Fasolino (d), Fabrizio Fortunato (g), Davide Romagnolo (e), Lorenzo Zaccaria (a, b), Damiano Cecchi (a, b), Riccardo Mager (a, b), Giuseppe Barone (b), Gabriele Paci (b), Chiara Intonti (f), Alberto Magonato (b), Luca Baldetti (f), Cosmo Godino (b)

(a) VITA-SALUTE SAN RAFFAELE UNIVERSITY, MILAN, ITALY; (b) CARDIOLOGY UNIT, IRCCS SAN RAFFAELE SCIENTIFIC INSTITUTE, MILAN, ITALY; (c) CARDIOLOGY DEPARTMENT, SPEDALI CIVILI, BRESCIA, ITALY; (d) DIVISION OF CARDIOLOGY, FONDAZIONE IRCCS POLICLINICO SAN MATTEO, PAVIA, ITALY; (e) CARDIAC INTENSIVE CARE UNIT, IRCCS HUMANITAS RESEARCH HOSPITAL, ROZZANO, ITALY; (f) CARDIAC INTENSIVE CARE UNIT, IRCCS SAN RAFFAELE SCIENTIFIC INSTITUTE, MILAN, ITALY; (g) CARDIOLOGY UNIT, MEDICINE DEPARTMENT, GENERAL HOSPITAL "F. MIULLI" ACQUAVIVA DELLE FONTI, BARI, ITALY

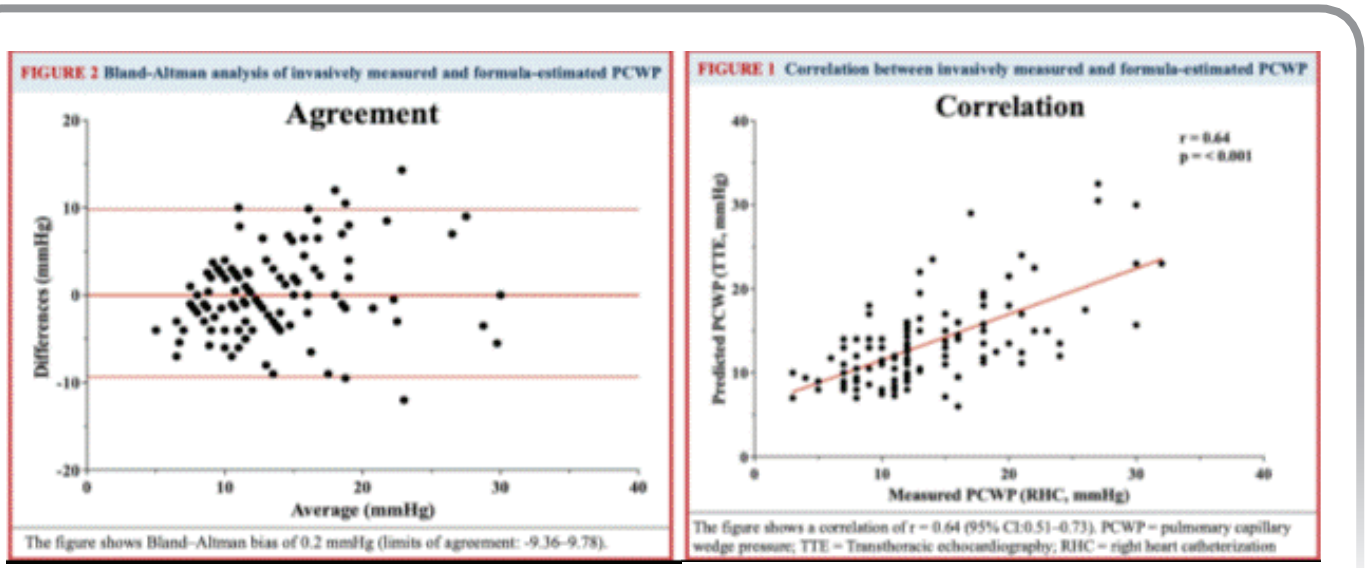
Introduction: Transthoracic echocardiography (TTE) can estimate several hemodynamic parameters measured by right heart catheterization (RHC). However, assessment of pulmonary capillary wedge pressure (PCWP) by TTE remains a major challenge. Among single echocardiographic indices, the E/e′ ratio is regarded as the most reliable. We therefore aimed to derive and validate a simple and accurate formula for estimating PCWP from E/e′.

Methods: We conducted a systematic review and meta-analysis of published studies reporting the correlation between PCWP by RHC and E/e′ by TTE to derive a formula for PCWP estimation. This formula was validated in the multicenter prospective TECH registry (Testing Echocardiography vs Catheterization in Hemodynamics; ClinicalTrials.gov NCT06859047), evaluating feasibility, correlation, and agreement with RHC measurements.

Results: The meta-analysis included 47 studies with a total of 5,006 patients. The weighted mean difference between PCWP and E/e′ was 2.75 mmHg (95% CI 2.54–2.97 mmHg), which was rounded to 3 mmHg to derive the simplified formula: PCWP = E/e′ + 3 [mmHg]. To account for physiological constraints, PCWP was capped at pulmonary artery diastolic pressure, which cannot exceed one-half of pulmonary artery systolic pressure (PAPs). Therefore, PCWP was set at PAPs/2 − 2 [mmHg], where 2 mmHg represents the physiological transpulmonary gradient, whenever E/e′ + 3 exceeded this threshold or when E/e′ was not measurable. The new formula was validated in 113 consecutive patients from the TECH registry. Feasibility was 100% (113/113 patients).

The correlation with PCWP measured by RHC was moderate (r = 0.64, 95% CI 0.51–0.73), with minimal bias on Bland–Altman analysis (0.2 mmHg; limits of agreement −9.36 to 9.78 mmHg).

Conclusion: We derived and validated an evidence-based formula for estimating PCWP from E/e'. The formula showed good accuracy, providing a reliable bedside tool for hemodynamic assessment in routine clinical practice.



Figures

Full and updated results from the ongoing TECH registry will be presented at the SIC Congress in Rome, December 2025

IMAGING CARDIOVASCOLARE 835
PATOLOGIA DELLA VALVOLA TRICUSPIDE (VALVULOPATIE)
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE (IMAGING CARDIOVASCOLARE)
IPERTENSIONE POLMONARE (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
DIAGNOSTICA INVASIVA INTRAVASCOLARE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

ACCURACY OF ECHOCARDIOGRAPHY IN ESTIMATING SYSTOLIC PULMONARY ARTERY PRESSURE IN SEVERE TRICUSPID REGURGITATION

Rosaria Sofia (a, b), Riccardo Mazza (a, b), Luca Iuliano (a, b), Andrea Tripoli (a, b), Alessandro Fasolino (c), Fabrizio Fortunato (e), Davide Romagnolo (d), Lorenzo Zaccaria (a, b), Damiano Cecchi (a, b), Riccardo Mager (a, b), Giuseppe Barone (b), Gabriele Paci (b), Giorgio Fiore (g), Francesco Ancona (g), Alberto Margonato (b), Luca Baldetti (f), Cosmo Godino (b), Carlo Gaspardone (b)

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Background: Severe tricuspid regurgitation (TR) is often thought to lead to underestimation of systolic pulmonary artery pressure (sPAP) by transthoracic echocardiography (TTE). This study aimed to assess the accuracy of TTE in estimating sPAP in patients with severe TR.

Methods: We analyzed patients with severe TR from the multicenter perspective TECH registry (Testing Echocardiography vs. Catheterization in Hemodynamics; ClinicalTrials.gov NCT06859047). All patients underwent right heart catheterization (RHC) and TTE within one hour under the same hemodynamic conditions. TR severity was classified according to current guidelines. TTE-derived sPAP was calculated by adding the right ventricular to right atrial pressure gradient, obtained from the continuous-wave Doppler peak velocity of TR using the simplified Bernoulli equation, to an estimate of right atrial pressure derived from inferior vena cava size and respiratory variation.

Results: Of 121 patients (47% female; mean age 67 ± 17 years) enrolled in the TECH registry, 51 (42%) had severe TR. TTE estimation of sPAP was feasible in all severe TR patients (100%). Mean sPAP in severe TR patients was 45.4 ± 17.1 mmHg by RHC and 43.5 ± 16.7 mmHg by TTE (p = 0.571). A strong correlation was observed between RHC and TTE sPAP (r = 0.95, 95% CI 0.91–0.97), with minimal bias on Bland–Altman analysis (1.9 mmHg; limits of agreement -8.2 to 12.0 mmHg).

Conclusion: TTE provides an accurate and reliable estimation of sPAP in patients with severe TR.

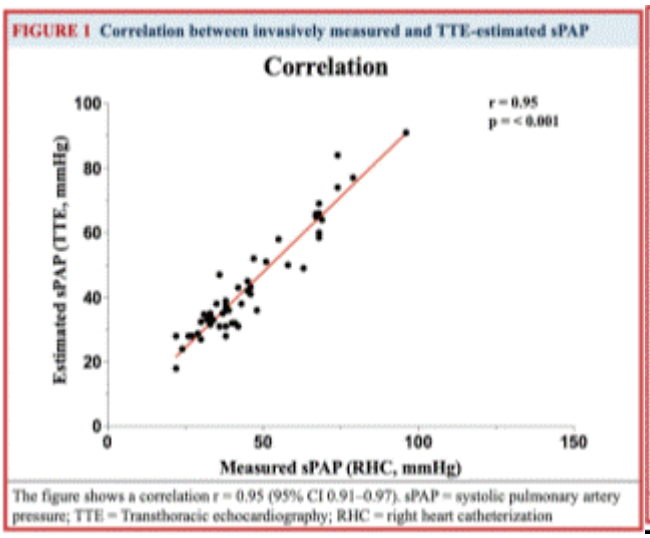


FIGURE 1 Correlation between invasively measured and TTE-estimated sPAP

The figure shows a correlation r = 0.95 (95% CI 0.91–0.97). sPAP = systolic pulmonary artery pressure; TTE = Transthoracic echocardiography; RHC = right heart catheterization

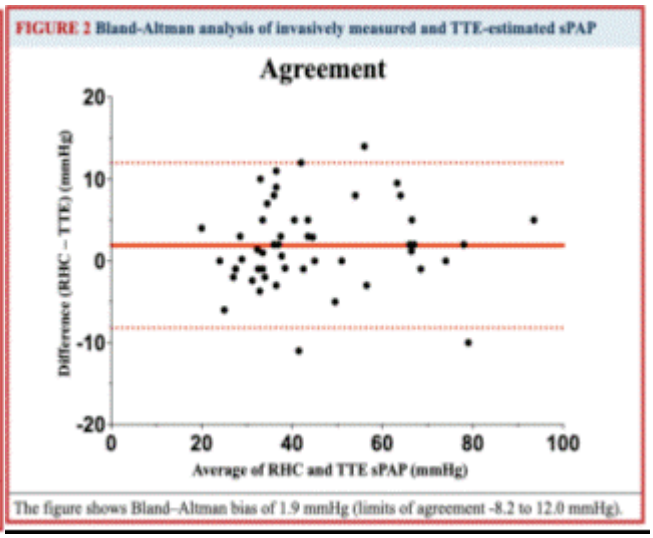


FIGURE 2 Bland-Altman analysis of invasively measured and TTE-estimated sPAP

The figure shows Bland–Altman bias of 1.9 mmHg (limits of agreement -8.2 to 12.0 mmHg).

Figures

Full and updated results from the ongoing TECH registry will be presented at the SIC Congress in Rome, December 2025

CardioSic

IMAGING CARDIOVASCOLARE 893
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE (IMAGING CARDIOVASCOLARE)

THINK OUTSIDE THE CHEST - AN UNUSUAL CASE MIMICKING HYPERTROPHIC CARDIOMYOPATHY

Laura Spaccaterra (a), Maria Concetta Pastore (a), Matteo Cameli (a), Flavio D´ascenzi (a), Elisa Giacomin (a), Marta Focardi (a)
(a) DIPARTIMENTO DI BIOTECNOLOGIE, UNIVERSITA' DEGLI STUDI DI SIENA

Background: left ventricular outflow tract (LVOT) obstruction is most commonly associated with hypertrophic cardiomyopathy but may also result from extracardiac mechanical factors. Traumatic diaphragmatic hernia, although rare, can mimic cardiomyopathy by exerting extrinsic compression on cardiac structures and altering hemodynamics.

Case presentation: a 67-year-old man with hypertension, overweight, active smoking, and a remote history of thoracic trauma presented with acute dyspnea (NYHA III), orthopnea, bilateral edema, and transient neurological symptoms. Transthoracic echocardiography showed concentric LV hypertrophy with preserved systolic function (LVEF 60%) and normal GLS (−24.6%), but a significant LVOT gradient at rest (Gmax 80.8 mmHg – Figure 1) due to systolic anterior motion of the anterior mitral leaflet, with moderate mitral regurgitation. NT-proBNP was markedly elevated (15,638 pg/mL). Initial working diagnosis included acute heart failure in suspected hypertrophic cardiomyopathy and possible cardioembolic event. However, chest X-ray and CT demonstrated a massive right diaphragmatic hernia with bowel loops herniated into the thoracic cavity, compressing adjacent cardiac and pulmonary structures (Figure 2). The patient underwent urgent surgical repair, with progressive resolution of respiratory and congestive symptoms. On follow-up echocardiography, a substantial reduction of the LVOT gradient was observed with symptoms resolution.

Conclusion: this case highlights the importance of considering extracardiac causes of acute heart failure and LVOT obstruction, particularly in patients with a history of trauma. Multimodality imaging proved essential to achieve the correct diagnosis and guide appropriate surgical management, leading to favorable clinical outcomes.

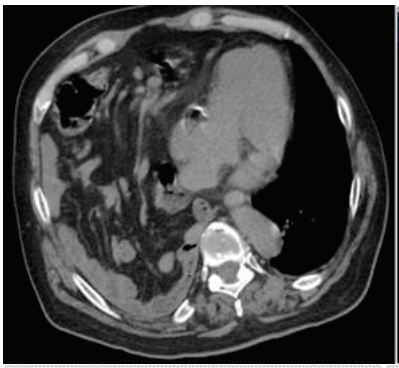


Figure 1: Continuous Wave Doppler at the left ventricular outflow tract (LVOT) showing a peak pressure gradient (Gmax) of 80.83 mmHg.

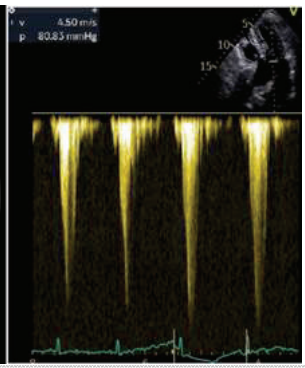


Figure 2: CT scan showing voluminous right diaphragmatic hernia causing mediastinal compression

Figure 1

IMAGING CARDIOVASCOLARE 1016
MINOCA (MYOCARDIAL INFARCTION WITH NORMAL CORONARY ARTERIES) (CARDIOPATIA ISCHEMICA)
INFARTO NSTEMI (CARDIOPATIA ISCHEMICA)
INFARTO STEMI (CARDIOPATIA ISCHEMICA)

INCREASED ARTERIAL STIFFNESS IN PATIENTS PRESENTING WITH ACUTE CORONARY SYNDROME

Laura Spaccaterra (a), Maria Concetta Pastore (a), Matteo Cameli (a), Flavio D´ascenzi (a), Martina Sportelli (a), Nicole Carabetta (a), Assunta Di Costanzo (a), Mariangela Vigna (a), Giuseppe Panuccio (a), Antonio Strangio (a), Sabato Sorrentino (a), Isabella Leo (a), Nadia Salerno (a), Jolanda Sabatino (a), Daniele Torella (a), Salvatore De Rosa (a)
(a) MAGNA GRAECIA UNIVERSITY OF CATANZARO, ITALY

Background: Arterial stiffness is characterized by structural and functional vascular changes that cause microvascular dysfunction and end-organ damage. It represents an early indicator of vascular impairment and an independent predictor of cardiovascular disease and adverse outcomes. This study sought to evaluate the diagnostic and prognostic value of echocardiographic indices of arterial and pulmonary stiffness in patients with acute myocardial infarction (AMI), with particular attention to subgroups with acute coronary syndrome (ACS) and myocardial infarction with non-obstructive coronary arteries (MINOCA).

Methods: We conducted a prospective observational study involving 83 patients enrolled at Magna Graecia University Hospital of Catanzaro between November 2024 and January 2025. The cohort included 37 patients with ACS, 13 patients with MINOCA, and 33 controls. Echocardiographic evaluation included: systolic-diastolic aortic diameter variation, peak R wave on ECG to Pulse Wave Velocity (PWV) transit time (R-PWV), defined as the difference between the R wave-to-PWV onset intervals measured at femoral and descending aortic sites, pulmonary acceleration time (ATp), maximum frequency shift (MFS) in pulmonary artery, and the MFS/ATp ratio.

Results: Patients with AMI showed significantly increased arterial stiffness compared with controls, demonstrated by R-PWV time (1.38 vs. 0.93; p<0.001) and reduced aortic diameter variation (p=0.012). Pulmonary stiffness (MFS) was reduced in AMI patients compared with controls (p=0.006). Subgroup analysis

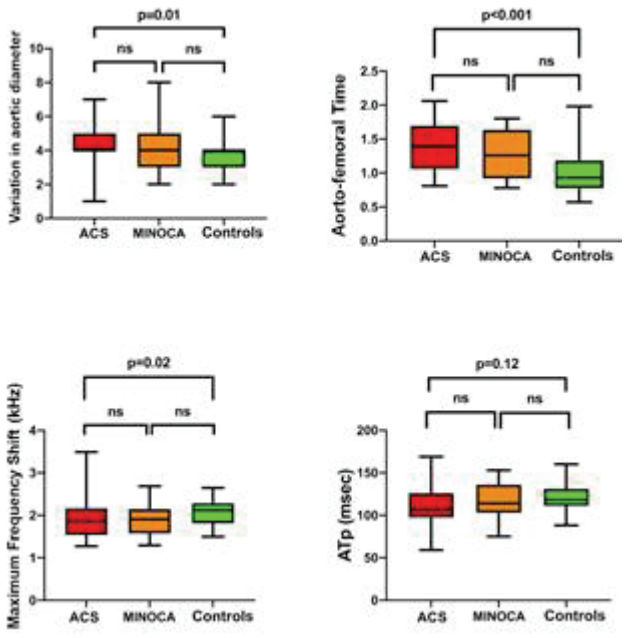


Figure 1

showed significant differences between ACS patients and controls, but no significant differences involving the MINOCA group. Correlation analyses revealed associations between stiffness parameters and measures of left ventricular function, including global longitudinal strain and ejection fraction.

Conclusions: Echocardiographic indicators of arterial and pulmonary stiffness demonstrated diagnostic and prognostic potential in patients with acute myocardial infarction, particularly in differentiating ACS patients from controls. Data regarding MINOCA were suggestive but inconclusive, highlighting the need for larger cohorts and extended follow-up. These findings support the potential clinical use of stiffness parameters for risk stratification and personalized management strategies in AMI patients.

IMAGING CARDIOVASCOLARE 760
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)
IPERTENSIONE POLMONARE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)

ROLE OF CARDIAC MAGNETIC RESONANCE IN PREDICTING PULMONARY HYPERTENSION AND LONG-TERM OUTCOMES IN DILATED/HYPOKINETIC CARDIOMYOPATHY

Michele Strosio (a), Laura De Michieli (a), Manuel De Lazzari (a), Alberto Cipriani (a), Raffaella Motta (a), Giorgio De Conti (a), Giuseppe Tarantini (a), Cristina Basso (a), Domenico Corrado (a), Martina Perazzolo Marra (a)
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Background: Dilated/hypokinetic cardiomyopathy (D/HC) is often complicated by pulmonary hypertension (PH), particularly isolated post-capillary PH (IpcPH) or combined post- and pre-capillary PH (CpcPH), with prognostic implications. Echocardiographic estimation of mPAP might be challenging due to biventricular disfunction, loading conditions and difficult acoustic windows. Cardiac magnetic resonance (CMR) provides unique insights into ventricular morphology and tissue characterization, including the presence of late gadolinium enhancement (LGE). Junctional LGE, localized at the right ventricular insertion points, has been linked to PH and adverse outcomes, but evidence remains inconsistent; moreover, CMR parameters have not been related to PH defined according to the updated 2022 ESC criteria.

Methods: Single-center, retrospective study including patients with D/HC who underwent both CMR and right heart catheterization (RHC) within three months, between 2010 and 2025. PH was defined as mean pulmonary artery pressure, mPAP, >20 mmHg. Clinical endpoints during follow-up included hospitalization for heart failure (HF) and all-cause mortality. Univariable and multivariable logistic regression were used to identify CMR determinants of PH, while Cox regression and Kaplan–Meier analysis assessed prognostic significance.

Results: A total of 208 patients met the inclusion criteria, of which 152 were men (72%) and with a median age of 50 (39-60) years. Junctional LGE was present in 91 patients (43%). PH was diagnosed in 109 (52%), mostly IpcPH (n=45) and CpcPH (n=47). At multivariable analysis, left ventricular ejection fraction (LVEF), right ventricular end-diastolic volume index (RVEDVi), and junctional LGE [OR 2.03 (95% CI 1.05–3.93), p=0.036] were independent determinants of PH at RHC. ROC analysis and Youden index identified thresholds of LVEF <35% and RVEDVi >90 ml/m², together with junctional LGE, as best predictors of PH at RHC. The risk of PH rose progressively with the number of markers above these thresholds, with patients harboring ≥2 markers at significantly higher risk for PH (HR 4.97, 95% CI 2.73–9.06, p<0.001) compared to those with 0/1 marker. During a median follow-up of 80 months, 62 patients (30%) were hospitalized for HF and 50 (24%) died. At KM analysis, patients with junctional LGE had shorter HF-free survival (log-rank p=0.032) during a long-term follow-up. Patients at high risk of PH according to the parameters reported above had a significant higher risk of HF hospitalization also when adjusted for age and NYHA class > 2 (HR 2.28, 95% CI 1.32-3.96, p=0.003). Stria/ring-like LGE patterns independently predicted all-cause mortality (HR 2.78, 95% CI 1.12–6.89, p=0.027).

Conclusions: In a wide cohort of patients with D/HC that underwent CMR and RHC within a restricted timeframe, CMR parameters like LVEF <35%, RVEDVi >90 ml/m², and junctional LGE independently predicted the presence of PH (particularly IpcPH and CpcPH), defined accordingly to the updated 2022 ESC guidelines. Patients with at least two of these CMR parameters exhibit a high risk of PH as well as an increased risk of HF hospitalizations over a long term follow-up, independently of age and NYHA class.

IMAGING CARDIOVASCOLARE 630
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MIOCARDICO-PERICARDICO
(MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

EVALUATION OF GENOTYPE-PHENOTYPE CORRELATION IN HYPERTROPHIC CARDIOMYOPATHY USING RADIOMIC ANALYSIS OF CARDIAC MAGNETIC RESONANCE

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Background: Hypertrophic cardiomyopathy (HCM) is a recognized inherited cardiomyopathy, with inconclusive evidence correlating genotype and phenotypic features. Radiomics is an emerging research field using quantitative features extracted from medical images and it could prove useful in identifying features computed from Cardiac Magnetic Resonance (CMR) associated to specific genotypes.

Purpose: to investigate if radiomic analysis of CMR can predict for a positive genotype in an HCM cohort.

Methods: this is a multicentric retrospective study which enrolled consecutive patients referred to our tertiary centre from 2014 to 2024 with diagnosis of HCM who performed CMR and genetic testing, and an external dataset acquired from a second tertiary centre for validation purpose. Radiomic analysis was performed on long axis cine MR sequences, splitting the dataset into a training (75% of the dataset) and an internal validation set (15% of the total dataset). The final test was performed on the external dataset. Three feature selection methods and five classifiers were tested to identify the most accurate model. A head-to-head comparison with Toronto and Mayo score was performed in the final test set.

Results: One-hundred-nine HCM patients were finally enrolled as internal cohort. One hundred additional external patients were used as validation cohort. Thirty-one patients (28%) in the internal cohort and 50 patients (50%) in the external test set had a positive genotype. Seven of the 474 radiomic features initially extracted were selected. In the internal validation set, the best performing model (LASSO + LR) achieved a balanced accuracy of 0.83, an AUC of 0.88, a sensitivity of 0.82 and a specificity of 0.75 with better performance compared with Toronto and Mayo score (with an AUC of 0.60 and 0.52 respectively, p value vs radiomics 0.07 and 0.03). On the external test set, a sensitivity of 0.76 has been obtained, with 38 positives correctly classified, with specificity of 0.64 and AUC of 0.72 (vs: AUC Mayo 0.55, p= 0.01; AUC Toronto 0.65, p= 0.17).

Conclusion: Radiomic analysis of cine MR sequences showed high accuracy in genotype positivity prediction in HCM, with better performance in a head-to-head comparison with Mayo and Toronto score. Radiomic features applied to CMR provide a novel, accurate and non-invasive approach to predict genotype in HCM and might act as a gatekeeper to select patients who should be addressed for genetic testing.

IMAGING CARDIOVASCOLARE 15
INTERVENTISTICA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
DIAGNOSTICA INVASIVA INTRAVASCOLARE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)

3DSTENT GUIDA PRATICA ALLA VALUTAZIONE TRIDIMENSIONALE DELLO SENT INTRA PROCEDURALE

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(a) AOU FEDERICO II NAPOLI

Introduzione: La corretta espansione ed apposizione dello stent coronarico è essenziale per ridurre il rischio di trombosi e restenosi dopo angioplastica coronarica. La tecnologia 3DStent, integrata nei sistemi GE Allia™ IGS, consente una ricostruzione tridimensionale dello stent in tempo reale direttamente in sala angiografica, senza la necessità di ricorrere ai sistemi di imaging invasivo (OCT o IVUS), offrendo un'opportunità concreta per migliorare l'accuratezza intra-procedurale nella valutazione della geometria dello stent.

Metodi: È stato individuato un protocollo operativo standardizzato per l'utilizzo di 3DStent: selezione della modalità dedicata, corretta impostazione dei parametri (FOV, velocità di rotazione), posizionamento ottimale del paziente, esecuzione della rotazione automatica del braccio a C e acquisizione delle immagini volumetriche tramite tecnologia CMCT (C-arm Motion Compensated CT). L'analisi ha incluso la misurazione dell'area minima dello stent (MSA), la verifica dell'apposizione e l'identificazione di eventuali sottoespansioni o malapposizioni.

Risultati: L'uso di 3DStent permette una valutazione precisa e immediata della morfologia dello stent. In particolare, l'identificazione di MSA <5,5 mm² ha facilitato l'ottimizzazione del risultato angioplastico in tempo reale. La tecnologia ha evidenziato un'elevata utilità nel guidare decisioni terapeutiche aggiuntive (post-dilatazione, rivascolarizzazione mirata).

Conclusioni: 3DStent si conferma uno strumento efficace, rapido e non invasivo per la valutazione intra-procedurale dello stent, migliorando la qualità dell'imaging e la sicurezza della procedura. La sua integrazione nei flussi di lavoro quotidiani della cardiologia interventistica rappresenta un importante passo avanti nella personalizzazione del trattamento PCI. Trattandosi di una metodica di recente implementazione, il suo utilizzo clinico è ancora nelle fasi iniziali. La letteratura scientifica inizia solo ora a documentarne l'efficacia, con i primi studi comparativi tra 3DStent e OCT pubblicati molto di recente (2024). Sebbene i dati preliminari siano promettenti, risulta fondamentale promuovere sia una più ampia adozione clinica, sia un solido sviluppo della ricerca scientifica per validarne ulteriormente l'impatto diagnostico e terapeutico.

IMAGING CARDIOVASCOLARE 663
ECOCARDIOGRAFIA 3-D (IMAGING CARDIOVASCOLARE)
PATOLOGIA DELLA VALVOLA TRICUSPIDE (VALVULOPATIE)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)

ASSOCIATION OF THE RIGHT ATRIOVENTRICULAR COUPLING AND RIGHT ATRIAL STIFFNESS WITH OUTCOME IN PATIENTS WITH SECONDARY TRICUSPID REGURGITATION AND PRESERVED RIGHT VENTRICULAR FUNCTION

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Background: In patients with secondary tricuspid regurgitation (STR), adverse remodeling of both the right atrium (RA) and right ventricle (RV) has been associated with clinical outcomes. Although typically assessed in isolation, these two chambers interact closely. The concept of right atrioventricular coupling (RAVC) has recently emerged, yet its prognostic significance in STR remains unexplored.

Purpose: To evaluate the association between RAVC and a composite endpoint of all-cause mortality and heart failure hospitalization (HHF) using two echocardiographic indices, in patients with severe STR and preserved RV systolic function:

1. Speckle-tracking–derived RAVC (RAVCSTE), defined as the ratio of RA longitudinal strain (RALS) to RV free-wall strain—lower values suggest impaired RA contribution to RV filling despite preserved RV systolic function.
2. RA stiffness index, calculated as the ratio of RA volume index to RALS—reflecting atrial remodeling relative to deformation capacity.

Methods: This retrospective analysis included 239 patients with severe STR (mean age 78 ± 11 years; 53% with atrial STR) and RVEF > 45% who underwent comprehensive 2D, 3D, Doppler, and speckle-tracking echocardiography. STR severity was determined using the recommended multiparametric approach incorporating qualitative, semi-quantitative, and quantitative criteria.

Results: After a mean follow-up of 18±15 months, 115 patients reached the composite endpoint of HHF and all-cause death. On spline curve modeling the cut-off values associated with an excess event rate within the overall study population were: 0.82 for RVACSTE and 4.6 for RA stiffness index. Kaplan-Meier analysis demonstrated significantly lower event-free survival among patients with RVACSTE ≤ 0.82 and RA stiffness index ≥ 4.6 mL/% ($p<0.005$, for both). However, at Cox multivariable analysis, after adjusting for RV function, left ventricular ejection fraction, pulmonary artery systolic pressure and STR regurgitant volume, only RVACSTE ($p<0.003$), but not RA stiffness index ($p=0.558$), was independently associated with outcomes.

Conclusions: In patients with severe STR and preserved RV systolic function, impaired RVAC and identify individuals at heightened risk of death or HHF. This novel echocardiographic markers may enhance risk stratification and guide clinical decision-making.

IMAGING CARDIOVASCOLARE 433
TROMBOSI E COAGULAZIONE (ATEROTROMBOSI)
CARDIOPATIE CONGENITE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE)
(IMAGING CARDIOVASCOLARE)
ECOCARDIOGRAFIA 3-D (IMAGING CARDIOVASCOLARE)

FUNNEL TYPE PATENT FORAMEN OVALE MORPHOLOGY ON 3D ECHOCARDIOGRAPHY: A NOVEL HIGH-RISK ANATOMIC FEATURE

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Background: Cryptogenic stroke is linked to Patent Foramen Ovale (PFO), although precise risk assessment is still difficult. In order to identify high-risk clinical and anatomical profiles, we sought to describe a novel morphologic classification of PFO using 3D Transesophageal Echocardiography (TEE).

Methods: 3D TEE was performed on 95 consecutive patients who had a documented right-to-left shunt. A new classification based on internal geometry was created: "cone-type" (wider left atrial end) and "funnel-type" (wider right atrial end). Together with clinical information, such as a history of cerebrovascular accidents (CVAs), morphology was examined.

Results: 37 (38.9%) of the 95 patients had previously experienced a CVA. This group had a larger right atrial (RA) opening cross-sectional area (48.5 [18.4–67.0] vs. 11.75 [8.6–17.9] mm², p=0.002, Mann–Whitney U) and a higher prevalence of dyslipidemia (43.2% vs. 3.4%, p<0.001). Among CVA patients, funnel-type morphology was more common (81.1% vs. 50% in no CVA group, p=0.002) and was associated with a combined event rate that was more than twice as high (50.8% vs. 19.4%, p=0.001). Dyslipidemia (OR 21.06), smoking (OR 6.25), funnel-type morphology (OR 6.47), and a larger RA tunnel opening area (OR 1.026 per mm²) were all found to be independent predictors of CVA through multivariate analysis. Furthermore, ROC analysis identified a right atrial (RA) cross-sectional area > 15.85 mm² as the optimal diagnostic cut-off (AUC 0.719), providing a quantitative threshold for this high-risk anatomy.

Conclusions: Previous CVA is highly correlated with funnel-type PFO morphology, as determined by 3D TEE, particularly when characterized by a right atrial opening area exceeding 15.85 mm². Its broad RA opening may serve as a "catchment" for emboli and encourage in-situ thrombosis, a risk that is compounded by smoking and dyslipidemia. More precise risk stratification and closure strategy guidance may be made possible by combining 3D morphology with clinical profile.

IMAGING CARDIOVASCOLARE 129
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE)
(IMAGING CARDIOVASCOLARE)
ECOCARDIOGRAFIA 3-D (IMAGING CARDIOVASCOLARE)
ENDOCARDITI (VALVULOPATIE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)

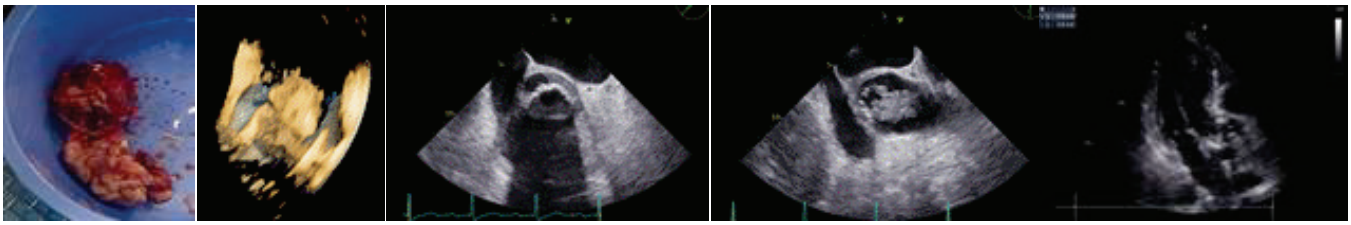
UN RARO CASO DI ENDOCARDITE DA ASPERGILLUS SU PROTESI VALVOLARE AORTICA

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L'endocardite infettiva è un'infezione dell'endocardio causata da microrganismi quali batteri o, più raramente funghi. L' incidenza generale è di circa 3–10 casi per 100.000 persone/anno. L'EI su protesi valvolare rappresenta circa il 20–30% di tutti i casi. L'endocardite fungina è una forma rara ma severa, e rappresenta il 2–4% dei casi totali di EI, con mortalità spesso superiore al 50%. I miceti più frequentemente isolati sono le specie di Candida, ma in una minoranza significativa dei casi, viene identificato il genere Aspergillus. L'endocardite da Aspergillus costituisce circa il 20–25% delle endocarditi fungine e si distingue per la sua presentazione subdola, l'assenza spesso di emocolture positive e la tendenza alla disseminazione embolica, rendendo la diagnosi complessa e spesso tardiva. CASO CLINICO: Uomo, 72 anni accedeva presso altro nosocomio per febbre e sintomi gastro-intestinali. In anamnesi una pregressa sostituzione valvolare aortica con protesi biologica "Inspiris Resilia - Edwards n°25" eseguita nell'anno precedente. Per la persistenza di febbre e per riduzione del visus, veniva centralizzato presso il nostro nosocomio dove l'ETT evidenziava una formazione peduncolata, mobile, adesa al versante aortico posteriore delle cuspidi della protesi delle dimensioni di 2x1.5 cm [fig 1]. Ulteriori immagini ipoecogene erano apprezzabili in corrispondenza della giunzione sino-tubulare. Si evidenziava contestuale disfunzione protesica per stenosi di grado moderato (V max 3,2 m/s, G medio 34 mmHg, DVI 0,45) ed insufficienza centrale di grado lieve. Gli altri apparati valvolari risultavano apparentemente indenni.

Veniva quindi eseguito un ecocardiogramma trans-esofageo che evidenziava sul versante aortico posteriore delle cuspidi, voluminose formazioni ad ecogenicità aumentata ma disomogenea, la maggiore delle quali di dimensioni massime pari a 3.5 x 2 cm circa, mobili e fluttuanti[fig 2,4]. L'anello protesico posteriormente e la giunzione mitro-aortica apparivano inoltre ispessiti ed a ecogenicità disomogenea come da raccolta ascessuale protesica e risultava apprezzabile accentuata mobilità della protesi[fig 3]. Le grossolane vegetazioni determinavano moderata riduzione dell'apertura delle cuspidi con stenosi di grado moderato ed insufficienza di grado lieve. Le successive indagini microbiologiche hanno confermato la sepsi da Aspergillosi per cui veniva avviata terapia antifungina. Per la comparsa di segni di emilato, veniva sottoposto a TC encefalo, che ha evidenziato la presenza di emorragia cisternale rolandica destra compatibile con embolizzazione cerebrale settica. In considerazione del persistente stato settico del paziente, delle dimensioni delle vegetazioni endocarditiche, nonche' delle possibili complicanze sistemiche da embolizzazione il paziente è stato sottoposto ad intervento cardiochirurgico di nuova sostituzione valvolare aortica con bioprotesi[fig 5].

CONCLUSIONI: L'imaging multimodale risulta fondamentale per la diagnosi di EI e per la valutazione di eventuali complicanze locali e sistemiche. Nei portatori di protesi valvolari, l'ETE svolge a tutt'oggi un ruolo cardine, sia diagnostico che nelle decisioni terapeutiche.



Figure

IMAGING CARDIOVASCOLARE 707
ECOCARDIOGRAFIA 3-D (IMAGING CARDIOVASCOLARE)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE) (IMAGING CARDIOVASCOLARE)
TROMBOSI E COAGULAZIONE (ATEROTROMBOSI)
PATOLOGIA DELL´AORTA (MALATTIE DEI VASI)

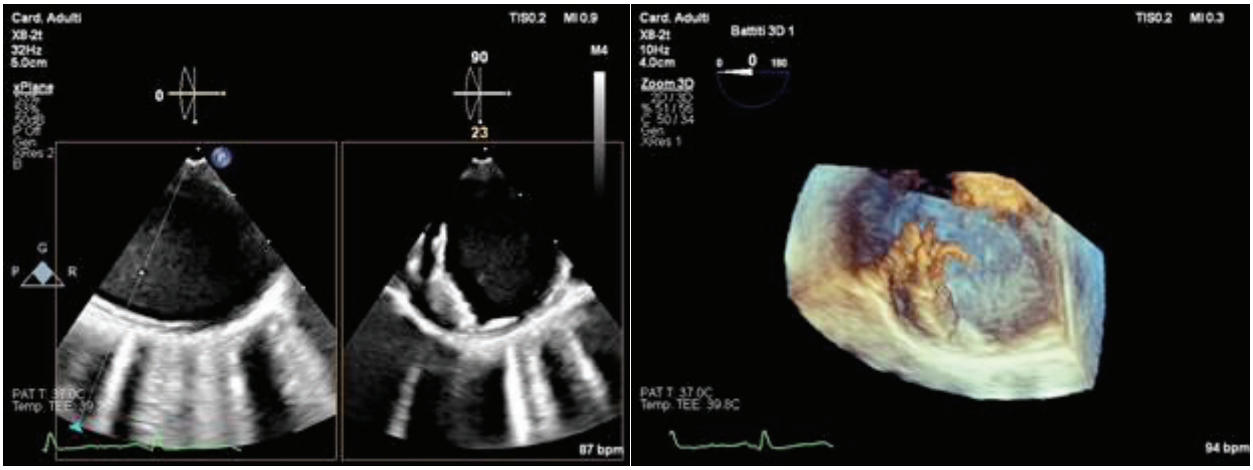
STROKE RICORRENTI IN TROMBOSI DELL'ARCO AORTICO MISCONOSCIUTA

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(a) OSPEDALE MAGGIORE DELLA CARITA' DI NOVARA

Introduzione: La trombosi dell'arco aortico rappresenta una causa rara ma potenzialmente sottodiagnosticata di ictus recidivante. Tale evenienza può sfuggire alla diagnosi, soprattutto in assenza di segni clinici specifici. Il riconoscimento precoce è cruciale per ottimizzare la gestione terapeutica e prevenire nuove embolie cerebrali.

Caso clinico: Paziente di 79 anni, ex fumatore, dislipidemico, polivasculopatico, cardiopatia ischemica sottoposta a bypass aorto-coronarico, carcinoma vescicale in attesa di intervento, pregresso attacco ischemico transitorio con attuale recidiva di ictus ischemico per il quale eseguiva TC cranio in cui si evidenziavano molteplici apposizioni trombotiche a livello dell'arco aortico. All'ecocardiogramma transesofageo (ETE): escluse formazioni ascrivibili a vegetazioni endocarditiche. A livello dell'arco aortico riscontro di voluminosa placca ulcerata, friabile, con elementi mobili, delle dimensioni massime di 20 x 8 mm, ascrivibile a trombosi dell'arco aortico. Alla valutazione cardiochirurgica e vascolare non venivano poste indicazioni chirurgiche. Il paziente ha proseguito quindi la doppia terapia antiaggregante e terapia statinica già in atto, con indicazione a monitoraggio dei valori pressori e dei fattori di rischio cardiovascolare.

Conclusioni: Questo caso sottolinea l'importanza di considerare la trombosi dell'arco aortico tra le cause di stroke embolico ricorrente. L'ETE si è dimostrato fondamentale per la diagnosi. La gestione terapeutica deve essere personalizzata e, in alcuni casi, può essere necessario un intensificato regime antiaggregante ed anticoagulante.



Figure

IMAGING CARDIOVASCOLARE 806
PLACCA VULNERABILE (ATEROTROMBOSI)
DIAGNOSTICA INVASIVA INTRAVASCOLARE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT)
(IMAGING CARDIOVASCOLARE)

ADVANCED CCTA IMAGING, ANGIOGRAPHY-BASED RADIAL WALL STRAIN AND MFR VERSUS IVUS-NIRS TO ENHANCE IDENTIFICATION OF LIPID-RICH VULNERABLE PLAQUE: A MULTIMODALITY IMAGING APPROACH

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Background and Aims: Identifying vulnerable coronary plaques (VP) is essential for stratifying cardiovascular risk in stable coronary artery disease (CAD). This is the first study to assess diagnostic performance in detecting VP of CCTA advanced plaque analysis, including maximal plaque burden (PBmax) and necrotic core area, angiography-derived radial wall strain (RWSmax) and Murray's quantitative flow ratio (μFR) by using Intravascular Ultrasound with Near-Infrared Spectroscopy (IVUS-NIRS) as gold standard.

Methods: We analyzed fifty lesions from forty-three patients who underwent coronary angiography with IVUS-NIRS following CCTA. VP were defined using IVUS-NIRS criteria as maximal Lipid Core Burden Index ≥ 325. Regression analyses evaluated associations between the imaging parameters and VP. Receiveroperatingcharacteristic (ROC) curves and the corresponding areas under the curve (AUCs) were calculated to quantify the diagnostic performance of each model.

Results: VP was found in 19 out 50 lesions (38%) and in 16 out of 43 patients (37%). About CCTA, PBmax and necrotic core area showed the highest accuracy in identification of VP (AUC=0.839 and AUC=0.876, respectively). Regarding invasive evaluation, angiography derived RWSmax demonstrated significant discriminative ability for detecting VP, whereas μFR did not (AUC=0.921 and AUC=0.637, respectively). Two multivariate models were tested: the first, combining PBmax and RWSmax, achieved the highest diagnostic accuracy (AUC=0.959); the second model, based only on CCTA-derived parameters, PBmax and necrotic core area, although less pronounced, also demonstrated significant predictive capability (AUC=0.939).

Conclusions: Integrating CCTA-derived PBmax with angiography-derived RWSmax provides outstanding discrimination of VP and may guide selective referral to IVUS-NIRS for definitive characterization.

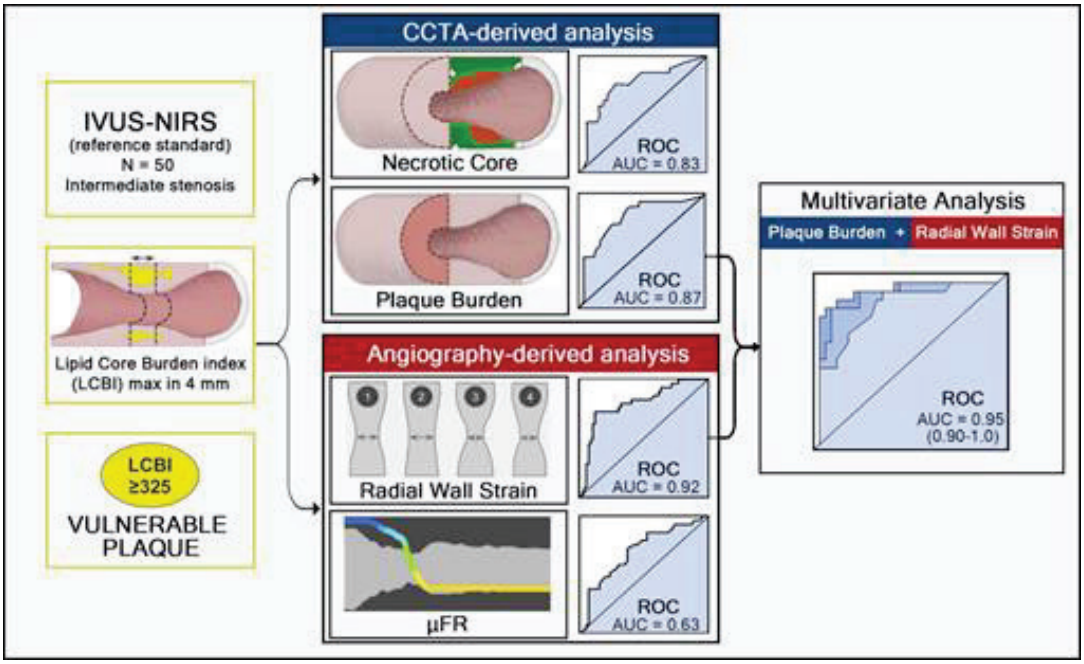

IVUS-NIRS
(reference standard)
N = 50
Intermediate stenosis
Lipid Core Burden index
(LCBI) max in 4 mm
LCBI
≥325
VULNERABLE
PLAQUE
CCTA-derived analysis
Necrotic Core
ROC
AUC = 0.83
Plaque Burden
ROC
AUC = 0.87
Angiography-derived analysis
Radial Wall Strain
ROC
AUC = 0.92
μFR
ROC
AUC = 0.63
Multivariate Analysis
Plaque Burden + Radial Wall Strain
ROC
AUC = 0.95
(0.90-1.0)

Figure 1

IMAGING CARDIOVASCOLARE 1029
ARITMIE VENTRICOLARI (ARITMIE)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

FROM PALPITATIONS TO DIAGNOSIS: A CASE OF LEFT DOMINANT ARRHYTHMOGENIC CARDIOMYOPATHY REVEALED BY EXERCISE TESTING

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Background: Arrhythmogenic cardiomyopathy (AC) is a genetic disorder characterized by fibrofatty myocardial replacement, predisposing to ventricular arrhythmias, sudden cardiac death, and progressive systolic dysfunction. While classically right-predominant, left ventricular involvement is increasingly recognized, often presenting with subepicardial or midmural scarring and exercise-induced arrhythmias.

Case Description: We report a 48-year-old male who developed a 250-bpm wide-complex tachycardia during the recovery phase of a maximal exercise test, preceded by frequent monomorphic ventricular ectopy. His medical history included a prior SARS-CoV-2 infection (2023) and gastroesophageal reflux disease, with no cardiovascular risk factors or ongoing therapy. He reported palpitations at rest after moderate-to-strenuous physical activity. Physical examination was unremarkable. Laboratory tests showed normal blood counts and renal function, elevated LDL cholesterol (154 mg/dL), and mildly raised cardiac biomarkers (hs-troponin 15.10 ng/L). The ECG demonstrated sinus rhythm at 75 bpm, with normal PR and QRS intervals and a right axis deviation, without specific repolarization abnormalities. Echocardiography revealed hypokinesia with increased echogenicity in basal inferior and inferolateral segments, while overall LV function was preserved. Right chambers were normal, with a residual right atrial embryonic structure. On the first day of hospitalization, the patient developed chest pain with recurrent wide-complex tachycardia documented on telemetry. Sinus rhythm was restored by electrical cardioversion, followed by ICU transfer. Coronary angiography revealed tortuous vessels without critical stenoses. Cardiac MRI demonstrated basal septal thickening, severe hypokinesia with thinning of basal and mid inferior and inferolateral walls, fatty infiltration, and extensive non-ischemic midwall/subepicardial ring-like late gadolinium enhancement, consistent with adipose myocardial replacement. These findings strongly suggested left-dominant AC. Based on clinical and imaging evidence, ICD implantation was indicated. The patient was discharged on optimal medical therapy. Genetic testing is ongoing.

Discussion: This case underscores left-dominant AC as a clinically relevant substrate for exercise-induced ventricular tachycardia in adults. Early recognition through multimodal imaging and timely arrhythmic risk stratification are critical for guiding ICD implantation and improving outcomes.

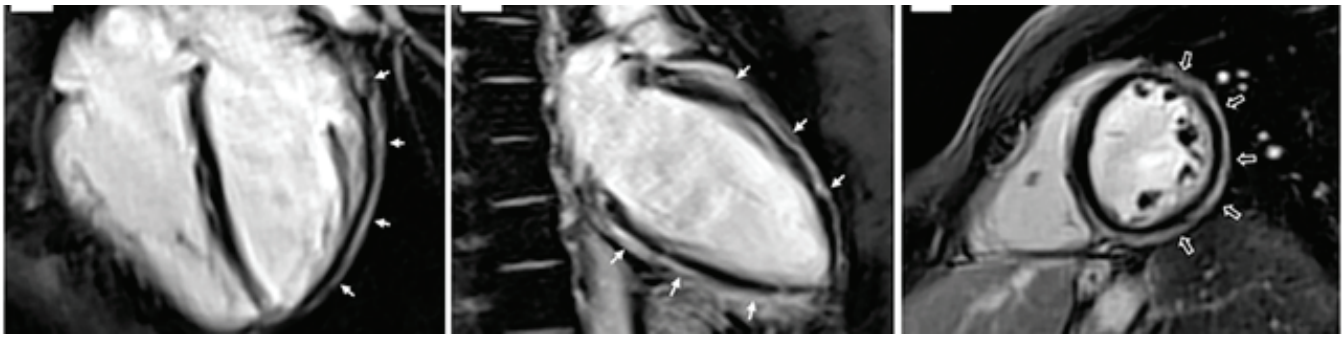


Figure 1

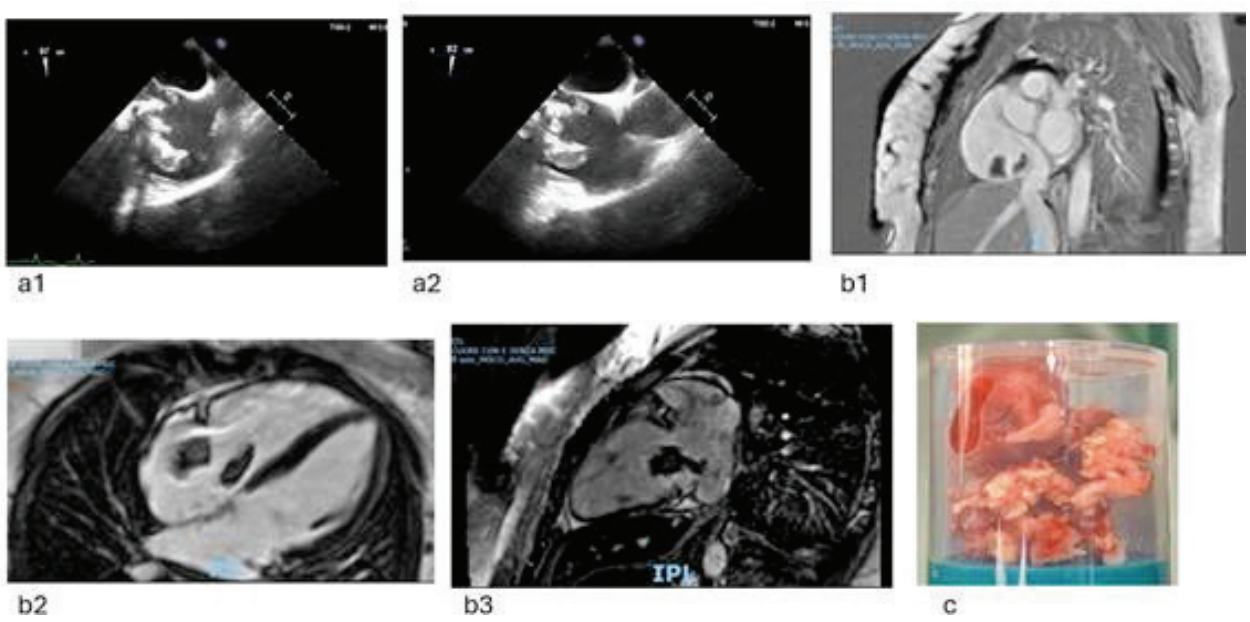
IMAGING CARDIOVASCOLARE 999
PATOLOGIA DELLA VALVOLA TRICUSPIDE (VALVULOPATIE)
ENDOCARDITI (VALVULOPATIE)
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE (IMAGING CARDIOVASCOLARE)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)

LIBMANN-SACKS ENDOCARDITIS IN A YOUNG WOMAN WITH ANTIPHOSPHOLIPID ANTIBODIES AND SYSTEMIC LUPUS ERYTHEMATOSUS: A MULTIMODAL IMAGING APPROACH

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Case Report: A 20-year-old woman with no previous medical history presented with fever, nephrotic syndrome with acute kidney injury, and a butterfly-shaped malar rash. Autoimmune testing revealed aPL positivity and features consistent with SLE, later confirmed by renal biopsy. Transthoracic and transesophageal echocardiography identified multiple multilobulated right atrial masses, the largest extending through the tricuspid valve. MRI demonstrated iso- to hypointense T2-STIR signal, hypointense T1 signal, and heterogeneous post-contrast enhancement of cardiac masses. CT angiography excluded extracardiac involvement, while PET/CT was not determinative. Differential diagnoses included thrombi, valvular vegetations, and primary cardiac tumors such as myxoma. The patient underwent surgical excision of the right atrial masses through right mini-thoracotomy. Postoperative echocardiography revealed severe tricuspid regurgitation. Histopathological analysis showed fibrino-hemorrhagic and necrotic tissue with neutrophilic granulocytes, occasional hemosiderophages, multiple microcalcifications, and paucicellular fibrous connective tissue, consistent with Libman-Sacks endocarditis in the clinical– laboratory context. The patient was discharged on anticoagulant therapy (warfarin) and scheduled for cardiology follow-up in good general condition.

Conclusions: Libman-Sacks endocarditis is a rare, nonbacterial manifestation of autoimmune disease, usually associated with systemic lupus erythematosus (SLE) and antiphospholipid antibodies (aPL). It can mimic thrombi or primary cardiac tumors, making diagnosis challenging. A multimodal imaging approach is often required to guide management although histology remains the gold standard. Surgical excision may be required in cases with bulky masses or hemodynamic compromise, but residual valvular dysfunction is common.



TEE (a1–a2) shows heterogeneous right atrial masses, the largest with a cauliflower-like shape and a peduncle near the IVC orifice. CMR reveals mild late gadolinium enhancement with gradual heterogeneous uptake (b1–b3). CMR mass score was 5. Findings prompted PET-CT correlation and subsequent surgical mass excision (c).

Figures

IMAGING CARDIOVASCOLARE 446
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT)
(IMAGING CARDIOVASCOLARE)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE
(IMAGING CARDIOVASCOLARE)

IMPACT OF EPICARDIAL ADIPOSE TISSUE ON RIGHT VENTRICULAR-PULMONARY ARTERIAL COUPLING FOLLOWING TAVI

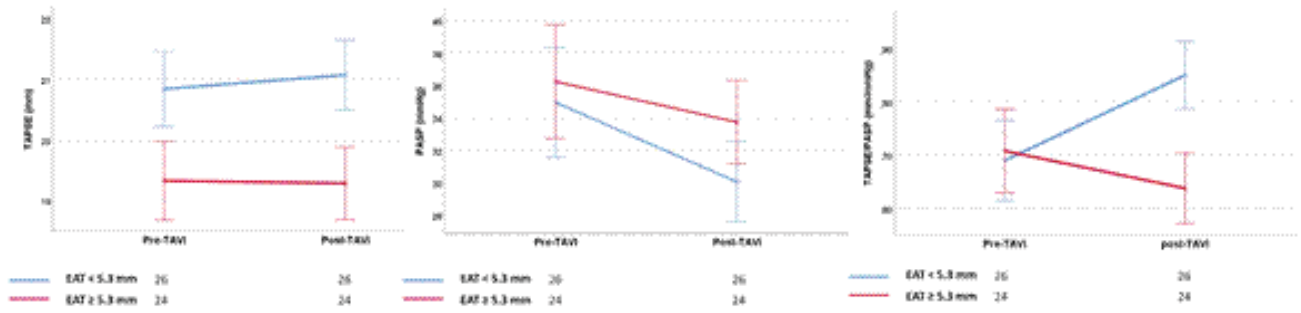
Caterina Viti (a), Francesco Aliberti (a), Alessandro Lupi (a), Benedetta Casini (a), Calogero Di Liberto (a), Enrica Fede (a), Andrea Santucci (a), Paolo Biagioli (a), Rocco Sclafani (a), Federico Fortuni (a), Erberto Carluccio (a)
(a) SC CARDIOLOGIA E FISIOPATOLOGIA CARDIOVASCOLARE, UNIVERSITA' DEGLI STUDI DI PERUGIA E OSPEDALE S. MARIA DELLA MISERICORDIA, PERUGIA

BACKGROUND: Although transcatheter aortic valve implantation (TAVI) effectively relieves left ventricular pressure overload in patients with severe aortic stenosis (AS), a subset of patients continues to exhibit right ventricular–pulmonary arterial (RV–PA) uncoupling and remain symptomatic after the procedure. Pre-procedural computed tomography (CT) is routinely performed before TAVI, allowing for the quantification of epicardial adipose tissue (EAT). EAT has been linked to adverse cardiac remodeling, including diastolic dysfunction and elevated left ventricular filling pressures. Given these associations, EAT may contribute to the persistence of RV–PA uncoupling following TAVI. This study aimed to investigate the impact of EAT on the evolution of RV–PA coupling after the procedure.

METHODS: We included 50 patients who underwent TAVI for severe AS at our institution. EAT was quantified pre-procedurally using ECG-gated, contrast-enhanced CT. EAT thickness was measured as the distance between the epicardium and the visceral pericardium at the right ventricle on three short-axis slices (upper, mid, and lower levels), and the average thickness was calculated. Transthoracic echocardiography was performed during the index hospitalization, both before and after TAVI. RV–PA coupling was estimated as the ratio of tricuspid annular plane systolic excursion (TAPSE) to pulmonary artery systolic pressure (PASP). Patients were stratified into two groups according to the median EAT thickness. Non-parametric statistical tests were applied to compare differences between groups and to assess changes before and after TAVI.

RESULTS: The median age of the study population was 82 years (IQR 79–84), and 32% were male. The median EAT thickness was 5.37 mm. Compared with patients with lower EAT, those with higher EAT had similar indices of AS severity but were more often male, exhibited greater left ventricular mass index, and had a higher prevalence of ischemic cardiomyopathy and atrial fibrillation. They also demonstrated lower left ventricular ejection fraction and higher PASP. As illustrated in the figure, TAPSE remained stable in both groups after TAVI, whereas PASP tended to decrease more markedly in patients with lower EAT thickness. Consequently, RV–PA coupling (TAPSE/PASP) improved significantly in the lower EAT group (P = 0.037), while in the higher EAT group it showed a non-significant trend toward worsening (P = 0.910).

CONCLUSIONS: EAT may contribute to the persistence of pulmonary hypertension, RV–PA uncoupling, and heart failure symptoms after TAVI. Novel metabolic therapies which have been shown to modulate EAT, could represent a potential therapeutic strategy. Their impact in patients with increased EAT undergoing TAVI warrants further investigation.


Pre-TAVI
Post-TAVI
EAT < 5.3 mm 26 26
EAT ≥ 5.3 mm 24 24
Pre-TAVI
Post-TAVI
EAT < 5.3 mm 26 26
EAT ≥ 5.3 mm 24 24
Pre-TAVI
post-TAVI
EAT < 5.3 mm 26 26
EAT ≥ 5.3 mm 24 24

Figures

IMAGING CARDIOVASCOLARE 642
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)
IMAGING MIOCARDICO-PERICARDICO
(MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
PERICARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

DIAGNOSTIC ROLE OF STRAIN REVERSUS SIGN AND CORRELATION WITH MAGNETIC CARDIAC RESONANCE IN CONSTRICTIVE PERICARDITIS

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(a) CENTRO CARDIOLOGICO MONZINO; (b) UNIVERSITA` DEGLI STUDI DI MILANO; (c) UNIVERSITA` LA SAPIENZA DI ROMA; (d) POLITECNICO DI MILANO; (e) UNIVERSITA` DI BARI; (f) UNIVERSITA` DI PERUGIA

Aims: A typical echocardiographic longitudinal strain (LS) pattern of the left ventricle (LV), called strain reversus (SR) has been described in patients with constrictive pericarditis (CP). The aim of this study was to evaluate the prevalence of SR among pericardial diseases, its diagnostic role in CP and its correlation with pericardial involvement assessed by cardiac magnetic resonance (CMR).

Methods and results: Eighty-five patients (mean age: 57±17 female: 32.8%) with pericardial diseases who underwent clinically indicated echocardiogram and CMR were retrospectively enrolled. According to right heart catheterization findings, CP and non-constrictive pericarditis (NCP) were found in 24 and 61 patients, respectively. The prevalence of SR was higher in CP cases as compared to NCP (91% vs 25%, $p < 0.001$) and correlated with CP diagnosis [OR: 3.43, CI: 1.39 - 5.49), p 0.001)]. The addition of SR to traditional Mayo Clinic Criteria significantly improved the diagnostic accuracy of echocardiographic assessment of pericarditis with a C-statistic from 0.82 to 0.92 (p 0.004) and a net reclassification improvement index of 0.198. SR was associated with pericardial thickening (OR: 2.30, CI: 1.21 - 3.41; p 0.001) and pericardial late gadolinium enhancement (OR: 1.55, CI: 1.07 – 2.04; p 0.036), but it was not linked to pericardial oedema.

Conclusion: SR is an echocardiographic sign associated to CP and pericardial involvement detected by CMR that provide additional diagnostic value to the traditional Mayo Clinic Criteria.

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86° CONGRESSO NAZIONALE SIC
Roma, 4-7 dicembre 2025

IPERTENSIONE ARTERIOSA

IPERTENSIONE ARTERIOSA 337
TRATTAMENTO DELL'IPERTENSIONE ARTERIOSA (IPERTENSIONE ARTERIOSA)
FARMACI CARDIOVASCOLARI (FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
GRAVIDANZA E CARDIOPATIA (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)

DONATORI DI OSSIDO NITRICO IN AGGIUNTA ALLA TERAPIA ANTIIPERTENSIVA NELL'IPERTENSIONE CRONICA IPODINAMICA: EVIDENZA DI UNA RIDUZIONE DEL RITARDO DI CRESCITA INTRAUTERINO

Giovanni Albano (a, b), Laura Colarocchio (a, b), Giorgia Di Bartolomeo (a, b), Gaetano Chiricolo (a, b), Giuseppe Stifano (a, b), Gian Paolo Novelli (a, b), Andrea Natale (a, b)
(a) UOC CARDIOLOGIA POLICLINICO TOR VERGATA; (b) SCUOLA DI SPECIALIZZAZIONE IN MALATTIE DELL'APPARATO CARDIOVASCOLARE UNIVERSITÀ DEGLI STUDI DI ROMA TOR VERGATA

Background: L'ipertensione cronica è associata spesso a complicanze materno-fetali compreso il ritardo di crescita intrauterino (IUGR). Una circolazione ipodinamica sembra essere associata più frequentemente a tali complicanze. Il nostro scopo è stato quello di verificare se in pazienti con ipertensione cronica di tipo ipodinamico l'aggiunta alla terapia standard del nitroderivato ed un aumento dell'intake di liquidi fosse associato ad una riduzione del rischio di IUGR.

Materiali e metodi: Sono state arruolate 347 pazienti con ipertensione cronica ipodinamica trattata con Alfa-metil-dopa eventualmente associata a calcioantagonisti con circolazione ipodinamica (resistenze vascolari periferiche>1300 dine. 174 erano seguite dal nostro ambulatorio per ecografia fetale, ecocardiogramma materno e trattamento clinico-farmacologico; 173 pazienti erano seguite presso altri centri che si recavano in visita solo per eseguire ecocardiogramma e scan fetale. Alle pazienti seguite presso il nostro ambulatorio è stato consigliato di introdurre in terapia nitroderivato transdermico ed aumentare l'intake idrico. Tutte le pazienti sono state sottoposte a ecocardiogramma all'arruolamento e a 3-4 settimana di distanza.

Risultati: Prima dell'aggiunta di NO i due gruppi mostravano valori di resistenze periferiche non significativamente differenti con TPVR 1594 (range 1060 – 2668) nei pazienti non trattati e 1589,5 (range 1147-3103) nei pazienti trattati. Nel gruppo non trattato con donatori di NO era presente a termine di gravidanza una maggior percentuale di feti IUGR rispetto al gruppo di pazienti trattate (79 di 173 vs 47 di 174, 45.6% vs 27%; p<0.05). Le 126 pazienti che hanno sviluppato successivamente ritardo di crescita avevano resistenze vascolari periferiche più elevate rispetto a quelle che non avrebbero sviluppato IUGR (1951.5 [range 1276-2668] vs 1537 [range 1060-3103], rispettivamente; p <0.001). L'aggiunta del nitroderivato è risultata protettiva riducendo il rischio di IUGR di circa 2,3 volte (OR 2,27; CI 95% 1,45 to 3,56; p<0.001). La riduzione delle TPVR era maggiore nelle pazienti trattate con donatori di NO. La riduzione delle resistenze vascolari periferiche di almeno il 9,2% rispetto alla valutazione iniziale era predittiva di una riduzione del rischio di IUGR. La terapia con nitroderivati era associata a una maggior probabilità di riduzione delle TPVR>9,2% (OR 3,41; 95% CI 2,1912 to 5,2950; p<0,01)

Conclusioni: L'aggiunta del nitroderivato nelle pazienti con ipertensione cronica a circolo ipodinamico sembra ridurre il rischio di IUGR. Tale meccanismo sembra dipendere dal miglioramento del profilo emodinamico delle pazienti rilevato a 4 settimane di distanza dall'arruolamento

IPERTENSIONE ARTERIOSA 606
GRAVIDANZA E CARDIOPATIA
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
FUNZIONE VENTRICOLARE, RIMODELLAMENTO E DANNO D'ORGANO
(IPERTENSIONE ARTERIOSA)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE
(IMAGING CARDIOVASCOLARE)

PREECLAMPSIA E IMPATTO CARDIOVASCOLARE A LUNGO TERMINE

Elisa Brangi (a), Martina Mazzini (a), Enrico Vizzardi (a)
(a) UNIVERSITA' DEGLI STUDI DI BRESCIA

Background: La pre-eclampsia è una complicanza della gravidanza che compare dopo la 20ª settimana con ipertensione arteriosa e danno d'organo materno. È associata a un maggiore rischio di malattie cardiovascolari a lungo termine, ma i fattori predittivi del suo sviluppo non sono ancora del tutto chiari.

Obiettivo dello studio: Valutare gli effetti della pre-eclampsia sul sistema cardiocircolatorio nel medio-lungo termine tramite la valutazione di parametri antropometrici, emodinamici (rigidità arteriosa e funzionalità endoteliale) ed ecocardiografici.

Materiali e metodi: Sono state arruolate 27 pazienti con storia di pre-eclampsia e valutate al tempo zero (T0) e successivamente fra i 10 e i 15 anni dal parto (T1). Sono state escluse le pazienti con fattori di rischio cardiovascolare preesistenti al momento dell'arruolamento. Il protocollo comprendeva la raccolta anamnestica, la misurazione dei parametri antroprometrici (peso e altezza), dei parametri vitali, dei parametri ecocardiografici standard, la valutazione della funzione endoteliale (tramite il Reactive Hyperemia Index - RHI) e della rigidità arteriosa (tramite l'Augmentation Index – Aix e l'onda di polso carotido-femorale -cfPWV).

Risultati: Al follow-up si è osservato un incremento significativo dei valori medi di pressione arteriosa sistolica (+14 mmHg, p=0,001), diastolica (+8 mmHg, p=0,019) e del BMI (da 22,9 ± 2,0 a 25,0 ± 3,5 kg/m², p<0,001). Si è registrato inoltre un aumento della prevalenza di ipertensione arteriosa (11,1% vs 37,0%). Per quanto riguarda i parametri ecocardiografici, la frazione d'eiezione rimane sostanzialmente stabile (p=0.665), si è registrato un incremento dei valori di volume atriale sinistro indicizzati (p<0.001) e delle dimensioni dell'aorta ascendente (p=0,002), seppur rimanendo entro i limiti fisiologici. L'augmentation index (AIx) aumenta dal T0 al T1, ma in maniera non significativa (AIx (T0): 9.4 vs AIx(T1): 13.7; p=0.308) e rimanendo comunque entro i limiti fisiologici. La velocità dell'onda di polso (PWV) e il reactive Hyperemia Index (RHI) sono in leggero miglioramento ma in maniera non significativa (PWV(T0): 6.5 vs PWV(T1): 5.9 p=0.067 e RHI(T0): 2.1 vs RHI(T1) 2.3; p=0,342).

Conclusioni: Nelle analisi sul medio-lungo termine degli effetti sul sistema circolatorio della pre-eclampsia si conferma la tendenza allo sviluppo di ipertensione arteriosa con un aumento dei valori pressori medi e del BMI. L'aumento delle dimensioni dell'aorta ascendente e del volume atriale sono potenziali marker precoci di rimodellamento vascolare e cardiaco. Tuttavia, sono necessari ulteriori studi di follow-up a lungo termine per definire meglio il ruolo predittivo di eventi di questi potenziali marker.

IPERTENSIONE ARTERIOSA 298
TRATTAMENTO DELL'IPERTENSIONE ARTERIOSA (IPERTENSIONE ARTERIOSA)
FISIOPATOLOGIA DELL'IPERTENSIONE ARTERIOSA (IPERTENSIONE ARTERIOSA)
GRAVIDANZA E CARDIOPATIA (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)

TERAPIA ANTIIPERTENSIVA GUIDATA DALL'EMODINAMICA MATERNA: REVISIONE SISTEMATICA DELLA LETTERATURA E METANALISI

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(a) POLICLINICO TOR VERGATA ; (b) UOC CARDIOLOGIA POLICLINICO TOR VERGATA; (c) SCUOLA DI SPECIALIZZAZIONE IN MALATTIE DELL'APPARATO CARDIOVASCOLARE UNIVERSITÀ DEGLI STUDI DI ROMA TOR VERGATA

L'ipertensione in gravidanza riguarda il 5-10% delle donne. Attualmente il trattamento dei disordini ipertensivi in gravidanza si basa principalmente sull'impiego di farmaci raccomandati dalle linee guida, scelti secondo la preferenza del clinico il cui unico target è la riduzione dei valori di pressione arteriosa materna. Tuttavia, questo approccio non considera l'eterogeneità dei meccanismi fisiopatologici sottostanti, né il profilo emodinamico individuale della paziente. Tramite metodi che diagnostiche non invasive è possibile inquadrare il profilo emodinamico delle pazienti come ipodinamico (bassa CO, alta TPVR), in questo caso sono preferibili vasodilatatori, o come iperdinamico (alta CO, bassa resistenza), sono più efficaci in questo secondo caso i farmaci che agiscono sulla CO.

Obiettivo: Valutare se dai dati presenti in letteratura il trattamento antipertensivo guidato da una valutazione emodinamica materna non invasiva riduca gli esiti avversi materni e perinatali rispetto alla gestione standard basata sulla pressione arteriosa.

Metodi: Sono stati consultati PubMed/MEDLINE e la Cochrane Library dalla loro origine fino al 15 giugno 2025. Sono state esaminate manualmente le liste di riferimento degli articoli rilevanti. Il protocollo è stato registrato prospetticamente in PROSPERO (CRD420251088494).
È stata condotta una revisione sistematica con meta-analisi. Sono stati inclusi studi che confrontavano il trattamento antipertensivo guidato da parametri emodinamici materni (valutati tramite ecocardiografia, USCOM o metodi non invasivi) rispetto alla gestione standard basata sulla sola pressione arteriosa. L'esito composito includeva preeclampsia, sindrome HELLP, ipertensione grave, restrizione della crescita fetale, parto pretermine prima delle 34 settimane, distacco intempestivo di placenta e morte perinatale. Gli odds ratio (OR) sono stati combinati utilizzando modelli a effetti fissi e random. Il rischio di bias è stato valutato tramite il test di Egger.

Risultati: Sei studi (1.200 pazienti nel gruppo intervento; 1.334 nel gruppo controllo) hanno fornito dati. La terapia guidata dall'emodinamica ha ridotto le probabilità di: Preeclampsia/eclampsia del 52% (OR 0.48; IC 95% 0.34–0.67; $p<0.001$; $I^2=0\%$); Ipertensione grave del 55% (OR 0.45; IC 95% 0.25–0.82; $p=0.01$; $I^2=32\%$); Restrizione della crescita fetale del 46% (OR 0.54; IC 95% 0.38–0.76; $p<0.001$; $I^2=0\%$); Parto pretermine <34 settimane del 63% (OR 0.37; IC 95% 0.25–0.54; $p<0.001$; $I^2=81\%$). La riduzione della sindrome HELLP (OR 0.21; IC 95% 0.06–0.78;

p=0.02) è risultata significativa con effetti fissi ma non con effetti random. Nessun effetto significativo è stato osservato per il distacco di placenta o la morte perinatale. Gli esiti avversi compositi hanno favorito la terapia personalizzata (OR 0.28; IC 95% 0.21–0.36; p<0.001; I^2=0%). Il test di Egger non ha mostrato bias rilevanti.

Conclusioni: Personalizzare la terapia antipertensiva sulla base del profilo emodinamico materno migliora significativamente l'outcome composito materno-fetale. Questi risultati supportano l'utilizzo del monitoraggio emodinamico non invasivo per personalizzare il trattamento nelle gravidanze complicate da ipertensione. Ulteriori studi randomizzati sono necessari per confermare questi risultati e valutarne la fattibilità clinica.

IPERTENSIONE ARTERIOSA 59
MONITORAGGIO DELLA PRESSIONE AMBULATORIALE (IPERTENSIONE ARTERIOSA)
FISIOPATOLOGIA DELL'IPERTENSIONE ARTERIOSA (IPERTENSIONE ARTERIOSA)
TRATTAMENTO DELL'IPERTENSIONE ARTERIOSA (IPERTENSIONE ARTERIOSA)

IL MONITORAGGIO AMBULATORIALE DELLA PRESSIONE ARTERIOSA DELLE 24 ORE (ABPM) COME STRUMENTO DI DIAGNOSI PRECOCE DI APNEE OSTRUTTIVE DEL SONNO (OSAS) NEI PAZIENTI CON IPERTENSIONE RESISTENTE

Pietro Lentini (a)
(a) OSPEDALE MADRE GIUSEPPINA VANNINI - ROMA

Background: L'ipertensione resistente rappresenta una sfida clinica per il rischio elevato di eventi cardiovascolari e per la frequente presenza di cause secondarie non diagnosticate. Tra queste, l'apnea ostruttiva del sonno (OSAS) è particolarmente rilevante ma spesso sottostimata.
In condizioni fisiologiche, durante il sonno la pressione arteriosa si riduce del 10–20% rispetto alle ore diurne (profilo dipper), per effetto della predominanza parasimpatica. Nei pazienti con ipertensione resistente questa riduzione può essere attenuata (non-dipper) o invertita (reverse-dipper), con valori notturni superiori a quelli diurni. Queste alterazioni, favorite da OSAS, aumentano lo stress emodinamico, la rigidità arteriosa, l'attivazione simpatica e l'infiammazione sistemica, incrementando il rischio di infarto, ictus e aritmie.

Metodi: Il monitoraggio ambulatoriale della pressione arteriosa nelle 24 ore (ABPM) è stato utilizzato per identificare profili pressori alterati (non-dipper, reverse-dipper, picchi pre-risveglio) e ipertensione mascherata in pazienti con ipertensione resistente. I soggetti con pattern sospetti sono stati avviati a polisonnografia per la misurazione dell'indice apnee-ipopnee (AHI) e la stadiazione dell'OSAS.

Risultati: L'ABPM ha evidenziato un'elevata prevalenza di alterazioni pressorie notturne nei pazienti con ipertensione resistente. La polisonnografia ha confermato OSAS in una quota significativa di questi casi. Nei soggetti con OSAS moderata-grave (AHI > 15–20), l'introduzione di auto-CPAP ha determinato normalizzazione dell'AHI, miglioramento del profilo pressorio e riduzione dei picchi pre-risveglio, con potenziale impatto sulla riduzione del rischio cardiovascolare.

Conclusioni: Nei pazienti con ipertensione resistente, l'ABPM è uno strumento fondamentale per individuare alterazioni pressorie notturne suggestive di OSAS. Il riconoscimento precoce e il trattamento mirato di questa condizione possono migliorare il controllo pressorio, ridurre il carico cardiovascolare e prevenire eventi maggiori. Integrare sistematicamente l'ABPM nel percorso diagnostico rappresenta una strategia efficace e poco invasiva per svelare un'importante causa secondaria di ipertensione.

IPERTENSIONE ARTERIOSA 18
MALATTIE DEL METABOLISMO (DIABETE E MALATTIE DEL METABOLISMO)
FISIOPATOLOGIA DELL'IPERTENSIONE ARTERIOSA (IPERTENSIONE ARTERIOSA)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)

BEYOND BLOOD PRESSURE: THE CARDIORENAL IMPACT IN POSTMENOPAUSAL WOMEN WITH MILD-TO-MODERATE CHRONIC KIDNEY DISEASE

Maria Maiello (a), Amati Francesca (c), Pierpaolo Caretto (c), Marco Matteo Ciccone (c), Pasquale Palmiero (a, b)
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Introduction: Mild-to-Moderate chronic kidney disease (MMCKD), defined as a glomerular filtration rate (GFR) above 30 mL/min/1.73 m² persisting for at least three months, is frequently associated with morphofunctional alterations of the left ventricle, particularly in hypertensive patients. This coexistence often leads to cardiovascular complications and events, making early diagnosis essential. Mild-to-moderate CKD corresponds to stage 3 CKD. The most common underlying causes include diabetes mellitus, arterial hypertension, family history of CKD, advanced age, obesity, smoking, acute kidney injury, glomerulonephritis, recurrent kidney infections, and polycystic kidney disease.
The aim of our study was to evaluate the prevalence of cardiac organ damage in postmenopausal women affected by arterial hypertension.

Methods: We studied 213 consecutive women, with a mean age of 48.5 years, all of whom had experienced amenorrhea for at least one year and had been receiving medical treatment for hypertension for at least one year. Exclusion criteria included severe renal insufficiency, type 1 or type 2 diabetes mellitus, and autoimmune diseases such as systemic lupus erythematosus. A control group was composed of 200 postmenopausal hypertensive women of similar age but without kidney disease.

Results: Women affected by MMCKD exhibited a markedly higher prevalence of cardiac abnormalities compared to unaffected women. Specifically, left ventricular hypertrophy was observed in 46.7% vs 21.5% ($p < 0.0001$, $\chi^2 = 28.5$, OR = 3.17), and left ventricular diastolic dysfunction in 55.8% vs 36.0% ($p < 0.0001$, $\chi^2 = 16.3$, OR = 2.25). The combination of both abnormalities was present in 41.3% vs 12.5% of cases ($p < 0.0001$, $\chi^2 = 43.0$, OR = 4.9), representing more than a threefold increase. Additionally, the prevalence of chronic coronary artery disease was nearly doubled in the affected group (15.5% vs 7.5%, $p < 0.01$, $\chi^2 = 6.4$, OR = 2.3), corresponding to an increase of over 50%.

Conclusion: In postmenopausal hypertensive women, mild-to-moderate chronic kidney disease (MMCKD) is significantly associated with increased prevalence of cardiac organ damage, particularly left ventricular hypertrophy, diastolic dysfunction, and coronary artery disease. These findings highlight the early cardiovascular impact of stage 3 CKD and the importance of timely recognition. The coexistence of renal and cardiac dysfunction suggests a shared pathophysiological mechanism that amplifies overall cardiovascular risk. Our results support the need for routine renal function assessment and echocardiographic screening in this population to identify high-risk individuals. Early detection and integrated management may prevent disease progression and reduce adverse cardiovascular outcomes, emphasizing the role of a multidisciplinary approach in clinical practice.

IPERTENSIONE ARTERIOSA 705
TRATTAMENTO DELL'IPERTENSIONE ARTERIOSA (IPERTENSIONE ARTERIOSA)
MONITORAGGIO DELLA PRESSIONE AMBULATORIALE (IPERTENSIONE ARTERIOSA)
FISIOPATOLOGIA DELL'IPERTENSIONE ARTERIOSA (IPERTENSIONE ARTERIOSA)

DOES SUPINE BP MEASUREMENT SUPERSEDE SITTING BP MEASUREMENT FOR EARLY CV RISK ASSESSMENT?

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Background: Supine hypertension (HTN) in hospitalized patients has been the subject of recent controversies, whether to treat or not to treat.

Purpose: The purpose of this study is to assess whether supine HTN even in asymptomatic non hospitalized subjects is associated with structural and functional abnormalities, as compared with subjects elevated and stage 1 sitting BP measurements, mandating early implementation of treatment before it is too late.

Methods: A total of 2320 asymptomatic subjects were screened for cardiovascular risk utilizing the Early Cardiovascular Disease Risk Scoring System (ECVDRS) also called Rasmussen Risk Score, which has been previously reported. In summary, the ECVDRS incorporates 7 vascular tests and 3 cardiac tests, with an additional inclusion of C-reactive protein (CRP). These 2320 patients were analyzed with both seated and supine BP measurements. The BP measurements were organized into the most recent standard American Heart Association (AHA) categories for BP.
These patients were further separated into 1223 patients who were not on any medications. Out of these, 281 subjects were exhibiting elevated and stage 1 sitting and abnormally elevated supine blood pressure as shown in Table1 and Table2.

Results: Shown in Table1 and Table2

Conclusions:

1. Supine HTN in both elevated and stage 1 seated BP subjects is associated with structural and functional abnormalities.
2. In subjects with stage 1 sitting BP and abnormal supine BP, the higher the supine BP, the higher the structural and functional abnormalities.
3. Subjects with stage 1 sitting BP and elevated supine BP have more structural and functional abnormalities than those with elevated seated BP.

Based on our data, it is time to mandate supine BP measurement in all subjects for CV risk assessment. In addition, it is time to mandate treatment in subjects with elevated sitting BP. These subjects have abnormal BP both during sleep and during exercise.



Figure 1

Table1

Total number of supine subjects	2320	
Total number not on medications	1223	53%

Table2

Table 2_6

BP Categories	Total subjects	CRP>1		C2>1		CIMT>1		BP Rise >3(	
Sitting 120-129, Supine 140-149	89	1	1%	48	54%	46	52%	33	37%
Sitting 120-129, Supine >150	33	0	0%	5	15%	9	27%	2	6%
Sitting 130-139 supine 140-150	113	4	4%	34	30%	32	28%	20	18%
Sitting 130-139 supine >150	46	0	0%	34	74%	18	39%	16	35%

Tables

IPERTENSIONE ARTERIOSA 338
ARTERIOPATIA DEI TRONCHI SOVRA-AORTICI (MALATTIE DEI VASI)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
FISIOPATOLOGIA DELL'IPERTENSIONE ARTERIOSA (IPERTENSIONE ARTERIOSA)

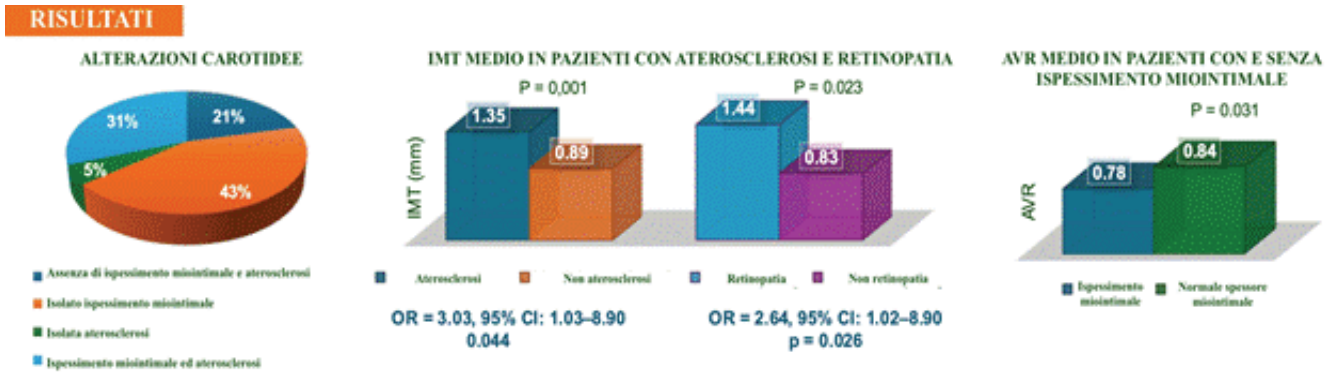
SPESSORE INTIMA-MEDIA CAROTIDEO E DANNO D'ORGANO IN PAZIENTI IPERTESI: CORRELAZIONE TRA IMT, ATEROSCLEROSI E RETINOPATIA IPERTENSIVA

Martina Sicilia (b), Stefano Carugo (b), Roberto Meazza (b)
(a) CENTRO IPERTENSIONE POLICLINICO DI MILANO; (b) CENTRO IPERTENSIONE - FONDAZIONE IRCCS POLICLINICO DI MILANO

Il ruolo dello spessore intima-media carotideo (IMT) come indicatore di aterosclerosi è ben consolidato, ma non è attualmente riconosciuto come marker di danno d'organo mediato dall'ipertensione arteriosa. Parallelamente, il rapporto arterovenoso retinico (AVR), misurato attraverso retinografia digitale non midriatica, rappresenta una manifestazione microvascolare tipica della retinopatia ipertensiva. Entrambi i parametri riflettono alterazioni vascolari significative, ma la loro interrelazione nei soggetti ipertesi non è stata ancora pienamente esplorata.

MATERIALI E METODI Questo studio ha coinvolto 100 pazienti ipertesi, con età media di 69,4 anni. Tutti i partecipanti sono stati sottoposti ad ecocolordoppler carotideo e imaging retinico. È stato considerato patologico un IMT superiore a 0,9 mm, mentre le placche aterosclerotiche sono state definite come ispessimenti focali pari o superiori a 1,5 mm o superiori del 50% rispetto all'IMT circostante. L'AVR è stato calcolato come rapporto tra il calibro medio delle arterie e delle vene retiniche, e valori inferiori a 0,82 sono stati interpretati come indicativi di retinopatia ipertensiva secondo la classificazione di Wong.

RISULTATI I risultati hanno evidenziato che i pazienti con aterosclerosi presentavano un IMT significativamente più elevato rispetto a quelli senza placche, e analogamente, i soggetti con retinopatia ipertensiva mostravano un IMT aumentato rispetto ai pazienti senza alterazioni



Figure

retiniche. Inoltre, l'AVR risultava significativamente ridotto nei pazienti con IMT patologico, suggerendo una chiara associazione tra ispessimento carotideo e danno microvascolare. L'analisi statistica ha confermato che un IMT aumentato è correlato a una maggiore probabilità di presenza sia di placche aterosclerotiche ma anche di retinopatia ipertensiva.

CONCLUSIONI Questi dati rafforzano l'ipotesi che l'IMT possa rappresentare non solo un indicatore di aterosclerosi precoce, ma anche un potenziale marker integrato di danno d'organo ipertensivo, sia a livello macrovascolare che microvascolare. L'integrazione dell'IMT nella valutazione del rischio cardiovascolare potrebbe migliorare la stratificazione prognostica e guidare strategie preventive più mirate nei pazienti ipertesi.

IPERTENSIONE ARTERIOSA 43
ATTIVITÀ FISICA E PREVENZIONE CARDIOVASCOLARE (ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT) FISIOPATOLOGIA DELL'IPERTENSIONE ARTERIOSA (IPERTENSIONE ARTERIOSA) MONITORAGGIO DELLA PRESSIONE AMBULATORIALE (IPERTENSIONE ARTERIOSA)

LA PRESSIONE ARTERIOSA PRIMA DELL'ESPOSIZIONE ALLE ALTE QUOTE: I SOGGETTI &LDQUO;SANI&LDQUO; SONO REALMENTE NORMOTESI?

Vignati Carlo (a, b), Irene Mattavelli (a), Elisabetta Salvioni (a), Massimo Mapelli (a), Beatrice Pezzuto (a), Piergiuseppe Agostoni (a, b)
(a) DIPARTIMENTO DI CARDIOLOGIA CRITICA E RIABILITATIVA, CENTRO CARDIOLOGICO MONZINO, IRCCS, MILANO; (b) DIPARTIMENTO DI SCIENZE CLINICHE E DI COMUNITÀ, UNIVERSITÀ DEGLI STUDI DI MILANO, MILANO

Introduzione: La crescente accessibilità alle alte quote grazie agli impianti moderni ha portato a un aumento dei soggetti che raggiungono altitudini elevate senza alcuna acclimatazione o screening medico. L'esposizione acuta all'ipossia ipobarica induce uno stress emodinamico e metabolico, aumentando la pressione arteriosa e la frequenza cardiaca, mentre riduce la saturazione di ossigeno.
Questi effetti possono essere particolarmente importanti per gli individui con malattie cardiovascolari preesistenti.

Metodi: Abbiamo condotto uno studio osservazionale trasversale presso la stazione di partenza (1.300 m, Entreves) della funivia Skyway Monte Bianco, valutando le caratteristiche demografiche e cliniche di partecipanti non selezionati prima della salita in quota con l'impianto. I dati sono stati raccolti tramite una stazione biometrica multiparametrico (Keito K9), misurando saturazione dell'ossigeno, frequenza cardiaca, pressione arteriosa, peso, altezza, composizione corporea e anamnesi medica.

Risultati: Hanno partecipato complessivamente 1.930 soggetti (56% maschi), ma i dati anamnestici erano disponibili per 1.174 volontari. Tra questi, il 18% aveva una storia di malattie cardiovascolari, prevalentemente ipertensione (16%). La pressione arteriosa sistolica ≥135 mmHg è stata riscontrata nell'11,1% dei partecipanti, con il 4,3% che presentava valori ≥150 mmHg. La prevalenza di soggetti con ipertensione oltre i limiti di riferimento era più alta nei pazienti cardiopatici.
I pazienti cardiovascolari erano più anziani, con un peso corporeo maggiore e avevano una pressione arteriosa più elevata rispetto agli individui sani. Interessante, non sono state osservate differenze nella frequenza di esposizione all'altitudine tra i diversi gruppi.

Conclusioni: I nostri risultati indicano che una proporzione significativa di individui, inclusi quelli con malattie cardiovascolari, raggiunge quote relativamente basse già con una pressione arteriosa superiore ai limiti di riferimento.
Considerando i potenziali rischi associati all'attivazione simpatica indotta dall'ipossia, sarebbe opportuno migliorare lo screening e le strategie preventive per il turismo ad alta quota. Ulteriori studi sono necessari per valutare le variazioni acute della pressione arteriosa a diverse altitudini e le loro implicazioni per il rischio cardiovascolare.

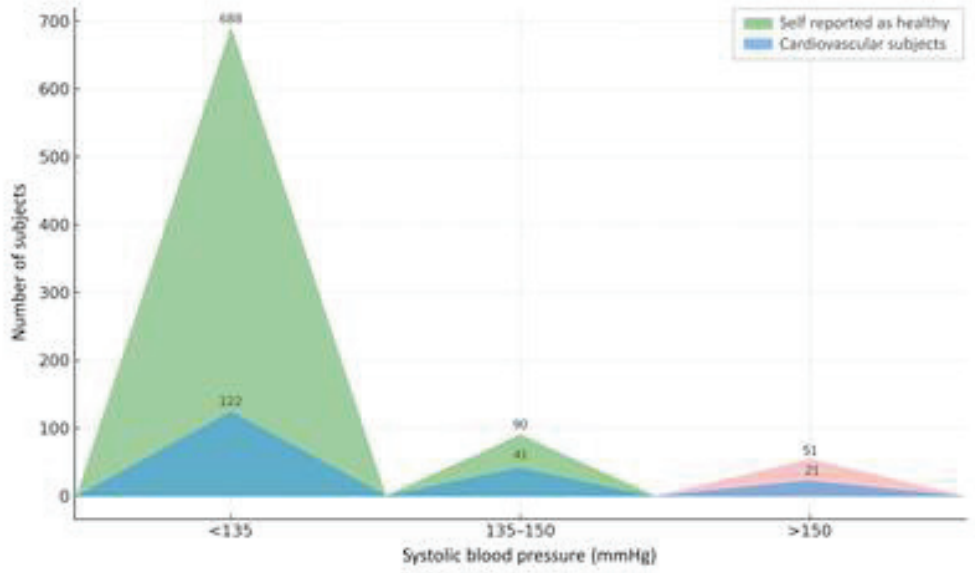

Self reported as healthy
Cardiovascular subjects
Number of subjects
700
600
500
400
300
200
100
0
688
122
90
41
51
21
<135
135-150
>150
Systolic blood pressure (mmHg)

Figura 1

CardioSic

86° CONGRESSO NAZIONALE SIC
Roma, 4-7 dicembre 2025

MALATTIE DEI VASI

CardioSic

MALATTIE DEI VASI 1073
ARTERIOPATIA DEI TRONCHI SOVRA-AORTICI (MALATTIE DEI VASI)
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INFARTO NSTEMI (CARDIOPATIA ISCHEMICA)

UN CURIOSO CASO DI SINDROME DA FURTO DELLA SUCCLAVIA

Ludovico Di Stasio (a, b)
(a) UOS EMODINAMICA, OSPEDALE DELL'ANGELO, MESTRE (VE); (b) UNIVERSITÀ DEGLI STUDI DI PADOVA

Introduzione: La sindrome da furto della succlavia, determinata da stenosi vascolare, provoca generalmente una riduzione del flusso ematico nell'arteria vertebrale con conseguente ischemia cerebrale e sintomi neurologici. In caso di graft arterioso di arteria mammaria interna sinistra (AMIS) su arteria interventricolare anteriore (IVA), un furto succlavio può generare un'ischemia cardiaca e pertanto un corredo sintomatologico del tutto sovrapponibile a quello di una cardiopatia ischemica. È giunta alla nostra attenzione una paziente di 78 anni con pregresso triplice bypass aorto-coronarico (CABG) per angina da sforzo, divenuta ingravescente, insorgente anche a riposo e con conseguente rialzo degli enzimi di miocardiocitolisi, dopo un improvviso movimento di abduzione dell'arto superiore sinistro.

Metodi: Allo studio coronarografico si è evidenziato un buon funzionamento dei due graft venosi su arteria circonflessa e arteria coronaria destra contestualmente a una stenosi critica, severamente calcifica, dell'arteria succlavia sinistra a valle di arteria mammaria (gradiente trans-stenostico: circa 40 mmHg). Alla cannulazione selettiva di AMIS si è notato un flusso TIMI (Thrombolysis In Myocardial Infarction) pari a 1, nonché flusso retrogrado da circolo coronarico nativo. Tramite accesso omerale sinistro, la paziente è stata sottoposta ad angioplastica percutanea (PTA) di arteria succlavia sinistra mediante litotrissia intravascolare e successivo impianto di stent ricoperto (espandibile su pallone) nella medesima sede.

Risultati: Dopo la PTA si è osservato l'abolizione del gradiente trans-stenostico e, all'angiografia selettiva, un ripristino di flusso TIMI 3 attraverso il graft arterioso e la scomparsa di flusso retrogrado da arteria coronaria sinistra nativa. La paziente è stata dimessa dopo 3 giorni di degenza. All'ecocardiogramma transtoracico si è assistito ad un miglioramento della frazione d'eiezione del ventricolo sinistro (35% → 52%). La paziente si è mantenuta asintomatica per angina o dispnea anche ad un follow-up a 3 mesi.

Conclusioni: Nei pazienti affetti da stenosi dell'arteria succlavia e pregresso CABG con graft arterioso AMIS su IVA, la sindrome da furto della succlavia si può presentare con una forma alternativa provocando un'ischemia cardiaca. In questo caso clinico l'angioplastica dell'arteria succlavia, coadiuvata da device dedicati, permette di ripristinare il corretto funzionamento del graft arterioso.

MALATTIE DEI VASI 238
PLACCA VULNERABILE (ATEROTROMBOSI)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
ARTERIOPATIA DEI TRONCHI SOVRA-AORTICI (MALATTIE DEI VASI)

SINGLE-CENTRE REAL-WORLD EXPERIENCE WITH THE ROADSAVER DUAL-LAYER MICROMESH STENT FOR CAROTID ARTERY STENTING: FEASUBILITY, SAFETY AND EFFICACY OUTCOMES

Matteo Ferrari (a, b), Edoardo Oscar Genta (a), Bianca Ada Magnanini (a, b), Ludovica Torzolini (a, b), Stefano Galli (a, b), Giovanni Teruzzi (b), Sarah Troiano (b), Piero Montorsi (a, b)
(a) UNIVERSITA' DEGLI STUDI DI MILANO; (b) CENTRO CARDIOLOGICO MONZINO

Cerebral embolization is the major complication of carotid artery stenting (CAS). The Roadsaver™ dual-layer micromesh stent (RSDLM) was designed to improve carotid plaque coverage reducing embolic complications. We assessed acute and long-term outcomes of CAS with the RSDLMS in a series of "all comers patients" scheduled for CAS according to contemporary guidelines.

From November 2014 to July 2025, 514 patients underwent 551 procedures (37 bilateral stenoses) with the RSDLMS. The primary endpoint was a composite of death, any stroke, retinal embolism and myocardial infarction at 30 days and at 24 months follow-up.

Patients' characteristics were mean age 74±8 years (43%>75yrs), 76% male, 87% asymptomatic, 50% lipid-rich plaque (<60 HU by CTA), 19% diabetic, 52% at high surgical risk. Either femoral (FA, 34%) or radial access (RA, 66%), was used; crossover rate from RA to FA was 1%. Difficult anatomies were left-bovine (8%) and type 2-3 aortic arch (31%). Proximal cerebral protection was used in 36% of pts. All procedures were successfully performed (intention-to-treat). Technical and procedural success were 99.6% and 95.8%, respectively. Cross-over from RA to FA was 1%. MACCEs rate was 2% at 30 days (Figure) and 5% at 24 months. Beyond 30 days, 2 strokes (one major, one minor, 0.36%) and 11 myocardial infarctions (2%) occurred. Doppler median PSV decreased from 3.36 m/s to 1.18 m/s at 24 hours (p<0.001).

In this large real-world cohort, CAS with RSDLM showed excellent technical, peri-procedural and long-term outcomes in moderate-to-high risk patients undergoing CAS, suggesting a favorable association with radial approach.

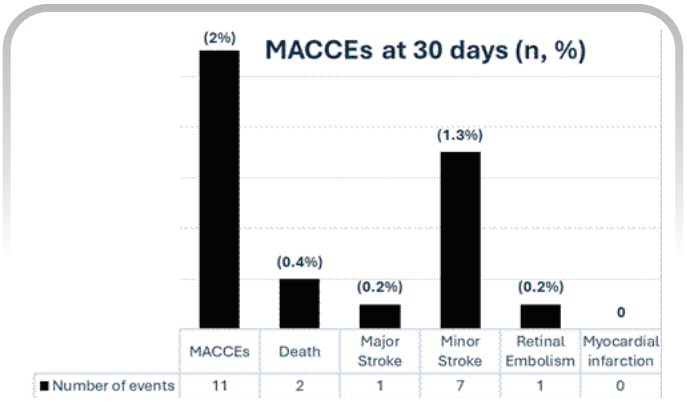


Figure 1

MALATTIE DEI VASI 681
FISIOLOGIA CORONARICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE) BIOLOGIA MOLECOLARE CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE) BIOLOGIA CELLULARE (GENETICA E BIOLOGIA MOLECOLARE)

ROLE OF HIPPO PATHWAY IN THE DEVELOPMENT OF CORONARY ARTERY DISEASE

Maurizio Forte (a), Gianmarco Sarto (b), Sonia Schiavon (a), Beatrice Simeone (c), Luca D´ambrosio (a), Daniele Vecchio (b), Giacomo Frati (a, b), Valentina Valenti (b, d), Sebastiano Sciarretta (a, b)
(a) IRCCS NEUROMED, POZZILLI, ITALY; (b) SAPIENZA UNIVERSITY OF ROME, ROME, ITALY;
(c) ICOT ISTITUTO MARCO PASQUALI, LATINA, ITALY; (d) MARIA CECILIA HOSPITAL , GVM CARE AND RESEARCH, COTIGNOLA, ITALY

Ischemic heart disease remains the leading cause of death in Western countries among all cardiovascular diseases (CVDs). The Hippo pathway is an evolutionarily conserved intracellular signaling pathway that plays a fundamental role in regulating cell survival and growth. We previously showed that the activation of mammalian sterile 20-like kinase 1 (MST1), the core component of the Hippo Pathway, leads to vascular dysfunction. However, the role of MST1 in patients with coronary artery disease (CAD) has not yet been investigated. In this work, we investigated whether MST1 activation is associated with CAD and its severity in patients.

We recruited 115 patients (aged 18 to 85 years) with preserved ejection fraction undergoing coronary angiography for suspected CAD. Anthropometric, vital, biochemical, and echocardiographic parameters were recorded during the hospitalization of the patients. A blood sample was collected within 48 hours of the procedure for peripheral blood mononuclear cells (PBMCs) isolation. MST1 levels were analyzed in PBMCs by ELISA assay and western blot analysis. MST1 levels were correlated with the presence of CAD and its severity, evaluated using the SYNTAX Score.

The mean age of the patients was 66.5±10.6 years, 72% were male and the BMI was 27.3±4.6 kg/m2. MST1 levels were significantly higher in patients with CAD compared to those without (CAD: 2195±1670 pg/mL vs NO CAD 1423±1765 pg/mL, unpaired t-test, t(113) = 2.17, 95% CI: 66.02–1478, p = 0.032). Binary logistic regression analysis shows that MST1 levels correlate with CAD independently by known risk factors for CAD, such as age, sex, hypertension, diabetes mellitus, dyslipidaemia, and smoking (p = 0.012). We also observed a strong correlation between MST1 levels and the SYNTAX Score (Spearman's rho 0.209, p=0.028). No differences in MST1 levels were observed between patients with acute (ACS) and those with chronic (CCS) coronary syndrome, nor between single-vessel and multi-vessel CAD.

This study provides novel evidence that MST1 activation is significantly associated with the presence of CAD and its severity in patients. We believe that MST1 may be considered a potential therapeutic target for the treatment of CAD in patients and may also serve as a biomarker for monitoring the disease.

MALATTIE DEI VASI 891
TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT)
(IMAGING CARDIOVASCOLARE)
ARTERIOPATIA DEI TRONCHI SOVRA-AORTICI (MALATTIE DEI VASI)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

BASELINE AND LONG-TERM COMPUTED ANGIOGRAPHY ASSESSMENT AFTER REVASCULARIZATION OF INTERNAL CAROTID ARTERY NEAR-OCCLUSION: PATHOPHYSIOLOGICAL INFERENCES

Edoardo Oscar Genta (a), Matteo Ferrari (a), Andrea Annoni (a), Elisabetta Mancini (a), Stefano Galli (a), Giovanni Teruzzi (a), Alice Bonomi (a), Daniela Trabattoni (a), Piero Montorsi (a)
(a) DEPARTMENT OF CLINICAL SCIENCES AND COMMUNITY HEALTH, UNIVERSITY OF MILAN, CENTRO CARDIOLOGICO MONZINO, IRCCS, MILAN, ITALY

Background. Carotid artery near occlusion (NO) refers to a severe stenosis of the internal carotid artery (ICA) leading to a low flow/pressure hemodynamic condition and distal lumen collapse. Although the recommended treatment is usually conservative, emerging evidence suggests that some categories of NO patients carry a non-negligible risk of stroke, and recent advances in endovascular techniques have reopened the debate on revascularization. However, little is known about compensatory mechanisms and anatomic physiopathological modifications after carotid artery stenting (CAS). We aimed to assess carotid anatomy changes via CTA in a series of consecutive NO treated with CAS.

Methods. In this retrospective analysis of prospectively collected data, we included consecutive NO stenoses who underwent successful CAS. NO was defined by the following CTA-based criteria: (1) >90% stenosis (ECST method), (2) target ICA/contralateral ICA distal diameter ratio ≤0.87 and (3) target ICA distal diameter ≤3.6 mm. Patients underwent CTA follow-up at 9 months post-CAS. Diameter and area of extracranial vessels were reassessed, and delta changes from baseline were evaluated.

Results. Twenty-nine out of 244 unilateral ICA stenoses fulfilled NO criteria. Of these, 26 patients underwent successful CAS. At follow-up no clinical events occurred. At 9-months CTA, the target ICA distal area increased from 7.84 ± 2.09 mm² to 13.56 ± 2.83 mm² ($p<0.001$), while the contralateral ICA distal area decreased from 18.85 ± 3.83 mm² to 14.93 ± 3.11 mm² ($p<0.001$). No significant changes were observed in the other extracranial vessels.

Conclusion. Carotid NO is associated not only with a distal ipsilateral lumen collapse, but also with contralateral ICA enlargement. Following CAS, the ipsilateral lumen increases in caliber, while the contralateral ICA decreases, reflecting the offsetting of a primary compensatory pathway.

CardioSic

MALATTIE DEI VASI 207
TROMBOSI E COAGULAZIONE (ATEROTROMBOSI)
PIASTRINE E TERAPIA ANTIAGGREGANTE (ATEROTROMBOSI)
PATOLOGIA DELLE VENE (MALATTIE DEI VASI)
EMBOLIA POLMONARE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)

FISIOPATOLOGIA DELLA TROMBOSI VENOSA IN QUOTA: IL CONTRIBUTO DELL'IPOSSIA IPOBARICA ACUTA

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Scopo: l'esposizione alla quota può causare effetti avversi. Tra questi la trombosi venosa profonda (TVP) ha una incidenza pari a 0,5% nella popolazione generale. Il rischio è 2-4 volte superiore per voli a lungo raggio (>4h) e, in assenza di pressurizzazione (es. hiking, soccorso in quota), 30 a 44 volte maggiore. Inoltre, pazienti con segni eco-tomografici di TVP sono spesso indistinguibili da pazienti negativi, pur usando marcatori noti come il D-dimero. Viceversa, sembrano differenziarsi per la risposta di un fenotipo piastrinico c.d. pro-coagulante (PP). Tutt'oggi, non sono noti studi che abbiano indagato l'espressione di PP – quindi il profilo di trombogenicità nell'uomo – nel contesto dell'ipossia ipobarica acuta (AHH).

Metodi: previo parere favorevole del Comitato Etico (prot. 2179/CEL) e consenso informato, 15 militari sani dell'Aeronautica Militare (età media 34aa, peso medio 79kg, BMI 25) sono stati esposti ad AHH, quota 25mila e 18mila piedi rispettivamente per 3 e 6min, in camera ipobarica. L'ipossia è stata indotta rimuovendo l'ossigeno fino a comparsa di sintomi (SpO2 <80%). Prelievo venoso è stato fatto pre e post camera (2h). L'espressione di PP è stata quantificata nel plasma ricco di piastrine (PRP) e volume piastrinico medio (MPV). Infine, è stata testata la risposta a reagenti noti (ADP, adrenalina, collagene, ac. arachidonico) tramite aggregometria a trasmissione luminosa (LTA).

Risultati: l'esposizione ad AHH ha determinato un'attivazione omogenea delle PP in termini quantitativi ($p < 0.01$; figura). In termini qualitativi, oltre alla riduzione significativa di MPV. le PP eran reattive ad ADP, adrenalina ed acido arachidonico ($p < 0.01$;), ma non al collagene da solo (dati non mostrati).

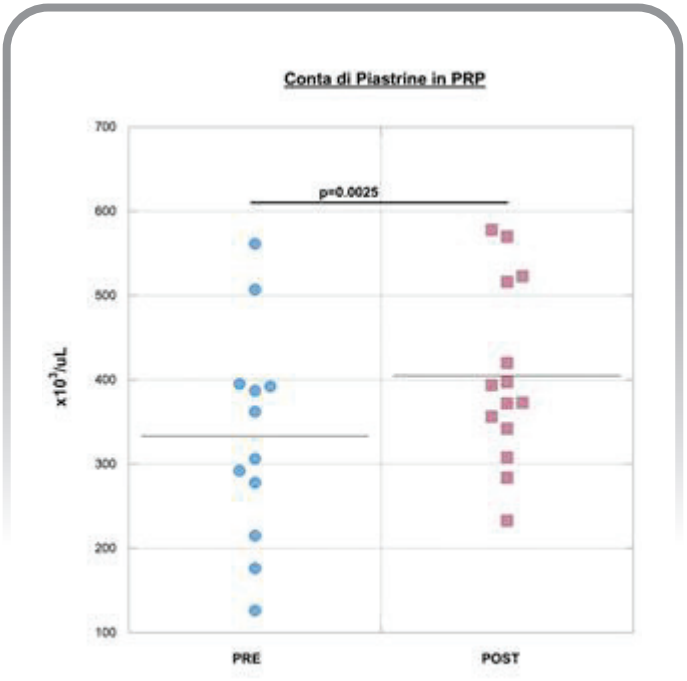


Figure 1

Conclusioni: le PP sono un fenotipo piastrinico coinvolto nella trombosi sia arteriosa che venosa. Il profilo di reattività è coerente con la trombosi venosa che vede l'assenza di lesioni endoteliali con esposizione di collagene sottostante, invece tipico dell'erosione della placca ateromasica. Sono solo parzialmente responsive ad antiaggreganti standard, non esprimendo GPIIaIIIb. Risultano invece sensibili alla modulazione dei flussi di cloro su cui agiscono gli inibitori dell'anidrasi carbonica. Tali farmaci, di prima linea contro il mal di montagna, potrebbero essere una potenziale profilassi primaria delle complicanze trombotiche venose (da ipossia ipobarica acuta e cronica) ed arteriose, scevra da effetti collaterali pro-emorragici.

MALATTIE DEI VASI 850
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INFARTO STEMI (CARDIOPATIA ISCHEMICA)
ARTERIOPATIA DEI TRONCHI SOVRA-AORTICI (MALATTIE DEI VASI)
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)

DISSEZIONE CORONARICA SPONTANEA E DISPLASIA FIBROMUSCOLARE: UN ARRESTO CARDIACO SVELA UN'ARTERIOPATIA SISTEMICA

Kristi Hoxha (a, b), Enri Leci (a), Maria Giovanna Pallotti (a), Francesca Sciarra (a), Gianni Casella (a)
(a) OSPEDALE MAGGIORE CARLO ALBERTO PIZZARDI DI BOLOGNA; (b) UNIVERSITÀ DEGLI STUDI DI FERRARA

Caso clinico: un uomo di 39 anni, senza precedenti anamnestici di rilievo, è stato soccorso per arresto cardiaco extraospedaliero da fibrillazione ventricolare. Dopo rianimazione cardiopolmonare e defibrillazione è stato ottenuto il ritorno alla circolazione spontanea. L'elettrocardiogramma dopo il ROSC ha documentato un infarto miocardico acuto con sopraslivellamento del tratto ST in sede antero-laterale estesa. La coronarografia ha documentato una lieve stenosi del tronco comune e dissezione/ematoma dell'IVA prossimale con ostruzione al tratto medio e concomitante riduzione di calibro di ramo intermedio e primo diagonale ai tratti prossimali. È stata quindi eseguita l'angioplastica primaria e posizionamento di stent medicato su tronco comune e IVA con supporto di contropulsatore aortico sino alla stabilizzazione emodinamica. L'ecocardiogramma ha mostrato acinesia apicale con FE 54%. Visto il quadro angiografico e una forte familiarità per eventi cardiovascolari precoci (bisnonno deceduto improvvisamente a 50 anni, zia a 37 anni, madre con IMA a 54 anni) sono stati eseguiti accertamenti per escludere un' arteriopatia sistemica: l'angio TC aorta toraco addominale è risultata negativa per dissezioni mentre la RM dei vasi cervico encefalici ha documentato un aspetto multifocale "a collana di perle" delle carotidi interne bilaterali, altamente suggestivo per displasia fibromuscolare (FMD). Alla luce di questi reperti è stato quindi avviato screening genetico per connettivopatie ereditarie. Il paziente è stato dimesso asintomatico in terapia con cardioaspirina, betabloccante e statina e avviato a follow-up multidisciplinare.

Discussione: la dissezione coronarica spontanea (SCAD) è una causa rara ma rilevante di sindrome coronarica acuta nei soggetti giovani, la cui gestione è preferibilmente conservativa, riservando l'angioplastica coronarica ai casi instabili o con interessamento del tronco comune, come nel presente caso clinico. Spesso si associa a displasia fibromuscolare (FMD), un'arteriopatia non aterosclerotica non infiammatoria, che colpisce arterie di piccolo e medio calibro. Tale condizione è più frequente nel sesso femminile (~ 90% dei casi) e, pur non essendo classicamente ereditaria, presenta evidenze di predisposizione genetica multifattoriale (e.g. varianti del gene PHACTR1) e incidenza aumentata nei soggetti affetti da alcune malattie del tessuto connettivo. La diagnosi di FMD extra-coronarica si riscontra in circa il 70% dei casi di SCAD e interessa prevalentemente le arterie renali (60-75%), le carotidi e le arterie endocraniche (25-30%), per cui, oltre alla terapia con aspirina a basse dosi e il monitoraggio pressorio, è attualmente raccomandato in tutti i pazienti con SCAD effettuare uno screening vascolare esteso con imaging "head to pelvis" e un follow-up multidisciplinare periodico.

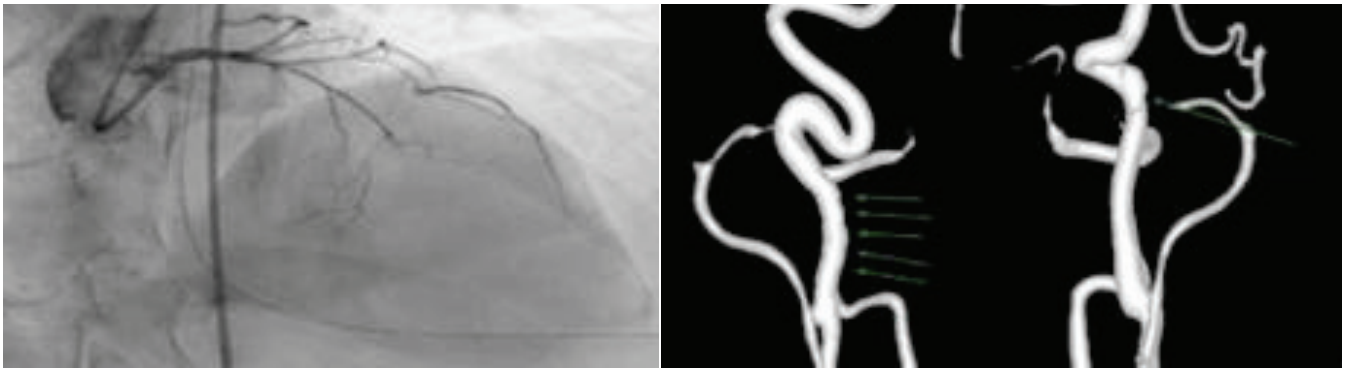


Figure 1

MALATTIE DEI VASI 425
ARTERIOPATIA ARTI INFERIORI (MALATTIE DEI VASI)
ARTERIOPATIA DEI TRONCHI SOVRA-AORTICI (MALATTIE DEI VASI)
BIOLOGIA MOLECOLARE CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)

EFFECTS OF PROBIOTICS ON ARTERIAL DISEASE AND FUNCTION: RESULTS FROM THE RANDOMIZED PROCARDIO STUDY

Giulio Maria Maulini (a), Andrea Ghisletti (a), Luca Cumitini (a), Chiara Puricelli (a), Andrea Giordano (a), Sara Sacchetti (a), Luca Giacomini (a), Gaia Mazzola (a), Matteo Basile (a), Marco Bagnati (a), Marco Mennuni (a), Roberta Rolla (a), Domenico D´amario (a), Giuseppe Patti (a)
(a) MAGGIORE DELLA CARITÀ HOSPITAL, UNIVERSITY OF EASTERN PIEDMONT, NOVARA

Background: Gut dysbiosis, an imbalance in gut microbiota, contributes to low-grade systemic inflammation, a key driver of coronary artery disease (CAD) and peripheral arterial disease (PAD). Previous observational data suggest modulating tryptophan (TRP) metabolism and its conversion into metabolites such as kynurenine and indoxyl sulfate may improve cardiovascular health, though randomized evidence is limited.

Purpose: We aimed to investigate the effects of probiotic supplementation on vascular health in dysbiotic patients with CAD and PAD.

Methods: The PROCARDIO study is a prospective, randomized, double-blind, placebo-controlled trial. Urine samples were collected, and TRP metabolism was analyzed to identify dysbiotic patients. Eligible patients were randomized to receive either probiotic therapy (Lactobacillus and Bifidobacterium species) or placebo for three months. The primary outcome was the change in intima-media thickness (IMT), while secondary outcomes included flow-mediated dilation (FMD), Ankle-Brachial Index (ABI), inflammatory markers, and dysbiosis-related metabolites.

Results: Sixty patients were enrolled (31 probiotic, 29 placebo), with well-matched baseline characteristics. Probiotic supplementation significantly reduced IMT on both carotid sides, as shown by the between-group comparison of the difference between follow-up and baseline IMT values (median relative reduction: -6.0% and -4.4%, $p<0.01$ and $p=0.02$, respectively).
FMD improved by a median 15% in the probiotic group but remained unchanged in the placebo group. Conversely, there were no significant differences in ABI. Probiotic therapy stabilized the kynurenine/TRP and indoxyl sulfate/TRP ratios, preventing the shift of tryptophan metabolism towards a more pro-inflammatory pathway.

Conclusions: PROCARDIO is the first intervention study demonstrating that probiotic supplementation improves vascular health (by reducing IMT) and enhances endothelial function (by improving FMD) in dysbiotic patients with CAD and PAD. These effects appear to be mediated by modulation of tryptophan metabolism, gut-derived inflammation and immune responses. Probiotics could potentially represent a new frontier of atherosclerosis prevention.

MALATTIE DEI VASI 6
TROMBOSI E COAGULAZIONE (ATEROTROMBOSI)
PATOLOGIA DELLE VENE (MALATTIE DEI VASI)
EMBOLIA POLMONARE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)

AVOIDING INAPPROPRIATE ANTICOAGULANT REGIME: A CASE REPORT ON PERICATHETER FIBROUS SHEATH IN A CANCER PATIENT

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(a) S.C. CARDIOLOGIA - ISTITUTO NAZIONALE TUMORI - IRCCS - FONDAZIONE "G. PASCALE" - NAPOLI; (b) UOC CARDIOLOGIA CON UTIC - OSPEDALE "V. MONALDI" - NAPOLI; (c) UOC CARDIOLOGIA CON UTIC - OSPEDALE "S.G. MOSCATI" - AVERSA; (d) UOC CARDIOLOGIA CON UTIC - OSPEDALE "UMBERTO I" - NOCERA INFERIORE

Background: Cancer remains the second leading cause of morbidity and mortality in Western countries. Conventional chemotherapy, often involving ionic drugs, can induce severe endothelial damage, thus necessitating the use of intravascular devices for drug infusion. Oncological patients inherently face an elevated thrombotic risk compared to the general population, and the presence of these intravascular devices further predisposes them to thrombotic complications.

Case Presentation: We report the case of a 63-year-old female, with no pre-existing cardiovascular risk factors, diagnosed with uterine leiomyosarcoma in 2024. Following total hysteroannessectomy, she commenced first-line chemotherapy with docetaxel/gemcitabine, administered via a port-a-cath device. During oncological follow-up in April 2025, she presented with secondary lesions consistent with disease progression in both lungs and the pelvic bones, necessitating a second-line chemotherapy regimen. A transthoracic echocardiogram revealed a 2 cm hyperechoic mass protruding into the right atrium. This finding was confirmed by transesophageal echocardiography, which identified the mass originating from the tip of the intravascular device. While D-dimer levels were mildly elevated, consistent with her neoplastic condition, and electrocardiogram and echocardiogram showed no overt signs of pulmonary embolism, a pulmonary angio-CT scan was performed, effectively ruling out pulmonary thromboembolism.
The patient was subsequently started on anticoagulation with enoxaparin for a presumptive diagnosis of catheter-related thrombosis. However, during low-molecular-weight heparin therapy, she developed a retroperitoneal hematoma complicated by hemorrhagic shock, necessitating embolization of the inferior epigastric artery, the source of bleeding. The port-a-cath was removed during her hospitalization, despite the persistent hyperechoic formation on a subsequent transthoracic echocardiogram. Subsequent pathological examination of the catheter revealed the hyperechoic formation to be a fibrous sheath.

Discussion: This case underscores a critical diagnostic challenge in managing pericatheter vascular hyperechoic formations. A fibrous sheath is an inevitable consequence of central venous catheter implantation. In asymptomatic patients, a pericatheter hyperechoic structure is approximately five times more likely to be a fibrous sheath than a catheter-related thrombosis. While pericatheter thrombosis can be asymptomatic, it often correlates with vessel wall adherence, ultrasound compressibility, higher echogenicity, a greater thickness-to-length ratio, and demonstrable color doppler flow defects.

Given these distinguishing features, color doppler ultrasound offers superior sensitivity and specificity for differentiating between these entities compared to computed tomography.

Conclusion: This case powerfully illustrates the urgent need for prompt differential diagnosis between a fibrous sheath and catheter-related thrombosis. Especially in oncological patients, who are at high risk for both thrombotic and hemorrhagic complications, an accurate diagnosis is paramount to avoid exposing them to potentially inappropriate anticoagulation therapies that could lead to severe adverse events.

CardioSic

86° CONGRESSO NAZIONALE SIC
Roma, 4-7 dicembre 2025

MALATTIE DEL MIOCARDIO E DEL PERICARDIO

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 140
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
TERAPIA DI RESINCRONIZZAZIONE (ARITMIE)
DEFIBRILLATORE IMPIANTABILE (ARITMIE)

CARDIAC RESYNCHRONIZATION THERAPY, REMODELING AND OUTCOME IN PATIENTS WITH AMYLOID TRANSTHYRETIN CARDIOMYOPATHY

Alberto Aimo (a, b), Martina Nesti (b), Giuseppe Vergaro (a, b), Dimitrios Bampatsias (c), Daniela Tomasoni (g), Cinzia Forleo (f), Francesco Musca (i), Matteo Serenelli (j), Vincenzo Castiglione (a, b), Riccardo Saro (h), Aldostefano Porcari (h), Giulio Sinigiani (k), Vera Fico (e), Elisa Frau (e), Andrea Igoren Guaricci (f), Giacomo Tini (l), Alberto Cipriani (k), Maria Beatrice Musumeci (l), Simone Longhi (m), Cristina Chimenti (n), Marco Metra (g), Martha Grogan (d), Federico Perfetto (e), Francesco Cappelli (e), Marco Merlo (h), Gianfranco Sinagra (h), Mathew Maurer (c), Ahmad Masri (o), Michele Emdin (a, b)

(a) SCUOLA SUPERIORE SANT'ANNA; (b) FONDAZIONE TOSCANA GABRIELE MONASTERIO; (c) COLUMBIA UNIVERSITY; (d) MAYO CLINIC; (e) OSPEDALE CAREGGI; (f) POLICLINICO DI BARI; (g) SPEDALI RIUNITI DI BRESCIA; (h) OSPEDALE UNIVERSITARIO DI TRIESTE; (i) OSPEDALE NIGUARDA; (j) OSPEDALE UNIVERSITARIO DI FERRARA; (k) OSPEDALE UNIVERSITARIO DI PADOVA; (l) OSPEDALE SANT'ANDREA; (m) OSPEDALE SANT'ORSOLA; (n) OSPEDALE UMBERTO I; (o) PORTLAND UNIVERSITY HOSPITAL

Background: Transthyretin amyloid cardiomyopathy (ATTR-CM) has a specific pathophysiology, with myocardial stiffening and systolic dysfunction only in advanced stages.

Objective: To investigate the response to cardiac resynchronization therapy (CRT) in ATTR-CM compared to heart failure (HF).

Methods: In this multicenter, observational study, patients with ATTR-CM receiving CRT (n=101) were matched to patients without amyloid CM by sex, age, and implantation type (CRT with vs. without defibrillator vs. conduction system pacing, upgrade vs. first implant). We evaluated changes in QRS duration and echocardiographic parameters following CRT implantation and at the most recent available assessments. The study endpoints were all-cause mortality alone or combined with HF hospitalization.

Results: Patients with ATTR-CM (median age 76 years [interquartile range 72-83], 98% male, LV ejection fraction (LVEF) 30% [26-33]) showed greater QRS shortening after CRT implantation (p=0.012), but not after a median of around 1 year (p=0.152). There were no significant differences in the absolute LVEF changes immediately after implantation (+7 units [+2/+10] vs. +3 [0/+9], p=0.124), or to the last echo (p=0.796), which was performed after 1.3 years in patients with ATTR-CM and 2.9 years in patients without amyloid CM. Patients with ATTR-CM had a shorter survival than controls (p<0.001 for both endpoint). Patients with ATTR-CM experiencing an early improvement in LVEF had a longer survival (log-rank 4.3, p=0.038).

Conclusions: Following CRT implantation, patients with ATTR-CM show QRS narrowing and improvement in LVEF, not different from non-amyloid patients. Early favourable LV remodelling seems to be associated with a lower risk of all-cause mortality.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 141
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT) (IMAGING CARDIOVASCOLARE)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)

PHOTON-COUNTING COMPUTED TOMOGRAPHY FOR TISSUE CHARACTERIZATION IN PATIENTS WITH LEFT VENTRICULAR HYPERTROPHY

Alberto Aimo (a, b), Carmelo De Gori (b), Matilda Muca (b), Mariaelena Occhipinti (b), Francesca Pignatelli (b), Alberto Clemente (b), Andrea Barison (b), Giuseppe Vergaro (a, b), Michele Emdin (a, b), Giancarlo Todiere (b)
(a) SCUOLA SUPERIORE SANT'ANNA; (b) FONDAZIONE TOSCANA GABRIELE MONASTERIO

Background: Photon-counting computed tomography (PCCT) combines high spatial resolution with spectral imaging, and can thus provide a morphologic, functional and tissue assessment of hypertrophic hearts. We investigated determine whether PCCT can characterize left ventricular hypertrophy (LVH) as accurately as cardiac magnetic resonance (CMR) in the whole cohort and across hypertrophic phenotypes.

Methods: Consecutive patients with LVH (n=123; 48 with hypertrophic cardiomyopathy [HCM], 36 with transthyretin cardiac amyloidosis (ATTR-CM) and 39 with secondary LVH) were referred to PCCT; 49 (40%) also underwent CMR within 12 months (median -31 days).

Results: PCCT differentiated the three etiologies through distinctive tissue patterns. ATTR-CM showed the highest LV mass index (LVMI; median 105 g/m²), late iodine enhancement (LIE) extent (17 segments), extracellular volume (ECV; 45%) and iodine density (2.2 g/mL); secondary LVH displayed minimal fibrosis and the lowest ECV, while HCM had the greatest wall thickness but intermediate fibrosis burden. Morpho-functional indices from PCCT correlated closely with CMR (LVMI: beta=0.95, wall thickness: beta=0.98, LVEF: beta=0.91; all p<0.001). PCCT-ECV correlated with CMR-ECV in the overall cohort (beta=0.88, p<0.001), and segment-by-segment concordance for LIE versus late gadolinium enhancement was 98-100%. Iodine density correlated with CMR-ECV in ATTR-CM (beta=0.99, p=0.002) but not in HCM. Coronary assessment revealed ≥50% stenosis in 23%, and >70% in 10%.

Conclusions: PCCT provides CMR-level accuracy for ventricular geometry, function and fibrosis while simultaneously visualizing coronary anatomy. Its ability to delineate distinctive tissue signatures (particularly the diffuse infiltration of ATTR-CM) suggests PCCT is a powerful alternative when CMR is contraindicated or not available.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 519
GRAVIDANZA E CARDIOPATIA
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

PERIPARTUM CARDIOMYOPATHY AS A PROTOTYPE OF THE TWO-HIT HYPOTHESIS: A CASE BASED INSIGHT

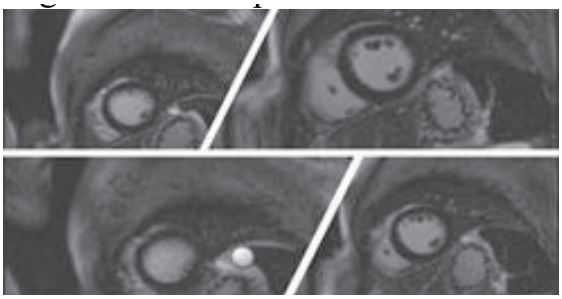
Alice Russo (a), Mattia Alberti (a, b), Yu Fu Ferrari Chen (a), Lorenzo Bazan (a), Lorenzo Faggioni (b), Doralisa Morrone (a), Emanuele Neri (b), Giovanni Donato Aquaro (b), Raffaele De Caterina (a)
(a) CARDIOLOGY DIVISION, UNIVERSITY OF PISA; (b) RADIOLOGY DIVISION, UNIVERSITY OF PISA

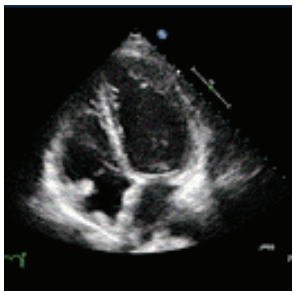
Peripartum cardiomyopathy (PPCM) is defined as new-onset left ventricular systolic dysfunction developing in the peripartum period in the absence of other identifiable causes. However, emerging evidence has revealed a significant overlap with genetic dilated cardiomyopathy (DCM), particularly in carriers of truncating variants in TTN, challenging the concept of PPCM as a purely idiopathic entity.

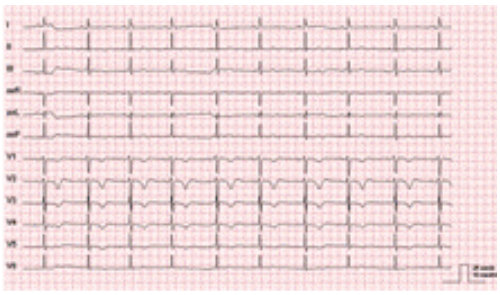
We report the case of a 37-year-old woman with obesity, previous atrial septal defect closure, and a family history of sudden cardiac death, who presented with dyspnea two months postpartum following an in vitro fertilization pregnancy complicated by preeclampsia. Echocardiography revealed severe systolic dysfunction (LVEF 20%) with markedly reduced global longitudinal strain. Cardiac magnetic resonance (CMR) imaging revealed biventricular dilation with diffusely elevated native T1 values, in the absence of signal abnormalities on Short Tau Inversion Recovery (STIR) and Late Gadolinium Enhancement (LGE) sequences. No arrhythmias were detected during follow-up Holter monitoring.

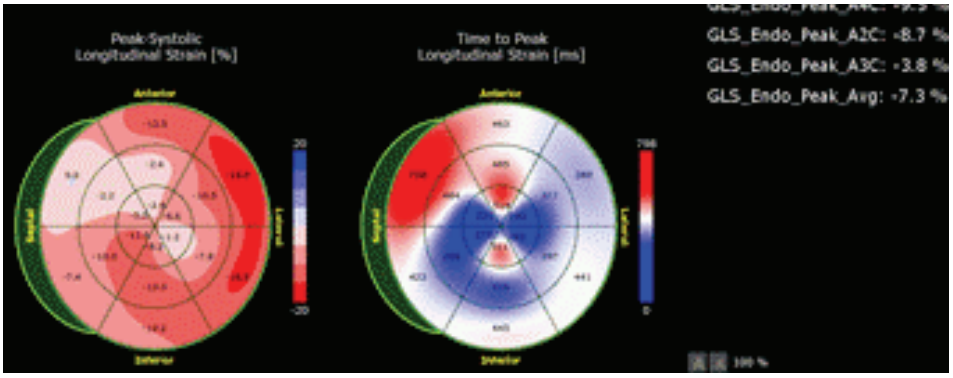
A next-generation sequencing panel identified a Likely Pathogenic nonsense TTN variant (p.Arg19240*). Family screening confirmed the same variant in a cousin affected by DCM. This case highlights the "two-hit hypothesis," where genetic susceptibility interacts with pregnancy-related hemodynamic, hormonal, and oxidative stress to precipitate cardiomyopathy. The absence of LGE on CMR underscores the importance of mapping sequences in TTN-associated disease, where diffuse tissue abnormalities may evade conventional detection.

Beyond diagnosis, genetic evaluation informs prognosis, reproductive counseling, and family screening. In our patient, guideline-directed therapy led to early recovery, but the presence of a TTN variant mandated caution against future pregnancies and reinforced the need for long-term monitoring. This report illustrates how integrating multimodality imaging with genetic testing redefines PPCM as a clinical syndrome rather than a single disease, emphasizing the importance of early recognition of underlying predispositions to guide management and improve outcomes.








Peak Systolic
Longitudinal Strain [%]
Time to Peak
Longitudinal Strain [ms]
GLS_Endo_Peak_A2C: -8.7 %
GLS_Endo_Peak_A3C: -3.8 %
GLS_Endo_Peak_Avg: -7.3 %

Figures

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 566
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
MINOCA (MYOCARDIAL INFARCTION WITH NORMAL CORONARY ARTERIES)
(CARDIOPATIA ISCHEMICA)
PROGNOSI (SCOMPENSO CARDIACO)
INFARTO STEMI (CARDIOPATIA ISCHEMICA)
INFARTO NSTEMI (CARDIOPATIA ISCHEMICA)

LONG TERM SYMPTOMS AND MORTALITY IN TAKOTSUBO SYNDROME VERSUS ACUTE CORONARY SYNDROMES: A MATCHED COMPARATIVE STUDY

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Background: Takotsubo syndrome (TTS), often referred to as "stress-induced cardiomyopathy", is characterized by acute, transient left ventricular dysfunction frequently triggered by emotional or physical stressors. While traditionally considered a benign and self-limiting condition, recent evidence highlights significant risk of long-term cardiac events, with persistent symptoms and adverse outcomes, including death. This study aimed to compare the long-term symptom burden and all-cause mortality in patients with TTS versus a matched cohort of acute coronary syndrome (ACS) patients.

Methods: We retrospectively analyzed 111 patients (mean age 72±10 years, 90% women) diagnosed with TTS at Pisa University Hospital and compared them with 105 ACS patients matched for age, sex, and left ventricular ejection fraction (LVEF) at discharge. Clinical data, including demographics, in-hospital complications, biomarkers, and treatments, were collected. The primary endpoint was the prevalence of recurrent cardiac symptoms (effort dyspnea and/or angina) at follow-up. All-cause mortality was a secondary endpoint. Median follow-up was 23 months (IQR 11–53).

Results: Effort dyspnea and/or angina were reported in 42 (38%) TTS patients, compared to 27% in the ACS group (p=0.016), primarily due to a higher prevalence of effort dyspnea (38% vs 25%, p=0.025). Despite recovery of LVEF at discharge, persistent symptoms were associated with lower EF (p=0.004), lower peak high-sensitivity troponin T levels (p<0.02), and a lack of identifiable triggers for TTS onset (p=0.020). Male sex, cardiogenic shock, ventricular arrhythmias, renal dysfunction, and the absence of ACE-inhibitors or beta-blockers at discharge were predictors of mortality (p<0.05). Mortality at follow-up was similar between TTS and ACS patients (14% vs 16%, p=0.433).

Conclusions: Patients with TTS experience a significantly higher burden of long-term symptoms than matched ACS patients, despite comparable mortality and apparent recovery of systolic function. These findings challenge the traditional benign view of TTS and underscore the need for individualized long-term management strategies, including functional assessments and targeted therapies.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 1079
MIOCARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
PERICARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
INFIAMMAZIONE E IMMUNITÀ (ATEROTROMBOSI)
ASSISTENZA CARDIACA IN ACUTO NEL DIPARTIMENTO DI EMERGENZA (ASSISTENZA CARDIACA IN ACUTO)

ACUTE MYOPERICARDITIS ASSOCIATED WITH MESALAZINE THERAPY IN A YOUNG PATIENT WITH ULCERATIVE COLITIS: A CASE REPORT

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We report the case of a 20-year-old male with a recent diagnosis of ulcerative colitis (UC) treated with oral mesalazine, who presented to the emergency department with a 10-day history of pharyngeal pain, intermittent low-grade fever, and recurrent chest pain not related to exertion.

Laboratory tests showed mild anemia, neutrophilic leukocytosis, elevated transaminases, troponin (994 pg/mL) and CRP (27.76 mg/dL), and mild hypokalemia (3.2 mmol/L). Electrocardiography revealed tachycardia with ST-segment elevation in the inferior leads, while echocardiography demonstrated mild left ventricular systolic dysfunction (LVEF 44%), moderate mitral regurgitation, and a non-tamponade pericardial effusion. Given the suspicion of myopericarditis, potentially induced by mesalazine, the drug was promptly discontinued and treatment with oral ibuprofen and colchicine was initiated.

The patient was therefore admitted to the Cardiology Unit. Cardiac CT showed no coronary lesions and confirmed a large circumferential pericardial effusion (20 mm in the inferior region). A few days later, a second echocardiography was performed, which revealed hypokinesia of the inferior interventricular septum in the mid-distal segment, hypokinesia of the mid segments of the anterolateral and posterior walls, and persistence of circumferential pericardial effusion. The effusion was homogenous in distribution across the described hypokinetic regions. Cardiac MRI revealed myocardial edema with subepicardial late gadolinium enhancement in the inferolateral walls, supporting the diagnosis of myopericarditis. Microbiological and virological workup was negative. Endomyocardial biopsy was not performed given the low-risk status of the patient.

Upon clinical stabilization, 30 days later, the patient was discharged asymptomatic, with a downward trend in biochemical markers of inflammation and myocardial injury, and with a significant improvement in the global systolic function (LV EF 60%).

This case highlights a possible association between mesalazine therapy and acute myopericarditis in a young patient with ulcerative colitis. Prompt discontinuation of mesalazine and initiation of anti-inflammatory therapy were associated with clinical recovery and normalization of cardiac function.

Inflammatory bowel diseases (IBD), such as Crohn's disease (CD) and ulcerative colitis (UC), are primarily gastrointestinal disorders; however, 25–40% of patients develop extraintestinal manifestations involving joints, skin and eyes, and, less commonly, kidneys, lungs and heart (<1%), with pericarditis and, even more rarely, myocarditis. Mesalazine is a first-line treatment for patients with mild-to-moderate UC and is frequently used in CD, although strong evidence in this setting is limited. Side effects of mesalazine are usually mild and

not dose-dependent, most commonly presenting as general fatigue or gastrointestinal symptoms (nausea, diarrhoea, constipation). Rarely, mesalazine may cause potentially life-threatening cardiac inflammation (manifested as tachycardia, pericarditis, or myocarditis), which can be difficult to distinguish from acute cardiac involvement related to IBD. Diagnosis remains a clinical challenge. Clinicians should be aware of this rare but potentially severe adverse event in order to promptly discontinue therapy and prevent further complications.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 1061
IMAGING MIOCARDICO-PERICARDICO
(MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
PERICARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE)
(IMAGING CARDIOVASCOLARE)

PERICARDIAL HYDATID CYST: A RARE CASE OF CONSTRICTIVE PERICARDITIS

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(b) CENTRO CARDIOLOGICO MONZINO, IRCCS, MILAN, ITALY

Background: Hydatid disease due to Echinococcus granulosus rarely involves the heart (<2% of cases), and isolated pericardial localization is exceptionally uncommon. Clinical manifestations are often nonspecific, and diagnosis may be challenging, especially in non-endemic regions.

Case Presentation: A 57-year-old man with a history of prolonged stays in Central America was referred for coronary CT due to exertional dyspnea. Imaging revealed severe pericardial calcifications and a large sacculated pericardial effusion compressing the right ventricle, consistent with constrictive pericarditis. CMR confirmed a large pericardial pseudocystic lesion with heterogeneous proteinaceous content and surrounding calcifications, but no pathognomonic hydatid features (Fig 1). Serology for Echinococcus was negative.

Management: Following Heart Team discussion, the patient underwent median sternotomy and pericardial cyst excision under cardiopulmonary bypass. Intraoperative transesophageal echocardiography and direct ultrasound (Fig.2) confirmed a septated cyst, which was sterilized with scolicidal agents and partially excised (Fig.3). Histopathology established the diagnosis of hydatid cyst. Postoperative recovery was uneventful, and antiparasitic therapy with albendazole/mebendazole was continued.

Discussion: This case highlights the rarity of isolated pericardial hydatid cyst presenting as constrictive pericarditis. Advanced imaging (CT, MRI) was crucial for anatomical assessment but not definitive for etiology, while TEE and intraoperative ultrasound provided decisive diagnostic clues. Negative serology further emphasizes the limitations of non-invasive tests. We propose a multimodal diagnostic approach integrating clinical history, TTE, CMR/CT, and TEE, with intraoperative imaging as a complementary tool when non-invasive modalities are inconclusive.

Conclusion: Pericardial hydatid cyst should be considered in the differential diagnosis of pericardial

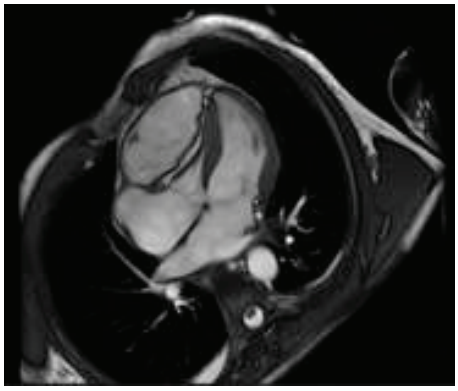


Figure 1

masses, especially in individuals with a history of travel to endemic regions. This case underlines the critical role of TEE and intraoperative echo in guiding diagnosis and ensuring safe surgical management when other modalities are non-definitive.

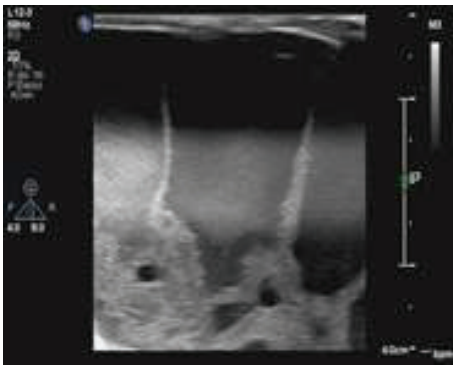


Figure 2

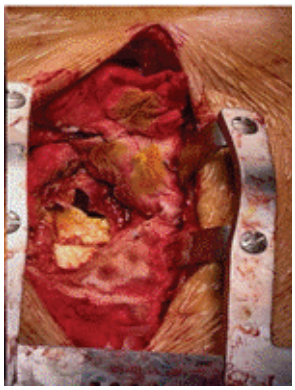


Figure 3

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 594
MIOCARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
ARITMIE VENTRICOLARI (ARITMIE)
DIAGNOSTICA INVASIVA INTRAVASCOLARE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

UN FULMINE A CIEL SERENO

Giacomo Antonioli (a), Margherita Zanoletti (a), Sara Mori (a), Marco Canepa (a)
(a) UNIVERSITA' DI GENOVA

Presentiamo il caso di una donna di 32 anni, di nazionalità sudamericana, senza fattori di rischio cardiovascolare né precedenti anamnestici, che accedeva in PS per dolore toracico tipico e dispnea da circa 4 gg. Non venivano riportati episodi febbrili né infezioni nelle settimane precedenti. All'ingresso era stabile dal punto di vista emodinamico, con primo ECG presentante RS, BAV I grado, BBSn di nuova insorgenza, TnI 33056 pg/ml, NT-pro-BNP 8063 ng/l, WB 15000/l, PCR 180 mg/l. L'ecocardiografia dimostrava funzione sistolica globale ridotta (FEVS 35%), ipocinesia globale e dissincronia settale, IM moderata, TAPSE nella norma, minimo scollamento pericardico. Alla coronarografia circolo coronarico indenne da stenosi significative o immagini suggestive per SCAD e alla ventricolografia non vi erano immagini ascrivibili a cardiomiopatia da stress. Trasferita in UTIC, nel sospetto di peri-miocardite, veniva avviata terapia con cardioaspirina 500 mg ev tid e terapia di neuro-modulazione ormonale. In prima giornata di ricovero insorgenza di BAV completo con pause asistoliche di max 6 secondi che hanno reso necessario l'avvio di isoprenalina ev per 24 ore, seguito da regressione spontanea del BAV, con persistenza della turba di conduzione sinistra. La degenza è stata caratterizzata da recidive di angor tipico, non associate a rialzo troponinico né movimento degli indici di flogosi e progressivo miglioramento della FEVS. Gli esami ematochimici sono risultati negativi per forme infettive o autoimmunitarie. La RM cardiaca intraricovero documentava miglioramento della FEVS (52%), edema in corrispondenza della parete inferiore ed infero-laterale in sede distale e apicale, LGE transmurale omosede, con marcato assottigliamento della parete inferiore ed infero-laterale in sede apicale (2 mm). Al fine di escludere sarcoidosi cardiaca, veniva eseguita PET-TC, risultata negativa. A 20 giorni dall'ingresso i valori di TnI hs persistevano elevati e al monitoraggio telemetrico si è assistito alla comparsa di BEV (> 5000/die), talora organizzati in coppie e triplette, con periodi di bi e trigeminismo, per cui eseguiva prova da sforzo con incremento del burden extrasistolico e comparsa di sintomatologia lipotimica. Veniva avviato metoprololo con beneficio clinico e la paziente veniva dimessa nei giorni successivi con TnI negativa e risoluzione della turba di conduzione sinistra. Dopo pochi giorni, nuovo accesso in PS per dispnea ingravescente con innalzamento dei valori di TnI hs e NTproBNP, BEV polimorfi a cadenza bigemina e calo della FEVS (40%). La RMN cardiaca risultava invariata rispetto alla precedente per cui si procedeva a BEM risultata diagnostica per miocardite linfocitaria (negativa l'estrazione di DNA/RNA per genomi virali). Avviava pertanto metilprednisolone ev per 3 giorni, seguita da terapia orale, con negativizzazione di TnI e NTproBNP e normalizzazione della FEVS. In corso di tapering di terapia steroidea post-ricovero, si è assistito ad un nuovo incremento del burden aritmico, riduzione FEVS e rialzo dei valori di TnI per cui veniva aumentato il dosaggio di corticosteroidi con beneficio clinico-strumentale. Alla RMN a 3 mesi dalla dimissione si osservava riduzione dell'edema, con LGE invariato. Al fine di escludere una cardiomiopatia a fenotipo aritmico esordita con "hot phase" veniva eseguito test genetico con pannello NGS, risultato negativo.
I successivi ECG sec. Holter mostravano soppressione del burden extrasistolico e la TnI hs persisteva negativa per cui a 7 mesi dalla dimissione veniva sospesa la terapia corticosteroidea senza ulteriori recidive clinico-laboratoristiche.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 767
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
DEFIBRILLATORE IMPIANTABILE (ARITMIE)

A HIDDEN CASE OF APICAL HYPERTROPHY CARDIOMYOPATHY

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Introduction: Hypertrophic cardiomyopathy (HCM) is a common inherited cardiac disease and an important cause of heart failure, arrhythmias, and sudden cardiac death. Based on the distribution of hypertrophy, HCM is classified into basal, midventricular, and apical variants. Apical HCM (ApHCM) is characterized by hypertrophy of the LV apex, giant negative T waves on electrocardiogram, and the typical "spade-like" cavity configuration. Its prevalence varies geographically, being more frequent in Asian populations. Despite its clinical relevance, current HCM guidelines provide little specific guidance on ApHCM, underlining the need for greater awareness and tailored management.

Case report: We present the case of a 38-year-old Caucasian man, active smoker with hypertension and dyslipidemia but no family history of cardiovascular disease, admitted to a peripheral hospital for acute chest pain. The 12-lead electrocardiogram showed T-wave inversion in the anterolateral leads. To rule out acute coronary syndrome, the patient underwent coronary angiography, which demonstrated normal epicardial coronary arteries. At transthoracic echocardiogram (TTE) apical aneurism was diagnosed with apical thrombus, so anticoagulant therapy with vitamin k antagonist was started. After a few weeks, he came to our ambulatory clinic to decide whether or not to continue anticoagulant therapy. He underwent to a clinical visit and to a TTE that showed a small LV cavity with preserved systolic function (EF 70%), with apex and mid-ventricular obliteration. In the suspicious of apical hypertrophy, a contrast enhanced TTE was performed with sulfur hexafluoride agent, showing severe apical hypertrophy (maximum wall thickness 21 mm) with apical aneurism without thrombotic apposition. The contrast enhanced TTE revealed also a large area of fibrosis in the interventricular septum. Cardiac magnetic resonance (CMR) confirmed the severe apical hypertrophy and the apical aneurism. Late gadolinium enhancement showed transmural involvement of the true apex and apical inferior wall, with additional subendocardial enhancement in the other apical and basal segments, accounting for approximately 25–30% of the total myocardial mass. A small focus of fatty metaplasia and a limited area of apical hypoperfusion were also observed. Genetic testing, already ongoing, was performed for familial screening. These findings were consistent with ApHCM complicated by an apical aneurysm and extensive myocardial fibrosis. For the prevention of sudden cardiac death, 24-hour Holter monitoring was performed and showed no -sustained ventricular tachycardia. The HCM risk score was 5.57% so we decided to implant a subcutaneous defibrillator.

Conclusion: Apical hypertrophic cardiomyopathy is often under-recognized in Western populations and may present with chest pain mimicking acute coronary syndrome. Multimodality imaging plays a key role in establishing the diagnosis and in identifying adverse features such as apical aneurysm and extensive myocardial fibrosis, both of which are associated with increased risk of ventricular arrhythmias and thromboembolic complications. The presence of adipose metaplasia, although less frequently described, may also contribute to arrhythmic vulnerability. Current risk calculators for sudden cardiac death do not fully capture these factors, potentially underestimating the true risk. Therefore, individualized assessment remains essential to guide preventive strategies, including implantable cardioverter-defibrillator therapy.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 121
MIOCARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

INSIGHTS INTO THE NATURAL HISTORY OF RECURRENT MYOCARDITIS, A MULTICENTRE INTERNATIONAL STUDY (RE-MYO STUDY)

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Background and Aims: Recurrence of acute myocarditis (AM) is a clinical challenge. The management and natural history of patients who experience a recurrence of AM (Re-AM) remain poorly characterized. The aim of this study is to investigate clinical characteristics and outcomes of patients with Re-AM .

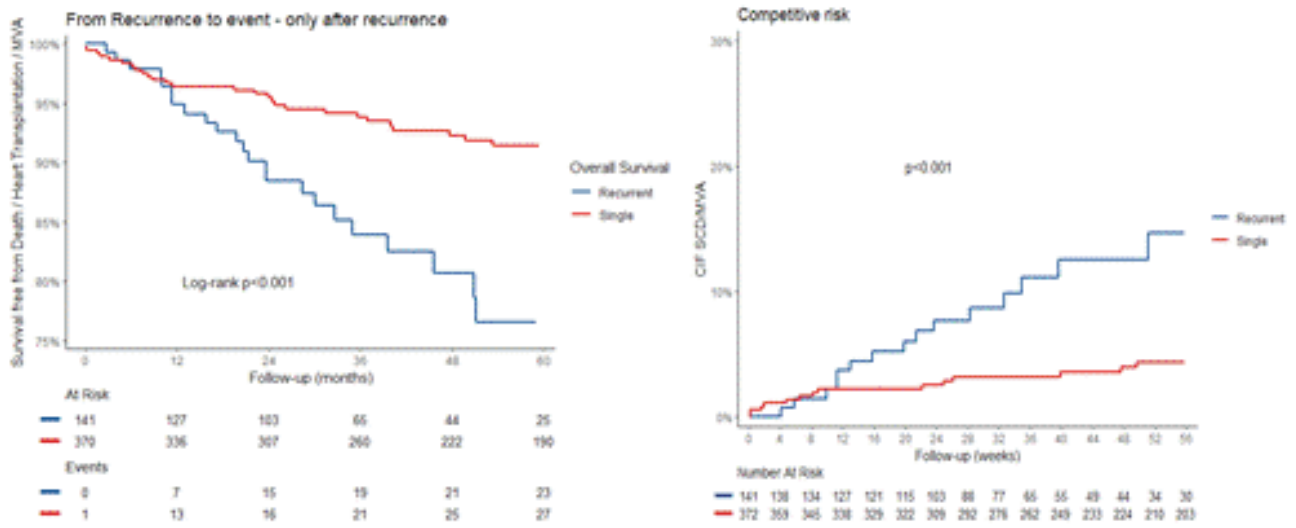
Methods and Results: In this retrospective international multicentre study, 141 consecutive patients with biopsy-proven or cardiac magnetic resonance (CMR)-proven Re-AM (35 [26, 45] years, 77% males, median left ventricular ejection fraction 55%) were investigated and compared with 372 consecutive patients with single acute myocarditis (S-AM), enrolled in the same period (2010-2021).

The primary outcome was a composite of all-cause mortality, heart transplant and major ventricular arrhythmias (MVA).

Despite generally similar baseline characteristics, Re-AM patients had more frequently a family history of cardiomyopathy (19% in Re-AM vs. 2.8% in S-AM, p<0.001) and a diffuse late gadolinium enhancement

(LGE) on CMR compared to SAM patients (46% in Re-AM vs. 34% in S-AM, p=0.019). The extent of LGE also increased between the first and the second AM episode in patients with Re-AM (p=0.001). During a median follow-up period of 33 months [IQR 23–52] Re-AM patients had a higher risk of experiencing the primary outcome (p=0.001) compared to the S-AM group, as well as a significantly elevated competing risk of MVA during follow-up (p<0.001). After adjustment for age, family history of cardiomyopathy, autoimmune disease, complicated clinical presentation, and LGE pattern, recurrence of AM remained independently associated with the primary outcome (HR 2.15, 95% CI 1.15–4.04, p=0.017). A family history of cardiomyopathy, autoimmune diseases and LGE, especially the ring-like pattern, were independently associated with a higher risk of recurrent AM.

Conclusions: Recurrent AM is a distinct clinical subgroup of AM associated with a general worse prognosis and a specific increased arrhythmic risk compared to S-AM.



Figures

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 475
MINOCA (MYOCARDIAL INFARCTION WITH NORMAL CORONARY ARTERIES) (CARDIOPATIA ISCHEMICA)
ELETTROSTIMOLAZIONE (ARITMIE)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)

A RARE CASE OF TAKOTSUBO SYNDROME TRIGGERED BY SEVERE BRADYCARDIA

Paolo Basile (a, b), Mariagiovanna D´eredità (b), Annamaria Fanigliulo (b), Fabio Clemente (b), Antonino La Spada (b), Ezio Dioguardi (b), Marzia Di Maggio (b), Antonietta Loforese (b), Cristina Fontana (b), Claudia Resta (b), Stella Maria Ricco (b), Maria Cristina Carella (a), Giovanni Luzzi (a, b), Marco Matteo Ciccone (a), Andrea Igoren Guaricci (a)
(a) UNIVERSITA' DEGLI STUDI DI BARI "ALDO MORO", BARI, ITALY; (b) PRESIDIO OSPEDALIERO OCCIDENTALE "SAN PIO" CASTELLANETA, ASL TARANTO, TARANTO, ITALY

Background: Takotsubo syndrome (TS) represent a reversible form of myocardial dysfunction in absence of significant coronary artery obstruction, promoted by important emotional or physical stress. Various factors are accounted as potential triggers of this syndrome. Severe bradyarrhythmias may represent a potential cause, although in available scientific literature it was rarely reported.

Case report: A 60-year-old women with a previous surgical closure of an atrial septal defect, arterial hypertension, COPD and previous smoking habit, went to the Emergency Department for worsening weakness and dyspnoea during the last days. The EKG revealed a severe bradycardia with a heart rate of 23 bpm and negative T waves in anterior and lateral leads. The patient was immediately treated with intravenous isoprenaline and transferred to our Cardiology ward. Subsequently, a dual chamber pacemaker was implanted without short-term complications. At the laboratory monitoring were pointed out a progressive increase of troponin values (up to 1500 pg/ml). Moreover, the EKG displayed a gradual accentuation of negative T waves and a marked increase of QT interval. The following transthoracic echocardiography revealed an akinesia of the apex of the left ventricle with a trivial reduction of ejection fraction. A coronary angiography was performed to exclude an ischemic origin of the clinical and laboratory picture, which showed the absence of significant coronary stenosis. Thus, the suspicion of TS was posed. Subsequently, a conservative management with a strict clinical, laboratory and instrumental monitoring was chosen, observing a progressive normalization of troponin values and QT interval. At the 1-month follow up the echocardiographic evaluation pointed out the absence of wall motion abnormalities, confirming the diagnosis of TS.

Discussion: Arrhythmias are often a consequence of TS with important prognostic implications. They can also be a potential trigger for this syndrome, in particular tachyarrhythmias. On the contrary, bradyarrhythmias are uncommon. Moreover, it has been observed that

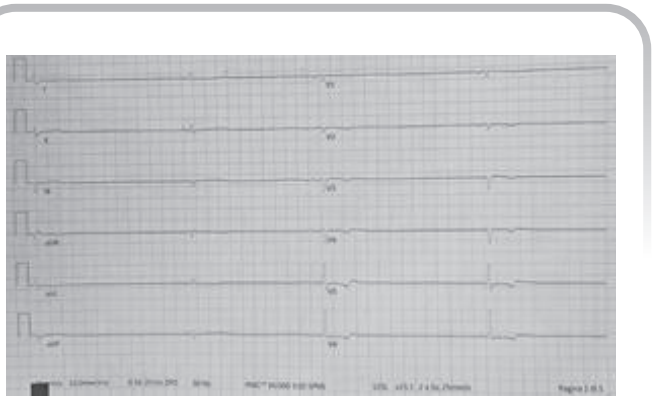


Figure 1

a treatment with exogenous catecholamines can trigger the syndrome. In our case, we believe that TS was induced by conduction tissue dysfunction and potentially exacerbated by the infusion of isoprenaline. The exclusion of a potential coronary artery disease remains essential in case of a suggestive EKG, alterations in segmental kinetic and increased troponin values. The exact mechanism leading to TS in this context remains unknown, requiring further investigation.

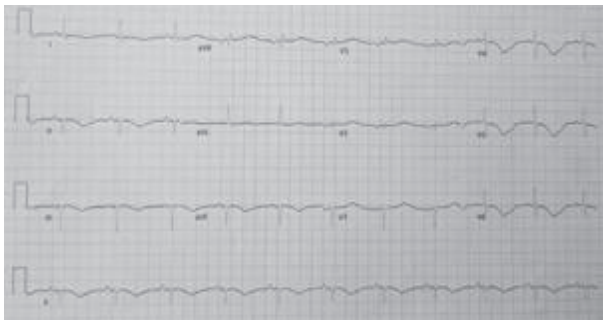


Figure 2

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 904
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
ARITMIE VENTRICOLARI (ARITMIE)

GRAVIDANZA NELLE PAZIENTI CON CARDIOMIOPATIA ARITMOGENA PORTATRICI DI VARIANTI IN GENI DESMOSOMIALI

Ilaria Rigato (b), Marika Martini (a), Paola Veronese (b), Maria Bueno Marinas (a), Luigi Filippo Brizzi (a), Alessandro Parodi (a), Serena Pinci (a), Rudy Celeghin (a), Annagrazia Cecere (a), Kalliopi Pilichou (a), Barbara Bauce (a)
(a) DIPARTIMENTO DI SCIENZE CARDIO-TORACO-VASCOLARI E SANITA' PUBBLICA, UNIVERSITA' DEGLI STUDI DI PADOVA; (b) AZIENDA OSPEDALIERA DI PADOVA

Nelle pazienti con Cardiomiopatia Aritmogena (ACM), la gravidanza rappresenta una condizione clinicamente rilevante in considerazione del sovraccarico ventricolare di volume e dello stiramento miocardico che caratterizzano questa condizione. Tuttavia, nella maggior parte delle donne affette da ACM la gravidanza risulta ben tollerata, con decorso generalmente benigno e senza complicanze di rilievo. Eventi cardiaci maggiori e complicanze ostetriche si osservano infatti raramente in questa popolazione. Le evidenze disponibili provengono tuttavia principalmente da studi retrospettivi che spesso non considerano il background genetico delle pazienti.

Obiettivo del presente studio è stato quello di analizzare prospetticamente i rischi cardiaci correlati alla gravidanza e l'impatto dell'ACM sugli esiti fetali e neonatali in una coorte di donne portatrici di varianti patogene o verosimilmente patogene nei geni desmosomiali.

Risultati: sono state considerate 17 gravidanze in 13 pazienti con ACM seguite tra il 2001 e il 2025; 7 erano portatrici di varianti di Desmoplachina, 3 di Plakofillina-2, 2 di Desmogleina-2 e 2 mostravano mutazioni multiple. L'analisi fenotipica ha evidenziato in 9 casi una forma destra o biventricolare di ACM e in 4 casi una forma a prevalente interessamento ventricolare sinistro. Prima della gravidanza, 6 pazienti erano portatrici di defibrillatore impiantabile (ICD), di cui 4 in prevenzione primaria.

Durante il periodo gestazionale è stato registrato un singolo evento aritmico maggiore; si trattava di un intervento appropriato dell'ICD al quarto mese in una paziente con dispositivo impiantato in prevenzione primaria. Nessuna donna ha sviluppato scompenso cardiaco durante la gravidanza; un episodio di scompenso si è invece verificato nel puerperio immediato in una paziente con severa disfunzione sistolica già nota. Tutte le pazienti hanno proseguito la terapia con beta-bloccanti durante la gravidanza. In un caso è stato documentato un ritardo di crescita intrauterino (IUGR) con conseguente parto pretermine. Nel 60% dei casi il parto è avvenuto tramite taglio cesareo. Tutti i neonati hanno mostrato crescita e sviluppo regolari. Nel follow-up, due pazienti hanno presentato recidiva di tachicardia ventricolare sostenuta e in ulteriori tre casi è stato impiantato un ICD in prevenzione primaria.

In conclusione, l'ACM nelle pazienti portatrici di varianti nei geni desmosomiali si associa a un basso tasso di eventi cardiaci maggiori durante la gravidanza. Il rischio di tachicardia ventricolare sostenuta appare scarsamente prevedibile e giustifica la necessità di proseguire la terapia con beta-bloccanti nel corso della gestazione. Inoltre, nelle donne con ACM che desiderano intraprendere una gravidanza è raccomandata una valutazione pre-concezionale del rischio con adeguato counselling, e il percorso assistenziale dovrebbe essere seguito da un "pregnancy heart team" multidisciplinare comprendente cardiologo e ginecologo.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 771
MIOCARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)
ASSISTENZA CARDIACA IN ACUTO NEL DIPARTIMENTO DI EMERGENZA (ASSISTENZA CARDIACA IN ACUTO)

RETTOCOLITE ULCEROSA IN GRAVIDANZA: QUANDO LA RIACUTIZZAZIONE INFIAMMA IL CUORE

Sara Bentivoglio (a), Claudia Ricci (a), Michele Moretti (b), Prisca Zeni (b), Giulia Casagranda (b), Elisa Minchio (b), Roberto Bonmassari (b), Flavio Luciano Ribichini (a)
(a) AOVR UNIVERSITA DEGLI STUDI DI VERONA; (b) OSPEDALE SANTA CHIARA TRENTO

Background: I pazienti con malattie infiammatorie intestinali (IBD) presentano un aumentato rischio di miocardite, potenzialmente secondaria a meccanismi di tipo autoimmune o a reazioni avverse a farmaci (5-ASA). La miocardite in gravidanza è un evento raro che tuttavia presenta serie difficoltà sul piano diagnostico-terapeutico e un elevato rischio di complicanze materno fetali.

Caso Clinico: Paziente di 33 anni con recente diagnosi di rettocolite ulcerosa (RCU), in terapia con mesalazina da febbraio 2024, e prima gravidanza a partire da dicembre 2024. Da febbraio 2025 riacutizzazione di RCU (febbre, diarrea, calprotectina fecale (CpF) 585 µg/g) trattata con progressivo incremento del dosaggio di mesalazina (orale da 3.6 a 4 g/die + topica da 0.5 a 1 g/die). Il 12/5/2025 (gravidanza a 23 settimane + 2) ricoverata per iperpiressia e dolore in ipocondrio sinistro con importante leucocitosi (20.100 – 30.000 /mm3), rialzo di PCR 154 - 245 mg/L e CpF (>1000 µg/g). Nelle prime 24 ore dal ricovero rapido deterioramento con comparsa di insufficienza respiratoria necessitante ventilazione non invasiva (NIV) ed instabilità emodinamica trattata con amine. Dal lato bioumorale riscontro di modesto incremento troponinico (TnThs a "plateau" fra 150 e 200 pg/mL) e importante rialzo di NTproBNP (12749-20000 pg/mL). All'ECG (figura) tachicardia sinusale con minime alterazioni aspecifiche della ripolarizzazione ventricolare. Ai controlli ecocardiografici seriati: ventricolo sinistro (VS) non dilatato con ipocinesia inferiore medio-basale e FEVs 45%. Dopo valutazione multidisciplinare iniziata terapia steroidea ad alto dosaggio (metilprednisolone 250 mg ev. x2) e sospesa mesalazina con buona risposta clinica, progressiva stabilizzazione del quadro respiratorio ed emodinamico e completo svezzamento da NIV e amine in 3a giornata. La sierologia per virus cardiotropi risultava negativa. Alla RM cuore, eseguita in 10a giornata, VS di normali dimensioni (VTDi 97 ml/m2) e spessori con ipocinesia del setto inferiore basale e FEVs 54%; alle sequenze T2 focale edema mesocardico infero-laterale basale (figura). Al monitoraggio ECG assenza di aritmie ipo o ipercinetiche; ai monitoraggi ostetrico-ginecologici gravidanza con decorso regolare, senza segni di sofferenza fetale.
Alla dimissione: TnThs 7 pg/ml, NTproBNP 210 pg/ml, PCR <2.9 mg/L e CpF 108 µg/g; all'eco persistenza di ipocinesia settale basale con FE 55%. A 1 mese, in scalo di terapia steroidea (prednisone da 25 a 5 mg/die), la paziente è rimasta asintomatica, con ECG, ecocardiogramma e biomaracatori nei limiti di norma (PCR <2.9 mg/L, CpF <51 µg/g, TnThs <14 pg/ml, NTproBNP 61 pg/ml). La successiva gravidanza è decorsa in modo regolare e si è conclusa con un parto a termine non complicato, senza eventi durante monitoraggio intensivo in UTIC nel post-partum.

Conclusioni: La miocardite è una rara complicanza in pazienti con IBD/RCU e può avere presentazione ad alto rischio; un contestuale stato di gravidanza comporta inoltre un alto rischio di complicanze materno-fetali. L'approccio multidisciplinare integrato è di fondamentale importanza, specie in casi complessi.



Figure 1

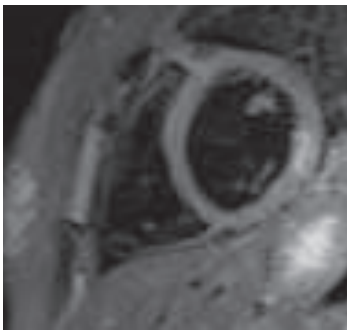


Figure 2

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 219
MIOCARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)

THERAPEUTIC RATIONALE OF BETA-BLOCKERS IN A LARGE POPULATION OF MYOCARDITIS WITH LOW-RISK PRESENTATION

Razvan Berghi (c), Beatrice Perkan (c), Alessandro Folgheraiter (c), Marco Taurian (c), Lisa Pellin (c), Ambra Fabbro (c), Laura Manfrin (c), Valentina Jahnsen (c), Leonardo Viotto (c), Antonio Cannatà (b), Daniel Bromage (b), Alessia Paldino (c), Marco Merlo (c), Gianfranco Sinagra (c)
(a) POLO CARDIOLOGICO "F. CAMERINI" - OSP. CATTINARA - TRIESTE (IT); (b) KING'S COLLEGE HOSPITAL - LONDON (UK); (c) CARDIOTHORACOVASCULAR DEPARTMENT, AZIENDA SANITARIA UNIVERSITARIA GIULIANO ISONTINA, UNIVERSITY OF TRIESTE, ITALY - MEMBER OF ERN GUARD-HEART

Background: Approximately 60% of acute myocarditis (AM) is characterized by a low-risk presentation and a favorable long-term prognosis. There are no clear official guidelines regarding clinical management of this clinical condition. The decision to initiate medication therapy is therefore based solely on clinical rationale, at the discretion of treating physicians.

Objectives: The aim of this retrospective cohort study is to investigate the efficacy of pharmacological treatment, namely beta-blockers (BB), renin-angiotensin-aldosterone system inhibitors (RAASi), mineralocorticoid antagonists (MRA), in changing the prognosis of low-risk myocarditis.

Methods: A total of 918 patients with a diagnosis of AM admitted to 2 international tertiary cardiac centers were included in the study. The inclusion criteria consisted of echocardiographic LVEF≥ 50% at admission, no major ventricular arrhythmia (MVA) at onset and no clinical evidence of heart failure. The diagnosis was confirmed by cardiac magnetic resonance imaging (CMR) or endomyocardial biopsy (EMB). The primary endpoint was a composite of all-cause mortality or heart transplantation, whereas the secondary endpoints consisted of arrhythmic events (MVA or ICD intervention) and myocarditis recurrence. The primary endpoint was observed on a subset population of 20 patients (2.2%) The secondary endpoints were observed on a subset population of 170 patients (18.5%).

Results: No pharmacological therapy has shown a statistically significant improvement in long-term prognosis, encompassing both death or heart transplant and arrhythmic events or myocarditis recurrence. Conversely, patients treated with BB who exhibited a positive LGE signal on CMR at admission showed a higher risk of adverse outcomes. However, this association appears to be primarily driven by the presence of LGE itself, rather than by BB therapy.

Conclusions: Overall, there is no clear prognostic improvement attributable to BB, RAASi or MRA therapy. This study opens new avenues for research into the characterization and description of LGE-positive patients, who constitute a higher risk subpopulation.

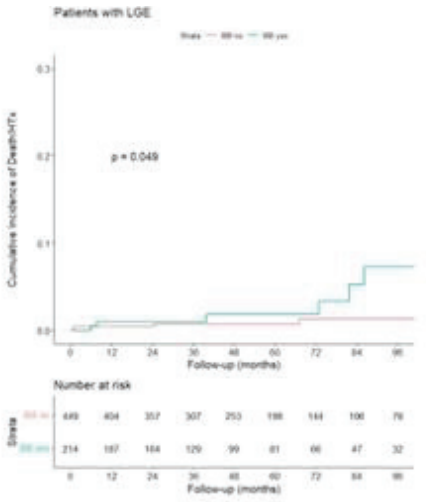


Figure 11 Cumulative Incidence of Death or Heart Transplant stratified according to BB therapy in the positive LGE group

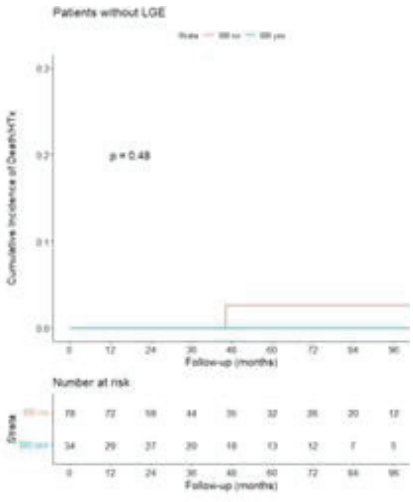


Figure 12 Cumulative Incidence of Death or Heart Transplant stratified according to BB therapy in the negative LGE group

Figures

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 864
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
IMAGING MIOCARDICO-PERICARDICO
(MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

EFFICACY AND SAFETY OF MAVACAMTEN IN OBSTRUCTIVE HYPERTROPHIC CARDIOMYOPATHY: REAL-WORLD EXPERIENCE OF THE FIRST 20 PATIENTS TREATED UNDER THE COMPASSIONATE USE PROGRAM OF A REFERRAL CENTER

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(a) CARDIOMYOPATHY UNIT, CAREGGI UNIVERSITY HOSPITAL, FLORENCE; (b) CARDIOLOGY, MEYER UNIVERSITY HOSPITAL, FLORENCE

Background: Obstructive hypertrophic cardiomyopathy (oHCM) is an inherited condition characterised by left ventricular hypertrophy and left ventricular outflow tract obstruction (LVOTob). Mavacamten is the first approved myosin inhibitors and represents a paradigm shift in the treatment of oHCM.

Objectives: To assess the efficacy and safety of mavacamten in a real-world oHCM cohort receiving optimised medical therapy.

Materials and Methods: We included the first 20 patients treated with mavacamten under the compassionate use program in our center. Clinical and echocardiographic assessments were performed at baseline and after 3 and 6 months (m) of treatment.

Results: LVOTob gradient decreased significantly at 3m at rest (from 56.0 to 13.5 mmHg, p=0.003) and with Valsalva (from 82.3 to 25.1 mmHg, p<0.0001), confirmed at 6m (rest: 22.2 mmHg, p=0.0001; Valsalva: 26.5 mmHg, p<0.0001), with concomitant LVEF reduction. NYHA functional class improved, with 15 (75%) patients reaching NYHA I by 3m (p=0.002), with further improvement at 6m. Early diastolic tissue Doppler velocities (e') improved, more evidently at 6m (septal e': 4.3 to 5.4, p =0.018; lateral e': 6.1 to 8.3, p= 0.002), associated to improvement of estimated systolic pulmonary artery pressure (sPAP) (from 30.2 to 24.1 mmHg at 6m, p=0.003) and mitral regurgitation severity (p=0.013). Left atrial dimension parameters and left ventricular end-diastolic volume did not change significantly, by contrast left ventricular wall thickness reduced. No serious adverse events were observed. A significant rise in systolic arterial pressure was noted at 6m (from 128 to 134 mmHg, p=0.045).

Conclusions: Efficacy and safety of mavacamten in oHCM was confirmed in this real-world patient cohort. Improvements in LVOTob and NYHA class were evident at 3m and maintained at 6m. Hemodynamic parameters improved, while there weren't evidence of positive left ventricular remodeling within this timeframe.

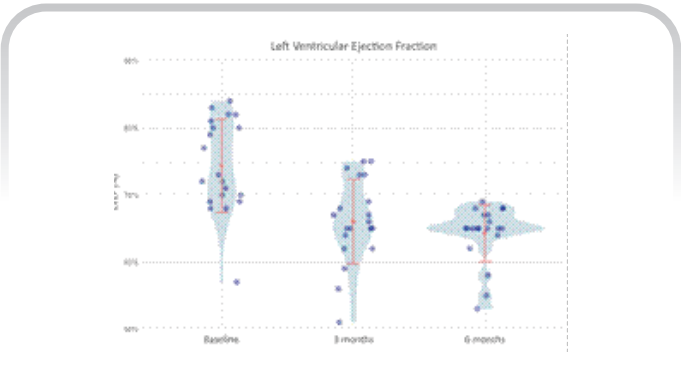


Figure 1

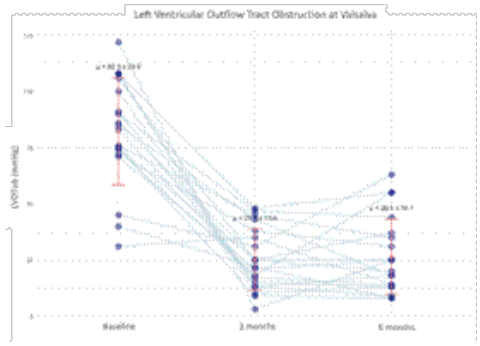


Figure 2

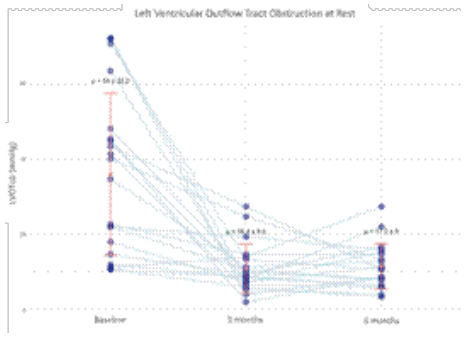


Figure 3

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 874
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE (IMAGING CARDIOVASCOLARE)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

HYPETROPHIC CARDIOMYOPATHY LOST SEVERE LEFT VENTRICULAR OUTFLOW TRACT OBSTRUCTION FOR LEFT POSTERIOR MITRAL LEAFLET CHORDAE ROPTURE

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(b) CARDIOLOGY, MEYER CHILDREN'S UNIVERSITY HOSPITAL, FLORENCE

Case Report: A 71 year-old male patient was diagnosed 7 years ago with obstructive hypertrophic cardiomyopathy (oHCM) with mild hypertrophy, elusive genotype and 2.4% HCM-SCD risk score. He presented with elongated mitral leaflets, complete systolic anterior motion of the mitral valve (SAM) and a severe left ventricular outflow tract obstruction (LVOTob) of 69 mmHg gradient. A posterior mitral leaflet (PML) prolapse was also documented, associated with moderate mitral regurgitation (MR). The patient was asymptomatic, with mild elevated NT-proBNP levels. Medical therapy with prolonged-release disopyramide and low-dose bisoprolol was initiated and subsequently titrated, with partial benefit to LVOTob. The patient remained asymptomatic, and NT-proBNP stable during follow-up. Additional therapy with spironolactone and empagliflozin was introduced to improve prognosis and mitigate mitral regurgitation.
At the most recent cardiological evaluation, the patient was asymptomatic, but presented mild elevation of NT-proBNP levels. Echocardiography revealed loss of mitral leaflets coaptation, resulting in severe MR due to rupture of a PML chordae tendineae, the complete resolution of SAM and absence of LVOT obstruction at rest and during Valsalva (gradient: 6 mmHg). Indexed left ventricular end-systolic volume had progressed from mild to moderate dilation (93 mL/m²), LV end-systolic diameter (LVESD) had increased to 46 mm (25 mm/m²), indicating adverse LV remodeling, and diastolic dysfunction had evolved into a triphasic pattern. Given these findings, the patient was referred for Heart Team discussion with indication for surgical mitral valve repair or replacement.

Discussion: LVOT obstruction results from the interplay of multiple anatomical and functional factors in oHCM and other cardiac conditions. These include mitral valve and LVOT anomalies (elongation of mitral leaflets, anomalies of subvalvular mitral apparatus), hypercontractility (HCM, Takotsubo syndrome on basal segments), interventricular septal hypertrophy (HCM, elderly patients). Dynamic changes in these elements over time or in the setting of intercurrent conditions can lead either to the development or the resolution of LVOTob. The present case provides a clear clinical illustration of this phenomenon.



Figure 1



Figure 2

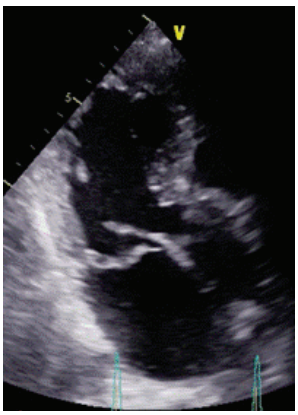


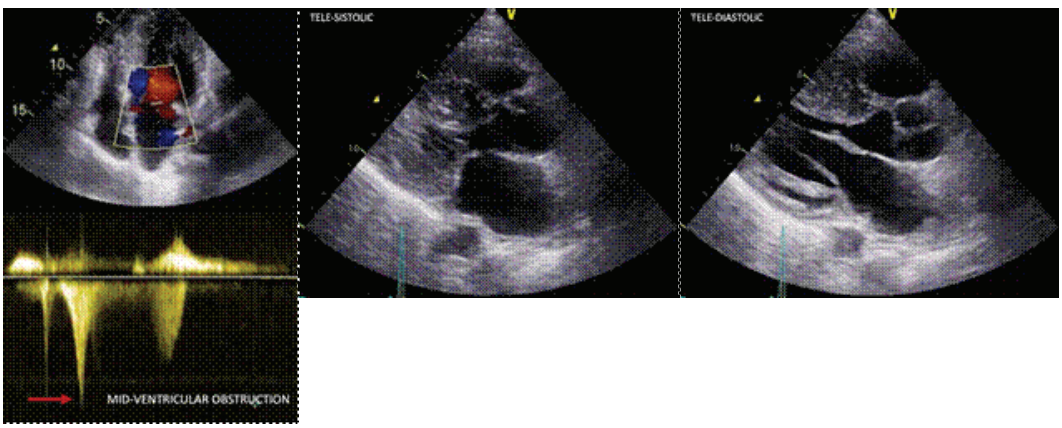
Figure 3

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 898
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)

HYPERTROPHIC CARDIOMYOPATHY IN NOONAN SYNDROME WITH MULTIPLE LENTIGINES WITH MID-VENTRICULAR OBSTRUCTION: A CASE REPORT

Giacomo Bonacchi (a), Alessandra Milazzo (a), Lupo Dei (a), Annamaria Del Franco (a), Giorgia Panichella (a), Maurizio Pieroni (a), Iacopo Olivotto (a, b)
(a) CARDIOMYOPATHY UNIT, CAREGGI UNIVERSITY HOSPITAL, FLORENCE; (b) CARDIOLOGY, MEYER CHILDREN'S UNIVERSITY HOSPITAL, FLORENCE

Case Report This is the case of a female 24 year-old patient with a pediatric diagnosis of Noonan syndrome with multiple lentigines (Leopard syndrome) with related hypertrophic cardiomyopathy (HCM), due to a pathogenic variant in PTPN11. She suffers from hearing loss and microphthalmia. At the age of 13, she received an ICD for primary prevention, with subsequent appropriate shocks and ATP treatments. She underwent surgical myectomy at 15 years with resolution of LVOT obstruction, because of dyspnea on mild exertion. At the last cardiological evaluation, she presented moderate left ventricular hypertrophy (LVH) (maximum wall thickness 25 mm), predominantly involving mid and apical segments, with complete obliteration of these segments and mid-ventricular obstruction (37 mmHg at rest and during Valsalva), despite treatment with nadolol 20 mg/day and short-release disopyramide 200 mg/day. The obstruction was related to LVH, markedly hypertrophic papillary muscles and additional chord between anterolateral papillary muscle and aortic annulus. Grade II diastolic dysfunction and severe left atrial enlargement were also present. The ECG showed T-wave inversion in leads DI, aVL, V6, and a pseudo-STEMI pattern in V1–V2. Blood tests showed markedly elevated NT-proBNP (6550 pg/mL) with normal high-sensitivity troponin T. Exercise stress echocardiography demonstrated absence of LVOT obstruction, poor exercise tolerance, with early termination at 75W due to dyspnea and asthenia. Therapy was intensified with the introduction of an SGLT2 inhibitor and up-titration of disopyramide. Discussion While clinical trial of aficamten in non-obstructive HCM are still ongoing, the safety and efficacy of myosin inhibitors in HCM phenocopies, such as RASopathies, have yet to be established. Preclinical studies on gene therapy are promising, but no phase I clinical trials are currently planned. This case highlights the urgent need to explore new pharmacological treatment for these patients.



Figures

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 983
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
DEFIBRILLATORE IMPIANTABILE (ARITMIE)
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)
ASPETTI GENETICI DELLE ARITMIE (ARITMIE)

OLTRE IL VENTRICOLO DESTRO: CASO CLINICO DI DISPLASIA ARITMOGENA DEL VENTRICOLO SINISTRO IN PAZIENTE CON NF1

Felice Borelli (a), Pierfrancesco Durante (a), Annita Bava (c), Domenico Oriente (c), Maria Stelitano (c), Giuseppe Princi (c), Renato Hoxa (a), Sabato Sorrentino (b), Daniele Torella (b), Francesco Antonio Benedetto (c)
(a) UMG DI CATANZARO-G.O.M. REGGIO CALABRIA; (b) UMG DI CATANZARO; (c) G.O.M. REGGIO CALABRIA

Background: La cardiomiopatia aritmogena (ACM) è una malattia genetica caratterizzata da sostituzione fibro-adiposa del miocardio, con conseguente disfunzione ventricolare, aritmie ventricolari e morte improvvisa. Le forme a prevalente interessamento sinistro (left-dominant ACM, ALVC) sono meno frequenti ma verosimilmente sottodiagnosticate, talora confuse con cardiomiopatia dilatativa, miocardite o pregressi infarti "silenti". La neurofibromatosi di tipo 1 è una patologia autosomica dominante dovuta a varianti del gene NF1 (17q11.2), che codifica per la neurofibromina. Le manifestazioni sono principalmente cutanee e neurologiche, con possibile interessamento di altri distretti.

Descrizione del caso: Uomo di 26 anni, senza noti fattori di rischio CV modificabili, affetto da NF1 con macchie "caffè-latte" e familiarità per morte cardiaca improvvisa, giungeva al PS per dolore toracico atipico. L'ECG mostrava scarsa progressione dell'onda R nelle derivazioni precordiali con bassi voltaggi del QRS nelle derivazioni periferiche. Agli esami ematici riscontro di valori di TnI hs negativi e profilo lipidico compatibile con età e stile di vita del paziente. Veniva sottoposto a TC del torace che documentava ipo-densità pericardica all'apice ed eseguito ETT che ha evidenziato aumentata ecogenicità ed ipocinesia del SIV e della parete inferiore del VSx, lievemente ipertrofico, con FSG nei limiti inferiori di norma (50%), ventricolo destro non dilatato e normocinetico. Il successivo approfondimento con RM cardiaca ha mostrato plurime aree di infiltrazione adiposa ed estesa fibrosi subepicardica plurifocale del VSx, quadro compatibile con ACM del VSx. L'ECG Holter 48 ore ha documentato un elevato burden aritmico ventricolare (17%) con fenomeni di R su T. Nel caso descritto, dunque, sono presenti tutti i criteri di Padova 2021 rivistati necessari per la diagnosi di cardiomiopatia aritmogena del VSx.

Discussione: Vista la familiarità per morte cardiaca improvvisa e l'elevato burden extrasistolico ventricolare all'ECG Holter 48 ore, si è deciso di procedere ad impianto di S-ICD in prevenzione primaria. La peculiarità del caso ha suscitato interesse clinico- scientifico, e alla luce delle ricerche effettuate possiamo affermare di essere di fronte al secondo caso in letteratura. Il precedente caso vedeva un paziente di 20 anni affetto da neurofibromatosi di tipo 1, ricoverato per dolore toracico e aritmie, in cui è stata fatta diagnosi di cardiomiopatia aritmogena del ventricolo sinistro. All'analisi genetica, è emersa una variante missense c.3277G > A nell'esone 25 del gene NF1.

Conclusione: Il caso clinico in esame vuole supportare l'evidenza dei criteri diagnostici per le ACM del ventricolo destro nell'applicazione dei casi coinvolgenti il VSx, rafforzare la valenza del programma di screening e follow up dei pazienti e i loro probandi. Infatti, attualmente è in corso studio genetico al fine rilevare la mutazione specifica del paziente in esame e successivamente effettuare adeguato screening ai familiari di primo grado.

CardioSic

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 480
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
ASPETTI GENETICI DELLE ARITMIE (ARITMIE)
PROGNOSI (SCOMPENSO CARDIACO)
ARITMIE VENTRICOLARI (ARITMIE)

SPETTRO FENOTIPICO E STRATIFICAZIONE PROGNOSTICA DELLA CARDIOMIOPATIA ARITMOGENA ASSOCIATA A MUTAZIONI NEL GENE DSG2: RISULTATI DA UNA POOLED ANALYSIS

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Razionale e obiettivi dello studio. Nei pazienti affetti da Cardiomiopatia aritmogena (CMA), l'identificazione di mutazioni nel gene DSG2 riveste un ruolo di particolare importanza clinica, dato che questo gene è spesso associato ad un fenotipo severo di malattia. La crescente consapevolezza dell'importanza della correlazione genotipo-fenotipo nella CMA sta favorendo lo sviluppo di un approccio sempre più personalizzato, sia sul piano diagnostico sia per quanto riguarda la stratificazione del rischio e la capacità di predizione di outcome avversi. Obiettivo del presente studio è quello di caratterizzare in maniera approfondita i pazienti con CMA associata a varianti di DSG2 in termini di presentazione clinica, espressione fenotipica ed outcome.

Metodi. Abbiamo svolto una pooled analysis, combinando dati clinici e genetici di pazienti con mutazioni patogenetiche o probabilmente patogenetiche nel gene DSG2 riferiti al nostro centro con quelli pubblicati in letteratura. Abbiamo quindi unito e analizzato caratteristiche demografiche, storia clinica, espressione fenotipica, diversi outcome e loro predittori al follow-up.

Risultati. La coorte complessiva comprende 202 pazienti, di cui il 60,1% ricavato dalla letteratura, con caratteristiche basali in gran parte sovrapponibili a quelle dei pazienti del nostro centro. La presentazione clinica più comune è stata quella con aritmie potenzialmente fatali (25,8%), e la maggioranza dei pazienti ha sviluppato un fenotipo con prevalente coinvolgimento del ventricolo destro (38,1%) oppure biventricolare (31,2%). Alla presentazione clinica, il riscontro di tachicardia ventricolare non sostenuta (TVNS) all'ECG Holter delle 24 ore si è rivelata essere l'unico predittore indipendente di eventi cardiovascolari avversi maggiori al follow-up. A un follow-up mediano di quasi 8 anni, il 35,3% dei pazienti, in particolare quelli con disfunzione ventricolare destra più severa, ha presentato aritmie potenzialmente fatali, mentre il 10,9% è andato incontro a scompenso cardiaco, con maggior rischio per i pazienti con coinvolgimento biventricolare.

Conclusioni. La CMA correlata a mutazioni nel gene DSG2 è caratterizzata da un elevato burden aritmico,

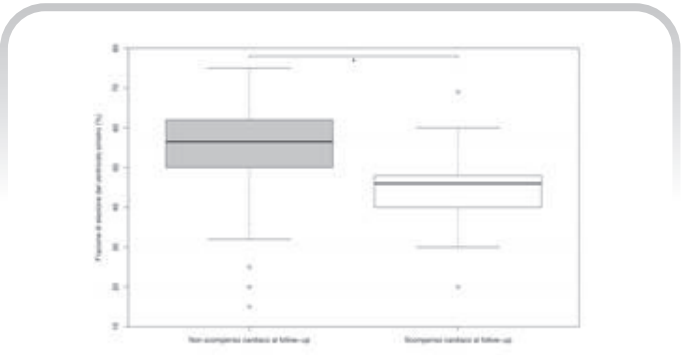


Figura 1

sia al momento della presentazione clinica che durante il follow-up. Il riscontro di TVNS all'ECG Holter rappresenta un predittore indipendente di eventi cardiovascolari avversi maggiori, rafforzandone il ruolo nella stratificazione precoce del rischio. In questo sottogruppo genetico di pazienti, la presenza di disfunzione ventricolare destra risulta associata a un maggior incidenza di aritmie potenzialmente fatali, mentre il coinvolgimento biventricolare appare maggiormente correlato allo sviluppo di scompenso cardiaco.

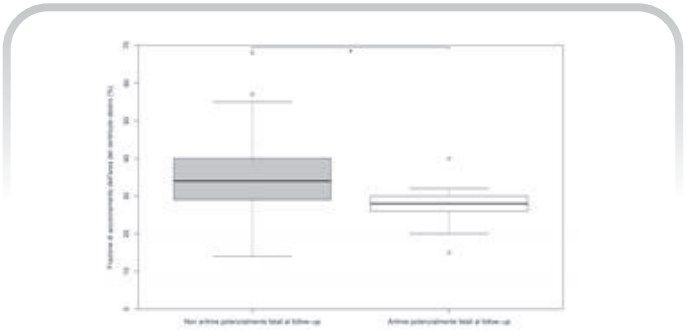


Figura 2

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 886
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
IMAGING MIOCARDICO-PERICARDICO
(MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
DEFIBRILLATORE IMPIANTABILE (ARITMIE)

A RARE CASE OF HOT PHASE IN LMNA-RELATED ARRHYTHMOGENIC CARDIOMYOPATHY

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A 15-year-old competitive swimmer, with no family history of cardiomyopathy or sudden cardiac death, was referred to our centre after premature ventricular beats (PVCs) were detected during a pre-participation screening. Baseline ECG showed sinus rhythm with diffuse low QRS voltages with fragmented complexes, poor R-wave progression in the precordial leads, and T-wave inversion in the inferolateral leads. A maximal exercise stress test revealed occasional multifocal PVCs. A 24-hour Holter monitor confirmed a moderate arrhythmic burden, with 433 PVCs, both isolated and in couplets, and a non-sustained ventricular tachycardia. Cardiac MRI revealed hypokinetic cardiomyopathy with moderate left ventricular (LV) dysfunction and normal right ventricular volume and function. On tissue-characterization, diffuse epicardial fibrosis of the lateral wall was evident, with some foci of transmural involvement of uncertain aetiology. The patient was started on anti-neurohormonal therapy. At follow-up, routine blood tests showed troponin I elevation, prompting hospital admission for further investigation, although the patient remained asymptomatic. To exclude infectious or inflammatory aetiologies, an endomyocardial biopsy was carried out, showing non-specific histopathological changes and no viral antigens, while PET-MRI was negative for pathological metabolic uptake in the left ventricular walls. Genetic testing identified a rare pathogenic missense variant (c.1622G>A, p.Arg541His) in heterozygosity in the lamin A/C (LMNA) gene. Because of elevated CPK levels, a neuromuscular genetic screen was performed and resulted negative. A definite diagnosis of left dominant arrhythmogenic cardiomyopathy (ACM) was made. Since the patient refused implantable cardioverter-defibrillator (ICD) implantation, a loop recorder was implanted in the meanwhile, showing no significant arrhythmias during 18 months of follow-up. On the latest follow-up cardiac MRI, partial recovery of biventricular function was observed, although with extensive macroscopic fibrosis. Given the progression of fibrotic replacement in a young patient with "hot-phases" episodes, ICD implantation was strongly recommended and eventually accepted.

Continuous troponin release has been reported in other cardiomyopathies, such as dilated cardiomyopathy (DCM), as well as in storage diseases like amyloidosis, and is associated with ongoing myocyte injury and an unfavourable prognosis. In ACM, troponin elevation has primarily been linked to "hot phases" of the disease and to variants in the desmoplakin gene. Among carriers of LMNA variants, troponin I release has only rarely been described rarely in patients with a DCM phenotype. This case underscores the importance of assessing troponin I in patients with LMNA cardiomyopathy and highlights the need for prospective studies to determine the prevalence and the prognostic significance of this marker.

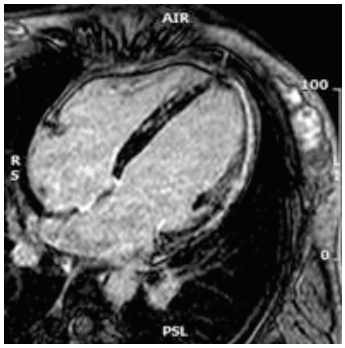


Figure 1



Figure 2

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 97
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)

HELIOS-B 12-MONTHS RESULTS FROM THE OPEN LABEL EXTENSION PERIOD OF VUTRISIRAN IN PATIENTS WITH TRANSTHYRETIN AMYLOIDOSIS WITH CARDIOMIOPATHY

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Background: Transthyretin amyloidosis with cardiomyopathy (ATTR-CM) is a progressive and fatal disease characterized by deposition of misfolded transthyretin protein in the heart. Vutrisiran, a subcutaneously administered RNA interference therapy, inhibits the production of hepatic transthyretin leading to rapid knockdown of the pathogenic protein. Over the 33–36-month (M), double-blind (DB) period of HELIOS-B (NCT04153149), vutrisiran treatment lowered the risk of the primary composite endpoint of all-cause mortality (ACM) and recurrent cardiovascular (CV) events vs placebo in both the overall population and the monotherapy population (patients not on tafamidis at baseline). Patients completing the DB period were eligible to enter a 2-year open-label extension (OLE).

Purpose: To present 1-year efficacy and safety data from the OLE of HELIOS-B.

Methods: Following completion of the DB period (up to 36 months), patients could enter the 2-year OLE period in which all patients received vutrisiran 25 mg q3M. Efficacy endpoints evaluated over the OLE period include mortality and CV events (collected at M6, 12, 18, and 24). The ACM secondary endpoint was prespecified for analysis up to M42 from the start of the DB period, which included data from up to 6M of the OLE; this was expected to increase statistical precision and power since former placebo patients in the OLE would not yet have experienced mortality benefit.

Results: Overall, 654 patients received treatment in HELIOS-B (vutrisiran n=326; placebo n=328). Of 477 patients who completed DB treatment, 462 (96.9%; vutrisiran n=241; placebo n=221) entered the OLE period (96.9% of eligible patients who completed HELIOS-B study). A vital status sweep at OLE M6 (November 2024) resulted in 99% data ascertainment, consistent with the primary analysis ascertainment of >99%. Efficacy and safety results at OLE M12 will be presented.

Conclusion: During the DB period of HELIOS-B, vutrisiran demonstrated significant clinical benefit versus placebo in patients with ATTR-CM. The impact of early vs delayed initiation of vutrisiran in this population will be elucidated in the OLE M12 data. Encore Presentation: Originally presented at ESC 2025 | August 29 – September 1, 2025.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 417
TUMORI CARDIACI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE) (IMAGING CARDIOVASCOLARE)
ECOCARDIOGRAFIA 3-D (IMAGING CARDIOVASCOLARE)

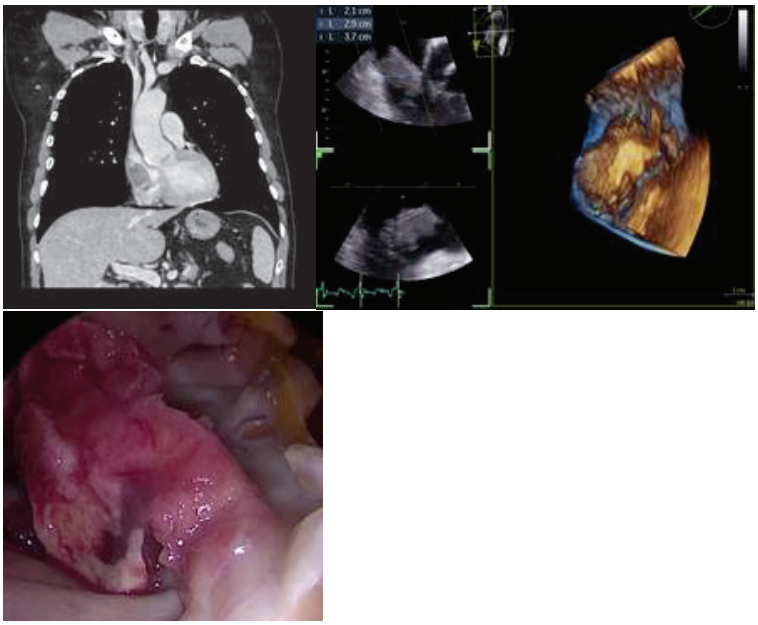
MASSE CARDIACHE: UN RARO CASO DI MASSA ATRIALE DESTRA

Benedetta Casini (a), Giuliana Bardelli (a), Luca Tulli (a), Elisabetta Girella (a), Giulia Lattanzi (a), Franceso Aliberti (a), Marcello Bergonzini (b), Erberto Carluccio (a)
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Introduzione: le masse atriali pongono rilevanti problemi di diagnosi differenziale, in particolare tra mixoma e trombosi endocavitaria. Il mixoma ha tipicamente sede nell'atrio sinistro, con base di impianto sulla fossa ovale; la localizzazione nell'atrio destro è molto rara e, ancora più eccezionale, quando l'impianto non coinvolge la fossa ovale. Pertanto, in caso di massa atriale con sede atipica per mixoma, è opportuno considerare con maggiore probabilità un'origine trombotica, soprattutto in presenza di fattori predisponenti.

Caso clinico: un uomo di 73 anni, con sindrome mielodisplastica complicata da piastrinopenia severa in terapia con un TPO mimetico, veniva ricoverato per un episodio di disartria. Alla TC cerebrale veniva documentata la presenza di una lesione ischemica e, nel corso degli accertamenti diagnostici, veniva riscontrata la presenza di una formazione di dubbia interpretazione all'interno dell'atrio destro. La TC torace evidenziava grossolana massa di aspetto polilobato di 35×29 mm, non significativamente vascolarizzata. L'ecocardiogramma transesofageo, anche con ricostruzione tridimensionale, confermava una voluminosa massa iperecogena, a superficie irregolare, con base di impianto di circa 10 mm sulla parete atriale destra in prossimità dello sbocco della vena cava inferiore, associata ad aneurisma del setto interatriale e forame ovale pervio. La RMN cardiaca, raccomandata per una migliore caratterizzazione tissutale, non è stata eseguita per rifiuto del paziente. Il paziente veniva sottoposto ad exeresi chirurgica della massa, con contestuale chiusura del FOP. L'esame istologico ha evidenziato trombosi inveterata in via di organizzazione, costituita da reticolo fibrinico inglobante elementi corpuscolati del sangue, cellule endoteliali con strutture pseudovascolari, tessuto di granulazione e bande di tessuto mixoide.

Conclusione: questo caso sottolinea come un trombo organizzato possa simulare un mixoma atriale, rendendo complessa la diagnosi differenziale.
La sede atipica della massa, la presentazione clinica con embolia paradossa e la presenza di sindrome mielodisplastica rappresentano elementi che avrebbero potuto orientare verso un'eziologia trombotica.
Nonostante il contributo dell'imaging multimodale, la diagnosi definitiva rimane affidata all'esame istologico.



Figure

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 175
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)

A RARE DIAGNOSTIC CHALLENGE:CONCOMITANT MULTIPLE MYELOMA AND WILD-TYPE TRANSTHYRETIN CARDIAC AMYLOIDOSIS

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Background: Cardiac amyloidosis (CA) is a rare but increasingly recognized cause of heart failure, thanks to greater clinical awareness and the development of standardized diagnostic algorithms. However, these improved diagnostic capabilities have also revealed more complex clinical scenarios, such as the unusual combination of multiple myeloma (MM) and transthyretin CA (ATTR-CA) described in this case report.

Case presentation: A 71-year-old male with a history of bilateral carpal tunnel syndrome and permanent atrial fibrillation presented with exertional dyspnoea (NYHA III functional class). He reported no family history of sudden cardiac death. His medications included apixaban 5 mg bid, irbesartan 150 mg bid, nebivolol 5 mg od, and digoxin 0.125 mg od. His blood pressure was 170/80 mmHg, and he exhibited no overt clinical signs of heart failure. The ECG showed atrial fibrillation with low voltages in the peripheral leads. NT-proBNP levels were significantly elevated (2100 ng/L). An echocardiogram revealed left ventricular hypertrophy (interventricular septum 15 mm, posterior wall 16 mm) with a preserved left ventricular ejection fraction (LVEF 60%) and elevated filling pressures (average E/E'11); longitudinal strain analysis showed an "apical sparing" pattern. CA was thus suspected and the diagnostic algorhythm was followed. Hematologic screening revealed monoclonal free light chains in the urine (kappa 110 mg/L, lambda 7.2 mg/L, kappa/lambda ratio 15), prompting a bone marrow biopsy which confirmed MM with 80% atypical plasma cells of the IgA/K type. In light of suspected AL amyloidosis, salivary gland biopsy was performed, which unexpectedly revealed TTR amyloid deposits instead. Given the strong clinical and echocardiographic suspicion of CA, a cardiac magnetic resonance imaging (MRI) was performed. The MRI confirmed myocardial involvement, showing left ventricular hypertrophy (interventricular septal thickness 14 mm), preserved LVEF, diffuse biventricular subendocardial late gadolinium enhancement, and increased values for both extracellular volume (43%) and T1 (1146 ms). To definitely confirm and define CA involment, an endomyocardial biopsy was performed, which also confirmed the presence of TTR amyloid deposits. Genetic testing was negative, leading to a diagnosis of wild-type ATTR-CA. The patient was initiated on disease-modifying therapy with tafamidis. Medical therapy was concurrently optimized with SGLT2 inhibitors, mineralcorticoid receptor antagonists and diuretics, leading to symptomatic improvement and a reduction in filling pressures. Simultaneously, chemotherapy for MM was started with a regimen of daratumumab, lenalidomide and dexamethasone.

At 1-year follow-up the patient remains stable and well.

Conclusion: This case highlights the diagnostic complexity of CA and underscores the crucial role of comprehensive evaluation, including organ targeted biopsy, in select cases. The coexistence of MM and ATTR-CA is rare but increasingly recognized; the diagnostic challenge arises from overlapping clinical features. Although non-invasive diagnostic tools have improved the identification and classification of CA, endomyocardial biopsy remains the gold standard for definitive diagnosis, prognostic stratification and targeted therapy in complex clinical scenarios.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 849
PERICARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
RIABILITAZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

INCIDENCE AND EVOLUTION OF PERICARDIAL EFFUSION AFTER CARDIAC SURGERY

Anna Picozzi (a), Gaia Cattadori (a, b), Silvia Di Marco (a), Claudio Anzà (a)
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Background. Pericardial effusion (PE) is a common finding after cardiac surgery. Although most cases resolve spontaneously, progression to cardiac tamponade (CT) is rare but potentially life-threatening. Data on incidence and evolution remain limited but are crucial, particularly in the Cardiac Rehabilitation (CR) setting.

Methods. We analysed 2662 patients (1775 men, 887 women; mean age 74±11 years) admitted to the Cardiac Rehabilitation Unit, Multimedica (Italy), between January 2022 and April 2024. Among them, 2152 patients (81%; 66% men; mean age 68±11 years) had undergone cardiac surgery. Anamnestic, clinical, laboratory, echocardiographic, and therapeutic data were collected.

Results. At first echocardiographic evaluation in CR (12±8 days after surgery), PE was detected in 382 patients (18% of the total post-cardiac surgery population; 74% men; mean age 65±12 years). 220 patients (58%) had mild PE, 146 (38%) moderate PE, and 16 (4%) severe PE. Pericardial effusion was already detected in early post-surgery phase in 54 patients (14%). A total of 374 PE patients (98%) showed favourable evolution with either reduction or complete resolution of PE and were discharged after an average of 21 days, comparable to patients without PE. Favourable outcomes were observed in 217 patients with mild PE (99%), 145 with moderate PE (99%), and 12 with severe PE (75%). CT developed in 8 patients (2% of the total PE population), requiring urgent transfer for management.

Conclusions. This study confirms the high incidence of PE after cardiac surgery, most often of mild or moderate severity, and demonstrates its almost consistently favourable evolution during CR.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 851
PERICARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
RIABILITAZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

MANAGEMENT AND TREATMENT OF PERICARDIAL EFFUSION AFTER CARDIAC SURGERY

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Background: Data on the optimal management of pericardial effusion (PE) after cardiac surgery remain limited, yet are crucial in the context of Cardiac Rehabilitation, being PE a common finding in this setting.

Methods: We analysed 2662 patients (1775 men, 887 women; mean age 74±11 years) admitted to the Cardiac Rehabilitation Unit, Multimedica (Italy), between January 2022 and April 2024, among which 2152 were post-cardiac surgery patients (66% men; mean age 68±11 years). Anamnestic, clinical, laboratory, echocardiographic, and therapeutic data were collected.

Results: PE was diagnosed in 382 patients (18% of surgical patients; 74% men; mean age 65±12 years): 220 (58%) mild, 146 (38%) moderate, and 16 (4%) severe. A total of 374 PE patients (98%) experienced favourable evolution (reduction or resolution of PE): 99% in mild, 99% in moderate and 75% in severe groups. Cardiac tamponade developed in 8 patients (2%), requiring urgent transfer. Of note, 87% of patients with severe PE or CT were on anticoagulant therapy. With regard to PE prevention, colchicine was prescribed in only 40 cases (10%). No PE-targeted therapy was initiated in 214 PE patients (57%), mainly those with mild (69%) or moderate (43%) effusion. Corticosteroids were administered to 107 PE patients (28%): 19% with mild PE (19%), 39% with moderate and 69% with severe PE. Twelve patients (3%) received combined corticosteroids and colchicine, while 32 (8%) were treated with non-steroidal anti-inflammatory drugs (NSAIDs). Therapy was shifted from NSAIDs to corticosteroids in 14 cases (4%).

Conclusions: Our findings confirm the favourable course of postoperative PE, whether treated with corticosteroids or NSAIDs, or managed conservatively, especially in mild and moderate cases. Anticoagulated patients require close monitoring. The use of colchicine for prevention, as recommended by guidelines, remains underutilized and should be reinforced.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 853
PERICARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
RIABILITAZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

INCIDENCE AND PREDICTIVE FACTORS OF CARDIAC TAMPONADE AFTER CARDIAC SURGERY

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Background: Pericardial effusion (PE), a frequent finding after cardiac surgery, resolves spontaneously in most cases but the rare progression to cardiac tamponade (CT) is an important clinical emergency. Data on the incidence and predictors of progression remain limited but are crucial to optimize clinical care and prioritize echocardiographic follow-up particularly in the Cardiac Rehabilitation setting.

Methods: We retrospectively evaluated 2,662 patients (1,775 men, 887 women; mean age 74 ± 11 years) admitted to the Cardiac Rehabilitation Unit, Multimedica (Italy), between January 2022 and April 2024. Anamnestic, clinical, laboratory, echocardiographic, and therapeutic data were collected.

Results: Of the total cohort, 2,152 patients (81%; 66% men; mean age 68 ± 11 years) had undergone cardiac surgery. PE was diagnosed in 382 patients (18% of surgical patients; 74% men; mean age 65 ± 12 years): 220 (58%) mild, 146 (38%) moderate, and 16 (4%) severe. CT developed in 8 patients (2% of total post-cardiac surgery population). Seven cases (88%) occurred after aortic surgery with sternotomy, all presenting with at least two postoperative complications, most frequently arrhythmias (88%; atrial fibrillation in 63%). All CT patients received anticoagulation therapy (3 alone and 3 combined with aspirin) except for 2 who were treated with aspirin plus enoxaparin at anti-thrombotic dosage. Three CT cases were detected at first echocardiographic control, three developed as a unfavourable evolution of a mild PE (without PE-targeted treatment), one occurred 10 days after a moderate PE treated with corticosteroids and one represented worsening of severe PE despite three days of combined corticosteroids plus colchicine therapy.

Conclusions: Progression of post cardiac surgery PE to CT is uncommon but potentially life-threatening. Aortic surgery with sternotomy, postoperative complications, especially arrhythmias and anticoagulation therapy may identify higher-risk patients, supporting closer monitoring and tailored preventive strategies.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 169
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)

WHEN TWO PATHS COLLIDE: WILD-TYPE TRANSTHYRETIN CARDIAC AMYLOIDOSIS COMPLICATING A DESMIN CARDIOMYOPATHY

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Background: The diagnosis of cardiomyopathy is often a complex process, particularly in patients presenting with a constellation of symptoms that do not align with a single disease entity. This case report details the unique clinical course of a patient with co-existing wild-type transthyretin cardiac amyloidosis (ATTR-CA) and a desmin-related cardiomyopathy, highlighting a rare overlap of an acquired disease of aging and a genetic, inherited disorder.

Case presentation: An 80-year-old man with arterial hypertension presented to Emergency Department with progressive exertional dyspnoea (NYHA III functional class). Family history revealed multiple cases of sudden cardiac death at a young age. He was on amlodipin 5 mg od and valsartan/hydrochlorothiazide 320/25 mg od. Blood pressure was 150/90 mmHg. On ECG monitoring frequent episodes of symptomatic 2:1 atrioventricular block were recorded. Echocardiography demonstrated increased wall thickness (interventricular septum: 14 mm), with preserved left ventricular ejection fraction (LVEF 55%), and severe left atrial dilation. A dual-chamber pacemaker was implanted. On follow-up, the patient required antihypertensive therapy reduction due to blood pressure lowering; also, NT-proBNP levels were high (2391 ng/L) with no signs of heart failure. Echocardiography showed cardiac hypertrophy with preserved LVEF and restrictive diastolic pattern. Although hypertensive heart disease might have been suspected at first, the presence of ambiguous red flags for infiltrative cardiomyopathy raised suspicion of cardiac amyloidosis. Haematological screening was negative, ruling out AL amyloidosis, while bone-tracer scintigraphy showed mild uptake (Perugini score 1). Nevertheless, considering the warning signs for an infiltrative cardiomyopathy, an endomyocardial biopsy was performed, ultimately revealing transthyretin deposits. To rule out hereditary ATTR-CA, a genetic testing was performed, which however identified a heterozygous DES (C4) variant. During follow-up, medical therapy was cautiously up-titrated with low-dose valsartan and SGLT2i, with symptomatic improvement and NT-proBNP levels reduction down to 486 ng/L. At 4-year follow-up the patient is alive with no heart failure hospitalizations.

Conclusions: This case report details a challenging diagnostic journey in an elderly patient with a constellation of symptoms and findings. It illustrates the complexity of hypertrophic phenotype cardiomyopathy with mixed etiology, combining desmin mutations and wtATTR-CA in an elderly patient and suggesting a multifactorial aetiology for the patient's condition, where pre-existing genetic predispositions to cardiomyopathy and conduction issues were compounded by the presence of wild-type ATTR amyloidosis. Careful integration of genetic testing, advanced imaging, and biopsy enabled accurate diagnosis. Whether ATTR-CA disease-modifying treatments may be useful in such cases deserves further studies.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 409
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
DEFIBRILLATORE IMPIANTABILE (ARITMIE)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)
ARITMIE VENTRICOLARI (ARITMIE)
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)

MASSIVE HYPERTROPHIC CARDIOMYOPATHY IN A YOUNG FEMALE PATIENT UNDERGOING SICD IMPLANTATION: A CASE REPORT

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(a) AZIENDA OSPEDALE-UNIVERSITA' DI PADOVA

Background: hypertrophic cardiomyopathy (HCM) is the most common genetic heart disease, characterized by a myocardial wall thickness ≥15 mm in any segment after exclusion of cardiac hypertrophy secondary forms. Sudden cardiac death (SCD) and heart failure are strongly related to the presence of an intraventricular dynamic gradient and the degree of hypertrophy. Beta-blockers and cardiac myosin inhibitor drugs, together with septal reduction therapy aim at reducing intraventricular gradient and managing symptoms yet showing uncertain benefit for SCD prevention. Hence, prophylactic Implantable Cardioverter Defibrillator (ICD) in high-risk patients should be considered; more specifically subcutaneous ICD (sICD) is a valuable tool in HCM young patients for reducing infections rates and valvular complications associated with electro-catheters.

Clinical case: we report the case of a 17-year-old Chinese woman, with no cardiovascular risk factors, presenting to the Emergency Room with exertional dyspnoea of mild intensity; physical examination revealed no signs of stasis and ubiquitous systolic ejection murmur 3/6. ECG showed sinus rhythm with negative T waves in V2 and aVL with widespread ST depression; laboratory results were normal except for increased hsTn-I (80.5 ng/L). Upon admission, transthoracic echocardiography showed severe hypertrophy of the interventricular septum (IVS; 44 mm), preserved left ventricular ejection fraction (LVEF;70%) with mid-ventricular (Mv) gradient (50 mmHg) not much changed after provocative manoeuvres, left ventricular outflow tract obstruction (LVOTO) of 23 mmHg reaching 39 mmHg after Valsalva, a dysfunctional and hypertrophic right ventricle (RV) and no valvular abnormalities. Cardiac magnetic resonance displayed a preserved LVEF (69%), marked asymmetric IVS hypertrophy (40 mm; F1) and Mv, LVOT and RVOT "signal void" with systolic apical obliteration, diaphragmatic RV hypertrophy (15 mm) with regional akinesis, increased T1-T2 signals in Mv septal portion and extended IVS and RV free wall intramural late gadolinium enhancement (LGE). Cardiopulmonary exercise test, yielding a marked cardiogenic reduction of functional capacity, and genetic testing, positive for MYBPC3 mutation, were performed.
Metoprolol and, as negative inotropic drug, Disopyramide were introduced with reduction of Mv and LVOT gradient. Given the HCM-SCD score (4,04), the LGE pattern on CMR and non-sustained ventricular tachycardia recordings on telemetry, sICD for primary prevention was indicated and implanted, correctly interrupting intra-procedure induced ventricular fibrillation despite the massive hypertrophy. At discharge, drug therapy was kept unchanged and cardiological screening for first degree relatives was strongly advised. Neither arrhythmias nor inappropriate shocks were detected during follow-up visit.

Discussion: This paradigmatic case highlights the relevance of multiparametric evaluation in newly diagnosed HCM patients and the early identification of high-risk features for malignant arrhythmias, particularly in young individuals. Identifying the best treatment is essential. The sICD representing now a valuable option, effective even in patients with severe hypertrophy, is associated with lower long-term complication rates and easier removability when required.

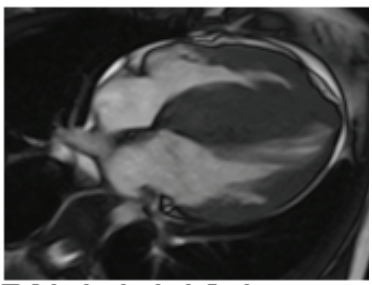


Figure 1

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 158
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
PROGNOSI (SCOMPENSO CARDIACO)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)
SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO)

HEART TRANSPLANTATION IN CARDIAC AMYLOIDOSIS

Federica Colio (a, b), Alessia Argirò (a, b), Manuel Garofalo (a, b), Paolo Milani (d, e), Giovanni Palladini (d, e), Pablo Garcia-pavia (f), Silvia Menale (j), Simone Longhi (g), Luciano Potena (i), Giulia Saturi (k), Alessio Aloisio (i), Aldostefano Porcari (l, m), Marianna Fontana (c), Alberto Cipriani (h), Ahmad Masri (n), Marcus Anthony Urey (o), Concetta Di Nora (p), Marco Merlo (l, m), Giuseppe Palmiero (q), Giuseppe Limongelli (q), Alessio Gasperetti (s), Fernando De Frutos (t), William Moody (u, v), Beatrice Musumeci (r), Giacomo Tini (r), Maurizio Pieroni (a, b), Federico Perfetto (a, b), Francesco Cappelli (a, b)

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Aims: To describe outcomes, complications, and post-transplant disease progression in a multicenter cohort of patients with transthyretin (ATTR) and light-chain (AL) cardiac amyloidosis undergoing HT, and to assess the use of disease-modifying therapies in this population.

Methods and Results: This is a retrospective multicenter study including 113 patients with cardiac amyloidosis (57 ATTR, 56 AL) who underwent heart transplantation (HT) across 13 centers in Europe, China, and the US. Patients with AL more often presented with NYHA class III/IV (65% vs. 36.5%, p=0.021), lower cardiac index,

and higher right atrial pressure compared to ATTR. Post-transplant infection and rejection rates were similar between AL and ATTR. New-onset neuropathy occurred in 11% of both groups, while neuropathy progression was more frequent in ATTR (23% vs. 7.1%; p=0.044). Median follow-up was 4.6 years in ATTR and 5.4 years in AL; 5-year survival was 77% in AL and 83% in ATTR. Sepsis was the leading cause of death in 11 (29%) of the cases. Among ATTR patients, 9 received tafamidis before HT, 7 after HT; 9 ATTRv patients received patisiran post-HT (1 pre-HT). Diflunisal was used in 3 ATTRv patients post-HT. In the AL group, 70% received bortezomib- and 18% daratumumab-based regimens.

Conclusions: Heart transplantation is a viable and effective treatment option for selected patients with cardiac amyloidosis. The use of disease-modifying therapies after HT in ATTR was limited, highlighting the need to standardize access and indications to prevent post-transplant disease progression.

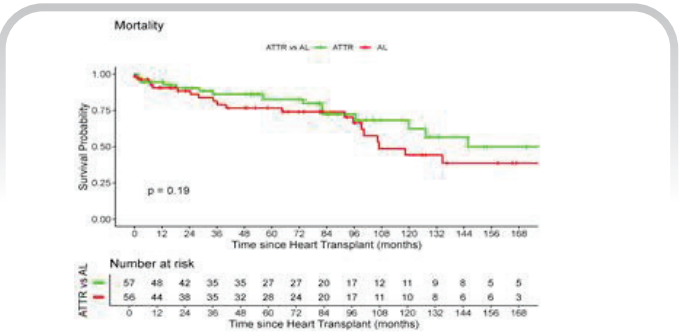


Figure 1. Unadjusted time to event analysis for post heart transplantation mortality.

Figure 1

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 957
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
IMAGING MIOCARDICO-PERICARDICO
(MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

EVOLVING EPIDEMIOLOGY OF CARDIOMYOPATHIES AT A NATIONAL REFERRAL CENTER: A 30-YEAR LONGITUDINAL STUDY

Federica Colio (a), Annamaria Del Franco (a), Alessia Argirò (a), Alessandra Fornaro (a), Laura Sasso (a), Carlotta Mazzoni (a), Gianmarco Carrassa (a), Mattia Targetti (a), Manuel Garofalo (a), Lorenzo Lupo Dei (a), Alessandra Milazzo (a), Giacomo Bonacchi (a), Maurizio Pieroni (a, b), Francesco Cappelli (a, b), Iacopo Olivotto (a, b, c)
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Background: Cardiomyopathies are a group of myocardial diseases with significant clinical and prognostic implications. The Cardiomyopathies Centre at Careggi University Hospital (Florence, Italy) has been serving as a referral hub for the diagnosis, management, and clinical research of these conditions for almost two decades. The aim of the study was to evaluate the evolving epidemiology and clinical burden associated with cardiomyopathies over time.

Methods: This single-centre, retrospective and longitudinal study included adult patients evaluated between 1995 and 2024 with a confirmed diagnosis of cardiomyopathy according to ESC/AHA guidelines. Demographic, clinical, genetic, and follow-up data were collected.

Results: Over 5,400 patients presented with various cardiomyopathy phenotypes, including hypertrophic (HCM), dilated (DCM), arrhythmogenic (ACM), and cardiac amyloidosis (CA), as well as Fabry disease and cardiac sarcoidosis. Over time, the number of patients followed at our center has increased, particularly for HCM and CA, with an approximately fivefold increase in the last 8 years (Figure 1). Two-thousand seven hundred and six patients with HCM (63% male) were evaluated, with median age at first evaluation of 63 years [IQR 51-74] and a median follow-up period of 5 [1-16] years. Of these, 1,066 underwent genetic testing. At the end of 2024, 394 patients had died. We followed 1,637 patients with DCM (70.5% male, median age 71 [58-82] years), with 229 deaths recorded and a median follow-up of 3.6 [1-9] years. The cohort also included 0.4% patients with secondary DCM and 0.5% with neuromuscular disorders with cardiac involvement. Among 808 with CA followed for a median follow-up of 1.5 [0.4-3] years, 611 patients were diagnosed as transthyretin-related CA (517 wild-type, 94 variant) and 197 as light-chain (AL) CA. ATTRwt patients were older (84 [79-87] years) and predominantly male (89%), while ATTRv patients were younger (77 [61 -82] years) with Ile88Leu as the most common pathogenetic variant. Two-hundred one deaths occurred in ATTR population (88% ATTRwt). Of 197 patients with AL CA (59% male, median age 72 [64–78] years), 126 had died over time. We evaluated also 127 with ACM (68% male, median

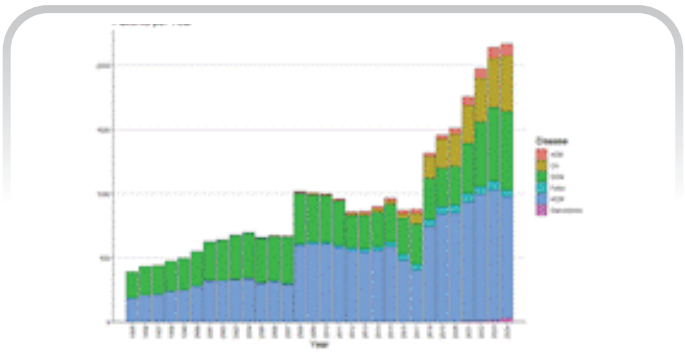


Figure 1

age 54 [40–64] years), with only one death in 2 [0-4] years, 130 patients with Fabry disease (71% female, median age 55 [43–66] years), with 12 deaths in 4 [0-7] years, and 37 with sarcoidosis (65% male, median age 60 [49–68] years), of whom 9 had cardiac involvement and none died in the last two years.

Conclusions: The global burden and diversity of patients with cardiomyopathy seen at referral centers has increased markedly over the last 3 decades, reflecting increased awareness, advances in diagnostic capability and including multimodality imaging and genetic testing, as well as the introduction of clinical trials testing novel precision approaches to conditions such as cardiac amyloidosis and hypertrophic cardiomyopathy.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 550
PERICARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
INFIAMMAZIONE E IMMUNITÀ (ATEROTROMBOSI)

HIGH RELAPSE RATES UNDER ANAKINRA IN GENETICALLY PREDISPOSED RECURRENT PERICARDITIS: INSIGHTS FROM A WES-BASED COHORT

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(c) AZIENDA SANITARIA FRIULI CENTRALE-ASUFC

Background: Knowledge on genetically determined recurrent pericarditis (RP) is limited. Emerging data suggest that autoinflammatory pathways and genetic variants may influence disease course and treatment response.

Aims: To assess the prevalence of genetic variants in RP and their impact on recurrence risk under IL-1 inhibition.

Methods: We conducted an observational cohort study of 131 adults with ≥3 RP episodes enrolled at the University Hospital of Udine (Italy, 2017–2021). Whole-exome sequencing (WES) identified inflammation/autoimmunity-associated variants. Patients resistant to NSAIDs, colchicine, and corticosteroids were treated with anakinra. The primary endpoint was time to first recurrence after anakinra initiation.

Results: 79 patients required Anakinra and 76 continued long-term treatment (median follow-up 30 months). Overall, 51.3% relapsed. Recurrence was more frequent in patients with genetic variants than in controls (80.0% vs. 41.1%, p=0.003) and occurred earlier (median 10 [5–16] vs. 21 [14–32] months, p=0.001). At 2-year Kaplan–Meier analysis, genetically positive patients showed a markedly higher relapse rate (p<0.001). Genetic predisposition independently predicted recurrence during anakinra (HR 4.07, 95% CI 2.09–7.91, p<0.001). Discontinuation of therapy was less frequent in the genetic group (p=0.044). Adverse events leading to discontinuation were rare (3.9%).

Conclusions: Genetic variants identify a high-risk subset with earlier and more frequent recurrences despite anakinra and lower discontinuation rates, suggesting a persistent inflammatory drive. Extended genetic testing should be considered in young patients with multiple recurrences and systemic inflammatory signs to refine risk stratification and guide personalized management.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 553
PERICARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
INFIAMMAZIONE E IMMUNITÀ (ATEROTROMBOSI)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)

TOCILIZUMAB: A NEW OPTION FOR REFRACTORY IDIOPATHIC RECURRENT PERICARDITIS. A CASE REPORT

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(a) UNIVERSITÀ DEGLI STUDI DI UDINE; (b) UNIVERSITÀ DEGLI STUDI DI TRIESTE; (c) AZIENDA SANITARIA UNIVERSITARIA FRIULI CENTRALE-ASUFC

Background: Recurrent pericarditis is the most common and troublesome complication of pericarditis and can be particularly challenging when it becomes refractory to conventional therapies, often resulting in a prolonged disease course. Interleukin-1 (IL-1) inhibitors have transformed the management of such cases; however, not all patients tolerate or respond adequately to these agents.

Case Summary: We present a 37-year-old man suffering from idiopathic recurrent pericarditis since the age of 25. After failure of standard therapies, he became corticosteroid-dependent, so treatment with anakinra (an IL-1 inhibitor) was attempted twice, but discontinued early due to allergic reactions. As the recurrences were always characterised by an overt inflammatory phenotype (characterised by fever, increased C-reactive protein and pericardial effusion), we administered off-label tocilizumab (an IL-6 receptor antagonist) as a last treatment option. The patient gained rapid benefit and was able to discontinue steroid therapy during the 6-month follow-up, achieving complete recovery from pericarditis.

Discussion: Interleukin-6 is a key cytokine in the pathogenesis of pericarditis, acting synergistically with IL-1 to drive inflammation and acute phase responses. In our patient, blockade of IL-6 with tocilizumab led to the complete resolution of inflammation, suggesting a possible new therapeutic option for refractory cases. This result highlights the potential of IL-6 inhibition as an alternative strategy, when IL-1 blockers are contraindicated or ineffective.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 94
MIOCARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
PROGNOSI (SCOMPENSO CARDIACO)

MIOCARDITE ASSOCIATA AD INFEZIONE DA PARVOVIRUS B19 IN ETÀ PEDIATRICA: PRESENTAZIONE CLINICA, TERAPIA E PROGNOSI

Giada Colombo (a), Giacomo Veronese (b, o), Francesca Raimondi (b), Giuseppe Alberto Annoni (c), Domenico Sirico (d), Francesco Bianco (e), Alessio Franceschini (f), Gessica Ingrasciotta (f), Giovanni Meliota (g), Guglielmo Capponi (h), Isabella Pelliccioli (b), Gaia Biancamaria Chiesa (b), Carlo Beretta (i), Giovanni Di Salvo (d), Sandra Nonini (a), Francesca Aresta (a), Luca Ragni (j), Gabriele Egidy Assenza (j), Olivia Leoni (k), Paul Stefan Vrabie (k), Michele Ercolanoni (k), Giuseppe Limongelli (l), Emanuele Monda (l), Maria Giovanna Russo (l), Alessandra Corato (m), Elena Reffo (d, m), Valentina Bucciarelli (e), Sergio Filippelli (e), Susanna Breviario (c), Carlo Pace Napoleone (c), Antonio Amedeo (f), Ugo Vairo (g), Maristella Lombardi (g), Nadia Assanta (h), Pietro Marchese (h), Andrea Garascia (a), Michele Giovanni Mondino (a), Rachele Adorisio (f), Ezio Bonanomi (b), Enrico Ammirati (a, n)

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Background: Il parvovirus B19 è un virus a DNA trasmesso per via respiratoria, responsabile dell'eritema infettivo in età pediatrica, ma anche associato alla miocardite acuta. Nel 2024 un aumento di infezioni da parvovirus B19 è stato registrato in Europa e negli Stati Uniti.

Nonostante il crescente interesse scientifico, le evidenze sulle caratteristiche cliniche e sugli outcomes nei bambini con miocardite acuta associata a parvovirus B19 restano limitate.

Metodi: Abbiamo condotto un'analisi retrospettiva su pazienti pediatrici (<18 anni) ricoverati per miocardite acuta in dieci centri cardiologici pediatrici italiani di terzo livello, tra il 1° gennaio 2022 e il 31 ottobre 2024. Di 216 casi consecutivi, 66 presentavano il DNA del parvovirus B19 nel plasma (PVB19+), mentre i 72 con test negativo costituivano il gruppo di confronto (PVB19–). Abbiamo inoltre analizzato il trend di incidenza della miocardite pediatrica nella popolazione della Regione Lombardia dal 2004 al 2024.

Risultati: Dei casi di miocardite acuta PVB19+, l'87,9% veniva ricoverato nel 2024. L'età mediana era di 32 mesi, con il 77,2% dei pazienti di età ≤7 anni, e il 54,5% di sesso maschile. La carica virale plasmatica mediana era di 34.411 copie/ml; la positività per IgM era presente nel 52,6% dei casi. Tra i 26 pazienti (39,4%) con dati istologici disponibili, l'88,4% presentava miocardite linfocitaria, e il DNA virale è stato rilevato nell'84,0% dei campioni miocardici. L'endpoint combinato di morte, trapianto cardiaco o impianto di dispositivo di assistenza ventricolare sinistra a lungo termine (LVAD) si è verificato nel 18,2% dei casi PVB19+, rispetto all'1,4% nei casi PVB19− ($p<0,001$). Un netto incremento dell'incidenza di casi di miocardite acuta pediatrica è stato osservato a livello regionale e istituzionale nel 2024, prevalentemente nei pazienti ≤7 anni e correlato ad infezione da PVB19.

Conclusioni: Durante l'epidemia di parvovirus B19 del 2024, in Italia si è registrato un incremento significativo dei casi di miocardite acuta pediatrica PVB19+, associati a prognosi sfavorevole. Il sospetto clinico è essenziale per arrivare alla corretta diagnosi ed un precoce test virologico mirato è fondamentale per guidare le decisioni terapeutiche e migliorare gli outcomes legati a questa patologia.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 498
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)
INFIAMMAZIONE E IMMUNITÀ (ATEROTROMBOSI)
ENDOCARDITI (VALVULOPATIE)

A RARE CASE OF HFPEF: LOEFFLER ENDOCARDITIS IN EGPA WITH SISTEMIC INVOLVEMENT

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Case Report: A 61-year-old woman presented to the emergency department with dyspnea and chest pain radiating to the back at rest. Labs showed creatinine 1.76 mg/dL, stable hsTnT elevation (264→256 pg/mL), NT-proBNP 19,090 pg/mL, and D-dimer 1,969 ng/mL. ECG revealed sinus rhythm with diffuse inferolateral ST-segment depression. Echocardiography demonstrated preserved LV function (LVEF 65%), increased wall thickness with apical kissing, borderline RV function, pulmonary hypertension, and diastolic dysfunction with elevated filling pressures.

Her history included chronic kidney disease, asthma with nasal polyposis, eosinophilia, and prior mastectomy for in situ ductal carcinoma. Immunology had suggested interstitial nephropathy with possible IgG4 involvement. Given asthma, eosinophilia, and nasal polyposis, she fulfilled criteria for eosinophilic granulomatosis with polyangiitis (EGPA).

Work-up included CT angiogram excluding pulmonary embolism, but showing mosaic attenuation. Labs confirmed eosinophilia (2,170 × 10^9/L, 30%) and high ECP (216 µg/L), with further NT-proBNP increase (22,535 pg/mL). Urinalysis showed microscopic hematuria without proteinuria. Right heart catheterization demonstrated postcapillary pulmonary hypertension (CWP 27 mmHg). Brain MRI revealed multiple T2 hyperintense lesions, consistent with multifocal vasculitis.

Cardiac magnetic resonance revealed diffuse endocardial LGE and extensive thrombotic layering along the LV endocardium and mitral valve, consistent with Loeffler endocarditis. Hospitalization was complicated by acute pulmonary edema, restrictive diastolic filling, acute-on-chronic kidney injury (peak creatinine 4.37 mg/dL), and urinary sepsis.

Wi the agreement of our immunologist colleagues, immunosuppression with methylprednisolone (1 g/day ×3), oral prednisone, and cyclophosphamide pulses was started, alongside warfarin. Given the highly suggestive biochemical and imaging findings, as well as the high bleeding risk due to the endomyocardial thrombus, we decided to forgo the cardiac biopsy, which remains the gold standard of the diagnosis of Loeffler endocarditis.

Despite complications, the patient improved clinically, with stable creatinine (3.5 mg/dL) and reduced NT-proBNP at discharge. At a monthly follow-up, she remained hemodynamically compensated. Echocardiography showed reduced LV wall thickness (IVS 9 mm, PW 8 mm), preserved systolic function, persistent restrictive diastolic pattern, and a progressive GLS improvement (from -10% to -20% at six months).

Conclusion: EGPA is a rare vasculitis with high cardiac morbidity and mortality. Cardiac involvement, including Loeffler endocarditis, may present with preserved systolic function but severe diastolic dysfunction and thrombotic complications. When biopsy is not feasible, echocardiografy and CMR are crucial for diagnosis and treatment guidance, providing an accurate tissue characterization. This case highlights the importance of early cardiological assessment, diastolic function and GLS analysis, and a multidisciplinary approach in the management of EGPA with cardiac and renal involvement

CardioSic

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 488
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MIOCARDICO-PERICARDICO
(MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
BIOMARCATORI DELLO SCOMPENSO (SCOMPENSO CARDIACO)

DIAGNOSTIC AND PROGNOSTIC IMPLICATIONS OF HIGH SENSITIVITY CARDIAC TROPONIN I IN ANDERSON-FABRY DISEASE

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Background: Anderson-Fabry disease (AFD) is a rare X-linked lysosomal disorder due to GLA gene mutations, causing deficient α-galactosidase A activity and accumulation of globotriaosylceramide in multiple organs. Cardiac involvement significantly affects morbidity and mortality. Early detection through multiparametric assessment, including ECG, echocardiography, cardiac magnetic resonance (CMR) and biomarkers, is crucial. This study aimed to evaluate the diagnostic performance of cardiac biomarkers, particularly high-sensitivity troponin I (hs-cTnI), for detecting cardiac involvement and to characterize the association between hs-cTnI levels and the extent of cardiac involvement.

Materials and methods: Retrospective observational study including patients with genetically confirmed AFD. Cardiological assessment included echocardiography, ECG and CMR, when available. Biomarkers (Lyso-Gb3, hs-cTnI, NT-proBNP) were collected. Outcomes considered during follow-up were adverse cardiac events, including heart failure (HF), arrhythmias and mortality.

Results: A total of 64 AFD patients were included (31% male, median age 48), most diagnosed through familial screening (n= 40, 63%). At first evaluation in our Center, n= 29 (45%) were asymptomatic, while n=24 (38%) showed predominant cardiac involvement. At echocardiography, median interventricular septum (IVS) thickness was 9 mm (8-14) mm, left ventricular ejection fraction (LVEF) was 63% (60-66). Among patients with CMR performed in our Center, 10/25 (40%) showed reduced native T1 and 12/24 (50%) had pathological late gadolinium enhancement (LGE). Median hs-cTnI, available in 60 patients at first evaluation, was 2.4 (1.9-31) ng/L. To identify cardiac involvement based on previously published echocardiographic criteria, hs-cTnI < limit of detection (LoD) showed 92% sensitivity (CI: 74–99%), 80% specificity (CI: 63–92%), 93% negative predictive value (NPV, CI: 80–99%), 77% positive predictive value (PPV, CI: 58–90%), and 85% accuracy (CI: 73–93%). At the 99th percentile sex-specific upper reference limit (99th%URLs), specificity and PPV improved (97% and 94%, respectively), but sensitivity and NPV decreased (64% and 79%). When defining cardiac involvement based on all available characteristics (including CMR and biopsy data), the diagnostic performance of hs-cTnI improved. Echocardiographic parameters worsened progressively across increasing hs-cTnI levels, even with hs-cTnI values below the sex-specific 99th% URLs. Over a median follow-up of 63 months between diagnosis date and last evaluation, n= 10 (16%) reached a composite

cardiovascular endpoint, with significantly lower event-free survival in patients with hs-cTnI ≥ LoD (p = 0.021) and ≥ 99th%URLs (p = 0.04).

Conclusions: In this single-center cohort, hs-cTnI proved valuable as a diagnostic biomarker to identify cardiac involvement: levels below the LoD reliably excluded cardiac involvement, while values above the 99th percentile confirmed disease with high specificity/PPV. Progressively increasing hs-cTnI values, even below the sex-specific 99th% URLs and therefore in the absence of overt myocardial injury, were associated with worsening structural and functional echocardiographic abnormalities.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 749
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)

REDUCTION OF CARDIAC UPTAKE AT BONE SCINTIGRAPHY AFTER TAFAMIDIS: A MEANINGFUL FINDING?

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Clinical case. Male patient, 77 years old, with a history of systemic hypertension and hypercholesterolemia under treatment, previous tobacco abuse. Previous history of bilateral carpal tunnel syndrome surgically treated 5-6 years prior to our first clinical evaluation. Surgical history comprises left shoulder surgery (likely enthesopathy), and radical prostatectomy for prostate cancer in May 2022. During preoperative workup (February 2022), he underwent a whole-body bone scintigraphy with bone-avid tracer (HMDP) that revealed moderate/relevant tracer uptake at the cardiac level (Perugini score 2–3). Complete hematological tests excluded the presence of a monoclonal component. In April 2022, he was evaluated in our Amyloidosis Outpatient Clinic. At echocardiography, biventricular pseudohypertrophy was present with preserved systolic function; signs of increased filling pressures were present. Genetic testing was negative for transthyretin (TTR) mutations. Wild-type transthyretin amyloid cardiomyopathy (ATTRwt-CM) was diagnosed, National Amyloidosis Center (NAC) stage 1a (NTproBNP 294 ng/L, eGFR 65 ml/min/m^2, diuretic equivalent dose <0.75 mg/kg), NYHA class I-II. Tafamidis was initiated thereafter. TTR level, before tafamidis treatment, was 291 mg/L. During the next three years, no heart failure hospitalizations occurred. The patient remained clinically stable, with biomarker fluctuations within the expected analytical variability and without the need to increase diuretic therapy with furosemide. TTR values progressively increased, reaching 375 mg/L in September 2025. Echocardiographic parameters remained stable. Given the remarkable clinical stability, we decided to repeat bone tracer scintigraphy (HMDP), performed at the same nuclear medicine laboratory, which showed a marked reduction of uptake (Perugini 1, Figure). Findings were confirmed with SPECT imaging. Cardiac magnetic resonance (CMR) has been ordered for this patient.

Discussion and conclusions. Few studies have described reduction in bone scintigraphy uptake after tafamidis treatment; however, pathophysiological basis—whether linked to reduced deposition, partial resorption of amyloid, or variability related to other reasons—remains uncertain. Recently, imaging dissociation between reduction in bone scintigraphy cardiac uptake and stable or increased amyloid load at cardiac magnetic resonance has been reported. Further longitudinal studies are required to clarify the pathophysiological and prognostic implications of changes in cardiac uptake at bone scintigraphy.

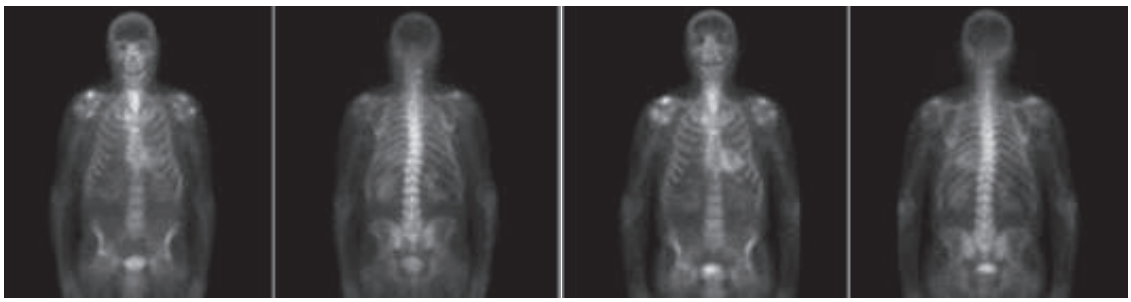


Figure. Change in cardiac uptake at HMDP bone scintigraphy before (A) and after (B) three years of tafamidis treatment.

Figure

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 1045
CARDIOLOGIA PEDIATRICA (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
FUNZIONE VENTRICOLARE, RIMODELLAMENTO E DANNO D'ORGANO (IPERTENSIONE ARTERIOSA)

LEFT VENTRICULAR TWIST AS AN EARLY MARKER OF CARDIAC INVOLVEMENT IN FABRY DISEASE:INSIGHTS FROM A SINGLE -CENTER STUDY INCLUDING ADULT AND PEDIATRIC PATIENTS ASSESSED BY ECHOCARDIOGRAPHY AND CARDIAC MRI

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Background: Fabry disease (FD) is an X-linked lysosomal storage disorder caused by α-galactosidase A deficiency, resulting in myocardial glycosphingolipid accumulation and progressive development of left ventricular hypertrophy (LVH), fibrosis, and arrhythmias. Early recognition of cardiac involvement is essential to initiate timely therapy and improve prognosis. In this context, plasma biomarkers and advanced echocardiographic techniques may allow detection of subclinical dysfunction not captured by conventional methods.
Objectives: To describe a single-center experience evaluating echocardiographic, cardiac magnetic resonance (CMR), and laboratory parameters in adult and pediatric patients with FD, with a focus on identifying early markers of cardiac involvement.

Methods: We prospectively enrolled 26 patients with genetically confirmed FD (mean age 33 ± 17 years; 50% male) and compared them with age- and sex-matched healthy controls. All subjects underwent comprehensive clinical evaluation, including cardiovascular risk profiling, laboratory testing, and both conventional and advanced echocardiography. Speckle-tracking echocardiography was used to measure global longitudinal strain (GLS) and left ventricular (LV) torsion, defined as the difference between apical and basal peak systolic rotation. Eight patients with echocardiographic LVH also underwent CMR for assessment of LV mass, volumes, native T1 mapping, and late gadolinium enhancement (LGE).

Results: Left ventricular ejection fraction (LVEF) was preserved in all FD patients (mean 62 ± 4%). LVH was detected in 15% of cases; these patients were significantly older (53.5 vs 25.0 years; $p = 0.008$) and had higher CK-MB levels (211 vs 98.5 U/L; $p = 0.033$). LV torsion was significantly reduced in FD patients compared with controls (6 ± 3° vs 13 ± 5°; $p < 0.001$), with the lowest values observed in those with LVH ($p = 0.013$). Importantly, even FD patients without LVH exhibited reduced torsion compared with controls (7 ± 3° vs 13 ± 5°; $p = 0.005$), despite preserved LVEF, indicating early subclinical dysfunction. NT-proBNP correlated inversely with peak endocardial twist ($\rho = -0.879$; $p = 0.0018$). CK-MB correlated positively with interventricular septal thickness (IVSd) ($\rho = 0.499$; $p = 0.041$) and ferritin levels ($\rho = 0.486$; $p = 0.022$), suggesting links between myocardial injury, remodeling, and storage pathology.

Among the 8 patients who underwent CMR, all showed increased LV mass (mean 95 ± 18 g/m²) and concentric remodeling. None had LGE, while 4 demonstrated elevated native T1 values, associated with the lowest torsion values, consistent with early myocardial involvement.

Conclusions: LV torsion emerges as a sensitive marker of early cardiac dysfunction in FD, being impaired even in the absence of LVH and with preserved LVEF. Correlations with NT-proBNP, CK-MB, septal thickness, and ferritin underscore the potential role of plasma biomarkers in detecting subclinical myocardial involvement. Together, these findings support the integration of advanced echocardiography and biomarker profiling for early diagnosis, risk stratification, and longitudinal monitoring in FD.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 551
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
TROMBOSI E COAGULAZIONE (ATEROTROMBOSI)

REAL-WORD EXPERIENCE OF DIRECT ORAL ANTICOAGULANT USE IN ANDERSON-FABRY DISEASE

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Background. Anderson-Fabry disease (AFD) is characterized by an increased prevalence of ischemic cerebral events, either related to cerebral small-vessel disease or cardioembolic events in case of cardiac involvement. Cerebral microbleeds are also common in AFD patients, making challenging the prevention of ischemic recurrencies. Direct oral anticoagulants (DOACs) may offer a safer profile compared to vitamin K antagonists (VKAs) in terms of bleeding risk and drug-induced nephropathy, but safety and efficacy indications on their use are lacking in AFD setting.

Methods. 304 AFD patients (median age 45 [32-56], 44% male, 52% classic, 13.7% renal involvement) from 4 centres were evaluated. Clinical and instrumental assessment at baseline, including data on anticoagulant therapy were collected. Major clinical events (including cerebral ischemic events and significant bleedings) were evaluated over a median follow-up of 5.4 years [2.9-8.1].

Results. Nineteen patients (6.3%) reported a history of stroke or arterial thromboembolic event at baseline. Of the patients, 171 (56.2%) were not receiving AFD-specific treatment due to lack of organ damage, 114 (37.5%) were on enzyme replacement therapy, and 19 (6.3%) on chaperone therapy. Nineteen patients received anticoagulant treatment, 10 (3.3%) with DOACs and 9 (3.0%) with VKAs. Indications for anticoagulants were atrial fibrillation (18, 94.7%) and deep vein thrombosis (1, 5.3%). During follow-up, 15 patients (4.9%) experienced a cerebral ischemic event with an incidence rate of 0.9% patient-years. Their baseline CHA2D2-VA scores were 0 (4 patients), 1 (5 patients), 2 (2 patients), 3 (2 patients) and 4 (2 patients). Four patients experienced a cerebral ischemic event while on anticoagulation: 1 (0.6% patient-years) on DOAC and 3 (1.8% patient-years) on VKA. Two patients experienced a severe bleeding event while on anticoagulation, both on VKAs (1.2% patient-years).

Conclusion. Real-world data from a large multicenter Italian AFD cohort suggest safety and efficacy of DOACs in AFD. CHA2D2-VA score does not predict the risk of cerebral ischemic events in AFD. The low incidence of stroke reported in our cohort may be related to AFD-specific and antithrombotic therapies, as well as the effect of a low disease burden.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 563
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
ASPETTI GENETICI DELLE ARITMIE (ARITMIE)

IMPACT OF VARIANT RECLASSIFICATION ON GENETIC TESTING YIELD AND CLINICAL OUTLOOK IN PATIENTS WITH HYPERTROPHIC CARDIOMYOPATHY

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Background. Periodic reinterpretation of variants associated with hypertrophic cardiomyopathy (HCM) is recommended in the light of evolving knowledge, but it requires considerable resources, and its clinical impact is unresolved. We here report the results of a systematic variant reclassification of HCM-associated variants identified at a national referral center, and the impact on clinical profiling.

Methods. A total of 805 consecutive probands with a definite HCM diagnosis genotyped in 1998-2023 (overall 268 variants: 158 pathogenic/likely pathogenic -P/LP-, 102 variants of uncertain significance -VUS-, and 8 benign/likely benign – B/LB) underwent variant reclassification. All were analyzed for all-cause death, ventricular arrhythmia composite (sudden death, cardiac arrest, appropriate implantable cardioverter-defibrillator therapy), atrial fibrillation or cerebrovascular events, heart failure composite (NYHA class III/IV, left ventricular ejection fraction <35%, cardiac transplantation).

Results. After a median follow-up of 8.8 [6.1-11.8] years, 62 of 268 variants (23.1%) were reclassified in 69 patients: 29 from P/LP to VUS or B/LB, 22 from VUS or B/LB to P/LP, 11 from VUS to B/LB and 4 vice versa. The overall yield of genetic testing (% with P/LP) changed from 58.7 to 55.4%. At survival analysis, HRs associated with P/LP status improved after reclassification for both all-cause death and ventricular arrhythmia. No changes were observed for the other outcomes.

Conclusion. Systematic reclassification of genetic variants led to a reduction in testing yield due to downgrading of 5.7% of P/LP variants, although 18.2 %VUS/B/LB were upgraded to P/LP. Reclassification more accurately identified risks associated with P/LP status, compared to the initial adjudication.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 912
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
PROGNOSI (SCOMPENSO CARDIACO)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)

INTEGRATING H2FPEF AND HCM RISK-SCD SCORES FOR EARLY RISK ASSESSMENT IN HYPERTROPHIC CARDIOMYOPATHY

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Background. The H2FPEF and HCM Risk-sudden cardiac death (SCD) scores predict heart failure (HF) with preserved ejection fraction or fatal arrhythmias in hypertrophic cardiomyopathy (HCM). This study aimed to explore whether combining these scores enhances risk stratification for adverse cardiovascular events in HCM patients.

Methods. In this retrospective longitudinal study, we enrolled 603 consecutive HCM patients with available baseline data to calculate H2FPEF and HCM Risk-SCD scores. Patients were divided into 4 groups based on low or moderate-high values of each score. Endpoints included all-cause mortality, a HF composite endpoint (NYHA class worsening, diuretic initiation or hospitalization), and the occurrence of systolic dysfunction (left ventricular ejection fraction < 50%).

Results. The median age was 52 [39-62] years; 63.0% were male, 53.2% had a positive genotype, and 38.8% showed obstructive form at rest. Among 488 patients with a low HCM Risk-SCD, those with a low H2FPEF score (n=254, group A) were mostly male, had more positive genotypes, fewer obstructive forms, symptoms and comorbidities than those with moderate-high H2FPEF (n=234, group B). Over 6.5 [3-10] years, group A had significantly lower rates of all-cause mortality (4.7% vs 12.0%, p=0.006), HF composite (4.3% vs 34.6%, p<0.001), and progression to overt dysfunction (1.9% vs 9.9%, p=0.002 when compared with group B. The combined score more accurately predicted clinical phenotype worsening at 5 years (AUC=0.89) than H2FPEF (0.81) or HCM Risk-SCD (0.77), p<0.05, but did not improve HF composite prediction (AUC=0.71 vs 0.69 of H2FPEF alone, p=0.551).

Conclusion. Incorporating the H2FPEF score into the risk assessment of patients with a low risk of SCD improves the stratification of HF events and progression towards overt dysfunction stage, supporting the utilization of both scores in clinical practice. The identification of HCM patients at low SCD but high HF risk, may guide treatment and follow-up strategies, including early adoption of HF treatments, while identifying a new phenotypic subgroup for future clinical trials.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 718
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)

MAVACAMTEN IN HCM: A CASE REPORT FROM THE REAL WORLD

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Hypertrophic cardiomyopathy (HCM) is a genetic myocardial disorder characterized by left ventricular hypertrophy in the absence of abnormal loading conditions. It is the leading cause of sudden cardiac death in young individuals. The echocardiography and cardiovascular magnetic resonance imaging are the corn- storner in the diagnosis. Conventional therapies, including beta-blockers, disopyramide, and calcium channel blockers, are useful in the management of symptoms but do not alter disease progression. Recently, mavacamten, a first-in-class cardiac myosin inhibitor, has emerged as a promising therapeutic option, although real-world evidence remains limited.

We present the case of a 62-year-old Caucasian man, ex-smoker and non-diabetic. His past medical history included arterial hypertension, chronic kidney disease, and dyslipidemia. He had a long-standing history of HCM diagnosed the first time in 2011, the transthoracic echocardiography (TTE) executed before showed severe hypertrophic cardiomyopathy with significant left ventricular outflow tract and moderate mitral regurgitation secondary to systolic anterior motion of mitral valve (SAM). The patient had been treated with nadolol and disopyramide for over a decade, along with diuretics for mitral regurgitation and antihypertensive therapy with an angiotensin receptor blocker. He was admitted following a syncopal episode despite optimal medical therapy. Electrocardiogram (EKG) showed ST-segment elevation in anterior leads with signs of left ventricular overload. TTE performed in our hospital, revealed asymmetric septal hypertrophy, a significant left ventricular outflow tract (LVOT) with maximum gradient at rest of 115 mmHg, and moderate mitral regurgitation due to SAM, confirmed by cardiac MRI. Genetic testing was performed for familial screening and showed the following variant of uncertain significant c. 1419_1421 del (p-Arg475del) in the NEXN(NM_144573.3) gene. Given persistent symptoms and elevated LVOT obstruction despite maximal therapy, diuretics were discontinued, intravenous hydration was administered, and mavacamten therapy was initiated, starting dose was 10 mg and up-titled to 15 mg. The clinical follow-up performed at two weeks, demonstrated significant hemodynamic and clinical improvement, EKG showed improvement in the ST-T segment.

At follow-up TTE left ventricular ejection fraction decreased from 73% to 65% while remaining normal. The peak LVOT gradient at rest declined from 115 mmHg to 50 mmHg. SAM resolved by week 8, and mitral regurgitation improved. The patient reported marked symptomatic improvement, including enhanced exercise tolerance and no further syncopal episodes. Therapy was well tolerated, with no adverse effects.

The HCM risk score was 2.1%. The 24-hour Holter monitoring confirmed no significant arrhythmias. An implantable loop recorder was placed for long-term rhythm surveillance.

This case highlights the potential benefits of mavacamten in obstructive HCM refractory to standard therapy. The drug provided rapid symptomatic improvement and reduced LVOT obstruction

without significant compromising systolic function. Our experience aligns with recent clinical trials and underscores the importance of echocardiographic monitoring, comprehensive risk stratification, and family screening. Mavacamten represents a valuable addition to the therapeutic armamentarium, although long-term outcomes require further investigation.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 780
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MIOCARDICO-PERICARDICO
(MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
PERICARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

CARDIOMIOPATIA IPERTROFICA NON OSTRUTTIVA CON ESORDIO GIOVANILE E PERICARDITI RICORRENTI: UN ENIGMA DIAGNOSTICO

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Background: La cardiomiopatia ipertrofica è una patologia estremamente eterogenea. Sebbene siano note diverse mutazioni sarcomeriche e non sarcomeriche associate alla patologia, diversi casi rimangono senza una diagnosi eziologia definita. Questo assume un peso clinico in particolare quando si tratta di persone giovani.

Riassunto del caso: Presentiamo il caso di una donna di 23 anni, senza familiarità per cardiomiopatia o morte improvvisa cardiaca giovanile, giunta presso il nostro ambulatorio con una diagnosi di cardiomiopatia ipertrofica ostruttiva. All'età di 13 anni durante accertamenti effettuati per dispnea da sforzo, veniva riscontrato un significativo versamento pericardico (5 cm), sottoposto a pericardiocentesi. Veniva avviata terapia con colchicina, corticosteroidi e antinfiammatori non steroidei. Agli esami ematici riscontro di positività degli anticorpi antinucleo (ANA: 1:320). Dopo circa un anno recidiva di versamento, non sintomatico. Dall'età di 15 anni ai controlli ecocardiografici progressivo incremento dello spessore parietale del ventricolo sinistro. All'età di 18 anni effettuava una risonanza magnetica cardiaca (CMR) che documentava ipertrofia asimmetrica non ostruttiva (setto 14 mm) con LGE intramurale lineare nel setto e nelle pareti anteriore e inferiore. Veniva sottoposta a biopsia endomiocardica che mostrava lieve fibrosi interstiziale aspecifica, senza necrosi né infiltrati. Seguita negli anni, l'ecocardiogramma più recente mostrava uno spessore massimo di 27 mm. Ripeteva una nuova CMR che confermava le dimensioni del setto interventricolare e documentava late gadolinium enhancement esteso (≈20% della massa). Considerato il rischio aritmico, veniva proposto impianto di defibrillatore automatico impiantabile in prevenzione primaria ma la paziente rifiutava. E' stata effettuata analisi genetica mediante studio dell'esoma, che ha identificato quattro varianti di significato incerto (classe 3): NOD2 c.3019dupC e PLCG2 c.3343C>T (paterne), VLC c.2273G>A e FLNA c.2999G>T (materne); entrambi i genitori sono stati sottoposti a screening cardiologico negativo.

Conclusioni: Il caso è interessante in quanto descrive una cardiomiopatia ipertrofica non ostruttiva, massiva, con estesa fibrosi, in una giovane donna, la cui diagnosi eziologica non è stata trovata, nonostante approccio multidisciplinare e contemporaneo (biopsia, risonanza magnetica cardiaca ed esame genetico mediante studio dell'esoma). Ancora molto deve essere fatto per giungere ad una comprensione più completa della cardiomiopatia ipertrofica.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 1053
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)
PROGNOSI (SCOMPENSO CARDIACO)

TRAIETTORIE A LUNGO TERMINE DEL RIMODELLAMENTO ATRIALE SINISTRO E IL LORO IMPATTO PROGNOSTICO NELLA CARDIOMIOPATIA IPERTROFICA

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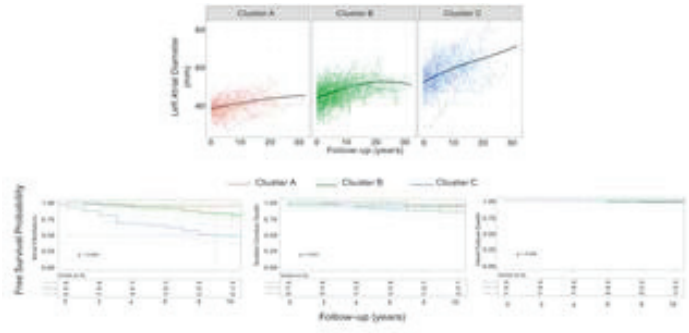
Background. La cardiomiopatia ipertrofica (HCM) è tradizionalmente definita dall'ipertrofia ventricolare sinistra, ma crescenti evidenze sottolineano il ruolo centrale del rimodellamento atriale sinistro (LA) nella progressione della malattia. Le misurazioni statiche dell'atrio sinistro si sono affermate come marker di rischio, ma non riescono a cogliere le modifiche dinamiche che avvengono nel tempo.

Obiettivo. Questo studio mirava a caratterizzare le traiettorie a lungo termine delle dimensioni dell'atrio sinistro nei pazienti con HCM e a valutarne il ruolo prognostico nella predizione di eventi cardiovascolari avversi, in particolare fibrillazione atriale (FA), morte cardiaca improvvisa (SCD) e morte per scompenso cardiaco.

Metodi. La popolazione in studio era composta da 210 pazienti con HCM (36% donne, età 45±17 anni) seguiti per un periodo di 35 anni. È stato applicato il group-based trajectory modelling per identificare distinti pattern longitudinali di rimodellamento atriale sinistro. La comparsa di FA, SCD o un endpoint composito di trapianto cardiaco/morte per scompenso rappresentavano gli endpoint indipendenti. Analisi di regressione di Cox hanno valutato l'associazione tra queste traiettorie e gli outcome clinici, confrontandone la capacità predittiva con le misurazioni statiche basali dell'atrio sinistro.

Risultati. Sono state identificate tre distinte traiettorie di rimodellamento atriale sinistro, aggiustate per età e sesso (Figura 1, pannello superiore). Le caratteristiche basali dei pazienti, stratificate per cluster di traiettoria, sono riportate nella Tabella 1. I pazienti nei gruppi con rimodellamento moderato (Cluster B) e severo (Cluster C) mostravano una probabilità significativamente più alta di sviluppare FA (log-rank $p < 0,001$) rispetto al gruppo stabile (Figura 1, pannello inferiore sinistro). La traiettoria di rimodellamento severo era inoltre associata a una maggiore probabilità di SCD (log-rank $p = 0,031$) e morte per scompenso (log-rank $p = 0,028$) (Figura 1, pannelli inferiore centrale e destro). I cluster di traiettorie hanno inoltre superato le dimensioni statiche dell'atrio sinistro al baseline nella predizione del rischio di FA (rispettivamente Cluster C aHR 9,30 vs 5,03 e Cluster B aHR 2,79 vs 2,55) ed è stata in grado di predire significativamente la SCD (Cluster C aHR 3,61), mentre le dimensioni al baseline dell'atrio sinistro non erano più in grado di predire la SCD, evidenziando il superiore valore prognostico del pattern longitudinale.

Conclusioni. Le traiettorie di rimodellamento atriale sinistro forniscono una valutazione dinamica e solida del rischio nei pazienti con HCM, offrendo una capacità prognostica superiore rispetto alle sole misurazioni basali. L'integrazione dei dati longitudinali dell'atrio sinistro nella pratica clinica potrebbe migliorare la stratificazione del rischio e guidare strategie gestionali più personalizzate.



Variable	Cluster A N = 50 (24%)	Cluster B N = 98 (47%)	Cluster C N = 62 (30%)	p-value
Age (years)	40±16	43±16	40±17	0.484
Sex				0.112
Female	10 (20%)	34 (35%)	23 (37%)	
Male	40 (80%)	64 (65%)	39 (63%)	
LV maximal wall thickness (mm)	**19±6**	**21±5**	**23±6**	**0.007**
LV outflow gradient at rest (mmHg)	**9±15**	**17±20**	**36±33**	**<0.001**
Body mass index (kg/m²)	1.81±0.18	1.83±0.19	1.96±0.86	0.380
Family history sudden death	16 (32%)	37 (38%)	25 (40%)	0.654
Family History HCM	32 (64%)	68 (69%)	40 (65%)	0.735
Genetic analysis	27/50	45/90	33/62	
Sarcomeric mutation	16 (59%)	33 (73%)	27 (82%)	0.148
NYHA > 1	**7 (14%)**	**42 (43%)**	**29 (48%)**	**<0.001**

Figure

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 1070
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
GESTIONE DELLA COMPLICANZE PM / ICD (ARITMIE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
DEFIBRILLATORE IMPIANTABILE (ARITMIE)

OLTRE L'ECG: UNA REVISIONE SISTEMATICA E METANALISI SULLA RILEVANZA DELLA FIBRILLAZIONE ATRIALE SUBCLINICA NEI PAZIENTI CON CARDIOMIOPATIA IPERTROFICA ED AMILOIDOSI CARDIACA

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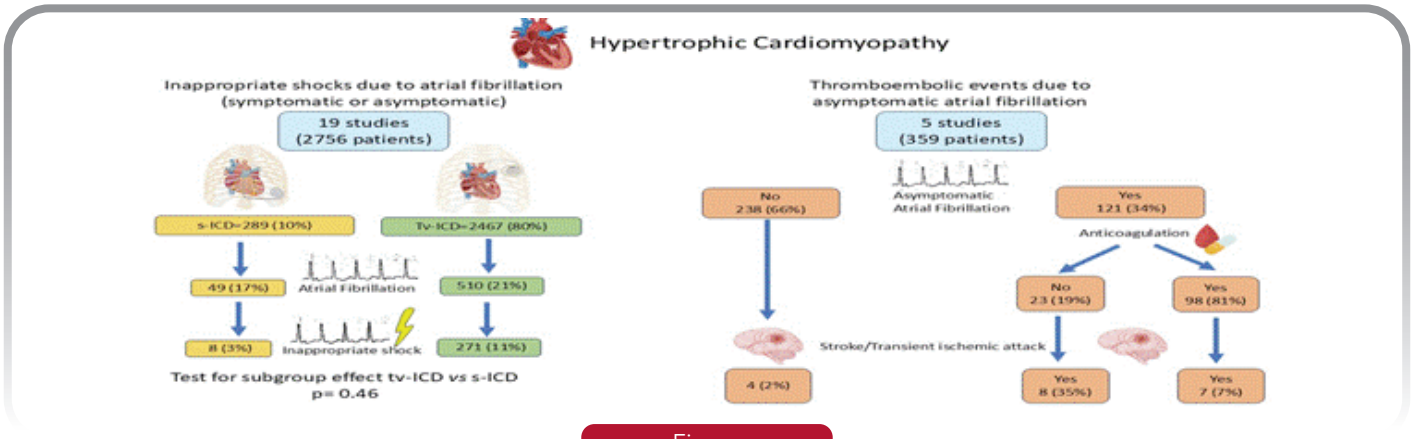
Background. La fibrillazione atriale sintomatica (sAF) o subclinica (SCAF) è frequente nella cardiomiopatia ipertrofica (HCM). Dati limitati riportano che entrambe possono determinare shock inappropriati da defibrillatore cardiaco impiantabile (ICD) ed eventi tromboembolici. Anche nell'amiloidosi cardiaca (CA) il significato della SCAF nel rischio tromboembolico resta sconosciuto.

Obiettivi. Valutare: 1) l'associazione tra sAF e SCAF e shock ICD inappropriati nei pazienti con HCM portatori di ICD transvenoso (tv-ICD) o sottocutaneo (s-ICD); 2) il rischio tromboembolico della SCAF in HCM e CA, stratificato per terapia anticoagulante.

Metodi. È stata condotta una revisione sistematica e meta-analisi degli studi (diagramma PRISMA) utilizzando PubMed, Cochrane, Embase e Scopus fino a maggio 2025. Sono stati inclusi studi che riportavano shock ICD inappropriati in HCM con sAF o SCAF e studi sugli eventi tromboembolici in pazienti con SCAF, stratificati per stato di anticoagulazione, in HCM e CA. Per il pooling degli odds ratio (OR) sono stati impiegati modelli ad effetti casuali; eterogeneità e bias di pubblicazione sono stati valutati.

Risultati. In diciannove studi (n = 2756 pazienti), l'incidenza media degli shock inappropriati è risultata 18% nei pazienti con tv-ICD e 11% con s-ICD. L'incidenza di sAF o SCAF è risultata pari al 30% ed è stata significativamente associata a shock inappropriati (OR = 11,0; IC 95%: 3,09–39,10); l'associazione è rimasta significativa dopo correzione per bias (OR = 6,29; IC 95%: 2,37–16,67). L'analisi per sottogruppi ha mostrato significatività solo per i tv-ICD, ma il test di differenza tra sottogruppi non era significativo (p = 0,46) (Figura 1).Per il rischio tromboembolico in HCM, cinque studi (n = 359 pazienti) sono stati analizzati descrittivamente: la SCAF senza anticoagulazione è risultata associata a un aumento del rischio di ictus/TIA (Figura 1). Per la CA, due studi sono stati analizzati descrittivamente e anche in questo caso la SCAF è risultata associata a un aumento del rischio di ictus/TIA (Figura 1).

Conclusioni. Nell'HCM, sAF e SCAF sono associate a un aumento degli shock ICD inappropriati, indipendentemente dal tipo di dispositivo, sottolineando l'importanza di algoritmi avanzati di discriminazione delle aritmie. La SCAF può aumentare il rischio tromboembolico, anche in presenza di episodi brevi, suggerendo la necessità di rivalutare le soglie di anticoagulazione in HCM e CA.


Hypertrophic Cardiomyopathy
Inappropriate shocks due to atrial fibrillation (symptomatic or asymptomatic)
19 studies (2756 patients)
s-ICD=289 (10%)
Tv-ICD=2467 (80%)
49 (17%)
Atrial Fibrillation
510 (21%)
8 (3%)
Inappropriate shock
271 (11%)
Test for subgroup effect tv-ICD vs s-ICD p= 0.46
Thromboembolic events due to asymptomatic atrial fibrillation
5 studies (359 patients)
No 238 (66%)
Asymptomatic Atrial Fibrillation
Yes 121 (34%)
Anticoagulation
No 23 (19%)
Yes 98 (81%)
Stroke/Transient ischemic attack
4 (2%)
Yes 8 (35%)
Yes 7 (7%)

Figure

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 575
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
BIOLOGIA MOLECOLARE CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)

DEVELOPING A CARE MODEL FOR CARDIOMYOPATHIES IN SOUTHERN ITALY: THE SISAGEN-CARDIO PROJECT

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Background. In recent years, growing evidence has highlighted the crucial role of genetic testing in the diagnosis, treatment, and management of patients affected by cardiovascular diseases, particularly cardiomyopathies. However, there is significant variability in the clinical and molecular presentation of these diseases, along with regional heterogeneity in genetic background and disparities in access to medical genetics services, counseling, and treatment. To address these regional challenges, there is a need to develop an operational model that combines technical and molecular diagnostics, imaging, and clinical capabilities tailored to the unique characteristics of different territories.

Aim of the Study. The SISAGEN-CARDIO project is a prospective, non-pharmacological, interventional, multicenter, non-profit study aimed at creating a family-centered network for the diagnosis and management of genetic cardiovascular diseases. This initiative seeks to implement a standardized, regional, patient- and family-centered network for the diagnosis and management of genetic cardiovascular diseases across the Apulia region.

Methods. Eligible participants include both inpatients and outpatients diagnosed with genetic cardiovascular conditions, such as cardiomyopathies, channelopathies, aneurysmal syndromes, and phenocopies. Baseline assessments will consist of clinical evaluations, ECG, echocardiography, cardiac MRI, and blood sampling for next-generation sequencing (NGS) of disease-related gene panels. Additional -omics analyses (genomics, transcriptomics, proteomics, metabolomics) and environmental exposure assessments (e.g., heavy metals, PFAS) are planned for selected cohorts.
The management protocol will follow the integrated clinical-genetic model developed at the Cardiovascular Genetic Disease Center (CMGCV) of IRCCS Policlinico San Matteo in Pavia, establishing a transferable and sustainable care pathway. A network of regional hubs will provide standardized workflows, multidisciplinary evaluations, cascade family screening, genetic counseling, and data collection via a shared digital platform. An estimated 250 patients are expected to enroll over a 36-month period.

Preliminary and Expected Results. The study aims to establish a coordinated regional network that integrates hospital and community care systems. Genetic testing and cascade screening are underway, with data collection including multilevel imaging and biofluid

analyses. Early-stage implementation has shown the feasibility of harmonizing workflows and expanding access to genetic services. Radiomic and radiogenomic evaluations are being explored for potential biomarker discovery, and environmental analyses are ongoing to assess gene-environment interactions in distinct subpopulations in Apulia.

Conclusion. SISAGEN-CARDIO represents a healthcare initiative addressing genetic cardiovascular diseases by transferring a model that has been successfully operating in Pavia to Southern Italy. This model has been adjusted to meet the specific needs and diversity of the Apulia region.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 407
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
MALATTIE DEL METABOLISMO (DIABETE E MALATTIE DEL METABOLISMO)

IL PANORAMA CLINICO E GENETICO DELLA CARDIOMIOPATIA IPERTROFICA: UNO STUDIO COMPARATIVO TRA FORME SARCOMERICHE E NON SARCOMERICHE

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Background: Hypertrophic cardiomyopathy (HCM) is defined by a left ventricular (LV) wall thickness ≥15 mm in any myocardial segment in probands, or ≥13 mm in their family members, not solely attributable to anomalous load conditions, with a highly variable clinical expression. It can be classified as sarcomeric (HCM Sarc+) or non-sarcomeric (HCM Sarc-) based on genetic findings. While genetic testing is commonly used for diagnosis, family screening, and patient counselling, its role in clinical risk stratification remains underexplored.

Purpose: The primary objective of this study was to compare HCM Sarc+ and HCM Sarc- in terms of epidemiological, clinical, and phenotypic characteristics, and to assess the evolving role of genetic testing in clinical practice. In addition, the study seeks to identify the major clinical events and progression pathways in both groups, aiming to improve patient management.

Methods: We conducted a observational study on 64 genetically tested HCM patients diagnosed between 2016 and 2024 at our regional cardiology reference centre. Patients were stratified into HCM Sarc+ (30 patients with pathogenic/likely pathogenic sarcomeric variants) and HCM Sarc- (34 patients with either wild-type or variants of uncertain significance in sarcomeric or non-sarcomeric genes). Clinical, demographic, and imaging data were analyzed, including family history, body mass index (BMI), symptoms, phenotypic traits, and major clinical events (MACE), including arrhythmias, device implantation, and surgery. Late gadolinium enhancement (LGE) on cardiac magnetic resonance (CMR) was also assessed. Statistical analysis was performed to compare the two groups.

Results: HCM Sarc+ and HCM Sarc- showed no significant differences in age at diagnosis or gender distribution. HCM Sarc- was associated with higher BMI ($p=0.037$) and a greater prevalence of diabetes/glucose resistance ($p=0.02$), suggesting a link with metabolic factors. Family history was strongly associated with HCM Sarc+ ($p<0.001$). HCM Sarc- exhibited a higher prevalence of obstructive phenotypes ($p=0.003$) and greater intraventricular gradients at rest and under stress ($p=0.002$), persisting at follow-up ($p=0.018$). LGE was more frequent in HCM Sarc+ ($p=0.025$), while no significant differences were found in device implantation or surgical interventions.

Conclusions: HCM Sarc+ and HCM Sarc- exhibit distinct clinical and phenotypic patterns. The association of HCM Sarc- with BMI and metabolic factors suggests a stronger environmental contribution. These findings reinforce the evolving role of genetic testing beyond diagnosis, providing valuable prognostic insights for personalized management, risk stratification, and targeted interventions in HCM.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 870
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
ASSISTENZA CARDIACA IN ACUTO NEL DIPARTIMENTO DI EMERGENZA
(ASSISTENZA CARDIACA IN ACUTO)

FENOTIPO IPERTROFICO IN PAZIENTE CON MIELOMA: UNA DIAGNOSI DIFFERENZIALE COMPLESSA OLTRE IL SOSPETTO DI AMILOIDOSI AL

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INTRODUZIONE: La diagnosi differenziale delle cardiopatie a fenotipo ipertrofico è complessa e richiede un approccio multimodale che integri imaging avanzato, biopsia ed analisi genetica per giungere a una corretta definizione eziologica, in quanto patologie come l'amiloidosi AL cardiaca rappresentano un'emergenza medica con una sopravvivenza mediana di 6 mesi se non trattata.

CASO CLINICO: Un paziente di 57 anni di etnia africana con recente diagnosi di mieloma multiplo IgGK con captazione ossea e cardiaca alla PET in attesa di trattamento, giungeva in Pronto Soccorso per picco ipertensivo e cefalea in assenza di angina o equivalenti. L'ECG a 12 derivazioni mostrava ritmo sinusale in assenza di disturbi di conduzione con segni di ipertrofia ventricolare sinistra ed alterazioni del tratto ST-T (pattern "pseudoSTEMI" in anteriore e T negative in sede laterale) per cui veniva richiesta valutazione cardiologica. All'ecocardiogramma veniva riscontrata marcata ipertrofia concentrica del ventricolo sinistro con alterazioni della texture miocardica ("granular sparkling"), riduzione della frazione d'eiezione (42%) in presenza di ipocinesia diffusa ed alterazioni dello strain (pattern "apical sparing"). Il dosaggio della troponina I ultrasensibile a distanza di 3 ore ha mostrato valori lievemente elevati ma a plateau (45->43 ng/L). Per una miglior caratterizzazione della cardiomiopatia, è stata eseguita una risonanza magnetica cardiaca che ha mostrato incremento dei valori di T1 nativo con gradiente crescente dalla base all'apice, in assenza di incremento del volume extra-cellulare e di LGE biventricolare. Nel sospetto di amiloidosi cardiaca, è stata eseguita dapprima scintigrafia con tracciante osseo che ha segnalato accumulo del radiofarmaco nel miocardio (Perugini score = 2) e successivamente, il paziente è stato sottoposto a biopsia endomiocardica con riscontro di positività alla colorazione al Rosso Congo e, sorprendentemente, la tipizzazione dell'amiloide ha rivelato depositi di transtiretina e non di catene leggere. Come ultimo step diagnostico, è stata eseguita analisi genetica NGS comprendendo i principali geni correlati a cardiomiopatia ipertrofica (compreso il gene della transtiretina) la quale non ha mostrato alcuna mutazione. La diagnosi finale è dunque quella di amiloidosi cardiaca da transtiretina

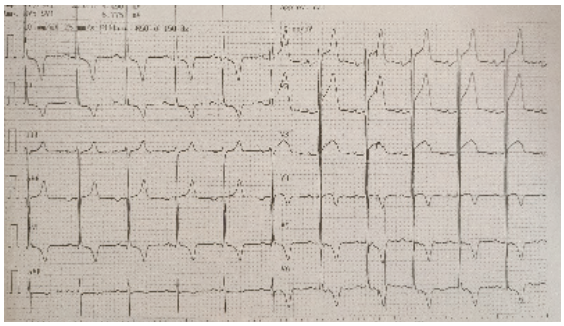


Figura 1

"wild type" in paziente con mieloma multiplo.
Parallelamente è stata introdotta e titolata fino alla massima dose tollerata la terapia per l'insufficienza cardiaca a frazione d'eiezione ridotta e la terapia target per amiloidosi ATTR (tafamidis). L'ecocardiogramma a 3 mesi ha mostrato completo recupero della frazione d'eiezione ed il paziente è stato sottoposto con successo a trapianto di cellule staminali ematopoietiche.

CONCLUSIONI: Questo caso evidenzia l'importanza di un iter diagnostico completo nelle cardiopatie a fenotipo ipertrofico, che ha permesso di distinguere un'amiloidosi ATTR wild-type da un sospetto iniziale di cardiomiopatia ipertrofica sarcomerica o di amiloidosi AL in un paziente con mieloma multiplo, con rilevanti implicazioni terapeutiche e prognostiche.

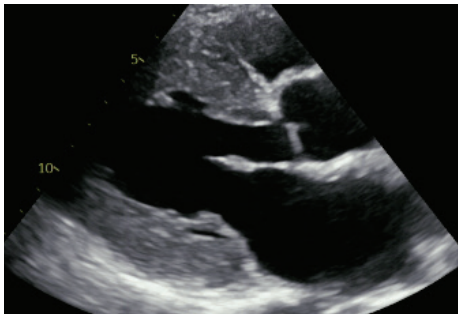


Figura 2

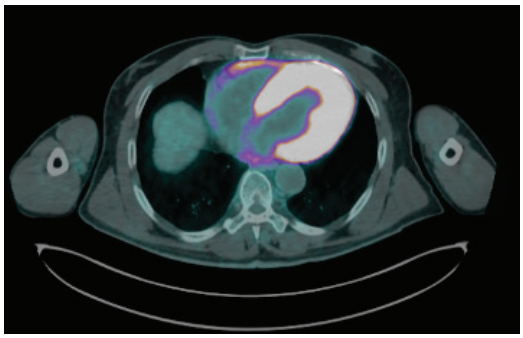


Figura 3

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 592
MIOCARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
INFIAMMAZIONE E IMMUNITÀ (ATEROTROMBOSI)
SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO)

THE MAN WHO DIDN'T FEEL PAIN: A RARE CASE OF MYOCARDITIS IN A YOUNG PATIENT WITH HSAN 4

Alessio Falagario (a), Valeria Porfido (a), Daniele Cosimo Lenoci (a), Paolo Basile (a), Marco Matteo Ciccone (a), Andrea Igoren Guaricci (a)
(a) CARDIOLOGIA UNIVERSITARIA, POLICLINICO DI BARI

Case report: Hereditary Sensory and Autonomic Neuropathies type 4 (HSAN 4), or Congenital Insensitivity to Pain with Anhidrosis (CIPA), is a rare autosomal recessive disorder characterized by impaired pain perception, anhidrosis, and cognitive deficits. Only a few hundreds of cases have been documented worldwide. Patients often present with repeated injuries, infections, and various complications due to their inability to sense pain and regulate temperature effectively. Cardiovascular involvement is infrequent but can be severe when it occurs. This report discusses the clinical presentation, diagnostic workup, and therapeutic challenges associated with a 25-year-old male patient with severe cognitive impairment and bedridden status due to HSAN 4, who presented to the Emergency Department with a two-week history of fever, vomiting, and diarrhea. Initial laboratory investigations revealed significantly elevated inflammatory markers and marked myocardial injury. The electrocardiogram showed sinus tachycardia at 105 bpm. Transthoracic echocardiography demonstrated severe left ventricular dilation with global hypokinesia (LVEF: 20%), right ventricular hypo-contractility, and a small pericardial effusion. Chest X-ray revealed bilateral pleural effusion. Blood cultures were positive for Staphylococcus aureus, raising the suspicion of myocarditis. Despite targeted antibiotic therapy and comprehensive management of acute heart failure, the patient's condition deteriorated, ultimately resulting in death.

Discussion: the management of patients with HSAN 4 poses significant clinical challenges due to their impaired pain perception, which can delay diagnosis and treatment, and the presence of severe cognitive impairment that complicates assessment and monitoring. Additionally, these patients often have multiple comorbidities related to prolonged immobility, including susceptibility to infections and cardiovascular complications. This case highlights the importance of early recognition and aggressive treatment of systemic infections in HSAN 4 patients, as well as the need for a multidisciplinary approach to manage the complex interplay of neurological deficits and systemic involvement. While HSAN 4 predominantly affects the sensory and autonomic nervous systems, cardiac involvement, although rare, may be life-threatening and warrants close monitoring, particularly in the presence of systemic infections.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 617
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
ARITMIE VENTRICOLARI (ARITMIE)
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
BIOLOGIA MOLECOLARE CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)

FACING TRANSPLANTATION BEFORE 30: THE MALIGNANT COURSE OF HOMOZYGOUS PLN CARDIOMYOPATHY

Alessio Falagario (a), Paolo Basile (a), Tomaso Bottio (c), Nicoletta Resta (b), Maria Cristina Carella (a), Marco Matteo Ciccone (a), Andrea Igoren Guaricci (a), Cinzia Forleo (a)
(a) CARDIOLOGIA UNIVERSITARIA, POLICLINICO DI BARI; (b) GENETICA MEDICA, POLICLINICO DI BARI; (c) CARDIOCHIRURGIA UNIVERSITARIA, POLICLINICO DI BARI

Background: Mutations in the phospholamban (PLN) gene are implicated in inherited cardiomyopathies, particularly dilated cardiomyopathy (DCM). The nonsense variant p.Leu39Ter (L39X), located in the transmembrane domain of PLN, has been associated with early-onset, severe heart failure in homozygous carriers, while heterozygous individuals show highly variable and age-dependent phenotypes. Only two homozygous cases have been reported in the literature to date, both requiring heart transplantation before the age of 30.

Case Report: We report a 25-year-old male with no known cardiovascular risk factors, presenting with progressive dyspnea and peripheral edema. Transthoracic echocardiography revealed severe biventricular dysfunction and significant mitral and tricuspid regurgitation. Cardiac magnetic resonance (CMR) demonstrated late gadolinium enhancement (LGE) in the inferolateral subepicardial left ventricular wall, consistent with non-ischemic fibrosis (fig. 1). Myocarditis, toxic, and ischemic causes were excluded. Despite optimal medical management, the patient progressed to refractory cardiogenic shock, requiring urgent heart transplantation. Genetic testing post-transplant identified a homozygous c.116T>G (p.Leu39Ter) variant in the PLN gene. Cascade genetic screening of first-degree relatives revealed homozygosity for the same variant in the patient's older sister and heterozygosity in the younger brother and both parents (non-consanguineous). The sister, although asymptomatic at initial evaluation, underwent CMR which showed moderate right ventricular dysfunction, systolic bulging of the ventricular wall, and non-ischemic fibrosis involving the left ventricular lateral wall, septum, and anterior segments—findings consistent with a biventricular arrhythmogenic cardiomyopathy. Her PLN risk calculator score was 15%. She was promptly started on heart failure and anti-arrhythmic therapy. A 24-hour Holter monitor also revealed non-sustained ventricular tachycardia (NSVT), confirming her arrhythmogenic risk (fig.2)

Conclusion: This case series represents the third

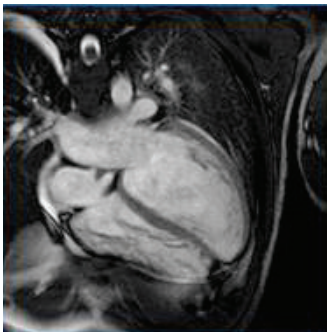


Figure 1

and fourth reported homozygous carriers of the PLN p.Leu39Ter variant, highlighting the malignant phenotype associated with homozygosity. It underscores the importance of early genetic screening and comprehensive cardiac evaluation in at-risk relatives, even in the absence of clinical symptoms. Timely diagnosis enables early initiation of life-saving therapy and surveillance in carriers of pathogenic PLN variants.

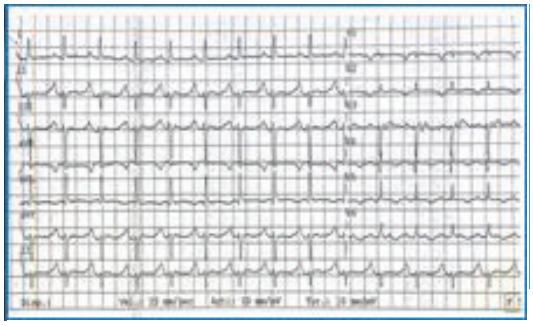


Figure 2

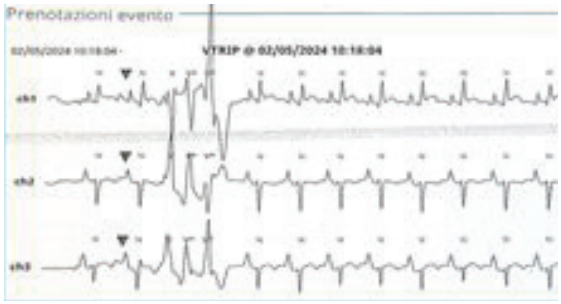


Figure 3

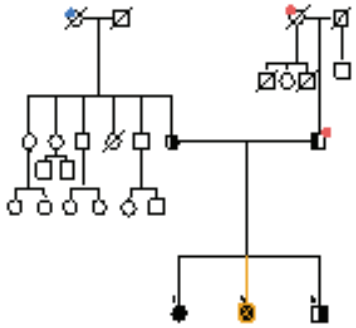


Figure 4

CardioSic

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 173
MIOCARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
MIOCARDITI & COVID 19 (COVID-19)
ECMO E COVID 19 (COVID-19)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)
SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO)

FROM COVID-19 TO INFLUENZA A (H1N1): A CASE OF RECURRENT VIRAL MYOCARDITIS AND SUCCESSFUL IMMUNOSUPPRESSIVE THERAPY

Federico Ferranti (a), Lucia Ilaria Birtolo (a), Giovanna Manzi (a), Annalisa Caputo (a), Gianmarco Scoccia (a), Katia Bruno (a), Nicola Galea (b), Viviana Maestrini (a), Cristina Chimenti (a), Paolo Severino (a), Francesco Pugliese (a), Roberto Badagliacca (a), Carmine Dario Vizza (a)

(a) DEPARTMENT OF CLINICAL, ANAESTHESIOLOGIC AND CARDIOVASCULAR SCIENCES, SAPIENZA UNIVERSITY OF ROME, ROME, ITALY; (b) DEPARTMENT OF RADIOLOGICAL, ONCOLOGICAL AND PATHOLOGICAL SCIENCES, SAPIENZA UNIVERSITY OF ROME, ROME, ITALY

Background: Myocarditis is an inflammatory disease of the myocardium with a highly variable clinical presentation and is often triggered by viral infections. While corticosteroids have historically been used with caution in viral myocarditis due to concerns over impaired viral clearance, recent insights from the COVID-19 pandemic suggest that their use may offer clinical benefits in selected cases. We report a case of recurrent viral myocarditis in a young woman, initially following SARS-CoV-2 infection and later associated with influenza A (H1N1), illustrating diagnostic and therapeutic challenges.

Case summary: A previously healthy 27-year-old woman presented with fulminant myocarditis after a paucisymptomatic SARS-CoV-2 infection. The initial episode was characterized by pericardial effusion, rapidly progressing to cardiogenic shock and severe left ventricular dysfunction, requiring veno-arterial extracorporeal membrane oxygenation (VA-ECMO). Early initiation of high-dose corticosteroid therapy, in combination with Remdesivir and monoclonal anti-SARS-CoV-2 antibodies, proved decisive in modulating the inflammatory response and allowed complete recovery of cardiac function. Two years later, the patient developed recurrent myocarditis

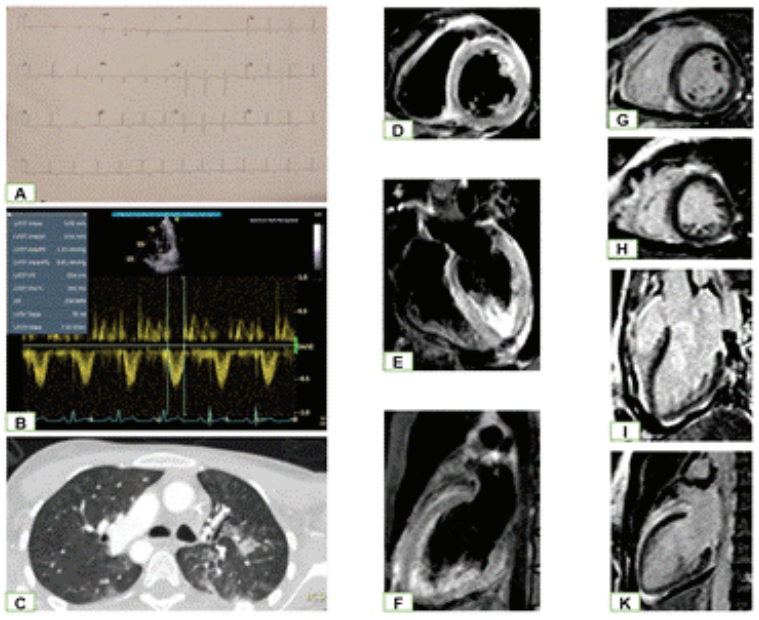


Figure 1

triggered by influenza A (H1N1), presenting with chest pain, elevated cardiac biomarkers, and severe reduction in ejection fraction. Cardiac magnetic resonance confirmed acute myocarditis demonstrating diffuse myocardial edema and patchy meso-subepicardial late gadolinium enhancement (LGE), associated with severe left ventricular dysfunction. High-dose corticosteroids and Levosimendan were administered, resulting in progressive improvement without the need for mechanical support. At discharge, following both episodes, the patient was asymptomatic and had a complete recovery of the left ventricular ejection fraction. Genetic testing was performed to investigate possible predisposition.

Conclusion: This case highlights the diagnostic and therapeutic challenges of recurrent viral myocarditis, as well as the potential role of immunosuppression.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 98
ARITMIE VENTRICOLARI (ARITMIE)
ASPETTI GENETICI DELLE ARITMIE (ARITMIE)
CARDIOPATIE CONGENITE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

SILENT BEATS, DEADLY SUBSTRATES: UNMASKING LEFT-DOMINANT ARRHYTHMOGENIC CARDIOMYOPATHY IN A HEALTHY TEENAGER

Alfonso Ferrara (a), Angelica De Nigris (b), Giovanni Maria Di Marco (b), Giangiacomo Di Nardo (b)
(a) UNIVERSITÀ DI SALERNO; (b) AORN SANTOBONO-PAUSILIPON

Patient Presentation: A previously healthy adolescent male was referred after incidental detection of frequent ventricular ectopy during routine pre-participation screening. He reported no palpitations, syncope, chest pain, or family history of cardiomyopathy, arrhythmias, or sudden cardiac death. His baseline physical examination and vital signs were unremarkable. Early detection of asymptomatic arrhythmic events in young athletes is crucial, as ventricular arrhythmias (VAs) may be the first manifestation of underlying cardiomyopathy, especially in arrhythmogenic syndromes Pre-participation screening can unmask subclinical cardiomyopathies and has been associated with reduced incidence of sudden cardiac death in athletic populations.

Initial Work-Up: Investigations showed: 24-hour Holter: sinus rhythm with 80/h PVCs, 268 couplets, bigeminy/trigeminy events. Exercise stress test: frequent PVCs, decreasing with exertion, suggesting a benign response.
TTE: dilated, globular LV, postero-lateral hypokinesia, LVEF 35%, mild mitral regurgitation. Labs: negative inflammatory and myocardial necrosis markers. The complexity of PVCs and reduced LVEF raised suspicion for underlying cardiomyopathy, particularly LDAC. In young individuals, PVCs with multiple morphologies, pairing or NSVT, and reduced EF are red flags. An early diagnosis is often missed due to preserved right ventricular function and subtle ECG findings in left-dominant phenotypes.

Diagnosis and Management: In-hospital telemetry revealed two runs of NSVT, prompting switch from Sotalol to Amiodarone. Serial echocardiograms showed further reduction in LVEF (25-30%). The patient was started on heart failure therapy (Bisoprolol, Enalapril, Spironolactone) and anticoagulated for superficial thrombophlebitis with Enoxaparin. Cardiac MRI (CMR) showed a moderately dilated LV (57 mm), LVEF 27%, and extensive subepicardial LGE in a ring-like pattern, consistent with left-dominant arrhythmogenic cardiomyopathy (LDAC). This fibrotic distribution is typical of LDAC and distinguishes it from myocarditis, which tends to involve mid-myocardial or focal regions. Although genetic testing was pending, the clinical, imaging and arrhythmic features fulfilled diagnostic criteria for arrhythmogenic cardiomyopathy per Padua criteria.

Follow-Up: The patient was diagnosed with LDAC with a fibrotic substrate, reduced systolic function, and NSVT-features
associated with high risk of sudden cardiac death (SCD). He underwent ICD implantation (Biotronik) for primary prevention. The procedure was uneventful. During hospitalization, he experienced a mild febrile illness,

but no myocarditis signs were found on repeat CMR or labs. Allergic reaction to contrast medium resolved promptly with IV corticosteroids. No further NSVT was documented during prolonged telemetry.
Post-discharge, arrhythmic burden was well controlled on Amiodarone, with no recurrences of NSVT or ICD therapies. ICD therapy in pediatric LDAC patients with high-risk features is supported by consensus statements, even in the absence of sustained VT or syncope.

Conclusions: This case highlights the importance of early evaluation of PVCs in young athletes, as they may unmask serious structural heart disease. LDAC is a distinct, underrecognized subtype of arrhythmogenic cardiomyopathy, often presenting with isolated LV involvement and typical MRI findings. Even in asymptomatic patients, complex ectopy, reduced LVEF, and fibrotic substrate are sufficient to justify ICD implantation for primary prevention. Cardiac MRI is pivotal in distinguishing LDAC from other mimics, such as myocarditis or dilated cardiomyopathy. A multidisciplinary approach-involving pediatric cardiology, electrophysiology, imaging, and heart failure specialists-was essential for diagnosis and risk stratification.
This case supports the need for refined screening strategies and earlier use of advanced imaging in selected young athletes.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 811
ARITMIE VENTRICOLARI (ARITMIE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
STUDI ELETTROFISIOLOGICI INVASIVI (ARITMIE)

BEYOND THE NORMAL ECHO: RING LIKE LGE AND GENETIC BACKGROUND IN ARRHYTHMIC RISK STRATIFICATION OF NDLVC

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Abstract

Background: Non-dilated left ventricular cardiomyopathy (NDLVC) is a recently defined entity, often characterized by arrhythmic risk disproportionate to ventricular function. According to the 2023 ESC guidelines, cardiac magnetic resonance (CMR) and genetics are essential for risk stratification. Recent multicenter studies have highlighted the prognostic role of ring-like late gadolinium enhancement (LGE) and pathogenic variants in high-risk genes, such as LMNA.

Case Presentation: A 46-year-old woman, heavy smoker, with a brother affected by LMNA-related dilated cardiomyopathy and implanted with an implantable cardioverter-defibrillator (ICD), was admitted for chest pain and palpitations. Continuous ECG monitoring showed frequent non-sustained ventricular tachycardia. Echocardiography documented preserved left ventricular ejection fraction (60%), while coronary CT angiography excluded obstructive disease. CMR revealed a ring-like pattern of LGE, consistent with diffuse fibrotic involvement and an arrhythmogenic substrate. Given the combination of arrhythmic burden, family history, and CMR features, an extravascular ICD was implanted for primary prevention.

Discussion: This case illustrates how the integration of advanced imaging and genetic background can unmask high-risk NDLVC phenotypes even in the absence of overt systolic dysfunction. The ring-like LGE pattern, previously associated with major arrhythmic events and adverse remodeling, coupled with a family history of LMNA mutation-related cardiomyopathy, provided converging evidence for early device therapy.

Conclusion: In NDLVC, integrating CMR tissue characterization with family history and genetic context can refine arrhythmic risk assessment and support timely preventive strategies for sudden cardiac death, particularly when echocardiography appears normal.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 1058
ARITMIE VENTRICOLARI (ARITMIE)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MIOCARDICO-PERICARDICO
(MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

PROGNOSTIC VALUE OF CARDIAC MAGNETIC RESONANCE IN PATIENTS WITH VENTRICULAR ARRHYTMIAS AND NORMAL ECHOCARDIOGRAPHY

Laura Fusini (a), Vincenzo De Peppo (b), Andrea Baggiano (a), Alberico Del Torto (a), Fabio Fazzari (a), Riccardo Maragna (a), Manuela Muratori (a), Saima Mushtaq (a), Kamil Stankowski (a), Luigi Tassetti (a), Gianluca Pontone (a, b)
(a) CENTRO CARDIOLOGICO MONZINO IRCCS; (b) UNIVERSITA' DEGLI STUDI DI MILANO

Background: The occurrence of ventricular arrhythmias (VA) is common in both the general population and athletes. While many ectopic beats are clinically insignificant, some VA may indicate an underlying substrate with potential for malignant episodes. Echocardiography is commonly used in patients with malignant VA to identify structural heart disease (SHD) which is the most frequent substrate of VA. Currently, the role of cardiac magnetic resonance (CMR) in the evaluation of these patients has not yet been well defined in terms of long-term prognostic value.

Objective: This study sought to determine whether CMR could identify patients with SHD among those with VA and a normal echocardiographic phenotype.
Methods: A total of 890 patients with VA were enrolled (age 44±16 years, male 59%) in this single-center retrospective observational study. Inclusion criteria were the presence of VA (number of PVCs/24h between 1,000 and 10,000, or PVCs/24 h >10,000) in the absence of known SHD on transthoracic echocardiography. Additionally, other exclusion criteria were significant coronary artery disease, congenital heart disease, known acute myocarditis, or pericarditis. All patients underwent a CMR evaluation for VA.

Results: CMR results identified a definite diagnosis of SHD in 213 patients (23.9%) and detected abnormal findings without a definitive SHD diagnosis in 56 patients (6.3%). The most frequent SHD diagnosis was myopericarditis (94 cases), followed by cardiomyopathies (104 cases, including 51 arrhythmogenic cardiomyopathy, 38 dilated cardiomyopathy, 13 coronary artery disease, 9 hypertrophic cardiomyopathy, 5 non-dilated cardiomyopathy, and 1 left ventricle noncompaction). CMR parameters revealed significantly higher ventricular volumes and left ventricular mass, as well as significantly lower bi-ventricular function in patients with SHD. LGE was observed in 43% of SHD patients, primarily with a subepicardial distribution (85 cases), followed by midwall (20 cases), subendocardial (14 cases), and transmural patterns (8 cases). Multivariate analysis identified male gender (OR: 1.906, p=0.003), right ventricular ejection fraction (OR: 0.950, p = 0.002), the presence of left ventricular motion abnormalities (OR: 20.697, p < 0.001), and the presence of LGE (OR: 10.724, p < 0.001) as independent predictors of SHD.

Conclusions: CMR was able to detect a relevant number of SHD in patients with VA and normal echocardiography. Male gender, right ventricular dysfunction, left ventricular wall motion abnormalities, and positive LGE were the strongest predictors of SHD.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 993
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
ARITMIE VENTRICOLARI (ARITMIE)
DEFIBRILLATORE IMPIANTABILE (ARITMIE)

ICD FOR PRIMARY PREVENTION IN HIGH-RISK HCM: LONG TERM OUTCOMES, EARLY EVENT CLUSTERING AND UNMET NEED IN RISK STRATIFICATION

Manuel Garofalo (a, b), Giorgia Panichella (a, b), Francesco Cappelli (a, b), Annamaria Del Franco (b), Maurizio Pieroni (a, b), Iacopo Olivotto (a, b)
(a) UNIVERSITA' DEGLI STUDI DI FIRENZE, FIRENZE (IT); (b) UNIT CARDIOMIOPATIE, AOU CAREGGI, FIRENZE (IT)

Background: Implantable cardioverter-defibrillator (ICD) placement for primary prevention may be indicated in hypertrophic cardiomyopathy (HCM) patients with increased arrhythmic risk. However, real-world incidence and predictors of appropriate ICD interventions in this setting remain incompletely defined. We aimed to evaluate the occurrence, timing, and predictors of arrhythmic events in high-risk HCM patients who received an ICD for primary prevention.

Methods: Among 1068 HCM patients evaluated at our center, 153 underwent ICD implantation for primary prevention based on guideline-recommended high-risk features. Baseline data included clinical, electrocardiographic, Holter, and imaging parameters. The primary outcome was a composite of appropriate ICD therapy or aborted sudden cardiac arrest. Secondary analyses included cumulative incidence of events and identification of baseline predictors.

Results: Median age at first visit was 45 years (IQR 31–55), and 62.7% were male. A positive genotype was present in 63.4%, family history of sudden cardiac death in 30.1%, unexplained syncope in 9.2%, and non-sustained ventricular tachycardia in 40%. Late gadolinium enhancement (LGE) on CMR was detected in 89.6% of evaluable patients. During a median follow-up of 7.0 years (IQR 2.7–12.1), 36 patients (23.5%) experienced the primary arrhythmic outcome. Cumulative incidence curves demonstrated that most events clustered in the early years after ICD implantation, with a marked concentration in the first 2–3 years and a relative plateau thereafter. At 5 years, event-free survival was approximately 75%. In multivariate analysis, conventional clinical markers—including age, sex, family history of sudden death, unexplained syncope, non-sustained ventricular tachycardia, and LGE—did not emerge as independent predictors of arrhythmic outcomes, highlighting the difficulty of further discriminating risk within an already high-risk cohort.

Conclusions: Among high-risk HCM patients submitted to ICD implantation for primary prevention, nearly one in four experienced appropriate ICD therapy or aborted cardiac arrest during long-term follow-up. Events occurred predominantly in the early years after implantation, underscoring a phase of heightened arrhythmic vulnerability. Despite extensive baseline characterization, no conventional clinical marker robustly predicted events, emphasizing the need for further refinement of risk stratification strategies in this population.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 997
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

GENOTYPE-POSITIVE CARRIERS WITHOUT BASELINE PHENOTYPE: PROGRESSION TO DILATED CARDIOMYOPATHY AND CHALLENGES IN RISK STRATIFICATION

Manuel Garofalo (a, b), Giorgia Panichella (a, b), Alessandra Fornaro (b), Francesco Cappelli (a, b), Iacopo Olivotto (a, b), Maurizio Pieroni (a, b)
(a) UNIVERSITA' DEGLI STUDI DI FIRENZE, FIRENZE (IT); (b) CARDIOMIOPATIE UNIT, AOU CAREGGI, FIRENZE (IT)

Background: Family members carriers of pathogenic or likely pathogenic variants in cardiomyopathy-associated genes remain at risk of developing dilated (DCM) or arrhythmogenic cardiomyopathy (ACM), despite the absence of overt phenotypic manifestations and preserved systolic function at baseline. We aimed to characterize outcomes and predictors of disease progression in this population.

Methods: We studied 34 genotype-positive relatives with baseline negative phenotype and left ventricular ejection fraction (LVEF) >50%. All underwent systematic evaluation including clinical assessment, ECG/Holter, and cardiac magnetic resonance (CMR). The primary outcome was the development during follow-up of DCM, defined as: (i) LVEF <50%, (ii) LV end-diastolic diameter above diagnostic threshold, or (iii) both. Secondary outcomes included atrial and ventricular arrhythmias, device implantation, and death.

Results: Median age was 42.4 years (IQR 26.1–55.1), and 52.9% were female. Patients were carriers of pathogenic or likely pathogenic variants in the following genes: LMNA (35.3%), DSP (26.5%), TTN (14.7%), and others (23.5%). At baseline, median LVEF was 56.5% (IQR 52.0–60.8), LVEDV 162 mL (IQR 136.0–181.8), and late gadolinium enhancement (LGE) was present in 41.2%. Symptoms were reported in 55.9%, and 23.5% had non-sustained ventricular tachycardia. Median follow-up was 1.45 years (IQR 0.74–3.71). During this period, 12 patients (35.3%) developed DCM: 3 with a LVEF <50% criterion, 5 according to LV dilatation criterion, and 4 fulfilling both. Median time to diagnosis was 1.66 years (IQR 0.69–3.49). Arrhythmic events included atrial fibrillation in 4 (11.8%), sustained ventricular tachycardia in 1 (2.9%), and appropriate ICD therapy in 1 (2.9%). Four patients (11.8%) underwent ICD implantation after a median of 2.45 years (IQR 1.53–3.04). No deaths occurred. Independent predictors of DCM development were older age at baseline CMR (OR 1.09 per year, p=0.042), the presence of symptoms at baseline (OR 2.42, p=0.014), and lower baseline LVEF (OR 0.76 per %, p=0.019). LGE was observed in 50% of patients who developed DCM but was not an independent predictor. Clustering analysis identified two phenotypically distinct subgroups: the first mainly represented by females, characterized by higher LVEF and smaller LV volumes, in which 25% developed DCM; the second mainly represented by males, with lower LVEF and larger LV volumes, in which 44% progressed to DCM.

Conclusions: Genotype-positive phenotype-negative DCM/ACM relatives are at substantial risk of early progression to overt cardiomyopathy. The presence of symptoms, subtle systolic impairment and older age at baseline CMR, emerged as strong predictors. The presence of LGE, although more common in patients with disease progression, and likely representing an early disease substrate didn't show an independent prognostic value. Unsupervised clustering highlighted distinct phenotypic profiles with different event rates, supporting the potential role of data-driven phenotyping in refining risk stratification strategies.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 1003 CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO) IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO) ECOSTRESS (IMAGING CARDIOVASCOLARE)

LATENT LEFT VENTRICULAR OUTFLOW TRACT OBSTRUCTION IN HCM: PROGRESSION TO RESTING OBSTRUCTION AND NEED FOR SEPTAL REDUCTION THERAPY

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Background: Hypertrophic cardiomyopathy (HCM) may present with left ventricular outflow tract obstruction (LVOTO) only under stress conditions. The clinical impact of stress-induced gradients in patients without resting obstruction remains incompletely defined.

Methods: We retrospectively analyzed 439 consecutive HCM patients undergoing exercise stress echocardiography. Patients with resting LVOT gradient ≥30 mmHg were excluded. The final cohort included 392 non-obstructive patients at rest, stratified according to exercise LVOT gradient: ≥50 mmHg (latent obstruction, n=60) and <50 mmHg (controls, n=332). Baseline demographic, clinical, and echocardiographic characteristics were compared, and clinical outcomes were assessed during long-term follow-up, including mortality, atrial fibrillation (AF), stroke, heart failure progression, septal reduction therapies (SRT), implantable cardioverter defibrillator (ICD) therapy, ventricular arrhythmias, and transplantation.

Results: During exercise, 60 patients (15.3%) developed LVOT gradient ≥50 mmHg. At baseline, patients with latent obstruction and controls were similar in age (39.3 ± 13.6 vs. 41.9 ± 18.5 years, p=0.18), body mass index (25.6 ± 3.7 vs. 25.3 ± 3.3 kg/m², p=0.67), body surface area (1.9 ± 0.2 vs. 1.9 ± 0.2 m², p=0.02), left atrial diameter (42.4 ± 7.4 vs. 41.5 ± 6.7 mm, p=0.43), maximum wall thickness (19.6 ± 4.7 vs. 22.1 ± 40.1 mm, p=0.89), E/A ratio (1.3 ± 0.5 vs. 1.2 ± 0.6, p=0.25), and E/e' ratio (8.9 ± 3.2 vs. 8.9 ± 3.9, p=0.59). β-blocker use at the time of stress testing was comparable (47.8% vs. 56.3%, p=0.29). As expected, LVOT gradient at rest (14.0 ± 6.1 vs. 8.8 ± 4.8 mmHg, p<0.001) and maximum stress gradient (76.5 ± 22.9 vs. 18.3 ± 9.8 mmHg, p<0.001) were markedly higher in latent obstruction patients. At follow-up (mean 10.8 ± 5.2 years), latent obstruction was associated with a higher incidence of developing resting obstruction (46.7% vs. 17.8%, RR 2.63, 95% CI 1.84–3.75, p<0.001) and a greater need for septal myectomy (18.6% vs. 4.1%, HR 4.39, 95% CI 1.93–9.98, p<0.001). Non-significant trends were observed toward higher rates of atrial fibrillation (30.0% vs. 16.8%, HR 1.51, 95% CI 0.88–2.60), appropriate ICD shocks (5.1% vs. 1.7%, HR 2.29, 95% CI 0.54–9.61), and new-onset ventricular fibrillation (3.4% vs. 1.4%, HR 2.10, 95% CI 0.38–11.51). No significant differences were observed in overall or cardiovascular mortality, stroke, heart failure progression, or transplantation.

Conclusion: Latent LVOTO during exercise identifies a subgroup of HCM patients at higher risk of progression to resting obstruction and need for invasive septal reduction therapies. These patients may represent ideal candidates for future therapies with myosin inhibitors. Stress echocardiography offers relevant prognostic information and should be incorporated into the comprehensive evaluation of HCM patients without obstruction at rest.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 942
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

STUDIO ECOCARDIOGRAFICO IN PAZIENTI CON DISCRASIE PLASMACELLULARI: POTENZIALE IDENTIFICAZIONE PRECOCE DI AMILOIDOSI CARDIACA AL

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Background: L'amiloidosi cardiaca AL è una complicanza severa nei pazienti con discrasie plasmacellulare e rappresenta una delle principali cause di morbidità e mortalità in questo setting. Ad oggi non esistono predittori ecocardiografici universalmente validati per identificare prospetticamente, in una popolazione con discrasie plasmacellulari, i pazienti destinati a sviluppare amiloidosi AL; ciò contribuisce al ritardo diagnostico. In questo contesto, l'ecocardiografia potrebbe offrire indici utili a riconoscere precocemente i soggetti a maggior rischio e ad accelerare l'iter diagnostico.

Materiali e Metodi: Abbiamo condotto uno studio retrospettivo osservazionale di coorte su 60 pazienti con discrasia plasmacellulare seguiti presso il nostro centro. Per ciascun paziente erano disponibili dati clinici, biomarcatori (NT-proBNP, troponina) ed ecocardiografici al baseline e al follow-up (mediana 427 giorni). Durante l'osservazione, 21 pazienti hanno ricevuto una diagnosi di amiloidosi cardiaca AL, con tempo mediano alla diagnosi di 304 giorni.

Risultati: Alla prima valutazione, i pazienti che successivamente hanno sviluppato AL presentavano alterazioni ecocardiografiche caratteristiche: RWT 0.61 vs 0.45 ($p<0.001$), GLS sn –15.1% vs –19% ($p<0.001$), RALS 0.98 vs 0.67 ($p<0.001$), troponina 47.5 vs 13 ng/L ($p=0.003$), NT-proBNP 1466 vs 128 pg/mL ($p=0.0004$). Al follow-up le differenze erano confermate e accentuate. All'analisi univariata RWT, RALS, SIV, GLS sn e NT-proBNP emergevano come predittori significativi. Al multivariato, modelli semplici mostravano elevata accuratezza: RWT+GLS sn+RALS (AUC 0.95) e RALS+DTD+SIV (AUC 0.94). Le curve ROC dei singoli parametri identificavano cut-off clinici: in particolare risultava RALS >0.80 (Sens 76%, Spec 87%), GLS sn >–16% (Sens 71%, Spec 92%), RWT >0.51 (Sens 81%, Spec 85%).

Conclusioni: I pazienti che hanno sviluppato amiloidosi AL mostravano già al baseline un fenotipo tipico, suggerendo che la malattia fosse verosimilmente già presente e che la diagnosi definitiva sia stata posta con ritardo. L'ecocardiografia può quindi fungere da strumento di allarme precoce, consentendo di sospettare tempestivamente l'amiloidosi AL. Il cut-off di RALS (0.80), inferiore rispetto a quello riportato in letteratura, suggerisce la possibilità di cogliere alterazioni in fasi iniziali. Questo è particolarmente rilevante in pazienti con MGUS o smouldering, dove la diagnosi di AL comporta un cambio sostanziale di approccio terapeutico, trasformando un quadro osservazionale in una condizione che richiede trattamento attivo. Nonostante i limiti del campione ridotto e del disegno retrospettivo, i nostri dati supportano l'uso sistematico dell'ecocardiografia come strumento di screening precoce dell'amiloidosi AL nei pazienti con discrasie plasmacellulari.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 365
MIOCARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)

BIOPSY-PROVEN VIRAL MYOCARDITIS: CLINICAL AND HISTOLOGICAL DIAGNOSTIC AND PROGNOSTIC INSIGHTS FROM A LARGE MONOCENTRIC PROSPECTIVE COHORT

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Background: Myocarditis is an inflammatory disease of the myocardium diagnosed by established histological, immunological and immunohistochemical criteria. Quantitative real-time polymerase chain reaction (PCR) on endomyocardial biopsy (EMB) is essential for identifying an infectious aetiology. To date, definitive epidemiological data on myocarditis are lacking due to the heterogeneity of clinical presentations and the seldom use of EMB. Viral myocarditis presents many other knowledge gaps, particularly regarding its pathogenesis, prognosis, treatment, and the role of specific viruses – especially parvovirus B19 (PVB19), currently the most prevalent.

Aims: Primary aims: 1. To characterize a large cohort of patients with EMB-proven myocarditis and to determine the prevalence of viral genomes in EMBs; 2. To assess the prognostic value of a positive viral PCR result; 3. To investigate the correlation between PCR results on EMB, clinical presentation, and non-invasive diagnostic tools – with a particular focus on viral serology – in viral myocarditis. Secondary aims: 1. To evaluate the use of specific antiviral therapies in patients with positive viral PCR; 2. To explore the association between specific viral agents and outcomes; 3. To examine the role of PVB19.

Methods: This prospective longitudinal study includes consecutive patients with EMB-proven viral myocarditis, followed up at the Cardioimmunology Outpatient Clinic of the University Hospital of Padua, between 1993 and 2025. All patients underwent EMB and qPCR analysis for viral genome detection. Patient data at diagnosis and follow-up were systematically collected using the REDCap database. Variables were compared using the Wilcoxon rank-sum test for continuous variables and the Chi-square or Fisher's exact test for categorical variables.

Results: The study included 343 patients (66% male, median age 41 years) with EMB-proven myocarditis. PCR on EMB detected viral genomes in 74 cases (22%). The most frequently detected virus was PVB19 (42%, 31/74). Among patients with positive viral PCR, 11 received specific antiviral therapy (22%). No statistically significant differences in clinical presentation and non-invasive diagnostic variables were observed between patients with positive vs. negative viral PCR, those positive for PVB19 vs. other viruses, or those with high vs. low PVB19 viral loads. The findings did not demonstrate a statistically significant correlation between viral serology and the results of PCR test. With respect to prognosis, PCR-positive patients had significantly lower probability of survival compared to PCR-negative patients (75% at 5 years vs 91%%, p = 0,0042) within a median follow up of 62.6 months (Q1-Q3 27.1-114.7). Finally, enterovirus-positive cases had a more favourable clinical course compared to those positive for other viruses.

Conclusions: A substantial proportion (22%) of EMB-proven myocarditis patients has a positive viral PCR. Viral-positive cases show higher mortality, but no distinctive clinical, biomarker or imaging profiles as

compared with patients with virus-negative myocarditis. In addition, viral serology show no correlation with PCR results on EMB, thus reinforcing the role of EMB also for etiological diagnosis. Currently, these patients can only access specific antiviral therapies on an off label, case-by-case basis, and further studies are needed to explore specific therapies for viral myocarditis.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 1027
TOMOGRAFIA AD EMISSIONE DI POSITRONI (PET) (IMAGING CARDIOVASCOLARE)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)
DEFIBRILLATORE IMPIANTABILE (ARITMIE)

UNO STRANO CASO DI SARCOIDOSI CARDIACA

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(a) POLICLINICO UMBERTO PRIMO

Background: La sarcoidosi cardiaca rappresenta una sfida diagnostica complessa e insidiosa. Il suo spettro clinico estremamente variabile può simulare numerose altre cardiopatie, determinando spesso un ritardo nella diagnosi e nel trattamento. Per tale ragione, l'approccio diagnostico deve essere approfondito e multimodale.

Caso clinico: Un uomo di 34 anni, con blocco di branca destra (BBDx) noto fin dall'infanzia e precedentemente asintomatico, è stato inviato alla nostra attenzione a seguito di una risonanza magnetica cardiaca che evidenziava un quadro di cardiomiopatia a fenotipo ipertrofico (spessore massimo settale 14 mm) con lieve disfunzione sistolica del ventricolo sinistro (FE 49%) e presenza di fibrosi sostitutiva con distribuzione subepicardica e transmurale in sede medio-apicale, associata a edema subepicardico nella parete settale. Alla prima valutazione, il paziente si presentava sintomatico per dispnea (classe NYHA II), con elettrocardiogramma evidenziante BBDx e emiblocco anteriore sinistro; l'ecocardiogramma mostrava ventricolo sinistro di normali dimensioni, con ipertrofia del setto interventricolare basale-medio e funzione sistolica ai limiti inferiori della norma (FE 45–50%) per ipocinesia marcata dei segmenti apicali e dell'apice vero, del SIV basale-medio inferiore ed anteriore. Nel sospetto di una cardiomiopatia non ancora definita, veniva eseguita valutazione per malattia di Anderson-Fabry che risultava negativa; venivano inoltre richiesti dosaggi di biomarcatori cardiaci (NT-proBNP e hs-Tn) e valutazione del burden aritmico con ECG Holter delle 24h. Infine nel sospetto di sarcoidosi cardiaca veniva richiesta PET-FDG che mostrava captazione aumentata e disomogenea nella parete settale del ventricolo sinistro (con maggiore focalità nel terzo basale). Gli esami per epatite, HIV e TB risultavano negativi. L'ecografia dei linfonodi superficiali era priva di evidenze patologiche. A maggio 2025, il paziente veniva pertanto ricoverato per esecuzione di biopsia endomiocardica (EMB) con guida CARTO per conferma diagnostica di sarcoidosi cardiaca. Durante il mappaggio si verificava un episodio spontaneo di tachicardia ventricolare degenerata in fibrillazione ventricolare, trattata con DC shock. Lo studio elettrofisiologico risultava positivo per inducibilità aritmica, pertanto veniva impiantato ICD. La EMB mostrava segni di cardiomiopatia avanzata con ipertrofia e vacuolizzazione dei miociti, depositi di lipofuscina e degenerazione basofila, assenza di infiltrati infiammatori significativi, fibrosi endocardica lieve e modesto edema interstiziale, senza evidenza istologica specifica per sarcoidosi. Alla luce del quadro clinico-radiologico che deponeva per elevato

sospetto di sarcoidosi cardiaca si è deciso con il gruppo multidisciplinare di intraprendere terapia immunosoppressiva con prednisone 25 mg x 2. Ai successivi follow-up, il paziente riferiva benessere clinico, con recupero parziale della funzione sistolica (FE 55%), assenza di aritmie rilevate dall'ICD e riduzione dei biomarcatori cardiaci, nonché decremento della captazione ventricolare sinistra alla successiva PET-FDG di controllo a 3 mesi dall'inizio della terapia.

Conclusioni: Questo caso evidenzia la complessità diagnostica e gestionale della sarcoidosi cardiaca. Sebbene la EMB rappresenti il gold standard diagnostico, la sua sensibilità rimane limitata a causa della distribuzione focale delle lesioni. Per questo motivo, è indicata nei casi con forte sospetto clinico l'avvio precoce della terapia immunosoppressiva, che può contribuire significativamente al recupero funzionale e al controllo della progressione di malattia.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 694 CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO) IDONEITA' SPORTIVA (ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT) IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)

A RARE PRESENTATION OF FAMILIAR FILAMINOPATHY IN A YOUNG ATHLETE

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A 18-year-old competitive road cycler with a negative PMH presented to the sport cardiology clinic for competitive sport clearance. His resting ECG presented high QRS voltages, incomplete right boundle branch block (RBBB), early repolarization pattern with negative T-waves in V5-V6 leads.His dad was known for having Dilatative cardiomyopathy, associated to a missense mutation of the Filamin C gene (FLNC - c.5777A>G p., Tyr1926Cys) in heterozygosis (VUS).

DIAGNOSTIC WORKUP

- Transthoracic echocardiogram showed mild asymmetric septal parietal hypertrophy (SIV 15 mm); normal segmental motion and systolic function. Chordal SAM with mild-moderate mitral regurgitation associated to LVOT flow acceleration (baseline/ Valsalva Gmax 18-25 mmHg). Right ventricle: TAPSE 33 mm. Mild tricuspid regurgitation, sPAP estimation: 25 mmHg.
- Stress Echocardiography at maximal effort (HR 201 bpm, >90% predicted MHR), showed LVOT obstruction (Gmax 50 mmHg) associated to chordal SAM. Significant increase of sPAP (Gmax 59 mmHg).
- Cardiac Magnetic Resonance showed left ventricle at upper normal limit for dimensions (201 ml, 116 ml/ m2) with mild-to-moderate hypertrophy (mass 170 g, 98 g/m2), involving mainly the interventricular septum (maximum 14 mm) and an inferior basal crypt. Normal tissue characterization. Absence of LGE areas.

MULTIDISCIPLINARY CONSULT

The patient showed a Hypertrophic obstructive cardiomyopathy (HOCM) phenotype. Given the family history, the patient also underwent a genetic analysis, and he was found to be carrier of the same FLNC mutation as his father.

The calculated HCM risk score was 2.15% (ICD not indicated). Treatment with beta-blocker was initiated and a shared decision making involving the young patient and his family counselled to pursue a strategy of noncompetitive moderate aerobic sports activity, balancing risks and benefit of physical activity.

Finally, regular follow up every 6 months was established, because of his young age and the related possibility of

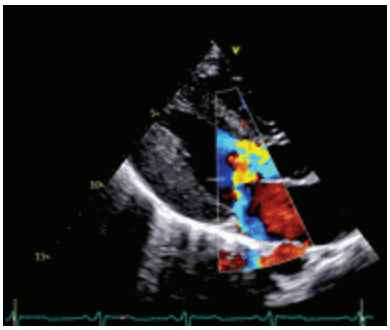


Figure 1

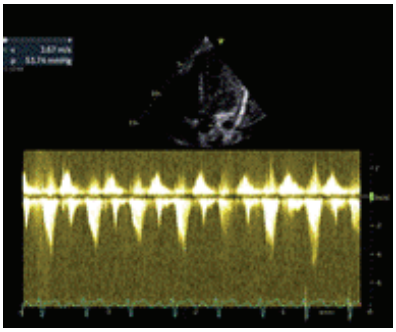


Figure 2

phenotype evolution during developmental age.

CONCLUSION

- Filamin C related cardiomyopathies (Filaminopathies) are a rare and heterogeneous nosology and show high variability in phenotypic expression and penetrance
- FLNC mutation related to HCM are still poorly understood and most gene mutation are classified as VUS, so do not support clinical decisions and/or risk evaluation in other family members.
- A multidisciplinary team is needed to address genetics, phenotype expression, clinical expression and risk stratification in young athletes with cardiomyopaties.

CardioSic

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 873
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)

POLYGENIC ARRHYTHMOGENIC CARDIOMYOPATHY IN ADOLESCENCE: CLINICAL, IMAGING AND GENETIC INSIGHTS

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Arrhythmogenic cardiomyopathy (ACM) is a genetically determined myocardial disease characterized by fibro-fatty replacement, right or biventricular dysfunction, and ventricular arrhythmias. Diagnosis during adolescence can be particularly challenging due to incomplete phenotypic expression. We report the case of a 16-year-old boy with an initial form of ACM associated with multiple pathogenic variants.

The patient, evaluated during family screening (mother affected, uncle with pacemaker implantation at a young age) developed intermittent ventricular ectopy from 2018, without sustained arrhythmias or symptoms. Serial Holter ECG monitoring between 2023 and 2024 confirmed isolated premature ventricular contractions, without significant arrhythmic burden and with no relation to exercise.

Cardiac magnetic resonance (CMR) demonstrated preserved left ventricular (LV) size and systolic function, right ventricular (RV) end-diastolic volume index of 119 mL/m² with ejection fraction at the lower limit of normal (54%), and focal akinesia with localized LGE in RV free wall. No relevant LV fibrosis was detected, except for junctional LGE of uncertain significance.

Genetic analysis revealed the presence of three pathogenic variants: a nonsense heterozygous mutation in the DSP gene (c.5800C>T, Arg1934Ter, class V), a heterozygous pathogenic variant in KCNQ1 (class V), and a heterozygous pathogenic variant in RYR1 (class V, associated with malignant hyperthermia).

At the most recent evaluation, the patient was still asymptomatic, with preserved biventricular function at echocardiogram and no evidence of sustained arrhythmias. On this basis, there were no current criteria for implantable cardioverter-defibrillator (ICD) placement. However, the coexistence of a pathogenic variant in an high-risk gene (DSP) with additional pathogenic variants in KCNQ1 and RYR1 raises concern for a potentially more severe disease trajectory and increased arrhythmic risk over time.

In conclusion, this case illustrates the complexity of

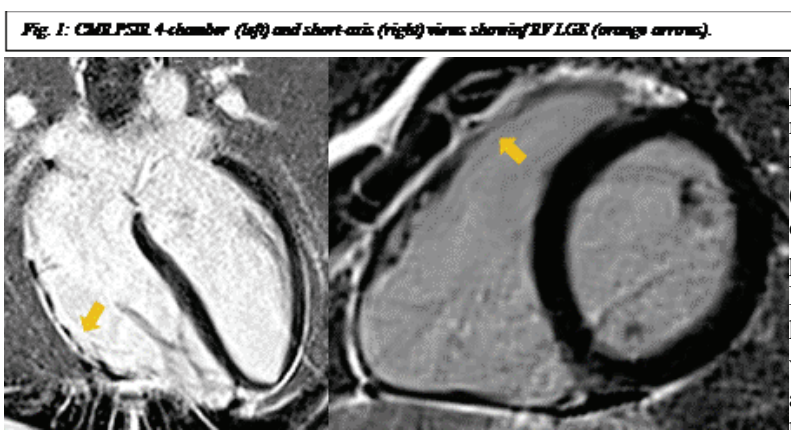


Figure 1

managing early ACM with polygenic pathogenic background. Careful longitudinal follow-up integrating clinical, imaging, and genetic information is essential to anticipate progression, refine arrhythmic risk stratification, and reconsider ICD implantation should the phenotype evolve.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 965 MIOCARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO) CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO) GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)

FROM ACUTE MYOCARDITIS TO CARDIOMYOPATHIES: THE CARDIOGENETIC LINK

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Acute myocarditis has traditionally been defined as an infectious or inflammatory disorder triggered by external factors (infectious – viruses, bacteria, protozoa, helminths, fungi; non-infectious – autoimmune, immune-mediated, or autoinflammatory; and exotoxic – alcohol, chemotherapy, drugs). However, increasing evidence suggests a genetic susceptibility to myocardial inflammatory syndromes. In a minority of cases, pathogenic variants have been identified in genes involved in immune response (e.g., HLA-DR4, TLR3) and, more importantly, in structural genes encoding sarcomeric and desmosomal proteins, showing a significant overlap with the genetic substrate of cardiomyopathies.

Ammirati et al. (2022) demonstrated, in a cohort of 95 acute myocarditis patients undergoing genetic testing for desmosomal variants, that the presence of pathogenic or likely pathogenic variants (that was demonstrated in 36 patients) correlated significantly with high-risk LGE patterns (septal and ring-like, P Value<0,0001). Conversely, myocardial edema—typically considered a favorable prognostic marker of reversible injury—was less prevalent in the genetically positive subgroup.

From the opposite perspective, DSP-related cardiomyopathy has been shown to carry an increased prevalence of myocarditis-like episodes, also termed "hot-phase cardiomyopathies." Gasperetti et al. reported that approximately 20% of 1014 patients in the international DSP-ERADOS registry experienced myocarditis-like events, which were associated with higher risks of arrhythmic and heart failure outcomes, with progressively worse prognosis after recurrent episodes. Interestingly, in this subgroup, immunosuppressive therapy—particularly corticosteroids—was linked to a significant reduction in arrhythmic (P Value <0,001) and heart failure hospitalizations (P Value 0,001), bringing residual risk close to (or lower than) that of DSP patients without a history of myocarditis-like episodes.

Further supporting the inflammatory–genetic interplay, both animal and human data suggest an autoimmune mechanism. Notably, anti-desmoglein-2 autoantibodies correlate strongly with ARVC diagnosis, regardless of desmosomal gene variant status (Chatterjee et al., 2018). A proposed mechanism is that pathogenic variants cause desmosomal detachment, leading to desmoglein-2 exposure and subsequent autoimmune targeting, particularly relevant since DSG2 expression begins after the sixth week of life, thus evading early T-cell self-recognition.

Finally, the recently proposed NDLVC risk score by Peretto et al. includes myocardial inflammation as a major predictor of 5-year arrhythmic outcomes, reinforcing the concept of a shared inflammatory–genetic substrate between myocarditis and cardiomyopathy. Consistently, the latest ESC guidelines recommend genetic testing (class IIa) in cases of family history of myocarditis, cardiomyopathy, or sudden cardiac death; recurrent myocarditis; or persistence of high-risk LGE (septal or ring-like) and/or left ventricular dysfunction at follow-up.

In conclusion, emerging evidence suggests that acute myocarditis and cardiomyopathies share a common genetic–inflammatory background. Genetic testing and recognition of specific imaging patterns may improve risk stratification, while targeted immunomodulatory approaches hold promise in reducing adverse outcomes.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 436 CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO) TOMOGRAFIA AD EMISSIONE DI POSITRONI (PET) (IMAGING CARDIOVASCOLARE) FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)

UN OMBRA MISTERIOSA: DUBBIO DIAGNOSTICO IN CARDIOMIOPATIA DA ACCUMULO

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ACG, di 75 anni, giungeva alla nostra attenzione dopo accesso in DEA per riacutizzazione di HF (comprovata da valori di NT/proBNP a 10425 pg/mL con dispnea a riposo), complicata da quadro bronchitico comunitario in terapia, con angor toracico (EAS associato a QS nelle inferiori con assente progressione di R nelle precordiali) senza elevazione delle troponine, edemi declivi, necessità di posizionamento di accesso venoso centrale. In anamnesi singolo parossismo di Afib. non reiteratosi, AOAI, quadro di riferita osteoartrosi diffusa in terapia corticosteroidea, ridotta all'atto del ricovero. Si somministrava furosemide 40 mg TID in bolo ev, e si disponevano monitoraggio ECG, ecocardiogramma: si riscontrava severa riduzione della FE (40%Q) con severo ispessimento parietale (1,4 cm, SIVm 1,7 cm), riduzione della cinesi globale associata a quadro di risparmio apicale. Agli esami ematochimici evidenza di elevazione della PCR (145 mg/L), QSP con elevazione della quota gamma di incerto significato (γ 24 %, A/G 0.75), valori di β2-microglobulina 6,3 mg/L. A monitoraggio ECG in nessuna derivazione voltaggi di R superiori a 0,5 mV, contrastando con l'apparente ipertrofia concentrica. Pure in presenza di QSP dubbio, ma in considerazione dell'età del paziente e del TTE si effettuava scintigrafia ossea Total Body, disponendo in ogni caso il dosaggio di free light chains, immunofissazione sierica e urinaria, e richiedendo consulenza ematologica. L'imaging metteva in evidenza un quadro sfumato ma patologico, interpretabile come Perugini 1-2 qualitativo, e con analisi semiquantitativa lievemente superiore ai riferimenti del rapporto Heart/Bone sx/dx (1.53, v.n. 1.5); la captazione incidentale su sedi articolari confermava il rimodellamento artrosico riferito. Tale quadro non è di per sè dirimente per nessuna delle forme prevalenti di cardiomiopatia amiloidosica, in quanto lo scoring dell'imaging, per quanto indicativo dell'ATTR, è noto per essere compatibile con una quota dei casi di AL, peraltro più frequentemente associata a bassi voltaggi all'ECG, ad una più severa cardiotossicità e a discrasie ematologiche. La consulenza dell'unità di Oncologia a sua volta esponeva dei dubbi, anche considerando come infrequenti nelle forme AL siano la riscontrata normofunzione renale, l'emocromo nei limiti, assenza di un quadro certo di gammopatia monoclonale al QSP, mantenimento del rapporto κ/λ anche in elevazione di entrambe, e pertanto si richiedeva dosaggio seriato di tutto il pannello per AL. Già durante il ricovero alla riduzione dello steroide e alla correzione di congestione infezione polmonare si osservava riduzione dei valori di PCR e dei valori di catene leggere oltre che del κ/λ, deponendo per alterazioni dei parametri ematologici dovuti ad una terapia incongrua del paziente: una consulenza ematologica successiva escludeva, alla luce dei valori in dimissione, la presenza amiloidosi da catene leggere, ponendo diagnosi di ATTR. Il test genetico effettuato a controllo escludeva forme ereditarie, definendo una forma wild type. A a sei mesi il paziente riferiva miglioramento di astenia e dispnea dopo introduzione di tafamidis in aggiunta a terapia specifica per HFrEF, con buon mantenimento dei valori di pressione arteriosa e frequenza cardiaca. Il paziente, di sua sponte e senza nostro consulto, effettuava

comunque biopsia del grasso periombelicale, di cui riferiva conferma della diagnosi nonostante lo scarso valore predittivo della metodica. Si proponeva introduzione offlabel di vericiguat per il buon profilo di tollerabilità nonostante l'ATTR prima di perdere il paziente a follow up per sue esigenze geografiche.

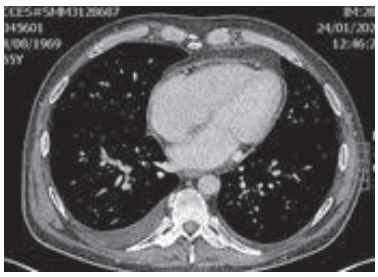
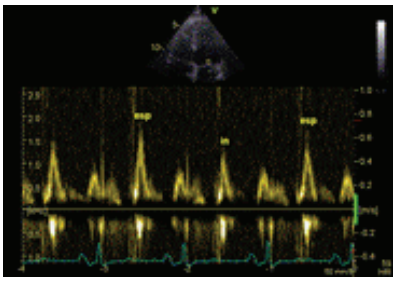
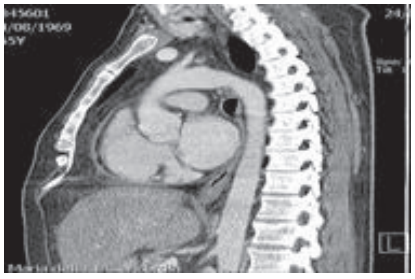
MALATTIE DEL MIOCARDIO E DEL PERICARDIO 1025 PERICARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO) IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE) BIOMARCATORI DELLO SCOMPENSO (SCOMPENSO CARDIACO)

UN CASO DI PERICARDITE COSTRITTIVA

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INTRODUZIONE: La pericardite costrittiva è una sindrome pericardica caratterizzata da rigidità del pericardio con possibile ispessimento e calcificazione e conseguente ostacolo al riempimento diastolico. La diagnosi risulta spesso non comune e per questo insidiosa.

CASO CLINICO: Uomo di 55 anni, in anamnesi patologica: ipertensione arteriosa sistemica, abitudine tabagica, pregresso abuso di cocaina, artrite reumatoide sieropositiva in trattamento con adalimumab. Da circa due anni il paziente lamenta dispnea da sforzo. Nel 2023 ricovero in Cardiologia per dolore toracico, la coronarografia mostrava arterie coronarie indenni da lesioni, la RM cardiaca evidenziava foglietti pericardici ispessiti, edema del pericardio, fisiologia costrittiva. Nei mesi successivi nuovo ricovero per segni e sintomi di scompenso cardiaco destro; veniva iniziata terapia con furosemide a basso dosaggio.
A gennaio 2025 ricovero in Cardiologia per peggioramento della dispnea da sforzo, classe NYHA III. All'esame obiettivo si riscontrava turgore giugulare, epatomegalia, polso paradosso, reflusso epatogiugulare, tono pericardico aggiunto e edemi declivi. Agli esami di laboratorio risultava emocromo normale, incremento degli indici di colestasi e delle transaminasi, basso valore di NT proBNP. L'ecocardiogramma transtoracico mostrava conservata funzione sistolica del ventricolo sinistro, apparati valvolari normali per morfologia e funzione, movimento anomalo del setto interventricolare (septal bounce), variazioni respiratorie significative dell'onda E mitralica, interdipendenza ventricolare, rapporto tra e' mediale ed e' laterale invertito (annulus paradoxus). Il cateterismo cardiaco evidenziava equalizzazione delle pressioni telediastoliche dei due ventricoli in inspirazione e curva ''dip and plateau'' della pressione ventricolare destra. Nel sospetto di pericardite costrittiva, veniva effettuata TC cardiaca con mdc che confermava la fisiologia costrittiva, già visibile all'ecocardiografia, e l'ispessimento dei foglietti pericardici. Il caso veniva discusso con i colleghi Reumatologi che ipotizzavano

Figure

l'associazione tra artrite reumatoide e pericardite costrittiva.
Il paziente veniva, dunque, inviato a valutazione Cardiochirurgica e posta indicazione a pericardiectomia. Dopo l'intervento chirurgico, il paziente è rimasto stabile dal punto di vista clinico e laboratoristico.

CONCLUSIONI: La pericardite costrittiva andrebbe sospettata quando coesistono segni e sintomi di congestione sistemica, valori di NT-proBNP non proporzionati al quadro di congestione, ecocardiogramma di I livello normale; in particolare nei pazienti con storia di pericarditi ricorrenti, malattie infiammatorie sistemiche, pregressa radioterapia toracica.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 451
MIOCARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)

SHORT-TERM OUTCOMES IN INFLUENZA VIRUS-RELATED MYOCARDITIS: A SINGLE-CENTRE REAL-LIFE EXPERIENCE

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(a) UNIVERSITA DEGLI STUDI DI ROMA - SAPIENZA

BACKGROUND: Myocarditis is a potentially life-threatening inflammation of the myocardium that can be triggered by viral infections, including influenza. While corticosteroids have historically been used with caution in viral myocarditis due to concerns over impaired viral clearence, recent insights – particularly those emerging from the COVID-19 pandemic – suggest that early, moderate-dose corticosteroid therapy may offer clinical benefits in selected inflammatory cardiac syndromes.

OBJECTIVE: This study aimed to assess the incidence and clinical features, as well as short-term outcomes of influenza-related myocarditis and/or pericarditis.

METHODS: A retrospective, observational study was conducted, including all consecutive patients diagnosed with acute myocarditis and/or pericarditis between December 2024 and March 2025 who presented with chest pain or dyspnea and had a confirmed Influenza A (H1N1) infection. The diagnostic evaluation included cardiac biomarkers, ECG, TTE, and cardiovascular magnetic resonance (CMR). All patients were monitored during a three-month follow-up period.

RESULTS: Of 281 patients with laboratory-confirmed H1N1 infection, six (2%) were diagnosed with myocarditis and/or pericarditis. All patients diagnosed with myocarditis received coritcosteroid therapy and an antiviral drug (oseltamivir). CMR confirmed the diagnosis in all cases of inflammatory cardiomyopathy. At 30 days, median LVEF improved from 49% to 58%. No deaths or rehospitalizations were reported.

CONCLUSION: Influenza-related myocarditis and/or pericarditis are relatively uncommon, occurring in approximately 2% of cases. When they occurr, they are primarily associated with an uncomplicated clinical course and with favourable short-term outcomes, including a rapid recovery of left ventricular function and the absence of adverse events at three-month follow-up.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 163
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
MECCANISMI DELLE ARITMIE (ARITMIE)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)

SIGNAL-AVERAGED ECG LATE POTENTIALS MIRROR DISEASE SEVERITY IN TRANSTHYRETIN CARDIAC AMYLOIDOSIS

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Background: Signal-averaged electrocardiography (SAECG) detects late ventricular potentials (LVP), markers of abnormal ventricular conduction, which may reflect myocardial structural damage. Their role in transthyretin cardiac amyloidosis (ATTR-CM) remains underexplored.

Methods: In this prospective, single-centre study, we enrolled 62 consecutive patients (32 ATTR-CM; 30 controls) undergoing clinical, echocardiographic, and SAECG evaluation. ATTR-CM diagnosis followed Gillmore's non-invasive algorithm or histology with genetic confirmation. LVP were defined as ≥2 of the following: filtered QRS (fQRS) >114 ms, low-amplitude signal duration (LAS40) >38 ms, and root mean square voltage in the terminal 40 ms (RMS40) <20 μV. A 0–3 LVP score was assigned.

Results: ATTR-CM patients exhibited increased wall thickness, worse diastolic function, reduced left ventricular ejection fraction (LVEF), impaired global longitudinal strain (GLS), higher pulmonary pressures, and lower TAPSE compared with controls (all p<0.01). SAECG showed prolonged fQRS (127±35 vs 90±15 ms, p<0.001, figure), lower RMS40 [12 (6 – 43) vs 40 (27 – 84) μV, p=0.001), and higher LAS40 [41 (20 - 73) vs 24 (20 - 31), p=0.029]. LVP+ (n=21, 34%) were more prevalent in ATTR-CM (76% vs 24%, p=0.006) and associated with greater wall thickness, higher pulmonary pressures, lower LVEF and GLS, and increased left bundle branch block prevalence. Higher LVP scores correlated with stepwise deterioration in echocardiographic parameters and progressive SAECG abnormalities, with LBBB observed exclusively in score=3. Logistic and linear regression identified septal thickness, pulmonary pressures, GLS, LVEF, QT/QTc, and LBBB as predictors of LVP presence and score.

Conclusions: ATTR-CM is associated with distinct SAECG alterations, whose severity parallels structural and functional impairment. The LVP score may provide incremental, non-invasive risk stratification, complementing imaging and biomarkers in identifying advanced disease phenotypes.

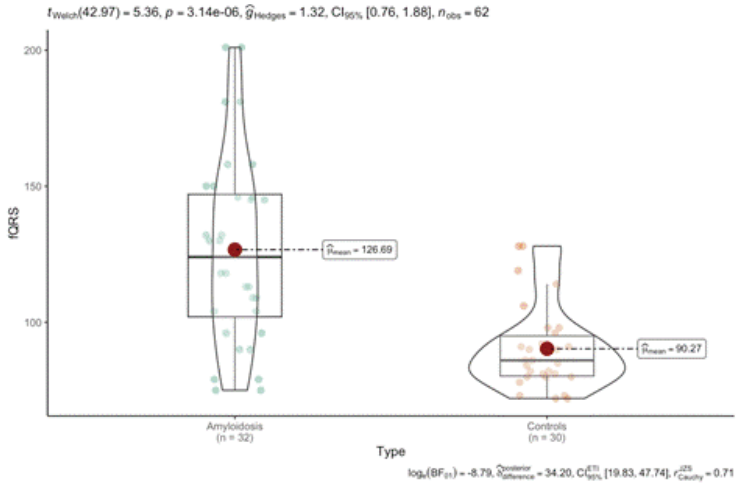


Figure 1: Violin plot describing differences in fQRS between ATTR-CM and Controls

Figure 1

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 1031
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
BIOLOGIA MOLECOLARE CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
SINCOPE (ARITMIE)
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)

SFIDA DIAGNOSTICA DELLA CARDIOMIOPATIA DI FABRY: È ANCORA INDICATA LA BIOPSIA ENDOMIOCARDICA?

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(a) POLICLINICO UMBERTO I

Background: La malattia di Fabry è una malattia da accumulo lisosomiale a trasmissione legata al cromosoma X, causata da una carenza dell'enzima α-galattosidasi A, che determina l'accumulo intracellulare di globotriaosilceramide (Gb3) in vari tessuti, tra cui il cuore. Il coinvolgimento cardiaco si manifesta prevalentemente con una cardiomiopatia a fenotipo ipertrofico, che va differenziata da altre cause, in particolare la cardiomiopatia ipertrofica sarcomerica. La risonanza magnetica cardiaca, attraverso la valutazione di una riduzione del tempo T1, permette di distinguere questa forma di ipertrofia ventricolare dalla amiloidosi cardiaca o dalla cardiomiopatia ipertrofica sarcomerica, pur in presenza di una ostruzione all'efflusso ventricolare sinistro.

Caso clinico: Un paziente di 64 anni, con storia di disturbo bipolare, accedeva in Pronto Soccorso per un episodio sincopale. All'elettrocardiogramma di ingresso si documentava una fibrillazione atriale a frequenza ventricolare media di 170 bpm che, in considerazione della instabilità emodinamica, veniva trattata con cardioversione elettrica e successivo ripristino del ritmo sinusale.
L'ecocardiogramma trans-toracico documentava una cardiomiopatia ipertrofica concentrica (SIV 18 mm, DTD 44 mm, PP 15 mm) con ostruzione del tratto di efflusso del ventricolo sinistro (Gradiente massimo di 85 mmHg in condizioni basali), con persistenza dell'ostruzione all'efflusso nonostante terapia con metoprololo ad alte dosi. La risonanza magnetica cardiaca ha confermato la presenza di ipertrofia concentrica del ventricolo sinistro, in assenza di modificazioni dei valori miocardici di T1 suggestivi per condizione da accumulo, con piccola e circoscritta area di LGE infero-laterale basale. In considerazione del quadro clinico di ostruzione all'efflusso ventricolare sn e di una RMC suggestiva di una forma primitiva di cardiomiopatia ipertrofica, il paziente veniva preso in considerazione per terapia con Mavacamten. Per la presenza di un aspetto ECG da preeccitazione ventricolare, si decideva di sottoporre il paziente a uno studio elettrofisiologico, che escludeva la presenza di una via accessoria, e, nella stessa seduta, ad una biopsia endomiocardica del ventricolo destro per via transvenosa femorale, per una migliore definizione della patologia alla base del fenotipo ipertrofico.
L'esito dell'esame istologico a sorpresa ha mostrato la presenza di vacuoli citoplasmatici che alla microscopia elettronica hanno mostrato l'aspetto a lamelle concentriche, suggestive di malattia di Fabry. Il paziente è stato sottoposto a screening enzimatico e genetico che ha confermato la mutazione N215S del gene aGAL, confermando la diagnosi di malattia di Fabry.

Conclusioni: Questo caso clinico dimostra come la malattia di Fabry possa simulare una cardiomiopatia ipertrofica sarcomerica ostruttiva in assenza di riduzione dei valori di T1 nativo alla risonanza magnetica. Prima di intraprendere una terapia specifica con Mavacamten è sempre necessario escludere questa forma secondaria, che se correttamente diagnosticata può essere trattata con terapia enzimatica sostitutiva, con importante impatto sulla prognosi dei pazienti affetti.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 905
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
IMAGING MIOCARDICO-PERICARDICO
(MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

DETERMINANTS OF LONG-TERM SURVIVAL WITH TAFAMIDIS IN TRANSTHYRETIN CARDIAC AMYLOIDOSIS: INSIGHTS FROM A MONOCENTRIC EXPERIENCE

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(a) DEPARTMENT OF MEDICAL AND SURGICAL SCIENCES (DIMEC), ALMA MATER STUDIORUM, UNIVERSITY OF BOLOGNA, BOLOGNA, ITALY ; (b) CARDIOLOGY UNIT, CARDIAC THORACIC AND VASCULAR DEPARTMENT, IRCCS AZIENDA OSPEDALIERO-UNIVERSITARIA DI BOLOGNA; (c) EUROPEAN REFERENCE NETWORK FOR RARE, LOW PREVALENCE AND COMPLEX DISEASES OF THE HEART - ERN GUARD-HEART

Background: Transthyretin cardiac amyloidosis (ATTR-CM) is a pathological condition leading to heart failure and death. Tafamidis has been shown in the ATTR-ACT trial to reduce disease progression. Nevertheless, few real-world studies are available in the literature regarding the effectiveness of this therapy.
The aim of the present study is to analyze the clinical and instrumental characteristics of patients treated with Tafamidis and to identify potential baseline predictors of heart failure, urgent cardiology visits or death after at least 12 months of treatment exposure.

Methods: We retrospectively analyzed 118 consecutive patients with ATTR-CM (including 12 with variant ATTR-CM and 106 with wild-type ATTR-CM), who initiated Tafamidis therapy at our center between 2022 and 2024. All patients underwent a comprehensive cardiological evaluation, which included transthoracic echocardiography, electrocardiography, laboratory testing, clinical assessment and systematic follow-up data collection.

Results: 107 patients (91%) were male with a median age of 75 [69–78] years. Most patients were in NYHA functional class II (96, 81%) and had a NAC stage 1 score (66, 56%). At the time of Tafamidis initiation, atrial fibrillation was present in 25 patients (21%); transthoracic echocardiography showed a left ventricular ejection fraction (LVEF) of 55% [48–60]. The median daily dose of furosemide was 50 [25–75] mg and NT-proBNP level was 954 [IQR 595–1530] pg/mL. Over a median follow-up of 29 [16–42] months, 34 patients (29%) experienced a composite endpoint of hospitalization, urgent cardiology evaluation or death. In univariate analysis, LVEF ≤50%, hemoglobin <12 g/dL and the combination of NT-proBNP >1200 pg/mL with a furosemide dose ≥50 mg/day were associated with adverse outcomes. These variables remained independent predictors of treatment failure in the multivariate analysis.

Conclusion: In this single-center study, Tafamidis treatment in patients with ATTR-CM was associated with clinical stability particularly among those who, at treatment initiation, presented with LVEF >50%, a daily furosemide dose <50 mg with moderately elevated NT-proBNP levels. Further multicenter studies are warranted to validate these prognostic indicators.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 884
SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO)
MIOCARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
ECMO (ASSISTENZA CARDIACA IN ACUTO)
ASSISTENZA INTENSIVA CARDIOVASCOLARE IN ACUTO (ASSISTENZA CARDIACA IN ACUTO)

FULMINANT MYOCARDITIS AND CARIDOGENIC SHOCK IN CATASTROPHIC APS AND SYSTEMIC SCLEROSIS

Josefina Magliolo (a), Lucia Ilaria Birtolo (a), Annalisa Caputo (a), Gianmarco Scoccia (a), Carmine Dario Vizza (a)
(a) MALATTIE DELL'APPARATO CARDIOVASCOLARE, UNIVERSITÀ SAPIENZA DI ROMA

Background: Fulminant myocarditis (FM) is a life-threatening condition characterized by acute cardiac inflammation leading to cardiogenic shock, ventricular arrhythmias, or multiorgan system failure and therefore requiring prompt intervention. We report a case on fulminant myocarditis (FM) rapidly evolved in cardiogenic shock in a 58-year-old female with newly diagnosed systemic sclerosis (SSc) and antiphospholipid syndrome, necessitating immediate initiation of mechanical circulatory support.

Case summary: A 58-year-old female patient admitted to the rheumatological department with a recent diagnosis of systemic sclerosis (SSc) and antiphospholipid syndrome and no cardiological records, developed dyspnea and chest pain. An electrocardiogram showed sinus tachycardia and ST-segment depression in inferior-lateral leads. A high-sensitivity troponin T test was performed, with an initial value of 3.78 µg/L and second value of 4.9 µg/L(normal value: <0.014 mcg/L). An echocardiogram showed severe impairment of LVEF to 20% with global hypokinesia; based on these findings a coronary angiography was performed revealing no significant stenosis in the coronary arteries, ruling out an ischemic cause (potentially linked to Antiphospholipid Syndrome). In less than 24 hours patient's clinical and hemodynamic status deteriorated rapidly, with worsening sensorium, hypotension, oliguria, and a rising lactate level on arterial blood gas analysis (>17 mmol/L). An echocardiogram showed further deterioration in cardiac function, with LVEF reduced to 10%. Despite initiation of inotropic therapy with dobutamine and norepinephrine, there was no clinical improvement. A suspected diagnosis of fulminant autoimmune myocarditis with cardiogenic shock was made, prompting urgent initiation of peripheral venoarterial Extracorporeal Membrane Oxygenation (VA-ECMO) combined with an Impella device to unload the left ventricle (EC-Pella approach). Immunosuppressive therapy was initiated, including high-dose methylprednisolone, plasmapheresis, and intravenous immunoglobulins, as recommended by rheumatology consultation. In the following days her clinical conditions improved. Serial echocardiograms showed a progressive improvement on left ventricle ejection fraction and a reduction in lactate levels, allowing for a gradual weaning from mechanical support.

Conclusion: Fulminant myocarditis in rheumatologic diseases is a life-threatening condition that can evolve rapidly in cardiac shock, therefore requiring prompt treatment. This case underscores the crucial role of early diagnosis, immediate mechanical circulatory support when necessary and empirical combined immunosuppression in managing suspected autoimmune fulminant myocarditis. It also highlights the benefits of a combined EC-Pella approach for left ventricular unloading and the importance of multidisciplinary teamwork to improve clinical outcomes.

CardioSic

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 959
PERICARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MIOCARDICO-PERICARDICO
(MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)

CONSTRICTIVE PERICARDITIS MIMICKING RIGHT HEART FAILURE: A CASE OF RECURRENT PLEUROPERICARDITIS AND COMPLEX MANAGEMENT

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Abstract: Constrictive pericarditis (CP) is characterized by pericardial thickening and rigidity, leading to impaired ventricular diastolic filling and predominantly right-sided heart failure. We report the case of a 66-year-old man with a history of recurrent pleuropericarditis, right-sided heart failure, and severe hepatic fibrosis likely of cardiogenic origin. Despite undergoing coronary artery bypass grafting (CABG) and pericardial adhesion lysis, symptoms persisted. CP was confirmed by cardiac catheterization and cardiac magnetic resonance imaging (CMR). Acid-fast bacilli were detected in pleural fluid, but mycobacterial cultures and PCR were negative. Medical therapy led to clinical improvement; surgical reintervention was deferred due to high operative risk.

Introduction: Constrictive pericarditis is an uncommon but potentially reversible cause of diastolic heart failure. Misdiagnosis is common, as CP may mimic restrictive cardiomyopathy, cirrhosis, or chronic pulmonary diseases (1;2). Precise diagnosis is crucial, as surgical pericardiectomy offers a curative option in selected cases. In developed countries, the most common causes include idiopathic/viral pericarditis, prior cardiac surgery, or radiation therapy. Diagnosis relies on clinical suspicion, imaging modalities, and invasive hemodynamic evaluation. (3;4)

Case Report: A 66-year-old male presented with a two-year history of recurrent pleuropericarditis, initially managed with antibiotics and corticosteroids. One year prior, he developed signs of right-sided heart failure, including peripheral oedema, ascites, and mild jaundice. Severe hepatic fibrosis was diagnosed and attributed to chronic cardiac congestion. Coronary CT angiography revealed triple-vessel coronary artery disease, and the patient underwent CABG with concomitant pericardial adhesion lysis. Despite the intervention, symptoms persisted, including recurrent pleural effusions and progressive dyspnea. On admission to our center, the patient was hemodynamically stable, mildly hypotensive, and oxygen-dependent. Physical examination showed abdominal distension and reduced breath sounds at the lung bases. ECG revealed low QRS voltage and T-wave abnormalities. Transthoracic echocardiography demonstrated a marked septal bounce, restrictive diastolic filling, preserved left ventricular ejection fraction (50%), and mild to moderate tricuspid regurgitation. Right heart catheterization confirmed CP, showing elevated right atrial pressure, prominent Y descent, diastolic pressure equalization across chambers, a dip-and-plateau pattern, and elevated right ventricular systolic pressure. CMR findings were consistent with constrictive physiology and showed subendocardial fibrosis suggestive of prior ischemic injury. Thoracentesis revealed pleural fluid positive for acid-fast bacilli, although mycobacterial cultures and PCR were negative. Extensive infectious and autoimmune panels were unremarkable, except for previous HBV exposure. Hepatic ultrasound excluded cirrhosis but confirmed post-hepatic portal hypertension. Given high surgical risk, reoperation was contraindicated. Medical therapy included diuretics, SGLT2 inhibitors, corticosteroids, and colchicine, with

clinical improvement and reduction in pleural effusions, although the patient still shows marked functional limitation. Follow-up imaging showed decreased pulmonary findings and no radiologic signs of active mycobacterial infection.

Discussion and Conclusion: CP should be considered in all cases of unexplained right-sided heart failure, particularly in patients with a history of pericardial disease or prior cardiac surgery (5). This case highlights the diagnostic and therapeutic challenges of CP, especially in patients with significant comorbidities and high surgical risk. Despite partial surgical pericardial release, constriction persisted, necessitating further evaluation and the patient still presents a marked functional limitation despite therapeutic optimization. Multimodal imaging and invasive hemodynamics were critical in confirming the diagnosis. While pericardiectomy remains the definitive treatment for refractory CP, careful patient selection and management in high-volume centers are essential. Multidisciplinary evaluation is key to optimizing outcomes in complex cases such as this.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 669
ARITMIE SOPRAVENTRICOLARI (ESCLUSA FA) (ARITMIE)
MIOCARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
PROGNOSI (SCOMPENSO CARDIACO)
CARDIOLOGIA PEDIATRICA
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)

EARLY EXPERIENCE OF THE EFFICACY OF A MYOCARDIAL PANEL IN THE MANAGEMENT AND TREATMENT OF PEDIATRIC MYOCARDITIS COMPLICATED WITH ARRHYTHMIAS

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Background: Myocarditis is defined as an inflammation of the myocardium, characterized by significant heterogeneity in causes and phenotypes, which makes the clinical management process complex at every step. The combination of direct cardiac injury and inflammation may lead to arrhythmias, which may worsen the outcomes, especially in pediatrics. In this population, the assay of viral genome, bacterial serology and markers of inflammation is advisable but not recommended.

Purpose: We sought to determine the efficacy of combined management and treatment driven by the systematic determination of viral genome, bacterial serology, and markers of inflammation in pediatrics diagnosed with myocarditis complicated by arrhythmias.

Methods: In 2024-25, we enrolled N=9 [7.0 (±4.0) years-old, 66.7% males] consecutive pediatric patients (< 18 years old) presenting with myocarditis complicated by arrhythmias: atrial tachycardia (AT), ventricular tachycardia (VT) or heart block (HB). For our purposes, we compared n=4 patients [7±4.5 years-old, 75% males] managed and treated in 2024 without applying the myocarditis panel, with n=5 patients [8±4 years-old, 60% males] from 2025 in which management and treatment was driven by the panel. The latter consisted of viral genome (Enterovirus, Adenovirus, Herpes Viruses, Parvovirus B19, Chickenpox, Measles, Influenza, Respiratory Syncytial Virus), bacterial serology (Mycoplasma, Chlamydia, Streptococcus, Borrelia, Rickettsiae, Brucella and Salmonella) and inflammation's markers [C-reactive protein (CRP), anti-native DNA antibodies, cANCA/pANCA, ENA and rheumatoid factor] systematic assay at the hospital admission. All the pathogenic agents detected were treated following currently available guidelines. Antiarrhythmic therapy was implemented according to clinical needs and modified based on lack of response or in case of recurrences. All the participants contextually underwent cardiac magnetic resonance (CMR). The post-discharge follow-up lasted 3 months.

Results: At admission, the most frequent arrhythmia was fascicular tachycardia, n=5/9 (55.6%), followed by

an atrioventricular block, n=2/9 (22.2%). The majority (n=6/9, 66.7%) presented with fever, with a CRP median value of 0.8 [Q1-Q3: 0.1, 4.0]. The most frequent pathogenic agents were Mycoplasma and Borrelia (n=2/9; 22.2%, respectively); Enterovirus, Influenza B, and Parvovirus B19 were detected less frequently (n=1/9; 11.1%, respectively). The most commonly used antiarrhythmic treatment was nadolol alone or in combination with flecainide (n=3/9, 33.3%, respectively). The mean hospitalization was 21±15 days. Patients managed and treated following the myocarditis panel experienced fewer arrhythmias duration time in hours (Log-rank, p=0.011), more extended periods in days free from in-hospital arrhythmic recurrences (Log-rank, p=0.003) and fewer number of recurrences 1 (20.0 %) vs 4 (100.0%), p=0.016. At the post-discharge follow-up, only those treated without a panel experienced recurrence of arrhythmias.

Conclusions: Among pediatric patients with myocarditis, the combined etiological/antiarrhythmic therapeutic management of arrhythmias, including VT and HB in particular, driven by the systematic application of our myocarditis panel, resulted in a short duration of in-hospital arrhythmias, without significant in-hospital or post-discharge complications.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 1051
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)
SCINTIGRAFIA MIOCARDICA (IMAGING CARDIOVASCOLARE)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
PROGNOSI (SCOMPENSO CARDIACO)

PERSEVERANCE PAYS: A CASE REPORT OF ISOLATED CARDIAC AL AMYLOIDOSIS

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Cardiac amyloidosis is a progressive infiltrative cardiomyopathy caused by the extracellular deposition of misfolded proteins in the myocardium. Once considered rare, its prevalence is increasingly recognized due to advances in non-invasive cardiac imaging. Current evidence indicates that it remains an underdiagnosed cause of heart failure.

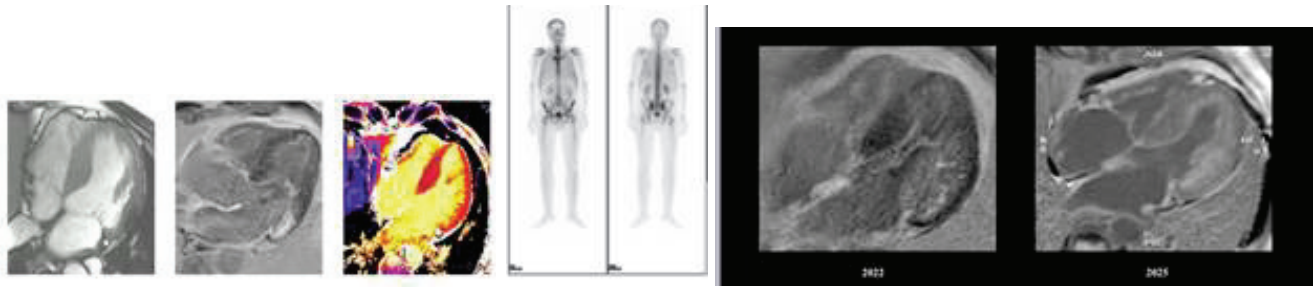
The disease usually manifests with heart failure symptoms, often with preserved systolic function at presentation. Given the systemic nature of amyloid deposition, extracardiac features frequently provide key diagnostic clues. Diagnostic evaluation includes a combination of laboratory assays, multimodality imaging (echocardiography, cardiac magnetic resonance, scintigraphy), and tissue biopsy. In selected cases, endomyocardial biopsy (EMB) is required to confirm the diagnosis.

Treatment is subtype-specific, complex, and usually requires a multidisciplinary approach, combining symptomatic therapy with disease-modifying agents. To date, approximately 30 proteins have been identified as amyloidogenic, but only nine are associated with clinically relevant cardiac disease. The two predominant forms are transthyretin amyloidosis (ATTR, including wild-type [ATTRwt] and hereditary [ATTRv] variants) and immunoglobulin light chain amyloidosis (AL).

AL amyloidosis is typically associated with clonal plasma cell disorders, resulting in secretion of unstable immunoglobulin free light chains (FLCs) that aggregate into amyloid fibrils. Cardiac involvement represents a major determinant of prognosis in this setting.

A 59-year-old Caucasian man was referred for follow-up of a previously diagnosed non-obstructive hypertrophic cardiomyopathy phenotype (first cardiac MRI in 2022). He reported exertional dyspnea of mild-to-moderate severity and had a left pleural effusion pending thoracentesis. Laboratory tests were within normal limits. Initial screening for amyloidosis, including serum protein electrophoresis, urine immunofixation, and scintigraphy, was negative. However, due to persistent symptoms and high clinical suspicion, repeat cardiac MRI was performed and showed findings strongly suggestive of cardiac amyloidosis. Subsequent EMB confirmed amyloid fibril deposition derived from lambda light chains.

This case highlights AL amyloidosis with isolated cardiac involvement, presenting with dyspnea in the absence of significant extracardiac manifestations or abnormal laboratory results. The diagnosis required repeat advanced imaging and confirmatory EMB, underscoring the need for persistent clinical vigilance in suspected cases.



Figures

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 991
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
BIOLOGIA MOLECOLARE CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

MAVACAMTEN IN NOONAN SYNDROME: CLINICAL BENEFITS MEDIATED BY AN OFF-TARGET MECHANISM

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In November 2023 a 38-year-old woman was referred to our outpatient clinic for a newly diagnosed non-obstructive hypertrophic cardiomyopathy. Her personal history included systemic lupus erythematosus complicated by lupus nephritis requiring dialysis (2014–2017) and subsequent renal transplantation (2017), retinal vein thrombosis (2008), corticosteroid-induced osteoporosis and hemorrhoidal prolapse (since 2023). The patient reported a strong limitation in her exercise capacity, in NYHA class III, and sporadic episodes of lightheadedness during physical effort. The electrocardiogram showed sinus rhythm at 72 bpm, with normal atrioventricular and interventricular conduction, high voltages and negative T waves in the inferolateral leads suggestive forn left ventricular hypertrophy. Transthoracic echocardiography revealed asymmetric left ventricular hypertrophy with a left ventricular ejection fraction (LVEF) of 60%, left ventricular outflow tract (LVOT) obstruction with a resting gradient of 68 mmHg, 95 mmHg with Valsalva manoeuvre, with moderate mitral and aortic insufficiency and a preserved right systolic function. Cardiac magnetic resonance (CMR) confirmed asymmetric septal hypertrophy (maximal wall thickness of 18 mm in the basal inferior interventricular septum), LVOT obstruction, diffuse interstitial fibrosis and patchy late gadolinium enhancement in mid inferolateral, inferior and anterolateral segments and apical inferior segment. HCM risk score was 4.18%. Therapy with metoprolol was initiated and subsequently combined with disopyramide. However, the latter was discontinued due to gastrointestinal intolerance. Given the persistence of LVOT obstruction despite metoprolol at maximally tolerated dose, a compassionate use request for mavacamten was promptly submitted and approved. The drug was started at a dose of 5 mg per day. After four weeks, the patient reported substantial symptomatic improvement, although LVOT gradients remained elevated (60- 75 mmHg). At week twelve, the dose was titrated to 10 mg daily. Four weeks later, the patient was in NYHA class II, complete resolution of LVOT obstruction was achieved, with relative decline in LVEF to 52% and relative hypokinesia of the apical segments. At week twenty, non-contrast cardiac MRI was performed and demonstrated a reduction in maximal septal wall thickness from 18 to 16 mm, complete resolution of LVOT obstruction and stable diffuse interstitial fibrosis. By week twenty-four, the patient was clinically stable, with LVEF of 53%, and no LVOT obstruction. A marked decrease in NT-proBNP was detected from treatment initiation (973 pg/ml vs. 5000 pg/ml at baseline). Meanwhile, genetic testing identified a heterozygous PTPN11 mutation (c.184T>A, p.Tyr62Asn, Class 4), confirming the diagnosis of Noonan syndrome. At sixty weeks the patient remained clinically stable in NYHA class II with preserved systolic function (LVEF 52%), absence of clinically relevant LVOT obstruction, and sustained symptomatic improvement. Conclusion. This case highlights the clinical and

structural effects of mavacamten therapy in a patient with obstructive hypertrophic cardiomyopathy ultimately diagnosed with Noonan syndrome. In this patient, mavacamten was associated with significant symptomatic relief, resolution of LVOT obstruction, a modest reduction in left ventricular hypertrophy and a substantial decrease in NT-proBNP levels, suggesting that - despite its unselective mechanism of action - the drug may confer meaningful clinical benefit in this complex setting.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 270
MIOCARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO)
IMAGING MIOCARDICO-PERICARDICO
(MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

PHEOCHROMOCYTOMA INDUCING LYMPHOCYTIC MYOCARDITIS PRESENTING WITH CARDIOGENIC SHOCK AND PULMONARY EDEMA: A CASE REPORT

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Introduction: Pheochromocytomas (PCCs) are rare neuroendocrine tumors arising from adrenal chromaffin cells, characterized by unpredictable catecholamine secretion. Beyond the classical triad of headache, diaphoresis, and palpitations, clinical presentations are often atypical. One of the most severe complications is catecholamine-induced cardiomyopathy (CICM), reported in up to 10–11% of PCCs, encompassing Takotsubo cardiomyopathy (TCM), catecholamine-induced myocarditis (CIM), and other forms of non-ischemic myocardial injury. Cardiac magnetic resonance (CMR) and endomyocardial biopsy (EMB) reamin pivotal diagnostic tools, yet distinguishing between CICM and other forms of myocarditis is frequently challenging.

Case Summary: A 41-year-old previously healthy female presented with acute dyspnea and hypertensive crisis. Initial evaluation revealed elevated high-sensitivity troponin I; electrocardiography showed sinus tachycardia with non-specific repolarization abnormalities and transthoracic echocardiography demonstrated a severe left ventricular dysfunction (ejection fraction 20%) with global mid-basal akinesia. Chest X-ray revealed pulmonary edema. Shortly after admission to the cardiac intensive care unit, she deteriorated, developing hypotension, oligo-anuria, and lactic acidosis. Dobutamine and high-dose diuretics achieved stabilization. Coronary angiography excluded obstructive coronary artery disease. EMB was consistent with acute lymphocytic myocarditis (LM) while viral PCR was negative. CMR confirmed myocardial edema and non-ischemic patchy late gadolinium enhancement. Despite initial recovery, the patient experienced recurrent hypertensive crises. Biochemical testing revealed markedly elevated urinary metanephrines, and imaging identified a 3 cm right adrenal mass. Robotic adrenalectomy was successfully performed and histopathology confirmed PCC, with complete recovery of cardiac function at follow-up.

Discussion: This case underscores the diagnostic complexity of non-ischemic cardiomyopathies presenting with cardiogenic shock. Although EMB and CMR supported a diagnosis of LM, the underlying cause was ultimately identified as catecholamine-mediated myocardial injury due to PCC. Classically, acute CIM is caracterized by neutrophilic infiltration; however, our case demonstrates that PCC-induced CIM can present mimicking autoimmune myocarditis, likely through a dual mechanism: direct catecholamine toxicity and immune activation from antigen exposure. The overlap between CICM, TCM, and LM highlights the limitations of current diagnostic frameworks and emphasizes the need for heightened clinical suspicion of PCC in patients with unexplained myocarditis-like presentations, particularly when associated with hypertensive crises. Importantly, distinguishing among these entities is crucial: according to the latest ESC Guidelines, corticosteroids may be considered in presumed autoimmune LM; however, in PCC patients, such therapy carries a high risk of precipitating a catecholaminergic crisis.

Conclusions: PCC-related CIM is a rare but life-threatening condition that can masquerade as autoimmune myocarditis. Diagnosis requires integration

of multimodal cardiac imaging, histopathology, and endocrine evaluation. To our knowledge, this is the first report of PCC presenting as biopsy-proven LM with concordant CMR findings, supporting a potential immune-mediated mechanism of myocardial injury triggered by catecholamine excess. Early recognition and timely surgical resection remain essential to ensure recovery and long-term survival.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 720
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)
ARITMIE VENTRICOLARI (ARITMIE)

DIVERSE ENTITÀ, STESSO FENOTIPO? STRATIFICAZIONE DEL RISCHIO NELLA CARDIOMIOPATIA NON DILATATIVA E NELLA CARDIOMIOPATIA ARITMOGENA DEL VENTRICOLO SINISTRO

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Introduzione. Le più recenti linee guida ESC sulle cardiomiopatie hanno introdotto la nuova entità di Cardiomiopatia non dilatativa del ventricolo sinistro (NDLVC), in parte sovrapponibile alla nota Cardiomiopatia Aritmogena del ventricolo sinistro (ALVC). Tuttavia, oltre ai casi con mutazioni genetiche note, in particolare associate agli "high risk genes" (LMNA, FLN-C), i dati prognostici sono ancora limitati.

Obiettivo. Valutare l'impatto dell'espressione fenotipica sugli outcomes clinici in pazienti con NDLVC "gene elusive" confrontati con pazienti con ALVC da nota mutazione desmosomiale.

Metodi. I dati clinici e strumentali di 42 pazienti NDLVC con test genetico negativo e senza storia pregressa nota di miocardite sono stati confrontati con quelli di 65 pazienti con ALVC con mutazione desmosomiale (classi ACGM 4 e 5), diagnosticati secondo i criteri di Padova 2020. L'endpoint principale (MACE) comprendeva aritmie ventricolari maggiori (MVA), morte improvvisa, morte cardiovascolare, scompenso cardiaco ed episodi di "hot phase".

Risultati. La coorte NDLVC presentava una prevalenza maggiore di sesso maschile (p=0.02), di stato di probando (p<0.001) e di MVA all'esordio clinico (p=0.05) rispetto alla coorte ALVC, che veniva invece diagnostica più frequentemente grazie allo screening familiare (p=0.02). Tra i parametri elettrocardiografici, l'unica differenza significativa emersa sono stati i bassi voltaggi nelle derivazioni periferiche nel gruppo ALVC (p=0.04). Alla risonanza magnetica cardiaca, i pazienti ALVC presentavano un grado maggiore di dilatazione ventricolare sinistra (volume telediastolico medio 95±22 ml/mq in ALVC vs 84±9.6 ml/mq in NDLVC, p<0.001), senza differenze significative nella frazione d'eiezione ventricolare sinistra (52±8.7% in ALVC vs 57±7.8% in NDLVC, p>1). Alla caratterizzazione tissutale, entrambi i gruppi presentavano un alto grado di fibrosi, in particolare con coinvolgimento di ≥ 3 segmenti (86% ALVC vs. 88% NDLVC, p=1). Durante un follow-up mediano di 36 mesi (IQR 30-113.5), non sono emerse differenze significative nei MACE (35% ALVC vs 33% NDLVC, p=0.99) e nei singoli oucomes clinici inclusi nella definizione di MACE.

Conclusione. Il nostro studio evidenzia come NDLVC e ALVC presentino un fenotipo in larga parte sovrapponibile, attribuibile soprattutto all'estesa fibrosi rilevata alla risonanza magnetica, più che alla funzione ventricolare. La scarsa consapevolezza clinica dell'NDLVC gene-elusive spiega la maggiore frequenza di probandi e di esordi con MVA, a differenza dell'ALVC desmosomiale, più spesso identificata tramite screening familiare. La presenza di bassi voltaggi periferici all'ECG rappresenta un elemento più caratteristico dell'ALVC. In definitiva, nei pazienti con fibrosi subepicardica gli esiti clinici risultano maggiormente determinati dall'estensione della cicatrice, piuttosto che dall'eziologia genetica sottostante.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 505
ARITMIE VENTRICOLARI (ARITMIE)
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

CLINICAL CHARACTERISTICS AND OUTCOME OF PATIENTS WITH BIVENTRICULAR AND LEFT-DOMINANT ARRHYTHMOGENIC CARDIOMYOPATHY WITH RING-LIKE LATE GADOLINIUM ENHANCEMENT PATTERN

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Background: The ring-like pattern of late gadolinium enhancement (RL-LGE) on cardiac magnetic resonance (CMR) has been proposed as a distinctive imaging marker of arrhythmogenic cardiomyopathy (ACM) with left ventricular (LV) involvement. However, the clinical characteristics and prognostic significance remain to be further clarified.

Methods: In this cross-sectional study, we included consecutive patients with a diagnosis of biventricular or left-dominant ACM (BIV-ACM or LD-ACM). RL-LGE was defined as subepicardial or midmyocardial LGE involving ≥3 contiguous LV segments on the same short-axis slice. The primary endpoint was a composite of sudden cardiac arrest, sustained ventricular tachycardia, or implantable cardioverter-defibrillator (ICD) interventions.

Results: Among 149 patients (mean age 36 ± 12 years; 66% male), RL-LGE was identified in 73 (49%), most commonly in association with DSP variants, with a higher prevalence in BIV-ACM (70%) compared to LD-ACM (30%). Over a median follow-up of 31 months, 24 patients (16%) experienced the primary endpoint, 67% of whom had RL-LGE. In multivariable Cox regression, RL-LGE emerged as an independent predictor of the primary endpoint (HR 2.47; 95% CI 1.10–6.02; p=0.042), along with nonsustained ventricular tachycardia (HR 2.62; 95% CI 1.17–6.41; p=0.033), whereas genetic status did not provide additional prognostic information. Incorporating RL-LGE into the ARVC risk model significantly improved its predictive performance (likelihood ratio test, p=0.006).

Conclusion: RL-LGE independently predicts arrhythmic events in ACM, irrespective of genotype status, and refines the prognostic performance of traditional risk models. Its detection may aid early recognition of high-risk patients and inform primary-prevention ICD therapy.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 295 MIOCARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO) IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO) RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)

A TICK FOR THE HEART: A CASE OF LYME CARDITIS IN A YOUNG MALE

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Background: The pre-Alpine geographical area of the Insubria displays an environment which favors the spring-summer proliferation of Ixodes ricinus, which is the main vector of Lyme disease, i.e. multi-systemic disease caused by the Spirochete Borrelia Burgdorferi. Cardiac involvement is accounted for 1-10% of cases with conduction system disturbances being the most frequent presentation, followed by myocarditis, pericarditis and heart valvular diseases.

Case report: An otherwise healthy 29-year-old man, who works as gardener in North Italy and Switzerland, presented to our Emergency Department (ED) in May complaining the acute onset of chest pain after a period of intermittent fever and asthenia. ECG showed diffuse ST-segment elevation. High-sensitivity troponin I and inflammatory biomarkers were increased. Bedside echo showed a moderately reduced left ventricular ejection fraction (LVEF) due to global hypokinesia with a minimal pericardial effusion. After admission, he mentioned a tick bite several weeks before symptom onset, prompting an extended microbiologic work-up. Borrelia serology returned positive whereas competing infectious serologies were non-diagnostic. Cardiac magnetic resonance (CMR) demonstrated edema and diffuse intramyocardial "patchy" late gadolinium enhancement consistent with the suspicion of infectious-inflammatory myocarditis.
Management included ceftriaxone iv followed by doxycycline p.o.; colchicine was implemented considering an eventual pericardium involvement together with anti-remodeling therapy. During hospitalization, chest pain gradually subsided and biomarkers normalized. Several control echos were performed revealing a gradual improvement of LVEF up to resumption of normal left ventricular function with no pericardial effusion. Continuous ECG monitoring showed neither arrhythmias nor conduction system disturbances. The patient was discharged with a scheduled mid-term follow-up including CMR, Holter-ECG and a clinical assessment.
Shortly after discharge the patient re-presented to our ED for nocturnal palpitations with recurrent chest discomfort after a sudden awakening from a nightmare. Vitals, labs, echos and ECG ruled out any acute event and supported the ongoing recovery. A psychological component was considered as a possible cause of the palpitations. The previous established follow-up was confirmed.

Conclusions: Lyme disease must be taken into the differential diagnosis of myo-pericarditis in young male who have spent time in rural places. The implementation of scores and specific CMR features may be helpful in revealing an actual cardiac involvement, even in those patients not displaying any conduction system disturbance, because an early identification and an appropriate antibiotic therapy result in a favorable short-term outcome. Further experience will help refine shared management strategies, with case reporting remaining warranted, given that the true epidemiologic burden of Lyme disease and its less common cardiac complications may still be underestimated. Therefore, a thorough medical history should always put a bug in someone's ear, or in this case a tick!

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 44
MIOCARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
MECCANISMI DELLE ARITMIE (ARITMIE)
INFIAMMAZIONE E IMMUNITÀ (ATEROTROMBOSI)

WEST NILE VIRUS AND CARDIOVASCULAR DISEASE: A META-SUMMARY OF CASE REPORT

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Background: The West Nile virus (WNV) is a widespread, mosquito-borne flavivirus that poses a significant public health issue in endemic regions. Recently, the incidence of WNV infection has surged in certain Italian regions, particularly in the North-east. In a small fraction of cases (less than 1%), the virus invades the central nervous system, leading to a serious condition known as West Nile neuroinvasive disease (WNND). This can manifest as encephalitis (50–71%), meningitis (15–35%), or acute flaccid paralysis (3–19%). WNV has been recently described as a possible trigger of cardiovascular diseases (CVDs). There are few data in the literature about this association.

Methods: We searched for case reports published in Pubmed, Google Scholar and EMBASE from 2009 to 2023 using the following keywords: "West Nile Virus", "Myocarditis", "Cardiovascular disease". In the present meta-summary, 8 case reports describing patients who experienced CVDs following an WNV infection were included. Patient characteristics, triggers and type of syncope were collected.

Results: A total of 8 patients with diagnosed CVDs triggered by WNV were examined. The median age was 67.29 (interquartile range, IQR: 53-70) years and 87.5% were male. 6 of 8 (75%) patients had altered mental status due to neurological involvement of the infection. Comorbidities were present in 5 patients (62.5%). Left ventricular ejection fraction was impaired in 5 patients (62.5%). 4 of 8 patients (50%) had arrhythmias, with 3 of them having a normal ejection fraction. Only the female patient failed to recover her ejection fraction and was implanted with a cardiac resynchronization therapy device. Data on the length of hospital stay and the day of onset of cardiac complications are not available for all patients. Sudden cardiac death was reported in one patient (12.5%).

Discussion: Currently, very few cases of WNV-associated CVDs have been reported. Cardiac arrhythmias are a frequent complication in critically ill patients. However, specific arrhythmias in WNV have not been reported. In the cases we described, patients developed bradyarrhythmia, which in one case was a complication of myocarditis and led to the patient's death. Diagnosing viral myocarditis is challenging because the only certain way to confirm it is through a post-mortem examination. It's still unclear whether the heart damage in WNV-associated myocarditis is caused by an indirect immune reaction to the virus or by the virus directly invading heart cells and causing inflammation. Direct viral involvement of the myocardium could be explained by a greater viral aggressiveness in penetrating cells, which might also explain why patients with frequent cardiovascular involvement also more frequently have neurological involvement. Furthermore, being male and having an advanced age are other common factors in patients with CVDs.

Limitations: The screening of only English language papers and the small number of included cases certainly pose a constraint; however, the present article is the first meta-summary exploring the association between WNV and CVDs. It is difficult to define the causal relationship between WNV and CVDs, however, common factors among the patients examined were male sex, advanced age, and neurological involvement. Conclusions: CVDs due to WNV have been associated with myocarditis and arrhythmias in particular, among elderly patients, males, and those with neurological impairment.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 202
MIOCARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
MIOCARDITI & COVID 19 (COVID-19)
ASSISTENZA INTENSIVA CARDIOVASCOLARE IN ACUTO (ASSISTENZA CARDIACA IN ACUTO)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

FULMINANT MYOCARDITIS DURING COVID-19 OUTBREAKS: MYTH OR REALITY?

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Background: Fulminant myocarditis (FM) is a life-threatening condition characterized by acute-onset hemodynamic compromise. Although infections are well-recognized triggers, the causative role of SARS-CoV-2 in FM has not been established. Furthermore, the concordance between SARS-CoV-2 detection on nasopharyngeal swabs and its identification by molecular analysis of endomyocardial biopsy (EMB) has not yet been investigated.

Aims: (1) To compare clinical, diagnostic features and outcome of FM cases before and after the COVID-19 pandemic in a tertiary referral center; (2) to evaluate the concordance between SARS-CoV-2 detection by serological or molecular testing on nasopharyngeal swabs and its identification by viral polymerase chain reaction (PCR) on EMB specimens.
Methods: We performed a single-center retrospective analysis of consecutive FM cases diagnosed between 2001 and 2025, comparing those identified before and after March 2020 (onset of the COVID-19 pandemic in our region). The primary composite outcome included cardiac death, heart transplantation (HTx), or myocarditis relapse.

Results: Forty-six FM patients (61% male; median age 36 years [Q1–Q3 28–47]) were included, of whom 17 (37%) were diagnosed after March 2020. Patients diagnosed before and after the COVID-19 outbreak were largely comparable in clinical and diagnostic characteristics. At presentation, 53% had ventricular fibrillation and 33% ventricular tachycardia. Median left ventricular ejection fraction (LVEF) was 40.0% [Q1–Q3 27.5–47.0]. Elevated troponin was observed in 89% of cases (median 3301.0 ng/L [Q1–Q3 385.5–13547.5]), and PCR was elevated in 79% (median 59.0 mg/L [Q1–Q3 19.9–79.9]). EMB was performed in 78% of patients, revealing lymphocytic (83%), giant-cell (14%), or eosinophilic (3%) histology, with no differences between cohorts. Viral genome was detected by PCR in 26% of EMBs, most commonly parvovirus B19 (44%) and enterovirus (22%), with no cases of myocardial SARS-CoV-2 detection. Notably, PCR for SARS-CoV-2 was negative even in two patients with concurrent SARS-CoV-2 infection during the index hospitalization. Thirteen patients received COVID-19 vaccination, with no cases of post-vaccination myocarditis. Immunosuppressive therapy was administered in 28% of patients, with no difference between cohorts (31.0% vs. 23.5%; p = 0.585), most commonly combining corticosteroids with azathioprine. Over a median follow-up of 34.0 months (Q1–Q3 17.9–96.1), the composite outcome occurred

in 35% (16/46) of patients, including 9 deaths (5 during index hospitalization), 5 relapses, and 2 HTx. Event distribution did not differ between pre- and post-pandemic cohorts, as confirmed by 36-month survival analysis (p = 0.085). On multivariable analysis, timing of FM diagnosis – before or after COVID-19 outbreaks – was not associated with adverse outcomes; baseline LVEF was the only independent predictor of adverse outcome (hazard ratio, 0.94 [95% CI, 0.90–0.98]; P = 0.010).

Conclusions: In this single-center series, FM patients showed similar clinical presentation, histopathological features, and outcomes before and after the onset of the COVID-19 pandemic. SARS-CoV-2 was undetectable by PCR on EMB in all patients with positive nasopharyngeal molecular or serological tests, providing evidence against a direct etiopathogenetic role of SARS-CoV-2 in FM within this cohort.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 203
MIOCARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MIOCARDICO-PERICARDICO
(MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)

MONOCLONAL ANTIBODIES TARGETING INTERLEUKIN-5/5R AND INTERLEUKIN-4/13 PATHWAYS IN EOSINOPHILIC MYOCARDITIS: A SINGLE-CENTER EXPERIENCE

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Background: Eosinophilic myocarditis (EM) is a rare and potentially life-threatening inflammatory heart disease with heterogeneous clinical manifestations, frequently occurring in the context of systemic eosinophilic syndromes such as eosinophilic granulomatosis with polyangiitis (EGPA) and hypereosinophilic syndrome (HES). Monoclonal antibodies (mAbs) targeting interleukin (IL)-5/IL-5R or IL-4/IL-13 pathways have demonstrated efficacy in controlling systemic eosinophilic manifestations; however, their therapeutic role in EM remains entirely unexplored.

Aims: 1) To characterize the clinical and diagnostic features of a single-center cohort of patients with EM who received anti–IL-5/IL-5R (mepolizumab, benralizumab) or anti–IL-4/IL-13 (dupilumab) therapy for extra-cardiac eosinophilic conditions; 2) To assess myocardial response and safety of anti–IL-5/IL-5R and anti–IL-4/IL-13 therapies in patients with EM.
Methods: We retrospectively included patients with EM followed at a tertiary referral center who had been treated with anti–IL-5/IL-5R or anti–IL-4/IL-13 therapy because of extra-cardiac eosinophilic diseases. For each patient, clinical, imaging, and laboratory data were collected at the time of EM diagnosis and at each follow-up visit.

Results: Thirteen patients with EM (54% male; median age 42 years [Q1–Q3 34–60]) received anti–IL-5/IL-5R or anti–IL-4/IL-13 therapy: mepolizumab (n=10), benralizumab (n=2), and dupilumab (n=1). EGPA represented the most frequent underlying condition (77%), with myocarditis as the initial manifestation in 82%. The leading clinical presentation was acute coronary syndrome-like (46%), followed by heart failure (38%); fulminant myocarditis occurred in 15%. Endomyocardial biopsy was performed in 54%, although prior glucocorticoids (GC) exposure precluded histological confirmation of eosinophilic infiltrates in two cases. At diagnosis, troponin I (median 4270 ng/L [Q1-Q3 3593-5114]) and C-reactive protein were elevated in 92% and 67% of patients, respectively, and peripheral eosinophilia was present in 92%. Autoantibody testing identified anti-heart autoantibodies (AHA) in 54% and anti-intercalated disk autoantibodies (AIDA) in 33%, whereas antineutrophil cytoplasmic antibodies (ANCA) were negative in all patients. Baseline echocardiography showed reduced left ventricular ejection fraction (LVEF, 46%; Q1–Q3, 40–52%), with pericardial effusion (66%) and intracavitary thrombus (38%). Cardiac magnetic resonance demonstrated myocardial edema in 82% and late gadolinium enhancement (LGE) in all cases (82% subendocardial). During a median follow-up of 61 months (Q1–Q3, 31–70), 77% of patients achieved functional recovery (NYHA class I), with a significant improvement in LVEF to 55% (Q1–Q3, 52–61; p=0.025). Peripheral eosinophilia decreased markedly (p<0.001). No EM relapses, deaths, or heart transplantations

(Htx) occurred. GC were successfully tapered or discontinued in all cases, and no mAbs treatment had to be withdrawn because of adverse events. Median treatment duration with mAbs was 29 months (Q1–Q3, 18.5–35.5); mAbs therapy, without concomitant GC or immunosuppressants, lasted 17.5 months (Q1–Q3, 5.7–25.5).

Conclusions: This study represents the first systematic evaluation of mAbs therapy in EM. Treatment was well tolerated and effective in reducing GC exposure and was associated with favorable myocardial response - even in fulminant presentations - with no relapses, deaths, or Htx reported during follow-up.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 234
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
MIOCARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)

RECURRENT MYOCARDITIS-LIKE EPISODES IN A PATIENT WITH A RARE VARIANT IN DES GENE: AN UNCOMMON HOT-PHASES CARDIOMYOPATHY

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This is a case of a 54-year-old woman with recurrent episodes of chest pain and elevated troponin levels in the absence of coronary artery disease. Transthoracic echocardiography during acute episodes demonstrated transient regional wall motion abnormalities and varying degrees of left ventricular systolic dysfunction. Cardiac Magnetic Resonance (CMR) imaging in the acute phase revealed myocardial edema, whereas follow-up CMR during stable periods showed extensive myocardial fibrosis in a non-ischemic distribution. Despite these recurrent inflammatory episodes over a 13-year period, the patient remained free from sustained ventricular arrhythmias. Her family history was notable for dilated cardiomyopathy in her mother, though no cases of sudden cardiac death or malignant arrhythmias were reported. Genetic testing revealed a heterozygous likely pathogenic variant in DES, a gene whose mutations are associated with extremely variable phenotypic expression. This case highlights the diagnostic complexity at the intersection of myocarditis and "hot phases" cardiomyopathy and suggests a potential link between DES variants and inflammatory cardiac phenotypes.

Keywords: Desmin (DES); Desminopathy; Non-Dilated Left Ventricular Cardiomyopathy (NDLVC); myocarditis; hot-phases cardiomyopathy; Arrhythmogenic Cardiomyopathy (ACM); Genetic testing

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 426
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
PROGNOSI (SCOMPENSO CARDIACO)

25-YEAR FOLLOW-UP OF THE MDDC1 FAMILY: A LMNA GENE VARIANT ASSOCIATED WITH DILATED CARDIOMYOPATHY WITH VARIABLE SKELETAL MUSCLE INVOLVEMENT

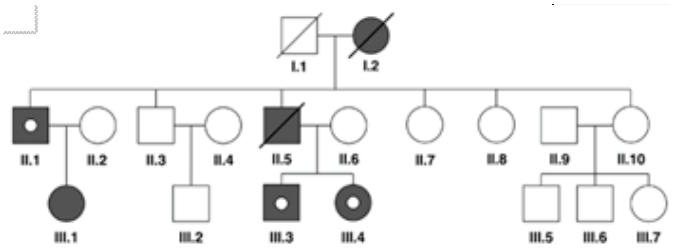
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Background: LMNA variants are a recognized cause of genetic dilated cardiomyopathy (DCM), often accompanied by conduction abnormalities, heart failure and variable skeletal muscle involvement. In 2000, a family with a history of DCM with skeletal myopathy was reported to carry a heterozygous single-nucleotide deletion in exon 6 (c.959delT), resulting in a truncated LMNA protein. At that time, the phenotype ranged from severe cardiac manifestation to milder skeletal muscle involvement.

Methods and Results: We conducted a 25-year follow-up of all living affected members of the original family through clinical reassessment, review of historical records, and updated genetic information. Five family members out of fourteen carried the LMNA c.959delT variant; all developed clinically relevant manifestations over time. As previously noted in the original case report the proband (II.5) died suddenly at age 32 shortly after the diagnosis of DCM; patient II.1 underwent orthotopic heart transplantation due to end-stage DCM and he was characterized by a mild skeletal muscle involvement consistent with limb-girdle muscular dystrophy (LGMD) that remains stable along the following 25 years. Patients III.3 and III.4, who at that time showed only mild muscular involvement in the absence of cardiomyopathy, developed end-stage non-dilated LV cardiomyopathy (NDLVC), leading to heart transplantation. Both were diagnosed with a form of Emery–Dreifuss muscular dystrophy (EDMD) that markedly differed in disease severity, with patient III.4 becoming dependent on daily activities. Patient III.1, who at the time of the first case report was asymptomatic, developed NDLVC with mild left ventricular dysfunction, non-sustained ventriculat tachycardia (NSVT) during monitoring, and a mild form of LGMD1B. No new carriers were identified, as none of the affected members had children.

Conclusions:
This unique 25-year longitudinal follow-up highlights pronounced intrafamilial variability in both cardiac and skeletal muscle manifestations of a single truncating LMNA variant. The findings underscore the importance of early family screening, long-term multidisciplinary follow-up, and the need to investigate more genetic and non-genetic modifiers that influence disease expression and progression in LMNA-related disorders.

Figure 1. Pedigree of the MDDCI family in 2025.
Individuals are labelled according to generation and pedigree number. Filled squares (males) and circles (females) indicate affected individuals, open symbols represent unaffected individuals, and shaded symbols indicate unknown disease status. A white dot inside a symbol denotes a history of heart transplantation.



Figures

CardioSic

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 443
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)
ASPETTI GENETICI DELLE ARITMIE (ARITMIE)
BIG DATA (TELECARDIOLOGIA ED E-HEALTH)

PREDICTING ARRHYTHMIC EVENTS IN DCM: A PROOF OF CONCEPT STUDY

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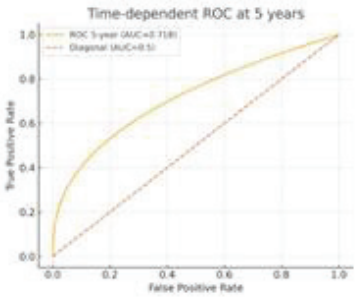
Background: In dilated cardiomyopathy (DCM), left ventricular ejection fraction (LVEF) alone underestimates arrhythmic risk; myocardial fibrosis on CMR (LGE), arrhythmogenic genotype, and treatment response (reverse remodelling) add complementary information. Objectives: To identify clinical/imaging correlates of arrhythmic events and to develop an internally validated 5-variable score with clear discrimination and stratification.

Methods: Single-centre cohort of 297 DCM patients with a composite endpoint of sustained VT/VF, appropriate ICD therapy, or arrhythmic death; 105 had events and 192/297 (≈65%) were censored. Missing data were handled with multiple imputation (m=20). Candidate predictors underwent univariable Cox screening; stable signals were entered into multivariable modelling with LASSO-Cox and cross-validation across imputations. Discrimination was assessed by 5-year AUC and C-index; stratification by Kaplan–Meier curves across increasing score strata.

Results: On univariable analysis, LGE and arrhythmogenic genotype were strongly associated with events (HR 5.54 and HR 4.17, respectively), while reverse remodelling was protective (HR 0.43, ≈57% lower hazard); male sex and family history of SCD also showed positive associations. LASSO selection frequencies highlighted the five final predictors with high stability: LGE 100%, reverse remodelling 100%, age 95%, LVEF 95%, genotype 90%. The score achieved AUC at 5 years = 0.718 (71.8%) and C-index ≈ 69.7%, with good calibration and clear, stepwise KM separation.

Conclusion: Beyond LVEF alone, integrating fibrosis (LGE), genotype, systolic function, age, and reverse remodelling identify clinically meaningful correlates of arrhythmic events in DCM. The resulting 5-variable score shows good discrimination (AUC ~72%) and distinct stratification, supporting patient-level ICD discussions; external multicentre validation is warranted.

Variable	Coefficient	Points in score
Age at diagnosis (per year)	+0.0124	+1 point per year
LVEF_echo (per 1%)	-0.0157	−1 point per 1%
LGE present	+0.3857	+31 points
Arrhythmogenic genes (LP)	+0.3433	+28 points
Reverse remodeling present	−0.7776	−63 points



Figures

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 474
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
INTELLIGENZA ARTIFICIALE (TELECARDIOLOGIA ED E-HEALTH)
ELETTROCARDIOGRAFIA/ CARDIOVERSIONE/ DEFIBRILLAZIONE (ARITMIE)

LEVERAGING LATENT ECG FEATURES FOR DETECTION OF CARDIAC AMYLOIDOSIS

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Background: Electrocardiography (ECG) remains a widely accessible diagnostic tool, yet its interpretation for complex conditions such as cardiac amyloidosis (CA) is often challenging. Deep learning methods have demonstrated high accuracy in ECG classification, but their limited transparency and dependence on large annotated datasets restrict their clinical adoption. Variational autoencoders (VAEs), by encoding signals into a compact latent space, offer the possibility to generate informative and interpretable ECG representations suitable for downstream diagnostic tasks.

Objective: We sought to explore the utility of VAE-derived ECG features in identifying patients with CA among those referred for diagnostic work-up, combining unsupervised signal compression with interpretable classification modelling.

Methods: We retrospectively analysed individuals referred to the Trieste Cardiovascular Department for suspected CA, all of whom underwent confirmatory nuclear scintigraphy. For each patient, the closest available ECG was selected and processed. Median 1.2-second beats were reformatted into the MUSE-compatible input required for the VAE model trained on 1.1 million ECGs (van de Leur et al.). The resulting 21 latent factors were first tested in univariate association with CA and subsequently incorporated into multivariable models. Logistic regression with LASSO penalisation was used, with the optimal tuning parameter identified via 10-fold cross-validation.

Results: The cohort consisted of 370 patients, of whom 119 (32%) had confirmed CA. Median age was 79 years (IQR 72–83), with 28% females. Three latent ECG factors showed significant association with disease status: F11 (OR=0.66 per 1 SD, 95% CI [0.51–0.83]), previously linked to subtle QRS/T alterations; F25 (OR=1.63, 95% CI [1.28–2.09]), related to QRS duration; and F30 (OR=0.71, 95% CI [0.56–0.89]), linked to QT prolongation. A baseline model including only age and sex yielded an AUC of 0.67 (95% CI [0.56–0.77]). Incorporating latent ECG features improved discrimination to an AUC of 0.69 (95% CI [0.59–0.79]), while the combined model (age, sex, ECG features) achieved an AUC of 0.70 (95% CI [0.60–0.80]). Calibration remained adequate across models (slopes 0.77–1.07; intercepts 0.08–0.31).

Conclusions: Application of VAE-based ECG representations enabled interpretable modelling of CA detection, highlighting reproducible electrophysiological patterns associated with the disease. Although predictive accuracy was moderate, this approach demonstrates how knowledge distilled from large datasets can be translated into clinically meaningful insights for rare and underdiagnosed conditions such as CA.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 476
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
MALATTIE DEL METABOLISMO (DIABETE E MALATTIE DEL METABOLISMO)

ROCK SOLID: AN ENIGMATIC CASE OF CARDIAC CALCIFICATION IN THE CONTEXT OF HYPERTROPHIC CARDIOMYOPATHY

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Background. Myocardial calcifications are exceptionally rare and usually secondary to metabolic, inflammatory, or infiltrative processes. Their occurrence in the context of hypertrophic–restrictive cardiomyopathy represents a unique and poorly characterized clinical entity, raising substantial diagnostic challenges.

Case Presentation. We present the case of a 56-year-old woman with a long-standing history of non-specific cardiac abnormalities and cerebrovascular anomalies, who developed progressive exertional dyspnea and palpitations. Echocardiography and cardiac magnetic resonance revealed diffuse myocardial and valvular calcifications in the setting of a hypertrophic left ventricle with a restrictive diastolic pattern. Endomyocardial biopsy demonstrated hypertrophied cardiomyocytes with foci of dystrophic calcification, glycogen disarray, and Annexin-5 positivity, consistent with degenerative processes. Whole-exome sequencing identified compound heterozygous variants in ENPP1 (c.2311+1G>A, pathogenic; c.2330A>G p.H777R, VUS), a gene classically implicated in arterial calcification and phosphate metabolism disorders. However, systemic mineral metabolism was normal, and specialized assays performed in collaboration with an American reference laboratory showed slightly reduced inorganic pyrophosphate levels with normal FGF23 levels. These findings were suggestive of a peculiar presentation in an adult subject of autosomal recessive hypophosphatemic rickets type 2 (ARHR2).

Conclusions. This case highlights an atypical form of hypertrophic–restrictive cardiomyopathy with extensive dystrophic calcifications, where genetic analysis suggested a possible ENPP1-deficiency–driven mechanism, but without definitive biochemical correlation. The diagnostic pathway underscores the difficulty of distinguishing rare genetic calcification syndromes from idiopathic processes, particularly when myocardial involvement predominates. Ultimately, the phenotype was interpreted as idiopathic dystrophic myocardial calcification complicating hypertrophic cardiomyopathy with restrictive physiology. Nonetheless, evidence that ENPP1 deficiency may induce vascular cell hypertrophy through FGF2 signaling raises the hypothesis that cardiomyocyte hypertrophy could be secondary to altered paracrine stimulation. Targeted substitutive therapy for for ENPP1-deficiency are currently being validated and the patient is under consideration for compassionate drug use. This case illustrates the importance of integrating advanced imaging, histopathology, genetics, and functional assays when confronting enigmatic cardiomyopathy phenotypes.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 501
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
ASPETTI GENETICI DELLE ARITMIE (ARITMIE)
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)

PREDICTORS IN GENE ELUSIVE DCM/NDLVC

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Background: Dilated cardiomyopathy (DCM) and non-dilated left ventricular cardiomyopathy (NDLVC) are clinically heterogeneous. Preliminary evidence suggests that genotype-negative and VUS patients may display an arrhythmic profile intermediate between non-arrhythmogenic and arrhythmogenic genotypes, but risk stratification remains uncertain.

Objective: To identify clinical and imaging predictors of arrhythmic events in genotype-negative and VUS patients with DCM or NDLVC.

Methods: We retrospectively analysed 377 genotyped patients with DCM (n=348) or NDLVC (n=29) who were either genotype-negative or VUS carriers, excluding those with sustained ventricular arrhythmias at baseline. Clinical, echocardiographic, and cardiac magnetic resonance (CMR) data were collected. The composite arrhythmic endpoint included ventricular fibrillation/sustained ventricular tachycardia, resuscitated cardiac arrest, or appropriate ICD therapy. Logistic regression was used to identify predictors, and model performance was evaluated by ROC analysis.

Results: In the overall cohort, the endpoint was observed in 24% (n=91, DCM n=87; NDLVC n=4) of patients. The median time from baseline to the occurrence of the endpoint was 7.0 years (95% CI, 1.4–12.6). In univariable analysis, genotype status (VUS vs Negative) showed no significant association with events. By contrast, recent syncope, reduced LVEF, increased LVEDD, NSVT and LGE were significantly associated with outcomes.
In multivariable analysis, only recent syncope (OR 11.8, p=0.028), NSVT (OR 13.8, p<0.001), and LGE (OR 3.80, p=0.042) remained independent predictors. The final model, including NSVT, LGE, and syncope, demonstrated excellent discrimination (AUC 0.851).

Conclusion: In genotype-negative or VUS of DCM/NDLVC, arrhythmic events are clinically significant and not negligible. As in many genetic cardiomyopathies, LVEF was not among the strongest predictors, whereas NSVT, recent syncope and LGE consistently emerged as key independent markers. Logistic regression combined with ROC analysis underscores the need for a multimodal approach to refine risk stratification and guide tailored ICD decisions.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 543
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
ARITMIE VENTRICOLARI (ARITMIE)
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)

PHENOTYPIC AND GENOTYPIC CHARACTERIZATON OF NON-DILATED LEFT VENTRICULAR CARDIOMYOPATHY (NDLVC): INSIGHTS FROM AN ITALIAN REGISTRY

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Background: Non-dilated left ventricular cardiomyopathy (NDLVC) is a newly defined class of cardiomyopathies introduced by the 2023 ESC guidelines. This category encompasses a highly heterogeneous spectrum of patients characterized by the absence of left ventricular dilation, accompanied by myocardial fibrosis and/or systolic dysfunction.

Objective: The aim of this study was to characterize NDLVC from phenotypic,genotypic, and prognostic perspectives.

Methods: This study employed a retrospective, multicenter design with Trieste servingas the reference center. Subjects were stratified into three groups according to the presence of late gadolinium enhancement (LGE) detected by CMR and left ventricular dysfunction assessed through echocardiography (group 1: LVEF>50%/LGE+; group 2: LVEF< 50%/LGE+; group 3: LVEF<50%/LGE-). The primary composite endpoint of the study included all-cause mortality or heart transplantation, while secondary endpoints consisted of (1) sudden cardiac death or major ventricular arrhythmias (MVA) and (2) mortality, transplantation, or hospitalization due to heart failure (HFH). Finally, we evaluated the predictive parameters of arrhythmias and progression to DCM.

Results: A total of 510 patients were enrolled and categorized into three groups (group 1: 362 patients; group 2: 108 patients; group 3: 40 patients). In the overall cohort, 329 (65%) were male, and 174 (66%) were probands. The most frequent clinical presentation at disease onset was non-sustained ventricular arrhythmia (n = 244, 48%). CMR analysis revealed that 470 (92%) patients exhibited LGE in the left ventricle, while 176 (43%) harbored a pathogenic or likely pathogenic mutation associated with an arrhythmogenic genotype. Over a median follow-up period of 57.5 months, 13 deaths (3%) occurred: 11 in group 1 (3%) and 2 in group 2 (2%). No patients from group 3 succumbed (p = 0.7136). Only one patient from group 1 underwent heart transplantation. Regarding secondary endpoints, 6 patients (1%) experienced HFH, while 78 (16%) developed MVA during follow-up. Group 2 exhibited the highest prevalence of both HFH (3 cases, 3%) and MVA (21 cases, 20%). Conversely, group 3 exhibited a higher baseline prevalence of MVA but a subsequent reduction in events during follow-up. The presence of LGE was significantly associated with an increased incidence of arrhythmic events during follow-up (HR 4.66, 95% CI: 1.04–20.91, p = 0.04). Additionally, male sex and specific arrhythmogenic genotypes (such as DSP, LMNA, and FLNC) emerged as predictors of ventricular arrhythmias. Finally, progression to DCM was documented in 136 patients (28%), with the highest incidence occurring among individuals in Group 2.

Conclusions: Non-dilated left ventricular cardiomyopathy represents a highly heterogeneous clinical entity. Our findings underscore the advantages of a multiparametric and personalized approach integrating clinical assessments, instrumental evaluations, and genotypic analysis, which significantly enhances predictive accuracy compared to phenotype-based classification alone.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 976
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)
ELETTROCARDIOGRAFIA/ CARDIOVERSIONE/ DEFIBRILLAZIONE (ARITMIE)

ARRHYTHMOGENIC CARDIOMYOPATHY DISEASE PATTERNS: ELECTROCARDIOGRAM AND CARDIAC MAGNETIC RESONANCE ASSOCIATIONS IN LEFT AND RIGHT VENTRICULAR INVOLVEMENT

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Introduction: Arrhythmogenic cardiomyopathy (ACM) is a rare heart muscle disease characterized by ventricular arrhythmias, heart failure, and sudden cardiac death. Initially considered a right ventricular disease (ARVC), ACM is now known to also affect the left ventricle alone (ALVC) or both ventricles (ABVC).

Purpose: The aim of this study was to evaluate the association between disease patterns present on electrocardiogram (ECG) and cardiac magnetic resonance (CMR).

Methods: Single-centre study of 82 consecutive patients classified with ACM based on the Padua criteria into ARVC (15.8%), ALVC (45.1%), and ABVC (39.0%). All patients underwent 12-lead ECG, CMR with late gadolinium enhancement (LGE) and genetic testing within 6 months. Patients were grouped by genotype: pathogenic/likely pathogenic variants in PKP2, DSP, or FLNC genes, or genotype-negative (including variants of uncertain significance).

Results: ECG abnormalities were present in 93.9% of patients, including 100% of ARVC patients, 86.5% with ALVC, and 100% ABVC (P = 0.039). Table 1 presents the characteristics of the overall study population and according to ventricular involvement.
The most common depolarization abnormality was delayed terminal activation duration of the S wave ≥55 ms in leads V1-V3 (35.3%), which was associated with RV dilation (P = 0.034) and anteroseptal LGE (P = 0.045). Low QRS voltage in the precordial leads was linked to LV dysfunction (P = 0.029) and lateral LGE (P = 0.042), while global low voltage correlated with LV systolic dysfunction (P = 0.003) and septal LGE (P = 0.046). QRS fragmentation in the inferior leads was associated with LV dysfunction (P = 0.008) and inferolateral LGE (P = 0.022).

Between repolarization abnormalities, TWI in V1-V3 or V4 in the presence of right bundle branch block was significantly associated with septal ($P < 0.001$), anteroseptal ($P < 0.001$), ring-like ($P = 0.011$), and RV LGE ($P = 0.013$). TWI in V5-V6 was correlated with LV dysfunction ($P = 0.012$).

Table 2 shows ECG and LGE characteristics according to genetic clusters. PKP2 mutation carriers showed more frequent TWI in V1-V3 and RV-predominant disease. DSP, FLNC, and genotype-negative patients had more LV LGE, including ring-like, anterior, septal, and anteroseptal patterns. Inferior LGE was more common in DSP carriers. RV LGE was mostly seen in PKP2 carriers and genotype-negative patients but absent in FLNC carriers.

Conclusion: Our study identifies significant associations between ECG abnormalities and CMR findings. To our knowledge, the relationship between ECG changes and LGE patterns has been relatively underexplored, particularly in ACM with LV involvement. Understanding these associations can improve diagnostic accuracy and risk stratification, emphasizing the combined use of ECG, CMR, and genetic testing in ACM evaluation.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 1097
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

HYPERTROPHIC CARDIOMYOPATHY DUE TO TRIM63 MUTATION: A PARADIGMATIC CASE OF GENOTYPE-PHENOTYPE CORRELATION

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Case report: A 42-year-old man, diagnosed with hypertrophic cardiomyopathy (HCM) since adolescence, was found to carry two pathogenic variants in TRIM63 in compound heterozygosity. The phenotype included concentric non-obstructive left ventricular hypertrophy, extensive myocardial fibrosis on cardiac magnetic resonance, and early reduction of left ventricular ejection fraction. During follow-up, the patient developed recurrent atrial flutter, successfully treated with ablation, and episodes of non-sustained ventricular tachycardia. Despite an intermediate risk of sudden cardiac death according to the HCM Risk-SCD score, given the extensive fibrotic burden and the arrhythmic risk associated with the mutation, a subcutaneous implantable cardioverter-defibrillator (S-ICD) was implanted for primary prevention. Genetic diagnosis also allowed targeted counselling: his children, who were monoallelic carriers, did not require immediate genetic testing but only periodic clinical follow-up, given the low probability of developing cardiomyopathy.

Discussion: HCM due to TRIM63 variants is considered a rare disease, with an estimated prevalence of about 1 in 150,000 in the general population. Clinically manifest disease occurs almost exclusively in biallelic carriers (homozygous or compound heterozygous), who account for approximately 0.3% of HCM cases. Reported cases remain limited and show recurring features: early onset, symmetric hypertrophy, diffuse fibrosis, early systolic dysfunction, and frequent arrhythmias, as observed in our patient. This case highlights a close genotype–phenotype correlation and exemplifies how the integration of genetics and cardiac magnetic resonance is reshaping the diagnostic, prognostic, and management approach to cardiomyopathies, paving the way towards precision medicine.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 212
MIOCARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
ARITMIE VENTRICOLARI (ARITMIE)
DEFIBRILLATORE IMPIANTABILE (ARITMIE)

INCIDENCE AND PREDICTORS OF MAJOR ARRHYTHMIC EVENTS AFTER MYOCARDITIS: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Introduction: The long-term arrhythmic risk after myocarditis remains unclear. Recent data indicate that ventricular arrhythmias may be frequently observed both in the acute phase and years after the initial event. Nevertheless, optimal management and prevention strategies are debated. The purpose of our study is to assess the incidence and predictors of major arrhythmic events (MAEs) after myocarditis during long term follow-up.

Methods: We conducted a systematic literature review and meta-analysis of 19 observational studies including patients with prior myocarditis with and without arrhythmic presentation. MAEs were defined as a composite of sudden cardiac death (SCD), aborted cardiac arrest or ventricular fibrillation (ACA/VF), sustained ventricular tachycardia (sVT) and appropriate implantable cardioverter defibrillator (ICD) or wearable-cardioverter defibrillator (WCD) intervention. The primary outcome was the incidence of MAEs only occurring during follow-up; secondary outcomes included the occurrence of each component of MAEs and the composite of all-cause mortality or heart transplantation (HTx) after the index event.

Results: 3954 patients (71% male, median age 46 [IQR 43-51] years old) were included. The main presenting clinical manifestations were advanced atrioventricular block (AVB) (15.1%), congestive heart failure (30.5%) and life-threatening arrhythmias (38.1%). Median left ventricle ejection fraction (LVEF) at presentation was 47%. The most common histological subtype was lymphocytic myocarditis (55.8%) and almost 7% had giant cells myocarditis. Overall late gadolinium enhancement (LGE) was present in most cases (89.4%). At discharge 84.6% of patients were treated with betablockers and 60,8% underwent an implantation of an ICD or prescription of a WCD. At a median follow-up time of 24 months (IQR 19-57), the incidence of MAE was 28%, with a median time of MAE presentation of 12 months. The incidence of sVT, ACA/VF, appropriate ICD/WCD intervention and SCD during the same follow-up were 22%, 6%, 20% and 1% respectively. The combined rate of all-cause mortality/HTx was 11%. Meta-regression analysis identified AVB, life-threatening arrhythmias at presentation, and fulminant myocarditis as characteristics significantly associated with higher risk of MAEs during follow-up, while male gender resulted as a protective factor. On the contrary,

the presence of LGE at CMR, histological subtype, LVEF <35% were not associated with MAE incidence during follow up. A leave-one-out sensitivity analysis was performed, and the exclusion of individual studies did not significantly alter the overall pooled estimate, with incidence values ranging from 27% to 31%. An additional sensitivity analysis, including only studies with 100% of ICD/WCD at discharge showed a MAEs incidence of 29%. Notably, in this subgroup, no SCDs occurred and the incidence of all-cause death/HTx was lower (5% vs. 11%).

Conclusion: The incidence of MAEs after myocarditis remains high over time, especially in patients with complicated myocarditis. Further prospective studies are needed to better stratify high-risk patients and guide decisions regarding early ICD implantation or other antiarrhythmic strategies.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 674
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
ABLAZIONE TRANSCATETERE (ARITMIE)
TERAPIA DI RESINCRONIZZAZIONE (ARITMIE)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)

A DIAGNOSTIC ODISSEY: UNMASKING FABRY DISEASE IN A PATIENT WITH LONG-STANDING HYPERTROPHIC CARDIOMIOPATHY

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Background: Fabry disease (FD) is a rare X-Linked genetic disease caused by mutations in the alpha-galactosidase (GLA) gene, leading to deficient GLA activity and accumulation of glycosphingolipids in body tissues, such as heart, kidney and brain. Fabry cardiomyopathy typically presents with progressive left ventricular (LV) hypertrophy, potentially leading to fibrosis, systolic dysfunction, ischemia, and arrhythmias. Differentiation of Fabry cardiomyopathy from hypertrophic cardiomyopathy (HCM) is crucial for implementing targeted therapy, improving long-term outcomes, and allowing for appropriate genetic counselling.

Case presentation: We report the case of a 68-year-old man with long-standing diagnosis of HCM with reduced LV ejection fraction (LVEF) and right accessory pathway referred to our heart failure clinic in 2022 due to dyspnea on mild exertion (NYHA IIb). Both his deceased mother and his living brother had received a diagnosis of HCM. His past medical history included a transient ischemic attack (2018) and chronic kidney disease. In 2011 he had experienced syncope due to advanced atrioventricular block; due to the presence of extensive late gadolinium enhancement at the cardiac magnetic resonance imaging in the context of HCM with normal LVEF, a dual-chamber implantable-cardioverter defibrillator was implanted; thereafter, recurrent atrial and ventricular arrhythmias, alongside progressive LV dysfunction, ensued. At the first evaluation in our clinic in late 2022 the patient was in atrial fibrillation with 100% ventricular pacing; NT-proBNP was 6085 pg/ml. The echocardiogram showed severe LV hypertrophy (interventricular septum: 16 mm), moderately reduced LV function (LVEF 36%) with electromechanical dyssynchrony, severe right ventricular dysfunction (TAPSE 9 mm), and severe tricuspid regurgitation. Heart failure therapy was optimized with loop diuretic, spironolactone, sacubitril/valsartan, and dapagliflozin. Beta-blocker therapy was discontinued due to severe right ventricular dysfunction. Screening for phenocopies, including Fabry disease, was initiated and revealed markedly reduced α-galactosidase activity (0.5; n.v. >2); Fabry disease was confirmed at the genetic testing, which showed a hemizygous c.644A>G p.(Asn215Ser) mutation in the exon 5 of the GLA gene, an amenable variant for which migalastat therapy was initiated. In 2023 the patient underwent successful atrial fibrillation ablation and upgrade to CRT-D, with subsequent functional class improvement (NYHA class I-II), persistent sinus rhythm, reduced NT-proBNP levels (~2200 pg/ml) and LVEF increase up to 45%. At almost 3-year follow-up, the patient was alive and well. A genetic investigation of his brother also confirmed Fabry disease, superseding his previous misdiagnosis of HCM.

Conclusion: Maintaining a high suspicion for Fabry disease is crucial for patients with a long-standing diagnosis of HCM, especially when "red flags" for the disease are present; the diagnosis of Fabry disease can lead to targeted, effective treatment and subsequent improvement in the patient's condition, but it also enables cascade screening of at-risk family members, ultimately altering disease management and improving long-term outcomes for the entire family. Furthermore, this case illustrates the importance of integrating device therapy, rhythm control, and specific pharmacologic treatment to improve clinical and functional outcomes in Fabry cardiomyopathy.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 453
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
PROGNOSI (SCOMPENSO CARDIACO)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)

EFFICACY OF VUTRISIRAN IN PATIENTS WITH TRANSTHYRETIN AMYLOIDOSIS WITH CARDIOMYOPATHY BY BASELINE HEALTH STATUS AND QUALITY OF LIFE

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Introduction: In HELIOS-B (NCT04153149), vutrisiran significantly reduced all-cause mortality (ACM) and recurrent cardiovascular (CV) events in patients with transthyretin amyloidosis with cardiomyopathy (ATTR-CM) vs placebo. Health status and quality of life (QoL) were assessed using the Kansas City Cardiomyopathy Questionnaire Overall Summary score (KCCQ-OS).

Hypothesis: Baseline KCCQ-OS score does not impact the efficacy of vutrisiran vs placebo in HELIOS-B.

Methods: Patients were randomized 1:1 to receive vutrisiran 25 mg or placebo every 12 weeks for up to 36 months. The current analysis assessed efficacy in patients with baseline KCCQ-OS of ≤50 and >50. Prespecified analyses assessed the primary composite endpoint of ACM and recurrent CV events, as well as the secondary endpoints change from baseline to Month 30 in 6-minute walk test (6MWT) and KCCQ-OS. Post-hoc analyses included the change from baseline to Month 30 in N-terminal pro-B-type natriuretic peptide (NT-proBNP) and troponin I. Analyses were performed in the overall and monotherapy (i.e. those not receiving tafamidis at baseline) populations. Results: Of 654 patients (overall population) included, 2 had missing baseline KCCQ-OS, 95 had KCCQ-OS ≤50 and 557 had KCCQ-OS >50. Patients with KCCQ-OS ≤50 had more severe CV status and cardiac involvement at baseline compared with KCCQ-OS >50 (mean 6MWT: 298.3 vs 387.8 m; median NT-proBNP: 2394.0 vs 1891.0 ng/L; New York Heart Association Class III: 25.3% vs 6.8%). Vutrisiran showed consistent benefits vs placebo across both KCCQ-OS subgroups for the composite endpoint of ACM and recurrent CV events (HR [95% CI] KCCQ-OS ≤50: 0.6 [0.3, 1.2]; KCCQ-OS >50: 0.7 [0.6, 1.0]), and for change from baseline to Month 30 in 6MWT, KCCQ-OS, NT-proBNP, and troponin I. Results in the monotherapy population were similar. Conclusion: Consistent benefits with vutrisiran vs placebo were observed for all endpoints assessed by health status/QoL at baseline, supporting the use of vutrisiran in patients with ATTR-CM regardless of baseline disease severity.

Funding: This study was funded by Alnylam Pharmaceuticals.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 665 CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO) DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO) GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE) RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)

SCINTIGRAPHY WITH BISPHOSPONATES IN PATIENT WITH CARDIAC AMYLOIDOSIS: BEWARE OF FALSE NEGATIVES

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Cardiac amyloidosis (CA) is a form of restrictive cardiomyopathy caused by extracellular deposition of a misfolded protein called amyloid. The two proteins that most likely affect the heart, being responsible for 95% of cardiac amyloidosis are: the immunoglobulin light chain (AL) amyloidosis and transthyretin (ATTR) amyloidosis.

Traditionally, amyloidosis was predominantly diagnosed in late stages of disease by endomyocardial biopsy (EMB). However, considering the arrhythmic risk, the possibility of a rapid progression into heart failure and all the further clinical outcomes, avoiding misdiagnosed or delayed diagnosis of cardiac amyloidosis is crucial for proper management and early treatment of the disease.

In this scenario Technetium-labelled cardiac scintigraphy (99mTc-PYP, 99mTc-DPD, and 99mTc-HMDP) plays a critical role in the non-invasive diagnostic pathway for patients with suspected ATTR-CA. Even with its diagnostic power being acknowledged, cardiac scintigraphy using bone tracers, is not considered a gold standard method for the diagnosis of cardiac amyloidosis, and false negative scans may occur.

In literature different studies analyse the incidence of false negative cases and the relative most frequent genetic mutations. Low sensitivity of cardiac scintigraphy with bone tracers has been reported in patients with biopsy-proven ATTR-CA, related to rare TTR variants such as Ser97Tyr, Tyr114Cys, Phe64Leu Val30Met, Thr59Lys and Glu81Ala.

In our report we document a false negative scintigraphy case for ATTR in a patient who came to our attention for exertional dyspnoea, concentric hypertrophy at the echocardiogram, and reduction of the EF.

The clinical status and the suggestive medical history lead us to the suspicion of amyloidosis, also supported by cardiac MRI, that showed concentric hypertrophy and dilatation of the left ventricular, with reduced left ventricular systolic function; non-lipomatous hypertrophy of the interatrial septum, circumferential pericardial effusion, diffuse subendocardial LGE and high native T1. Further investigations, including immunohistochemistry of a minor salivary gland biopsy, confirmed transthyretin amyloid deposition.

The absence of cardiac uptake of the tracer raised suspicion for a possible TTR gene variant. In fact, the genetic testing confirmed heterozygotic mutation c.242A>Cp.(Glu81Ala).

Therefore, a negative scan in patients with strong clinical suspicion of ATTR-CA does not rule out the diagnosis. Even though scintigraphy remains a very useful non-invasive diagnostic tool, in some cases, it may prove insufficient and should be aided by advanced imaging modalities, such as CMR, and, in selected cases, by EMB. Thanks to the enormous advance in genetic testing, we can identify genetic variants associated with lower uptake of the tracer and detect new TTR genetic variants.

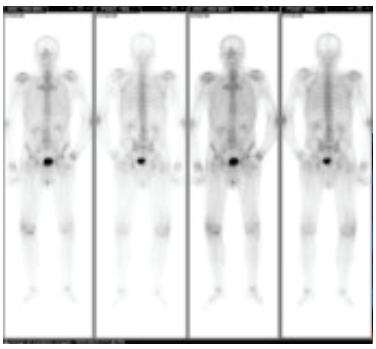


Figure 1

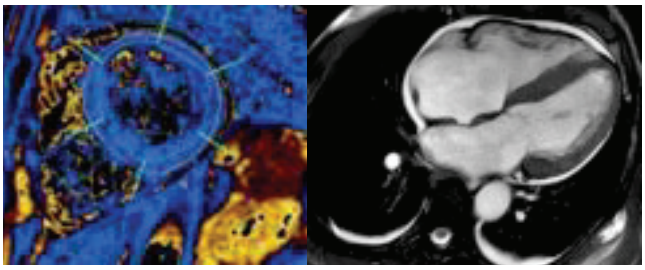


Figure 2

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 284
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
INFIAMMAZIONE E IMMUNITÀ (ATEROTROMBOSI)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)

PROGNOSTIC ROLE OF INFLAMMATORY MARKERS IN TAKOTSUBO SYNDROME: INSIGHTS FROM THE GEIST REGISTRY

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Background: Takotsubo Syndrome (TTS) is a transient cardiac dysfunction that mimics acute coronary syndrome (ACS) but occurs without coronary obstruction. Emerging evidence suggests that systemic inflammation plays a role in TTS pathophysiology, yet its prognostic significance remains unclear. This study investigates the role of inflammatory markers in TTS patients from the German Italian Spanish Takotsubo (GEIST) Registry.

Methods: We analyzed 280 TTS patients and 280 age- and sex-matched ACS patients. Leukocyte parameters, including neutrophil-to-lymphocyte ratio (NLR) and lymphocyte-to-monocyte ratio (LMR), were assessed on admission. The primary endpoint was all-cause mortality, the secondary endpoint was in-hospital complications.

Results: Monocyte levels were significantly higher in TTS than in ACS (0.63±0.3 vs 0.51±0.24, $p<0.001$). Independent predictors of in-hospital complications included physical triggers, left ventricular ejection fraction (LVEF), and NLR. Age, physical triggers, LVEF, NLR, and LMR were associated with long-term mortality. High NLR predicted worse survival, while elevated LMR was linked to better prognosis.

Conclusions: This study confirms the prognostic value of NLR in TTS and, for the first time, highlights LMR as a potential prognostic marker. These findings support the role of inflammation in TTS and suggest it might be a potential therapeutic target. Further prospective studies are warranted to clarify the inflammatory mechanisms underlying TTS and their clinical implications.

CardioSic

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 286
MIOCARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MIOCARDICO-PERICARDICO
(MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
INFIAMMAZIONE E IMMUNITÀ (ATEROTROMBOSI)

THE ROLE OF NLR IN PREDICTING OUTCOMES IN PATIENTS WITH MYOCARDITIS

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Background: Neutrophil-to-lymphocyte ratio (NLR) is an easy-to-use inflammatory biomarker. Baseline NLR is independently associated with incident cardiovascular events and all-cause mortality. However, whether this applies to acute myocarditis (AM) has not been evaluated.

Objectives: The present study aimed to investigate the prognostic value of NLR in patients with AM.

Methods: A total of 1,150 consecutive patients with a diagnosis of AM admitted to 10 international tertiary referral cardiac centers were included in the study. The diagnosis was confirmed using cardiac magnetic resonance or endomyocardial biopsy. The primary outcome measure was a composite of all-cause mortality or heart transplantation. Patients were divided into 2 groups according to an NLR cutoff of 4 derived from spline regression analysis and 70:30 train-test split algorithm.

Results: Patients with an NLR <4 were younger and more likely to present with chest pain, and those with an NLR ≥4 were more likely to present with breathlessness and have other comorbidities. Over a median follow-up of 228 weeks, a NLR ≥4 was associated with a worse prognosis ($P < 0.0001$). After adjustment for prognostic variables, NLR emerged as an independent predictor of outcome (HR: 3.03 [95% CI: 1.30-7.04]; $P = 0.010$). Elevated NLR remained associated with worse outcomes among patients with preserved ejection fraction at baseline, who are conventionally considered to be at lower risk of adverse events ($P < 0.0001$).

Conclusions: In patients with AM, elevated NLR is associated with worse prognosis and may be valuable for stratifying patients, even those conventionally considered at low risk.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 487
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)

STRAIN ATRIALE SINISTRO E ACCOPPIAMENTO ATRIO-VENTRICOLARE NEI PAZIENTI CON AMILOIDOSI CARDIACA

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Background/Introduction: Cardiac amyloidosis (CA) should be suspected in patients with unexplained tickened interventricular septum (IVS ≥ 12mm) and one or more red flags. Among cardiac manifestations the presence of heart failure with preserved ejection fraction (HFpEF) and sometimes with mid-range ejection fraction (HFmEF) should be considered. Multiparametric echocardiographic scores (such as IWT score) exist to discriminate the presence of CA in patients with left ventricular hypertrophy. This score doesn't include left atrial function. Amyloid accumulates in all cardiac structures (also in the atrial wall) altering its function.

Purpose: to assess left atrial function and left atrioventricular coupling index in patients with HFpEF or HFmEF and cardiac amyloidosis.

Methods: a case-control study was conducted enrolling 50 patients with CA diagnosed in accordance with recent ESC position paper and 50 patients with HFpEF and HFmEF and IVS ≥ 12 mm. Speckle tracking echocardiography was performed in all patients; IWT score was assessed in all patients. Left atrial (LA) function was analyzed measuring reservoir LA strain (PALS), LA contraction strain (PACS), LA stiffness (LASI= E/e' average/PALS); LA reservoir work (LAWR= PALS x LA reservoir volume). Left atrioventricular coupling index (LACI) was also measured as the ratio of LA end-diastolic volume divided by left ventricular (LV) end-diastolic volume.

Results: we found that patients with CA were significantly older and male (p-value < 0.05) compared to HF patients; atrial fibrillation significantly predominated in patients with CA (p-value 0.0045). Natriuretic peptides and troponin were significantly increased in CA patients (p-value 0.04 and p-value 0.01). Analyzing echocardiographic data: LV global longitudinal strain (-12±3.9 % vs -12.87 ±4.3%) and LVEF (52.12 ± 8.15 % vs 50±7.68 %) did not differ significantly between groups; relative wall tickness (RWT) was significantly increased in CA patients (p-value < 0.0001), left atrial function and LACI were significantly impaired in patients with CA. PALS, PACS and LAWr were significantly reduced in patients with CA and they were predictors of CA. Also LA indexed volume, LASI and LACI were significantly increased in patients with CA (p-value < 0.05). Analyzing ROC curve, we found that a value of LASI > 1,1% (AUC 0.86), PALS < 5.5 % (AUC 0.81) and LAWr < 103 %/ml (AUC 0.82) were the best predictors of CA in patients with HF; also PACS < 0.9% (AUC 0.79) or absence of atrial contraction and LACI > 56% (AUC 0.73) were found to be good predictors of CA.

Conclusions: Left atrial function and left atrioventricular coupling are more impaired in patients with CA than in patients with HF alone. LACI and left atrial function could aid to diagnose CA in patients with HFpEF or HFmEF with left ventricular hypertrophy, especially if IWT score is between 2 and 7. To confirm the proposed cut-off values larger studies are needed.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 1081
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)
PROGNOSI (SCOMPENSO CARDIACO)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)

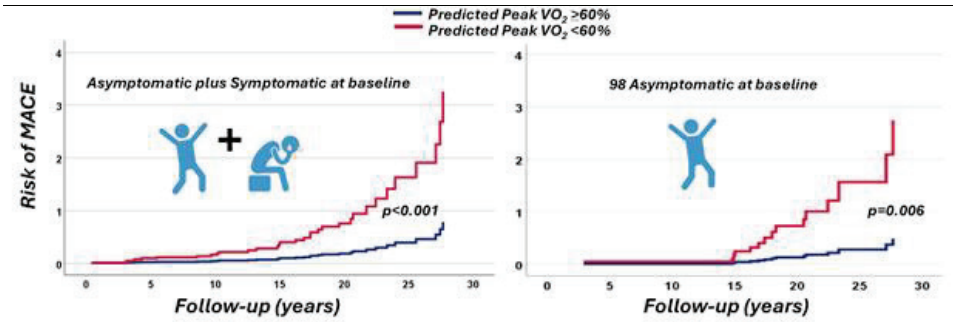
VALORE PROGNOSTICO A LUNGO TERMINE DEL TEST DA SFORZO CARDIOPOLMONARE NEI PAZIENTI SINTOMATICI E ASINTOMATICI CON CARDIOMIOPATIA IPERTROFICA

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Obiettivi. La cardiomiopatia ipertrofica (HCM) è una patologia miocardica eterogenea caratterizzata da ipertrofia ventricolare sinistra in assenza di cause secondarie. Il ruolo del test da sforzo cardiopolmonare (CPET) nella predizione degli eventi cardiovascolari maggiori (MACE) rimane parzialmente chiarito, in particolare nel follow-up a lungo termine e indipendentemente dallo stato sintomatologico basale. Metodi. Sono stati seguiti longitudinalmente 154 pazienti con HCM (età 43±16 anni; 27% donne) sottoposti a CPET massimale. Al basale, 98 pazienti erano in classe NYHA I, 48 in classe II e 8 in classe III. I trattamenti non farmacologici dell'HCM ostruttiva (SRT: septal reduction therapy), la progressione alla fase avanzata end-stage di HCM (ES-HCM), la morte cardiaca improvvisa (SCD), la morte per scompenso cardiaco (HF) e il trapianto cardiaco (HT) hanno costituito un endpoint composito di MACE.

Risultati. Durante un follow-up medio di 12±9 anni, 38 pazienti hanno presentato MACE (SRT=9; ES-HCM=11; SCD=10; HF/HT=8). All'analisi multivariata, i predittori indipendenti di MACE sono risultati una percentuale del predetto del picco di VO_2 (pVO_2%) <60 (HR 4,16; IC95% 1,89–9,14; p<0,001) e una classe NYHA >I (HR 2,27; IC95% 1,06–4,89; p=0,036). Considerando la SRT come rischio competitivo, l'unico predittore di MACE è risultato la pVO_2% <60 (HR 3,966; IC95% 1,626–9,670; p=0,002). Tra i pazienti asintomatici (classe NYHA I), soltanto la pVO_2% <60 è rimasta un predittore significativo di MACE (HR 5,611; IC95% 1,635–19,253; p=0,006), con una divergenza del rischio evidente dopo circa 15 anni di follow-up. Il risultato è stato confermato anche nell'analisi con rischio competitivo.

Conclusioni. In questo studio a lungo termine, il CPET si conferma un potente strumento prognostico nell'HCM. Una riduzione del picco di VO_2 identifica i soggetti a maggior rischio, sottolineando il potenziale del CPET nell'affinare la stratificazione prognostica, anche nei pazienti classificati come NYHA I.



Figures

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 1083
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

CARATTERIZZAZIONE NEUROLOGICA E CARDIOLOGICA NEI PAZIENTI CON AMILOIDOSI EREDITARIA DA TRANSTIRETINA

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Background. L'amiloidosi da transtiretina mutata (ATTRv) può manifestarsi come neuropatia periferica o autonomica isolata (polineuropatia amiloidotica familiare, FAP), più raramente come amiloidosi cardiaca isolata, o come combinazione di entrambe. Il coinvolgimento neurologico e cardiaco è spesso studiato separatamente e non esistono dati sull'interazione tra stadi di malattia neurologica e coinvolgimento cardiaco.

Obiettivi. Scopo di questo studio è stato caratterizzare una popolazione di pazienti con diagnosi definitiva di ATTRv, seguiti presso le Unità di Neurologia e Cardiologia del nostro Ateneo.

Metodi. Sono stati inclusi 58 pazienti con ATTRv (41% donne, età media 60±15 anni). Le mutazioni identificate sono state: 28 Phe64Leu, 20 Val30Met, 4 Val142Ile, 3 Glu54Lys, 1 Ile68Leu, 1 Lys65Asn e 1 paziente sottoposto a trapianto ortotopico di fegato. Il coinvolgimento neurologico è stato valutato mediante esame clinico e test elettroneurografici; la valutazione cardiologica comprendeva ECG, ecocardiografia Doppler completa con speckle tracking e dosaggio di NT-proBNP. I pazienti sono stati classificati dai neurologi in tre stadi di disabilità: G0 = soggetti asintomatici portatori della mutazione patogenetica ma senza evidenza clinica o strumentale di coinvolgimento neurologico; G1 = pazienti sintomatici senza necessità di supporto per la deambulazione; G2 = pazienti che necessitano di ausili per camminare o dipendenti dalla sedia a rotelle. Per le variabili continue è stata utilizzata l'analisi della varianza (ANOVA), con calcolo dei p-value.

Risultati. Nei pazienti con maggiore disabilità neurologica l'età risultava più avanzata, mentre la



Figure 1

distribuzione per sesso, l'età prevista di esordio della malattia e le mutazioni non differivano tra i gruppi. La progressione della disabilità neurologica si associava a un coinvolgimento cardiaco più severo. I livelli di NT-proBNP e la percentuale di pazienti con NYHA > I aumentavano progressivamente. Parametri strutturali e funzionali, quali spessore parietale massimo del ventricolo sinistro, la massa ventricolare sinistra indicizzata e lo spessore relativo di parete peggioravano con l'avanzare del deficit neurologico. Anche il volume atriale sinistro indicizzato e il rapporto E/E' aumentavano progressivamente, mentre lo strain longitudinale globale si riduceva, nonostante una frazione di eiezione preservata.

Conclusioni. I pazienti con ATTRv senza sintomi neurologici mostrano un profilo cardiologico favorevole. Al contrario, i pazienti con coinvolgimento neurologico, anche nello stadio senza necessità di supporto alla deambulazione, presentano ispessimento parietale e peggioramento della funzione sistolica e diastolica, con ulteriore deterioramento negli stadi neurologici più avanzati. Tale fenomeno appare indipendente dal tipo di mutazione. Pertanto, una valutazione neurologica e cardiologica congiunta è imprescindibile nei pazienti con ATTRv.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 988
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
ELETTROSTIMOLAZIONE (ARITMIE)
GESTIONE DELLA COMPLICANZE PM / ICD (ARITMIE)

UN CASO ATIPICO DI SINDROME DI TAKOTSUBO

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INTRODUZIONE

La Sindrome Takotsubo (TTS) è caratterizzata da una acuta e transitoria disfunzione ventricolare sinistra che esordisce con caratteristiche cliniche ed elettrocardiografiche che possono simulare una sindrome coronarica acuta e da un quadro ecocardiografico tipicamente caratterizzato da ipo-acinesia dei segmenti medio-apicali del ventricolo sinistro. Si manifesta generalmente in donne in età post-menopausale, in assenza di malattia coronarica e dopo un intenso stress fisico o psichico.

CASO CLINICO

Donna di 75 anni, ipertesa e diabetica, si ricovera in Cardiologia per impianto di pacemaker (PMK) bicamerale, indicato dopo riscontro di blocco atrioventricolare (BAV) avanzato all'ECG-Holter. All'ingresso in reparto, l'ECG mostrava bradicardia sinusale a 41 bpm, BAV di primo grado e blocco di branca destra. L'ecocardiogramma transtoracico (TTE) evidenziava ventricolo sinistro con funzione sistolica conservata e frazione di eiezione (FE) del 65%. Il giorno successivo la paziente è stata sottoposta a impianto di PMK bicamerale tramite accesso venoso ascellare sinistro in anestesia locale con lidocaina. La procedura è stata ben tollerata e si è svolta senza complicanze. È stata inoltre eseguita una radiografia del torace che ha escluso la presenza di pneumotorace. Dieci ore dopo, la paziente ha lamentato dolore toracico retrosternale associato a sudorazione algida e nausea. L'ECG mostrava ritmo sinusale con ventricologramma elettroindotto. Gli esami ematochimici hanno rivelato aumento degli indici di miocardiocitonecrosi, mentre il TTE ha documentato disfunzione ventricolare sinistra (FE 30%) con acinesia dell'apice e dei segmenti medi e insufficienza mitralica di grado moderato. La paziente è stata sottoposta a coronarografia d'urgenza che non ha evidenziato stenosi coronariche emodinamicamente significative. Nel sospetto di sindrome di Takotsubo, è stata ricoverata in Terapia Intensiva Cardiologica e trattata con levosimendan e terapia diuretica e.v. con progressivo miglioramento clinico e strumentale. Il TTE eseguito dopo una settimana ha mostrato miglioramento della funzione sistolica del ventricolo sinistro (FE 50%). La paziente è stata quindi dimessa in buone condizioni cliniche.

CONCLUSIONE

Sebbene rari, in letteratura sono stati descritti alcuni casi di TTS post-impianto di PMK, prevalentemente in donne anziane e nella maggior parte dei casi con un buon decorso clinico. I tipici segni ECG-grafici sono mascherati dal ventricologramma elettroindotto, impedendo il riconoscimento immediato del problema. Questo caso clinico sottolinea l'importanza di considerare l'impianto di pacemaker come un potenziale evento stressante trigger per la TTS.

CardioSic

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 368
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
DEFIBRILLATORE IMPIANTABILE (ARITMIE)
ARITMIE VENTRICOLARI (ARITMIE)
PROGNOSI (SCOMPENSO CARDIACO)

THE ROLE OF GENETICS IN ICD IMPLANTATION DECISIONS IN DILATED CARDIOMYOPATHY

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Background: Dilated cardiomyopathy (DCM), caused by a monogenic background, is a heterogeneous disease with arrhythmic risk varying by the gene involved. Implantable cardioverter-defibrillators (ICDs) remain the mainstay of sudden cardiac death (SCD) prevention, but genetic data are not consistently integrated into decision-making.

Aim and methods: We evaluated the role of genetic testing in guiding ICD management at a tertiary referral center. A retrospective analysis was performed on 1,169 DCM patients who underwent genetic testing. Based on existing evidence, LMNA, FLNC, RBM20, and desmosomal genes (PKP2, DSP, DSG2, DSC2, JUP) were considered high-risk arrhythmogenic.

Results: ICDs were implanted in 431 patients (37%), of whom 367 (85%) were for primary prevention (71% male, mean age 46 ± 14 years). In this group, family history of DCM and SCD was present in 30% and 15%, respectively. Presentation was predominantly heart failure (55%), followed by arrhythmic events (32%) or family screening (15%). Pre-implant LVEF was 34 ± 12%, and LVEDVi 88 [72–109.5] mL/m². Pre-implantation LVEF was 34±12%, and LVEDVi 88 [72–109.5] mL/m². Among traditional clinical indicators for ICD implantation in primary prevention, 67% had LVEF<35%, 53% were NYHA class ≥2, 12% experienced syncope, 68% had non sustained ventricular tachyarrhythmias, 45% had frequent PVCs (>1000/24h), and 22% had significant bradyarrhythmia. Imaging and functional markers were also common, with 71% showing LGE. Genetic testing was performed pre-implant in only 85 patients (23%); 20 (22%) carried arrhythmogenic variants. However, ICD implantation rates did not differ between arrhythmogenic and non-arrhythmogenic genotypes (p = 0.84). During a mean 5-year follow-up, 33% received appropriate ICD interventions. Patients without pre-implant genetic testing had higher rates of appropriate shocks than those tested (36% vs. 24%, p = 0.03). Among pre-implant tested patients, event rates were similar between arrhythmogenic variant carriers and non-carriers (21% vs. 24%, p = 0.77).

Conclusion: In our cohort, most ICDs implanted without prior genetic testing dated back to earlier years, which likely explains the higher rate of arrhythmic events observed in this group. When genetic testing was performed before implantation—though still infrequently— it did not appear to significantly alter implantation decisions or improve arrhythmic risk prediction beyond clinical and phenotypic markers. However, while phenotypic characterization still remains the key driver in ICD decision-making, cardiomyopathy management must be individualized, and in this context genotypic information plays a fundamental role.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 374
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)

RELATIVES OF VUS AND GENETIC NEGATIVE PROBANDS AFFECTED BY DILATED CARDIOMYOPATHY: CHARACTERIZATION, PREVALENCE AND PROGNOSTIC PREDICTORS OF CARDIAC DISEASE

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Background. All first-degree relatives of probands affected by cardiomyopathies should undergo family screening with an electrocardiogram (ECG) and imaging, regardless of the proband's genetic status. Relatives of probands with Dilated Cardiomyopathy (DCM) who carry variants of uncertain significance (VUS) or have negative genetic results represent a poorly characterized subgroup.

Aim. This study aimed to provide a clinical and prognostic characterization of first-degree relatives of probands with DCM who carried VUS or had negative genetic testing. Specifically, we sought to assess the prevalence of disease in this population, comparing it with estimates in the general population and in relatives carrying pathogenic or likely pathogenic (P/LP) variants in the titin (TTN) gene, and to evaluate predictors of disease development.

Methods. We conducted a multicenter, retrospective, longitudinal cohort study of first-degree relatives of probands with DCM and VUS or negative genetic results. The primary endpoint was the development of DCM and/or "incomplete" DCM (defined as isolated left ventricular systolic dysfunction or isolated left ventricular dilatation). The secondary exploratory endpoint was a composite of cardiovascular death, heart transplantation, ventricular assist device (VAD) implantation, heart failure hospitalization, sudden cardiac death (SCD) or aborted SCD, and major ventricular arrhythmias. Descriptive analyses compared affected and unaffected relatives, while univariable and multivariable models identified predictors of disease. Kaplan-Meier curves assessed cumulative incidence of DCM or incomplete DCM during follow-up.

Results. A total of 292 first-degree relatives from 172 families with a proband carrying VUS or negative genetic results were enrolled. DCM was diagnosed in 15 relatives (6%) after a median follow-up of 29 months (IQR 8–85 months) and at a median age of 44 years (IQR 36–58 years). No differences were observed between VUS and negative relatives in terms of DCM or incomplete DCM development. The incidence rate of DCM in this cohort was higher than in the general population (17.2 vs 0.18 per 1,000 person-years), but lower than in relatives with P/LP TTN variants (33.6 per 1,000 person-years). Older age and echocardiographic parameters (larger left ventricular end-diastolic diameter and lower ejection fraction) were the main predictors of disease, while cardiovascular risk factors were not significant in multivariable analysis. Regarding the secondary endpoint, SCD occurred in 2% of relatives, more frequently in those with a family history of SCD, with additional affected family members, with baseline ECG abnormalities, and after a diagnosis of DCM.

Conclusions. The incidence rate of DCM in relatives of probands with VUS or negative genetic results was 17.2 per 1,000 person-years. Higher-risk individuals were older (particularly 35–55 years) and showed subtle abnormalities at baseline echocardiography. Importantly, this group is not exempt from adverse cardiovascular outcomes.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 1066
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
MIOCARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

PREVALENCE OF CARDIAC SARCOIDOSIS ACCORDING TO DIFFERENT INTERNATIONAL CRITERIA: A (2 YEARS) SINGLE CENTRE EXPERIENCE

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Background: Cardiac sarcoidosis (CS) is a rare and challenging condition, characterized by heterogeneous clinical manifestations and the absence of a diagnostic gold standard. Several criteria (HRS 2014, WASOG 2014, JCS 2016, AHA 2024) have been proposed, with variable approaches and non-overlapping results.

Objectives: To assess prevalence and compare the diagnostic performance of major CS criteria in a consecutive cohort of patients evaluated at a tertiary referral center.

Methods: We prospectively included 80 patients (mean age 63.7±8.9 years; 42 males) between February 2023 and March 2024 at the Cardiac Sarcoidosis Outpatient Clinic. Seventy-six had histologically confirmed extra-cardiac sarcoidosis, while 4 were suspected isolated CS. All underwent clinical evaluation, ECG, 24h Holter, echocardiography, contrast-enhanced CMR, and FDG-PET. Endomyocardial biopsy was performed in 6 patients but yielded non-diagnostic results.

Results: The prevalence of clinically diagnosed CS varied according to the criteria applied: 10% with JCS 2016, 15% with HRS 2014 and WASOG 2014. The 2024 AHA algorithm identified 20% of patients as "probable" or "highly probable" CS, including 4 cases of isolated CS not detected by other systems. CMR with late gadolinium enhancement and FDG-PET were pivotal in the diagnostic pathway, while endomyocardial biopsy showed low sensitivity (<20%).

Conclusions: The prevalence of CS differs significantly depending on the diagnostic framework used. The AHA 2024 algorithm proved more flexible and inclusive, reducing diagnostic heterogeneity and improving recognition of isolated forms. CMR and FDG-PET remain essential diagnostic tools. Prospective multicenter studies are warranted to harmonize criteria and establish shared diagnostic standards.

Keywords: cardiac sarcoidosis; diagnostic criteria; CMR; FDG-PET; AHA 2024

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 126
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MIOCARDICO-PERICARDICO
(MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
PROGNOSI (SCOMPENSO CARDIACO)

IL RUOLO DEL GENOTIPO COMPLESSO NELLA CARDIOMIOPATIA DILATATIVA DA VARIANTI NEL GENE DELLA TITINA: CARATTERISTICHE CLINICHE E IMPLICAZIONI PROGNOSTICHE

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Background. La cardiomiopatia dilatativa (CMD) da varianti patogeniche o verosimilmente patogeniche (P/LP) del gene TTN presenta fenotipo variabile e penetranza incompleta. Oltre al ruolo noto dei fattori acquisiti come second hits (abuso alcolico, gravidanza, chemioterapia), il possibile contributo del genotipo complesso rimane da chiarire.

Obiettivi. Valutare l'impatto prognostico del genotipo complesso (variante TTN P/LP associata ad almeno una variante di significato incerto [VUS] in geni correlati a CMD), confrontandolo con il genotipo semplice (solo variante TTN P/LP). L'endpoint primario era rappresentato da mortalità per tutte le cause ed eventi aritmici maggiori (morte cardiaca improvvisa, tachicardia ventricolare sostenuta o fibrillazione ventricolare, shock appropriato da defibrillatore impiantabile).

Metodi. Studio retrospettivo monocentrico su 44 pazienti adulti con CMD seguiti dal 2002 al 2025 con analisi genetica mediante pannello multigene (next-generation sequencing, NGS). I pazienti sono stati sottoposti a una valutazione clinico-strumentale estesa, e l'analisi statistica è stata condotta utilizzando modelli di regressione di Cox.

Risultati. Il 36% (16/44) dei pazienti presentava un genotipo complesso. Non sono emerse differenze cliniche o strumentali significative alla diagnosi, ad eccezione di una massa ventricolare sinistra inferiore nei soggetti con genotipo complesso (74 g vs. 135 g; p<0.001). Dopo un follow-up mediano di 5.8 anni, il genotipo complesso si associava a un'incidenza significativamente maggiore di mortalità per tutte le cause (25% vs. 4%; p=0.012), eventi aritmici maggiori (31% vs. 4%; p=0.040) e dell'endpoint composito di mortalità per tutte le cause ed eventi aritmici maggiori (38% vs. 7%; p=0.008) (Figura 1).

Conclusioni. Il genotipo complesso in pazienti con

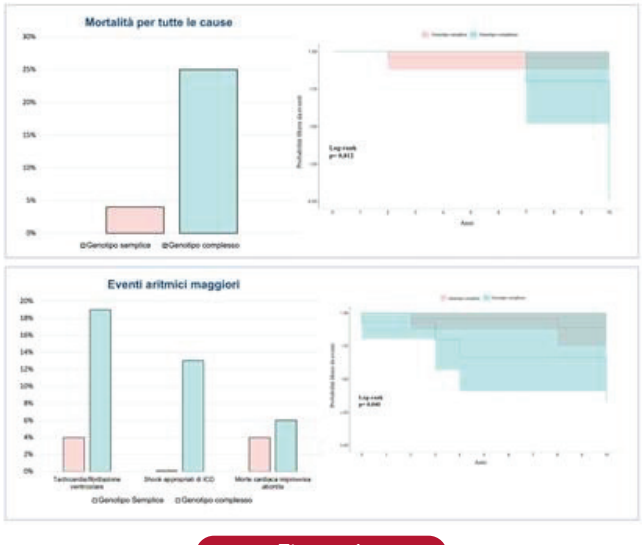


Figura 1

CMD da TTN si associa a una prognosi peggiore caratterizzata da un burden aritmico più elevato e una maggiore mortalità. Questi dati rafforzano l'ipotesi che le varianti multiple, anche se di significato incerto, possano agire come second hit genetici, modulando espressività e gravità del fenotipo.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 345
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)

PROTECTIVE TTR VARIANT UNMASKS HYPERTROPHIC CARDIOMYOPATHY IN A PATIENT WITH DOWN SYNDROME: A CASE REPORT

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Gaetano Chiricolo (a), Giuseppe Novelli (a), Andrea Natale (a)
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(b) UOC CARDIOLOGIA POLICLINICO DI ROMA TOR VERGATA

Introduction: Hypertrophic cardiomyopathy (HCM) is the most common inherited cardiomyopathy, with a prevalence of about 1 in 500 individuals. It is caused by mutations in sarcomere protein genes and may present with left ventricular outflow tract (LVOT) obstruction, heart failure symptoms, and arrhythmias. Cardiac amyloidosis (CA), mainly due to transthyretin (ATTR) or immunoglobulin light chains (AL), is an important differential diagnosis in patients with unexplained left ventricular hypertrophy. Distinguishing between HCM and CA is crucial, as both conditions have specific genetic and disease-modifying therapies. We report the case of a 38-year-old man with genetic disorder, in whom genetic testing first excluded ATTR amyloidosis through the detection of a protective TTR variant, and subsequently confirmed obstructive HCM due to a pathogenic MYBPC3 mutation.

Case report: A 38-year-old man with Down syndrome was referred to our institution for dyspnea and palpitations. Transthoracic echocardiography showed concentric left ventricle hypertrophy (interventricular septum thickness 22 mm, posterior wall 12 mm), preserved left ventricular ejection fraction, and complete systolic anterior motion of the mitral leaflet (SAM), with augmented LVOT gradient at rest (85mmHg). Electrocardiogram revealed frequent premature ventricular complexes (PVCs). Given the hypertrophic phenotype and arrhythmic burden, the patient underwent genetic testing for cardiac amyloidosis and hypertrophic cardiomyopathy (HCM). Beta-blocker therapy was initiated. First available genetic result concerned transthyretin gene, reporting the presence of the Thr139Met variant, which is described in the literature as protective against amyloid fibrillogenesis. This allowed us to reasonably exclude cardiac amyloidosis as the cause of hypertrophy. At the first follow-up visit, due to persistent symptoms and PVCs, disopyramide therapy was added, resulting in significant clinical improvement and reduction in LVOT gradient. One month later, sarcomere gene testing identified the c.2309-2A>G mutation in the MYBPC3 gene, confirming the diagnosis of obstructive hypertrophic cardiomyopathy (oHCM).

Discussion: Hypertrophic cardiomyopathy (HCM) and cardiac amyloidosis (CA) are two major differential diagnoses in patients presenting with unexplained left ventricular hypertrophy. The detection of the TTR Thr139Met variant, described in the literature as protective against amyloid fibrillogenesis, allowed us to reasonably exclude ATTR-CM as the cause of hypertrophy in our patient. Subsequently, identification of a pathogenic MYBPC3 mutation established the diagnosis of obstructive HCM, which guided pharmacological management. An additional distinctive feature of this case is the coexistence of three different genetic conditions in the same patient: a chromosomal abnormality (Down syndrome), a sarcomeric mutation causing HCM, and a protective TTR variant.. This

diagnostic pathway underscores the importance of cautious interpretation of genetic variants: while some TTR mutations are disease-causing, others may be neutral or even protective, and their misclassification may lead to diagnostic uncertainty or inappropriate clinical decisions. Conclusion: This case emphasizes the central role of genetic testing in differentiating HCM from cardiac amyloidosis in patients with left ventricular hypertrophy. Careful interpretation of TTR variants is crucial to avoid diagnostic pitfalls, while timely identification of pathogenic sarcomere mutations enables early initiation of tailored therapies.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 99
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MIOCARDICO-PERICARDICO
(MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
MINOCA (MYOCARDIAL INFARCTION WITH NORMAL CORONARY ARTERIES)
(CARDIOPATIA ISCHEMICA)

UN RARO CASO DI SINDROME DI TAKO-TSUBO A FRIGORE: IL FREDDO FA AMMALARE?

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La Sindrome di Tako-Tsubo è una cardiomiopatia da stress caratterizzata da disfunzione ventricolare sinistra, solitamente reversibile. I fattori stressogeni che possono indurre questa patologia sono diversi, per lo più di tipo fisico o emotivo.

Presentiamo il caso di una paziente di 74 anni, affetta da dislipidemia e pregressa abitudine tabagica, in follow-up per una pregressa neoplasia vescicale. Giunge alla nostra attenzione in seguito ad episodio di dolore toracico, associato a sudorazione algida e lipotimia, occorso in estate, subito dopo essere entrata in un negozio dove era presente una eccessiva aria fredda. La curva enzimatica mostrava una dismissione massima di Troponina I-HS pari a 9756 ng/L e proBNP 8104 pg/mL. Per tale motivo veniva ricoverata in Cardiologia dove veniva sottoposta ad esame coronarografico con evidenza di coronarie esenti da lesioni significative. L'RX torace non descriveva lesioni pleuroparenchimali ma, posto a confronto con il precedente eseguito circa sei mesi prima, era evidente un ingrandimento dell'ombra cardiaca (vedi immagini allegate). All'ECG si rilevava un ritmo sinusale con onde T profonde, simmetriche, diffuse. L'ecocardiogramma evidenziava una moderata disfunzione del ventricolo sinistro (FE 38%) per acinesia dei segmenti medio-apicali in toto. Al controllo predimissione si assisteva ad un miglioramento della funzione ventricolare sinistra (FE 45%) con acinesia limitata al setto apicale e alla parete anteriore apicale. Veniva successivamente dimessa a domicilio con diagnosi di Sindrome di Tako-Tsubo e con indicazione ad eseguire controllo ambulatoriale ad un mese.

CONCLUSIONI: La Sindrome di Tako-Tsubo è una cardiopatia non ischemica che mima una sindrome coronarica acuta e che spesso si presenta in donne in epoca post-menopausale. Solitamente è causata da intensi stress fisici o emotivi, come lutti, litigi, minacce, infezioni. La particolarità del nostro caso risiede nel fatto che questa sindrome sia stata indotta da un intenso sbalzo termico, dovuto al calore estivo e all'eccessivo utilizzo dei climatizzatori nei luoghi chiusi. In letteratura sono descritti soli casi di cardiomiopatia da stress legati a ipertermia acuta o ipotermia, ma non sono presenti casi indotti da variazioni brusche della temperatura esterna. La prognosi è generalmente benigna nel breve termine, ciò è corroborato dal rapido miglioramento della cinetica del ventricolo sinistro osservato nella nostra paziente.



Figura 1

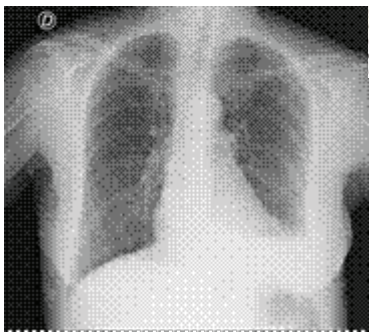


Figura 2

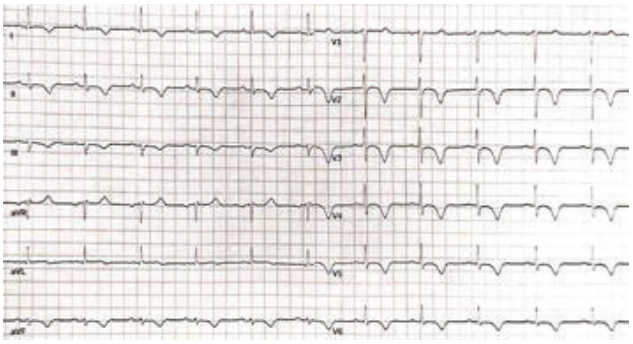


Figura 3

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 305
ARITMIE VENTRICOLARI (ARITMIE)
MIOCARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

TLL1 GENE VARIANT ASSOCIATED WITH MYOCARDITIS, MITRAL VALVE PROLAPSE, AND VENTRICULAR ARRHYTHMIAS

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(a) OSPEDALE SAN RAFFAELE, MILANO

The relationship among TLL1, inflammatory heart diseases, valve prolapse, and sudden cardiac death has not been fully investigated. Herein, we present the case of a 60-year-old man who was resuscitated after cardiac arrest on ventricular fibrillation (VF) and diagnosed acute myocarditis, proven by cardiac magnetic resonance, in the context of valve prolapse.
The case was notable for reporting a not-yet described cardiac arrest in a patient with TLL1 mutation, together with valve prolapse and inflammatory heart disease. We surmise that the genetic substrate may have had a role in the disease pathogenesis, and this emphasizes the role of genetic testing in the context of major adverse events, especially if in concomitance with inflammatory heart diseases.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 308
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)

INTRA-LEFT ATRIAL DYSSYNCHRONY AS A PREDICTOR OF SUPRAVENTRICULAR TACHYARRHYTHMIAS IN DILATED CARDIOMYOPATHIES

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(a) OSPEDALE SAN RAFFAELE, MILANO; (b) MAASTRICHT UNIVERSITY, NETHERLANDS

Background: Supraventricular tachyarrhythmias (SVTs), including Atrial Fibrillation (AF), Atrial Flutter and Atrial Tachycardia are common in patients with Dilated Cardiomyopathy (DCM), and are associated with adverse clinical outcomes and increased morbidity. Early identification of reliable predictors for SVTs is crucial for optimizing patients' management and risk stratification. So far, left atrial volume index (LAVi) appears to be the single main predictor of adverse cardiovascular events and AF recurrence in DCM. Emerging evidence suggests that prolonged intra-atrial conduction time might reflect underlying atrial remodeling, thereby increasing the risk of SVTs onset. However, the prognostic role of intra-left atrial dyssynchrony (ILAD) in DCM has not been thoroughly investigated. Moreover, no ILAD cutoff has been established to predict the occurrence of SVTs and AF in particular.

Objective: This retrospective, single center study taking place at a third level center for cardiomyopathies (Maastricht University Hospital, Maastricht, Netherlands) aimed to investigate the association between ILAD and the incidence of new onset SVTs in DCM patients. Specifically, it sought to assess ILAD's role in arrhythmic risk stratification, establish potential pathogenic thresholds, and explore its relevance across SVT subtypes, with a focused analysis on patients developing new-onset AF.

Methods: The study cohort included n=117 patients diagnosed with DCM. ILAD was retrospectively measured via Tissue Doppler imaging at baseline echocardiogram and was reassessed during prospective follow-up for internal validation purposes. Patients with DCM and new onset SVTs (n=57) were compared to both DCM controls without documented SVTs (n=60), and healthy controls (n=19). SVTs were detected by repeated Holter ECG exams or ILR interrogation over a median follow-up of two years. ROC analysis was used to define optimal ILAD cutoff, and survival analysis evaluated event-free-survival. Subgroup analysis was conducted on DCM patients with new onset AF.
Results: ILAD values were significantly higher in DCM patients compared to healthy controls at baseline (0.016 s ± 0.022 vs 0.036 s ± 0.035, p <0.01). Among DCM patients, those who developed new onset SVT had significantly higher ILAD values compared to those with uneventful follow-up (respectively: 0.051 s ± 0.049 vs 0.021 s ± 0.020, p <0.01). A prognostic ILAD cutoff of 0.01 s was identified. Similar findings were observed for the prediction of AF.

Conclusion: Elevated ILAD values are associated with an increased risk of new onset SVTs in DCM patients. The combined use of ILAD and LAVi enhances predictive accuracy and may serve as a valuable tool for early risk stratification. The definition of a quantitative cutoff for ILAD introduces new opportunities for personalized monitoring and early therapeutic strategies in DCM patients at risk of SVT.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 309
SINCOPE (ARITMIE)
DEFIBRILLATORE IMPIANTABILE (ARITMIE)
MIOCARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

BRADYARRHYTHMIC MYOCARDITIS: PRESENTATION, RISK, AND MANAGEMENT

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(a) OSPEDALE SAN RAFFAELE, MILANO

Background: Clinical features and prognosis of myocarditis presenting with bradyarrhythmias are still undefined.

Aims: To compare clinical presentation and outcomes of patients with and without bradyarrhythmias at myocarditis onset.

Methods: We retrospectively enrolled patients aged 18–65 years with confirmed myocarditis, based on cardiac MRI (Lake Louise criteria) and/or endomyocardial biopsy (ESC criteria). Patients with bradyarrhythmia (defined by atrioventricular block of any degree, sinus bradycardia <50 bpm, sinus arrest, sinus pauses >2s, atrial sinus block) occurring within the first 24h after hospital admission were identified (study group).
The control group was composed of patients without bradyarrhythmic onset, matched by age, sex and type of clinical presentation (chest pain, heart failure and ventricular arrhythmias). The primary endpoint was a composite of inhospital death, need for circulatory support (inotropic/mechanical), and cardiac device implant (pacemaker/defibrillator).
Secondary outcomes were inhospital length of stay, and longterm adverse outcomes (all causes death, heart transplant, systolic dysfunction and lifethreatening arrhythmias by 12 months).

Results: The final study population included 68 patients (mean age: 48±8 years; 38% women). The study group was composed of 34 patients, including 8 (24%) with complete atrioventricular block and 6 (17%) with sinus bradycardia <50bpm. The primary endpoint was obtained in 27 of 34 patients (80%) in the study group and 3 of 34 (8%) in the control group (p<0.001). In particular, cardiac devices (CRT, ICD, PM) were implanted more frequently in the study group (79% vs. 8%, p<0.0001). The length of hospital stay was also longer in the study group (median 11 vs. 5 days p=0.07). Longterm adverse outcomes were observed in 22 of 34 patients (64%) in the study group compared with only 3 patients (9%) in the control group (p<0.001). The rate of cardiac mortality was 8% in patients with bradyarrhythmic presentation compared with 0% in the control group (p=0.239). By 12-month follow- up, 9 out of 34 patients (26%) in the study group showed left ventricular ejection fraction (LVEF) <40%, compared to 0% in the control group (p<0.005).

Conclusions: Early-bradyarrhythmic onset of myocarditis is significantly associated with adverse outcomes, both inhospital and in the long term.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 312
ARITMIE VENTRICOLARI (ARITMIE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
DEFIBRILLATORE IMPIANTABILE (ARITMIE)

CARDIAC OUTCOMES IN LAMINOPATHIES VS. OTHER NEUROMUSCULAR DISORDERS

Carlotta Negro (a), Andrea Villatore (a), Simone Sala (a), Chiara Di Resta (a), Giovanni Peretto (a)
(a) OSPEDALE SAN RAFFAELE, MILANO

Background: Cardiac involvement in lamin A/C-associated muscular dystrophies (LMNA-MDs) is known to portend adverse outcomes. However, comparative data with non-LMNA neuromuscular disorders (NMDs) remain limited.

Objectives: o evaluate the incidence of (i) major arrhythmic events (MAE) and (ii) mechanical cardiac failure in LMNA-MD versus a heterogeneous NMD cohort.

Methods: We retrospectively enrolled consecutive patients with MDs selected from historical cardiomyopathy cohort at a referral center. The study group of patients with LMNA-MDs was compared with the control group of patients with other NMDs. Clinical records, 12-lead electrocardiograms, transthoracic echocardiograms, and cardiac magnetic-resonance images were systematically reviewed.
Primary end-points were: 1) major arrhythmic events (MAE), namely sustained ventricular tachycardia/ fibrillation or appropriate ICD shocks; and 2) major mechanical events (MME), namely heart transplantation, admission for acute heart falure, or critical systolic dyfunction, i.e. left-ventricular ejection fraction (LVEF) < 35 %.

Results: The study cohort consisted of 37 patients—19 with LMNA-MD and 18 with other NMDs (50 % other muscular dystrophies, 39 % dystrophinopathies, 6 % mitochondrial disorders).
The overall cohort had a mean age of 49 ± 17.7 years, 54% were male, and average baseline LVEF was 48% ± 15.3%. Median follow-up was 25 years (range [3–57]).
Neuromuscular symptoms emerged earlier in LMNA-MD with median 4 y (IQR 2-13) vs. 21 y (IQR 7-37), $p<0.05$. Conversely, there was no significant difference in the age of the first cardiac manifestation, which was predominantly electrical in LMNA-MD (95 %) and more mixed electrical and mechanical in other NMDs (respectively, 67 % vs. 28 %, both $p<0.05$).
MAEs did not statistically differ between the two groups, but the first arrhythmia occurred earlier in LMNA-MD with median 32y (IQR 17-40) vs. 43y (IQR 24-54), $p<0.05$. Ventricular tachycardia was also more common in LMNA-MD (42% vs. 11%, $p=0.033$), although it developed at a similar age in both groups (~41 years).
MMEs were not significantly different, and cardiac mortality was comparable (~11%) in both groups.

Conclusions: LMNA-MD displays an early, arrhythmia-driven cardiac trajectory, with earlier onset of arrhythmias and higher prevalence of ventricular tachycardia, supporting proactive rhythm monitoring and earlier ICD consideration. Other NMDs tend toward premature systolic dysfunction, underscoring the need for intensified echocardiographic follow-up and prompt heart-failure therapy. Tailoring surveillance to these divergent phenotypes may improve outcomes across neuromuscular disease subtypes.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 315
MIOCARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
ASPETTI GENETICI DELLE ARITMIE (ARITMIE)

IMPACT OF VARIANTS OF UNKNOWN SIGNIFICANCE IN ARRHYTHMOGENIC MYOCARDITIS

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Background: Arrhytmogenic myocarditis is one of the most cause of sudden cardiac death in young people. Although the importance of genetic testing in inflammatory cardiomyopathies is already known, the clinical value of genetic variant of uncertain significance (VUS) in arrhythmogenic myocarditis is unclear.

Purpose: To investigate the relationships between VUS and clinical features in patients with arrhythmogenic myocarditis

Methods: We retrospectively enrolled patients without coronary artery disease, with acute AM defined by EMB or CMR criteria or subacute AM defined by the presence of nonischemic LGE at baseline CMR assessment. Diagnostic workup for arrhythmias included Holter ECG, programmed ventricular pacing (PVS), and continuous arrhythmia monitoring by implantable loop recorder (ILR) and/or implantable cardioverter defibrillators (ICD).
The endpoints of the study were: a) prevalence of VUS ; b) occurrence of complex VA (premature ventricular contractions (PVC) >10000/24h, non sustained ventricular tachycardia, sustained ventricular tachycardia, and ventricular fibrillation) in VUS+ vs VUS- at baseline; c) prevalence of LGE in VUS+ vs VUS- at baseline; d) occurrence of complex VA (premature ventricular contractions (PVC) >10000/24 h; non sustained ventricular tachycardia, sustained ventricular tachycardia, and ventricular fibrillation) during follow-up; d) prevalence of ICD therapy in VUS+ vs VUS-

Results: Of 78 patients (32 years old, IQR 22-35; 56% males) with arrhythmogenic myocarditis, 32 (41%) were VUS+, while the remaining 46 (59%) were VUS- . The most commonly detected VUS were (34%) structural protein genes, (41%) cell junction protein genes, and (37%) ion channel protein genes. Baseline left ventricular ejection fraction (LVEF) in VUS+ group was 58% (IQR 43,5; 73,5), as was the case in VUS- group LVEF 58% (IQR 43,3, 74,38). Baseline complex ventricular arrhythmias (VA) were more frequent in VUS+ than in VUS- groups (40% vs 20% with ORR: 2,9, IC [1,09, 8.08], p<0.042). Furthermore, at baseline, LGE+ was more frequently found in the VUS group than in the VUS- group (respectively: 31/32 vs 37/46, p-value< 0,041). By 2-year follow-up, complex VA remained more frequent in the VUS+ group (43%) than in VUS- group (22%) (OR: 2,8; IC: [1,04, 7,53] and p value <0,038). Finally, ICD implantation for prevention of arrhythmic events was more frequent in the VUS+ than in the VUS- patients (respectively: 37,5% vs. 15,2% with ORR: 3,34, IC [1,14; 9,81], p=0.024).

C**onclusions:** Although the presence of VUS for genes involving structural proteins, ion channels, and cell junctions in young patients with arrhythmic myocarditis is not related to mechanical cardiac dysfunction, it is associated with a higher arrhythmic risk already at clinical presentation resulting in a higher frequency of ICD implantation.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 319
GRAVIDANZA E CARDIOPATIA (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
ARITMIE VENTRICOLARI (ARITMIE)

CONCEALED CARDIOMYOPATHIES IN WOMEN WITH PERIPARTUM PRESENTATION: INSIGHTS FROM A NATION-WIDE STUDY

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Background. Aetiology and long-term risk of peripartum cardiomyopathy (PPCM) remain unpredictable.

Aim. To identify clues suggesting concealed nonischaemic cardiomyopathy (NICM) mimicking PPCM at clinical presentation.

Methods. Adult females diagnosed with PPCM were retrospectively selected from a nationwide registry (Ref: NCT05878041) based on the following inclusion criteria: 1) diagnosis of PPCM at presentation; 2) advanced diagnostic workup including at least one of the following: a) delayed-enhanced cardiac magnetic resonance (CMR); b) 12-lead ECG recording lasting at least 24 hours; c) genetic testing for NICM. The primary endpoint was a composite of sustained ventricular arrhythmias, recurrent PPCM and cardiac-related hospitalization by long-term follow-up.

Results. Of n=28 consecutive females diagnosed with PPCM (mean age at presentation 32±5 years; mean left ventricular ejection fraction [LVEF] 35±6%), CMR, 12-lead rhythm monitoring and genetic test were obtained, respectively, in n=19, n=10, and n=5 patients. Overall, 12 patients (43%) had signs of concealed NICM, including striae of late gadolinium enhancement on CMR (n=6), nonsustained ventricular tachycardias or ventricular ectopy with right bundle branch block morphology (n=5), and cardiomyopathic gene variants (n=3). Bay a median follow-up of 5 years, 9 patients (32%) met the primary endpoint, which was more commonly observed within the NICM group (respectively: 8/12 vs. 1/16, p=0.001). In detail, patients with NICM had more sustained ventricular arrhythmias (2 vs. 0, p=0.17), cardiac related hospitalizations (4 vs. 0, p=0.02), and recurrent PPCM (2 vs. 1, p=0.56). The groups did not show significant differences in terms of age, ethnicity, parity, history of hypertension, delivery mode, and baseline LVEF (all p>0.05).

Conclusion. Our data suggest that the use of CMR, 12-lead arrhythmia monitoring and genetic testing, may help identifying concealed NICM as a high-risk group among women presenting with PPCM.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 911
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
CARDIOPATIE CONGENITE NELL´ADULTO (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)

PATTERNS OF PRESCRIPTION OF CONVENTIONAL MEDICAL TREATMENT OF HEART FAILURE WITH REDUCED EJECTION FRACTION IN END-STAGE HYPERTROPHIC CARDIOMYOPATHY

Isabella Perlati (a), Marco Canepa (b), Fabio Vagnarelli (c), Enrico Ammirati (d), Federica Re (e), Chiara Lanzillo (f), Cristina Chimenti (g), Chiara Calore (h), Marco Merlo (i), Giuseppe Limongelli (j), Iacopo Olivotto (k), Camillo Autore (l), Beatrice Musumeci (a), Giacomo Tini (a)

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Background: In approximately 5-10% of cases, hypertrophic cardiomyopathy (HCM) presents severe left ventricular remodeling with hypokinesia and dilatation, defined "end-stage" phase (ES) of the disease, which is typically associated with development of advanced heart failure (HF).
Patterns of use of conventional medical treatments for HF with a reduced ejection fraction (HFrEF) in ES-HCM have never been investigated.

Methods: Patients with ES-HCM from 11 Italian referral centres were retrospectively evaluated.
ES-HCM was defined by LVEF<50%. We included only patients with a last clinical evaluation performed after January 2019, to ensure all patients were potentially evaluated in the era of the "4 HFrEF pillars" (i.e., beta blockers [BB], renin-angiotensin system inhibitors [RASi], mineral receptor antagonists [MRA], and sodium-glucose cotransporter-2 inhibitors [SGLT2i]). For all patients we collected clinical information related to the time of HCM diagnosis, ES development and clinical course, with a focus on medical therapy at the time of last clinical evaluation at each centre. We investigated differences between patients who were prescribed versus those who were not prescribed for each HFrEF pillar.

Results: The study population included 274 ES-HCM patients (59% males, mean age at HCM diagnosis: 38±18 years, mean age at ES development: 55±15 years). At the time of last evaluation, mean age was 60±15 years; 56% of patients were in NYHA III/IV and 78% had an ICD. Mean LVEF was 43±8%, 68% patients had a restrictive filling and 40% had moderate-to-

severe mitral regurgitation. Prescription of all 4 HFrEF pillars was reported in 26% of patients. Specifically, 91% were treated with BB, 75% with RASi, 63% with MRA, 51% with SGLT2i. Furthermore, 70% were on loop diuretics. Comparing patients taking vs not taking BB, obstructive HCM at diagnosis was more common in those prescribed with BB (26% vs 4%, p=0.01), whereas NYHA III/IV was less frequent (54% vs 79%, p=0.02). Comparing those taking vs not taking RASi, males were more common in the first group (63% vs 46%, p=0.02). Comparing those taking vs not taking MRA, NYHA III/IV (62% vs 47%, p=0.01) and use of loop diuretics (78% vs 57%, p=0.001) were more common in those prescribed with MRA. Moreover, MRA were more commonly used in patients with lower LVEF (42±9 vs 44±8%, p=0.04), lower TAPSE (18±4 vs 19±4 mm, p=0.01), higher sPAP (37±13 vs 32±14 mmHg, p=0.003) and restrictive filling (78% vs 56%, p=0.001). Comparing those taking vs not taking SGTL2i, use of loop diuretics was more common in the first group (77% vs 63%, p=0.02). SGLT2i use was also more frequent in those with lower LVEF (41±8% vs 44±9%, p=0.01), moderate-to-severe mitral regurgitation (50% vs 30%, p=0.001) and larger left atrial diameter (53±12 vs 50±8 mm, p=0.01).

Conclusions: While BB and RASi are commonly used in ES-HCM, MRA and SGLT2i are prescribed in approximately 60% and 50% of cases. These two latter classes of drugs appear to be prescribed in ES-HCM with a worse clinical profile, indicating that clinicians tend to use them when disease progress.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 580
MIOCARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MIOCARDICO-PERICARDICO
(MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)

PROGNOSTIC ROLE OF UPDATED LAKE LOUISE CRITERIA FOR THE DIAGNOSIS OF ACUTE MYOCARDITIS (ITAMY MAPPING STUDY)

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Background: The 2018 Lake Louise (LL) criteria show high sensitivity for diagnosing Acute Myocarditis (AM). This study aims to assess the prognostic value of LL criteria in AM.

Methods: 257 consecutive hemodynamically stable patients fulfilling updated LL criteria for diagnosis of clinically suspected AM (presenting with chest pain, troponin raise and no obstructive coronary artery) were enrolled. CMR imaging was performed using 1.5-T scanners following Updated LL criteria. Patients were divided into two groups accordingly to the combination of LL criteria: those with AM diagnosis made using the "original" LL Criteria (DOC), who exhibited both myocardial edema on T2-STIR images and non-ischemic late gadolinium enhancement (LGE), and those in whom diagnosis requiring at least one "mapping" Criteria (DMC) group, where the diagnosis was made either solely on the basis of mapping criteria (T2 + T1 and/or ECV) or by combination of only one original plus ≥1 mapping criterion. cardiac death, resuscitated cardiac arrest, appropriate implantable cardioverter-defibrillator (ICD) shock, heart failure hospitalization and myocarditis recurrence were considered as cardiac events during the follow-up.

Results: Final population included 210 patients. During a median follow-up of 57 months, cardiac events were recorded in 31 patients, all of them occurred in the DOC group and none in DMC group. The Kaplan-Meier curves analysis showed that DOC group ($p<0.0001$), LGE presence (particularly if midwall-septal/ring-like pattern, $p<0.0001$) and a higher number of LL criteria ($p=0.0002$) were associated with worse prognosis. At multivariate analysis the number of LL criteria, DOC and midwall septal/ring-like LGE pattern were confirmed to be independent predictors of major cardiac events.

Conclusions: In patients with hemodynamically stable AM, conventional LL criteria including edema at T2-STIR and positive LGE provide significant prognostic information, while mapping criteria had a limited role.

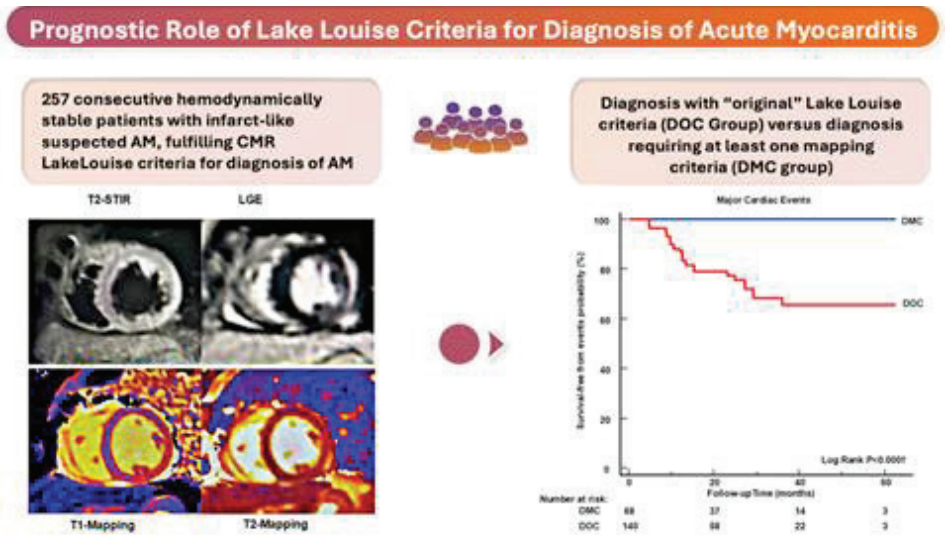

Prognostic Role of Lake Louise Criteria for Diagnosis of Acute Myocarditis
257 consecutive hemodynamically stable patients with infarct-like suspected AM, fulfilling CMR LakeLouise criteria for diagnosis of AM
Diagnosis with "original" Lake Louise criteria (DOC Group) versus diagnosis requiring at least one mapping criteria (DMC group)
T2-STIR
LGE
T1-Mapping
T2-Mapping
Major Cardiac Events
DMC
DOC
Log Rank P<0.0001
Follow-up Time (months)
Number at risk:
DMC 68 37 14 3
DOC 140 68 22 3
Cardiac Events evaluated during a follow-up of 57 (42 – 71) months:
cardiac death, resuscitated cardiac arrest, appropriate ICD shock, heart failure hospitalization and myocarditis recurrence

Figure 1

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 812
TUMORI CARDIACI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
TROMBOSI E COAGULAZIONE (ATEROTROMBOSI)
IMAGING MIOCARDICO-PERICARDICO
(MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

COMBINING CLINICAL AND MORPHOLOGICAL PARAMETERS TO PREDICT EMBOLIC EVENTS IN PATIENTS WITH CARDIAC MASSES

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Background: Cardiac masses (CMs) are uncommon but clinically significant, with embolic events representing a major complication that negatively impacts prognosis. Predictive models for embolic risk in this population are limited, and the CHA_2DS_2-VASc or CHA_2DS_2-VA scores, widely used for thromboembolic risk in atrial fibrillation, have not been systematically evaluated in patients with CMs.

Purpose: To assess the predictive value of the CHA_2DS_2-VASc and CHA_2DS_2-VA scores combined with echocardiographic features for embolic risk in patients with cardiac masses, and to develop a risk score to improve clinical risk stratification and management.

Materials and Methods: We conducted a retrospective cohort study enrolling 238 consecutive patients with histologically confirmed CMs evaluated between January 2004 and October 2024. Patients with atrial fibrillation, thrombi or on anticoagulation were excluded. Clinical, laboratory, and comprehensive echocardiographic data were collected. Embolic events were diagnosed via Computed Tomography angiography. Multivariable logistic regression identified predictors of embolism, and a risk score was developed by weighting variables according to their regression coefficients. Prognostic impact was assessed by Kaplan-Meier survival analysis.

Results: Among 238 patients, 52 (21.8%) had embolic events at presentation. Independent predictors were CHA_2DS_2-VA score (Odds Ratio, OR, 2.51, 95% Confidence Interval, CI, 1.83–3.44), irregular margins (OR 48.1, 95% CI 13.6–169.37), mobility (OR 16.1, 95% CI 4.64–55.2), and septal implantation (OR 0.22, 95% CI 0.07–0.75). The risk score assigned 4 points to irregular margins, 3 points to mobility, and -2 points to septal implantation; these were summed with the CHA_2DS_2-VA score. The combined score showed excellent predictive performance (AUC 0.943, 95% CI 0.912–0.974), with a cutoff ≥7 points yielding 83% sensitivity and 94% specificity. Patients with scores ≥7 had significantly worse survival (hazard ratio 2.03, 95% CI 1.11–3.72, p=0.017). CHA_2DS_2-VA Sc score did not provide a significant improvement in predictive performance compared with the model using the CHA_2DS_2-VA (AUC 0.941 [95% CI 0.908–0.975] vs 0.943 [95% CI 0.912–0.974], p for comparison = 0.70).

Conclusions: A novel, easily applicable risk score integrating CHA_2DS_2-VA and echocardiographic features accurately predicts embolic risk and prognosis in patients with cardiac masses. This tool may guide clinical decision-making regarding surgical timing and anticoagulant therapy, warranting prospective validation.

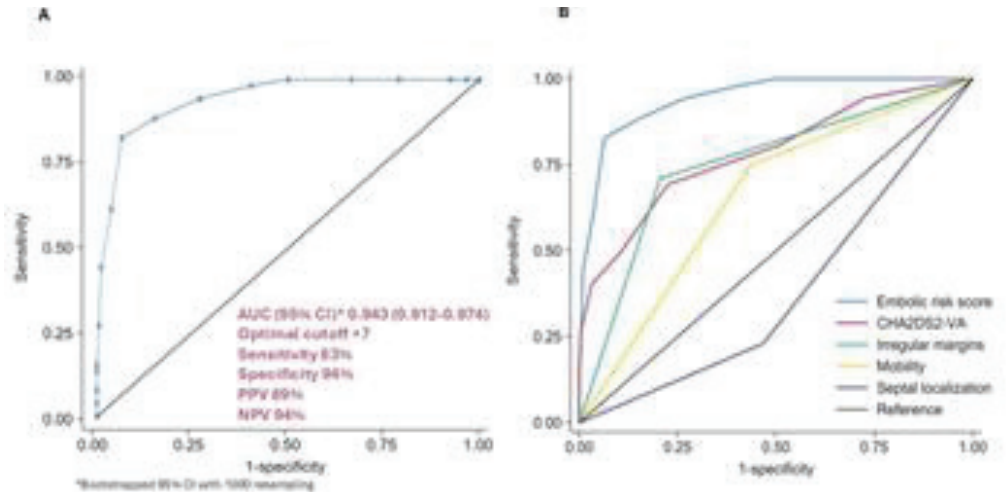

A
1.00
0.75
0.50
0.25
0.00
Sensitivity
0.00
0.25
0.50
0.75
1.00
1-specificity
AUC (95% CI)* 0.943 (0.912-0.974)
Optimal cutoff >7
Sensitivity 83%
Specificity 94%
PPV 89%
NPV 94%
B
Embolic risk score
CHA2DS2-VA
Irregular margins
Mobility
Septal localization
Reference

Figure 1

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 206
MIOCARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)

A COMMON GENETIC SIGNATURE IN TWO SIBLINGS WITH CAMPYLOBACTER JEJUNI-RELATED MYOCARDITIS: CASE REPORT AND RESULTS FROM A SYSTEMATIC REVIEW OF LITERATURE

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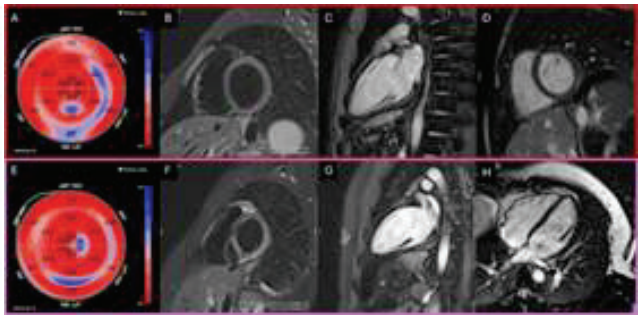
Genetic variants in cardiomyopathy-related genes could be responsible for an increased vulnerability to myocardial inflammation induced by pathogenic agents in the setting of acute myocarditis (AM). To date, few studies have investigated the role of pathogenic/likely pathogenic (P/LP) variants in patients with AM.

We describe the case of two young siblings with an unremarkable clinical history that presented to the Emergency Department with acute-onset oppressive chest pain, accompanied by fever, abdominal pain, and diarrhea that had persisted for five days. The FilmArray Gastrointestinal panel revealed the presence of Campylobacter and stool culture identified Campylobacter jejuni (CJ). On the basis of cardiac symptoms, ECG, echocardiographic and cardiac magnetic resonance findings, the diagnosis was clinically-suspected AM associated with CJ infection. Based on the familial occurrence, the patients were referred for genetic analysis that showed common variants of uncertain significance (VUS) in the genes encoding for the mitochondrial DNA polymerase (POLG), laminin subunit 3 α (LAMA3) and dynein cytoplasmic 2 heavy chain 1 (DYNC2H1), for the first time described in the context of AM.

Furthermore, a systematic review of the literature was conducted, covering articles from 1980 to January 2025. The search terms used were "CJ and myocarditis". A total of 179 records were identified but, finally, full-text analysis was made in 44 studies. A total of 59 patients with CJ-related myocarditis were identified. Of these, 55 (93%) were male and mean age was 27 ± 11 years. Clinical presentation was diarrhea in 97% of cases, chest pain in 86% and fever in 52%. In a fifth of the cases, ECG were absolutely normal as well as in more than half of cases LVEF was >50%. Only in very rare cases, CJ-related myocarditis was complicated by LV dysfunction and cardiogenic shock. After tailored antibiotic therapy and guideline-directed medical treatment for AM, in the maiority of cases, clinical outcome was favourable. In none of the cases, genetics was further investigated. In conclusion, we found a novel phenotype of familial AM associated with CJ infection. In case of gastrointestinal

symptoms and suspected bacterial AM, we suggest the etiological confirmation on stool culture in order to start tailored antibiotic therapy. Genetic analysis may help in identifying familial cluster at higher risk of myocardial inflammation.

PATIENT 1					PATIENT 2				
GENE	NUCLEOTIDE	PROTEIN	GENOTYPE	R.S NCBI	GENE	NUCLEOTIDE	PROTEIN	GENOTYPE	R.S. NCBI
DYNC2H1	c.10303C>A	p.(Ala3434Asp)	Heterozygous	-	DYNC2H1	c.10303C>A	p.(Ala3434Asp)	Heterozygous	-
FOLG	c.547G>C	p.(Glu183Gln)	Heterozygous	rs145182785	FOLG	c.547G>C	p.(Glu183Gln)	Heterozygous	rs145182785
LAMA3	c.5849A>G	p.(Gln1950Arg)	Heterozygous	rs1479777672	LAMA3	c.5849A>G	p.(Gln1950Arg)	Heterozygous	rs1479777672
HCN2	c.448G>T	p.(Gly150Cys)	Heterozygous	-	ALMS1	c.13886G>T	p.(Arg4625Ser)	Heterozygous	rs748794703
					TTN	c.59258G>A	p.(Gly19753Ser)	Heterozygous	rs375805552
					GJC1	c.23G>A	p.(Arg8His)	Heterozygous	-
					JPH2	c.847A>T	p.(Lys283Met)	Heterozygous	-



Figures

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 1082
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
ECOCARDIOGRAFIA 3-D (IMAGING CARDIOVASCOLARE)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)

REVERSE SEPTAL CURVATURE IN CARDIOMIOPATIA IPERTROFICA: UN FENOTIPO AD ALTO RISCHIO

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Introduzione: Nei pazienti con cardiomiopatia ipertrofica (HCM), la reverse septal curvature del ventricolo sinistro (RSC) è stata associata a un fenotipo clinico sfavorevole. Tuttavia, le sue implicazioni meccaniche e strutturali restano poco esplorate.

Metodi: 107 pazienti con HCM sono stati sottoposti a ecocardiografia 3D e risonanza magnetica cardiaca (CMR) complete. Con entrambe le tecniche, la RSC è stata definita come una convessità del setto medio del ventricolo sinistro (VS) rivolta verso la cavità ventricolare sinistra, estesa per oltre un terzo della distanza dalla base all'apice. Inoltre, abbiamo definito cavity obliteration (CO) come l'apposizione completa delle pareti endocardiche all'apice, con o senza estensione al ventricolo medio, e mid-cavity obliteration (MCO) come apposizione completa solo a livello del ventricolo medio.

Risultati: Quarantanove pazienti (46%) sono stati classificati come portatori di RSC (Tabella 1). L'aneurisma apicale del VS è stato osservato esclusivamente nei pazienti con RSC (10 su 49, 20%) (Figura 1, pannello C). Questi pazienti sono stati esclusi dall'analisi successiva, e le differenze tra i gruppi senza RSC (NoRSC) e con RSC sono riportate nella Tabella 1. Analizzando l'apposizione delle pareti, 40 pazienti presentavano CO e 9 MCO (Figura 1, Tabella 2). La RSC era presente in tutti i pazienti con MCO. La frazione di eiezione (EF) apicale risultava significativamente ridotta nei pazienti con MCO, con una forte interazione del gradiente EF apico-basale (b=-30, p<0.001) (Figura 2).

Conclusioni: La RSC è associata alla presenza di aneurisma del VS e a un gradiente intraventricolare. Nei pazienti senza aneurisma del VS, la RSC rappresenta un marker di MCO, che mostra una ridotta frazione di eiezione apicale del VS.

Table 1	No RSC (58)	RSC (39)	p
Age (years)	59±14	56±16	0.171
Female sex (%)	25	31	0.470
FHHCM (%)	42	54	0.299
FHSD	25	39	0.188
Sarcomeric Mutation (%)	33	67	0.005
NYHA >I (%)	34	55	0.027
NSVT (%)	21	51	0.001
ICD (%)	22	67	<0.001
Left atrial volume index (ml/m²)	38±16	41±16	0.414
LV Maximal Wall thickness (mm)	19±4	23±5	<0.001
GLS (%)	-13.0±3.3	-10.7±2.4	0.001
Late gadolinium enhancement (%)	69	90	0.026
LVOTG ≥30 mmHg (%)	25	28	0.798
IVG ≥30 mmHg (%)	0	16	0.002

Table 2	CO (=40)	MCO (=9)	p
RSC (%)	40	100	0.001
3D LV EF (%)	69±8	66±7	0.982
Basal 3D LV EF (%)	61±9	61±6	0.824
Mid 3D LV EF (%)	76±10	73±9	0.381
Apical 3D LV EF (%)	84±16	62±10	<0.001
LVOTG ≥30 mmHg (%)	30	33	0.845
IVG ≥30 mmHg (%)	5	33	0.013
GLS (%)	-11.9±3.3	-10.3±2.7	0.196
LGE (%)	87	100	0.275

Tabella 1

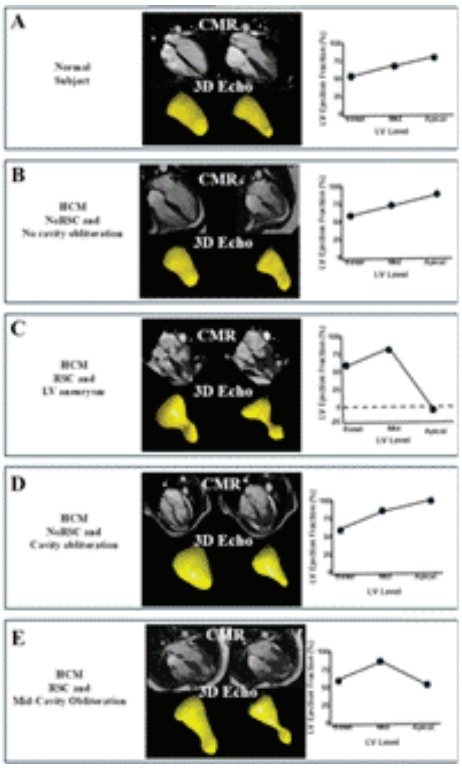


Figura 1

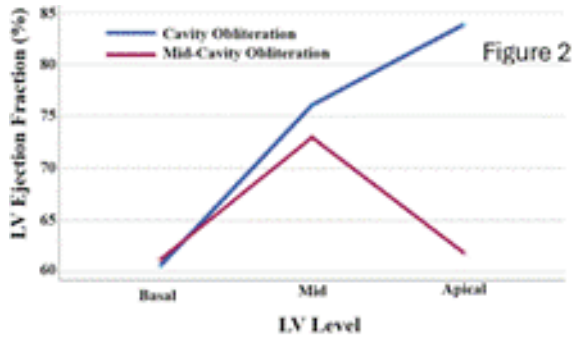


Figura 2

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 1054
CARDIOLOGIA PEDIATRICA (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
FARMACI ANTI-DIABETICI (DIABETE E MALATTIE DEL METABOLISMO)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)

INFANTILE DILATED CARDIOMYOPATHY IN ALSTROM SYNDROME

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Clinical Presentation: A female newborn, born at term following an uncomplicated pregnancy, presented at 7 months of age at our ED, with progressive cough, tachypnoea, reduced oral intake and ultimately decreased weight. On admission she was overtly polidyspnoeic with thoraco-abdominal asynchrony, vital parameters showed BP 86/51mmHg, HR 165 bpm, RR 45 bpm, SpO2 94% in room air, BT 36.6°C, RT < 2 seconds, weight 6.98kg. She was transferred to PICU, started on CPAP and sedated.

Diagnostic Work Up: The transthoracic echocardiography documented normal intracardiac anatomy including coronary artery anatomy and no intracardiac shunts, but revealed a severely dilated left ventricle (LV), end-diastolic diameter 39mm, (z-score +4), with severely reduced ejection fraction (LVEF) to 18%, LVOT VTI 8cm, GS -4.8%. There was moderate mitral regurgitation secondary to LV dilatation. The right ventricle was normal. The ECG showed sinus rhythm, normal AV conduction and left ventricular hypertrophy. At blood tests NTproBNP was 39741ng/L, TnT 66.1ng/L. Full blood count, kidney and liver function were within normal limits, CRP only mildly elevated at 1.67mg/L.
Viral serology and PCR resulted negative, but metabolic screening documented increased blood acylcarnitine concentrations.
An urgent cardiovascular magnetic resonance (CMR) confirmed the severe LV dilation (LVEDV 172ml/m2) and with LVEF of 13%. There was no sign of oedema or LGE, but native T1 values were increased up to 1300ms.
Genetic testing showed two pathogenetic variants in heterozygosis in ALMS1 gene on chromosome 2p13: c.10131dup [p.Gln3377ThrfsTer12] and c.11313_11316del [p.Glu3772TrpfsTer18] and the patient was diagnosed with Alström syndrome. Cascade testing on the parents confirmed that they were both carriers of one mutation each.

Therapy and outcome: The patient underwent a first cycle of levosimendan and was started on full heart failure therapy including ace-inhibitor (captopril 0.3mg/kg tds), spironolactone (6.25mg od), ivabradine (0.15mg/kg bid), furosemide (1mg/kg bid) and dapagliflozin (0.1mg/kg od).
Despite 3 months of GDMT, the TTE remained stable at 18%, while NTproBNP decreased to 29623ng/L. Oculistic and audiometry screening as well as endocrine

screenings and abdominal ultrasound are currently negative.

Conclusion: We presented an ultra-rare case of Alström syndrome, in which dilated cardiomyopathy (DCM) was the only sign of presentation. AS a rare multisystemic and progressive genetic disorder encompassing retinal dystrophy, cardiomyopathy, neuronal hearing loss, obesity, insulin resistance, type 2 diabetes, dyslipidaemia, accelerated non-alcoholic fatty liver disease and premature renal and cardiovascular disease. According to the literature, HF secondary to DCM represents the initial manifestation in 40% of infants, however due to the rarity of the disease and in its diagnosis the true incidence may be underestimated.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 201
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)

VUTRISIRAN IMPROVED OUTCOMES VERSUS PLACEBO IN PATIENTS WITH TRANSTHYRETIN AMYLOIDOSIS WITH CARDIOMYOPATHY AND SEVERE CHRONIC KIDNEY DISEASE: POST HOC ANALYSIS OF HELIOS-B

Aldostefano Porcari (a, d), Farooq H Sheikh (b), Julien Dang (c), Marianna Fontana (d), Vincent Audard (e), Pablo Garcia-pavia (f), Michel Khouri (g), Antoine Jobbe-duval (h), Yevgeniy Brailovsky (i), Hua Zheng (j), Satish Early (j), Colleen Moffitt (j), Ali Yilmaz (k)

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Background: Decline in renal function is common in patients (pts) with transthyretin amyloidosis (ATTR) and is a marker of disease progression associated with mortality in ATTR with cardiomyopathy (ATTR-CM). The TTR-silencing RNAi therapeutic vutrisiran reduced risk of all-cause mortality (ACM) and cardiovascular (CV) events vs placebo (PBO) in pts with ATTR-CM in the Phase 3 HELIOS-B study (NCT04153149).

Aims: To assess the potential impact of vutrisiran on renal function and efficacy/safety of vutrisiran in pts who advanced to CKD Stage 4 during the HELIOS-B double-blind (DB) period.

Methods: HELIOS-B eligibility criteria included eGFR ≥30 mL/min/1.73m2. Pts were randomized 1:1 to vutrisiran 25 mg or PBO Q3M. In this post hoc analysis of the DB period (up to 33–36 months), the proportion of pts with eGFR decline ≥40% from baseline was assessed. The primary composite endpoint of ACM and CV events, as well as ACM, CV events, and safety, were also assessed in pts who progressed to CKD Stage 4 (eGFR <30 mL/min/1.73m2) during the DB period. Outcomes were assessed overall and by baseline tafamidis use (monotherapy and baseline tafamidis subgroups).

Results: Median (IQR) eGFR at baseline in pts receiving vutrisiran and PBO was 64 (50–81) and 65 (53–81) mL/min/1.73m2, respectively. In the overall population, fewer pts in the vutrisiran group experienced a ≥40% decline in eGFR from baseline vs PBO (12.7% vs 21.2%, respectively); results were consistent in monotherapy and baseline tafamidis subgroups. Among pts who advanced to CKD Stage 4, in the overall population, vutrisiran reduced the risk of composite ACM and CV events vs PBO (HR [95% CI] 0.47 [0.26, 0.85]); similar results were seen in ACM and CV events, separately, and in the monotherapy and baseline tafamidis subgroups (CV-related death: 34.3% with PBO; 9.7%

with vutrisiran in the overall population). The safety profile of vutrisiran in pts who advanced to CKD Stage 4 was comparable with PBO. No new safety signals were reported.

Conclusion: Vutrisiran appeared to preserve renal function in pts with ATTR-CM. Consistent with results from the overall population, vutrisiran reduced the risk of ACM and CV events vs PBO in pts with ATTR-CM and advanced CKD in HELIOS-B; results require corroboration in a larger pt population. Encore Presentation: Originally presented at AHA 2025 - November 8-10, 2025

Funding: This study was funded by Alnylam Pharmaceuticals

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 205
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)

CLINICAL IMPLICATIONS OF DISEASE PROGRESSION IN TRANSTHYRETIN AMYLOID CARDIOMYOPATHY IN THE ERA OF DISEASE-MODIFYING TREATMENTS

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Transthyretin amyloid cardiomyopathy (ATTR-CM) is a multisystem, progressive disease caused by the deposition of wild type or variant transthyretin protein in the form of amyloid fibrils within the myocardial extracellular space. Hereditary Val122Ile-ATTR-CM is associated with severe cardiomyopathy and may present with variable degrees of neuropathy. This particularly aggressive form of amyloidosis is associated with rapid disease progression and poor outcome, posing significant challenges for patient management. While TTR stabilizers and gene silencers are available for the treatment of hereditary ATTR amyloidosis with neuropathy, tafamidis is the only approved treatment in ATTR-CM in Italy so far. However, about 30% of patients treated with tafamidis have been reported to progress. A 70-years-old cameroonian woman, presented to our Institution with signs of worsening HF in 2020. Her past medical history was relevant for hypertension and low back pain. The 12-lead ECG demonstrated SR with RBBB and tendency towards low QRS complex voltages. Echocardiography showed increased biventricular wall (max 21 mm), granular sparkling of myocardium, preserved LVEF with reduced GLS and apical sparing pattern. These findings raised suspicion of amyloidosis and the patient underwent bone scintigraphy with SPECT/CT demonstrating an intense myocardial uptake (Perugini 3) in the absence of monoclonal proteins in serum and urine. A diagnosis of hereditary V122I-ATTR-CM (NAC ATTR stage I) was confirmed following identification of the Val122Ile TTR variant on gene sequencing. Neurological examination ruled out amyloid-related neuropathy. According to the 2021 ESC guidelines, the patient was started on tafamidis 61 mg as disease-modifying treatment, subsequently reduced to 20 mg due to intolerance (mostly asthenia and dyspnea), and conventional HF medications including mineralocorticoid-receptor antagonists and sodium-glucose cotransporter-2 inhibitor. Treatment was effective in relieving congestion and HF symptoms in the following 6 to 9 months. Unfortunately, despite tafamidis therapy, the patient experienced clinical, laboratory and instrumental signs of disease progression in the following 5 years, including a) recurrent HF admissions for worsening symptoms requiring escalation of loop diuretic dose, b) worsening conduction disease (onset of 1st degree AV block, widening of the QRS complex), c) severe biventricular systolic disfunction, d) development of moderate mitral and tricuspid regurgitation, and e) substantial elevation in serum NT-pro BNP and troponin I (Figure). Noteworthy, the patient suffered one episode of acute ischemic stroke which was deemed of cardioembolic

origin following detection of new atrial fibrillation, for which she was started on oral anticoagulation. The presence of coronary artery disease was ruled out. Considering the relatively young age of the patient, the aggressive TTR genotype, the inability to tolerate full dose tafamidis due to intolerance and the clear evidence of rapid disease progression, the patient underwent a further neurological examination in June 2025 that identified amyloid-related peripheral neuropathy. Tafamidis was withhold, and vutrisiran, a novel disease-modifying treatment preventing the production of TTR protein by the liver, was initiated for achieving better control of symptoms and disease progression.

This case report of disease progression in a female patient with hereditary V122I-ATTR-CM uniquely demonstrates that trajectories of disease evolution are variable despite disease-modifying treatment, particularly in aggressive forms, such as the V122I. Furthermore, it highlights the current lack of therapeutic options for patients in whom monotherapy with stabilizers fails to achieve disease control, especially in wild type ATTR-CM.

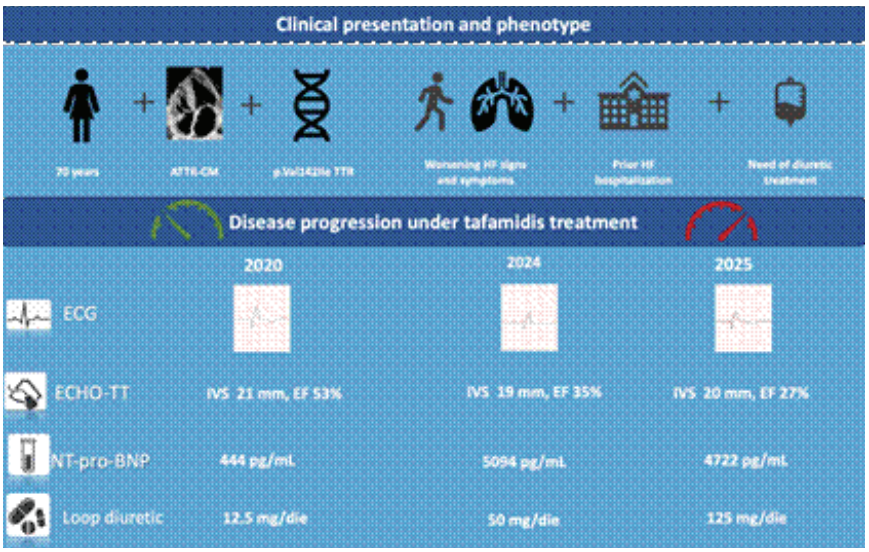


Figure 1

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 214
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MIOCARDICO-PERICARDICO
(MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
SCINTIGRAFIA MIOCARDICA (IMAGING CARDIOVASCOLARE)

CLINICAL IMPACT OF ATYPICAL MYOCARDIAL UPTAKE OF BONE TRACER IN HYPERTROPHIC PHENOTYPE: NOT ALWAYS CARDIAC AMYLOIDOSIS

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Background: Bone scintigraphy has transformed the diagnosis of transthyretin cardiac amyloidosis, but false positive results may occur. Mitochondrial cardiomyopathies can mimic infiltrative phenotypes and are often underrecognized.

Case summary: A 58-year-old man with bilateral sensorineural hearing loss, insulin-dependent diabetes mellitus and long-standing hypertrophic cardiomyopathy presented with worsening heart failure and persistently elevated troponin. Bone scintigraphy demonstrated abnormal myocardial uptake in an unusual pattern in the absence of monoclonal proteins in serum and urine, and cardiac magnetic resonance showed patchy late gadolinium enhancement, raising suspicion of cardiac amyloidosis. However, endomyocardial biopsy was negative for amyloid and demonstrated myocyte hypertrophy with Alcian blue–positive vacuoles. A cardiomyopathy gene panel excluded variants in validated cardiomyopathy causing genes, TTR, PRKAG2, and LAMP2. Mitochondrial DNA sequencing revealed a pathogenic variant in the MT-TL1 gene, consistent with MELAS. A cardiomyopathy-oriented clinical review uncovered a maternal family history of type 1 diabetes, deafness, and maculopathy, supporting the final diagnosis.

Discussion: This case highlights the diagnostic challenge of the hypertrophic phenotype, distinguishing

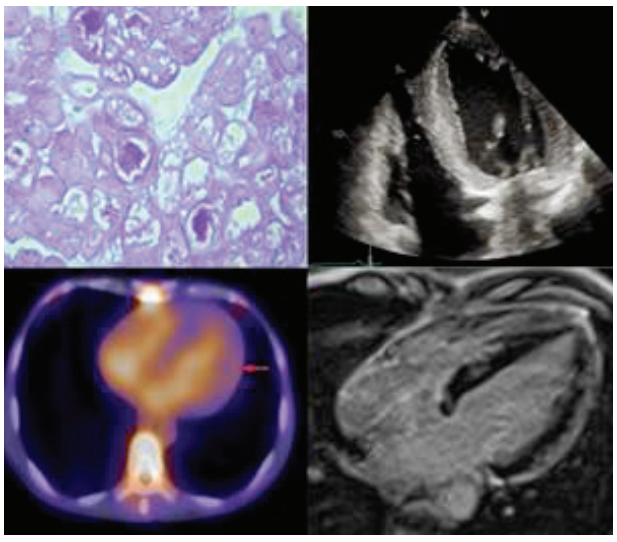


Figure 1

sarcomeric HCM from infiltrative and metabolic or mitochondrial phenocopies. Imaging findings were not typical of a specific condition: distribution of myocardial uptake on bone scintigraphy was atypical for amyloidosis, and late gadolinium enhancement was predominantly intramyocardial-subepicardial rather than the diffuse subendocardial-transmural pattern typical of amyloidosis. Integrating cardiac histology, comprehensive genetic testing, and a systematic assessment of extra-cardiac features and family history was pivotal to avoid misdiagnosis - and inappropriate therapies such as Tafamidis - and to reach the correct etiologic diagnosis.

Take home messages: Mitochondrial disease can mimic cardiac amyloidosis as it presents with a hypertrophic phenotype and possible false positive myocardial uptake on bone scintigraphy. A cardiomyopathy-oriented approach to clinical review and interpretation of multimodal imaging findings is essential to prevent misdiagnosis and guide appropriate therapy, particularly in heart diseases with a hypertrophic phenotype with atypical features.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 256
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)

RAPID DECISIONS IN WALDENSTROM MACROGLOBULINEMIA-ASSOCIATED CARDIAC AL AMYLOIDOSIS: FROM CRISIS TO RECOVERY

Marco Bressan (a, b), Marialisa Appella (c), Cosimo Agrimi (a, b), Alessandro Altinier (a, b), Marta Gigli (a, b), Franca Dore (d), Rossana Bussani (e, f), Manuela Caizzi (g), Francesco Zaja (g), Gianfranco Sinagra (a, b), Marco Merlo (a, b), Aldostefano Porcari (a, b)

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Systemic immunoglobulin light-chain (AL) amyloidosis is characterized by the production of misfolded immunoglobulin light chains by an abnormal clone of plasma cells that subsequently deposits within the interstitial space of multiple organs, resulting in progressive organ dysfunction. Cardiac infiltration (cardiac AL amyloidosis, AL-CA), present in up to 80% of patients, is the main driver for mortality, with median survival ranging from 2 months to 4 years depending on cardiac disease severity. Although often caused by multiple myeloma, systemic AL amyloidosis may result from other hematological conditions such as Waldenström macroglobulinemia (WM), a rare B-cell lymphoma accounting for less than 2% of non-Hodgkin lymphomas.

Here we present a case of a 51-year-old male with a 1-month history of dyspnea and chest discomfort on exertion, a recent flu syndrome and no prior cardiovascular events. Clinical examination revealed heart failure. The ECG (Panel A) demonstrated sinus rhythm with low QRS complex voltages. The echocardiogram showed mildly increased wall thickness (septum of 12 mm), mild systolic dysfunction and mild circumferential pericardial effusion. Laboratory tests showed elevated cardiac biomarkers (NT-proBNP 2285 ng/L, hs-troponin I 144 ng/L), an IgM lambda

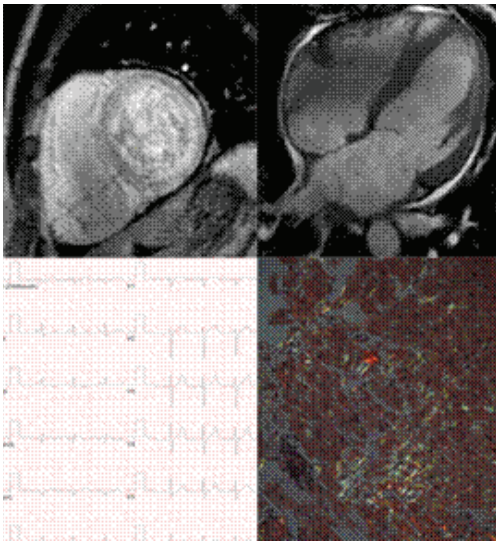


Figure 1

paraprotein with increased lambda FLCs in serum (651 mg/L) and urine. Coronary angiography ruled out obstructive artery disease. Bone marrow biopsy showed lymphoplasmacytic lymphoma (MYD88+). In light of a possible AL amyloidosis, periumbilical fat aspirate was performed and showed no amyloid deposition. Cardiac MRI (Panel B and C) showed elevated T2, a marked increase in native T1 (1161 ms) and ECV (44%). Endomyocardial biopsy (Panel D) was performed due to elevated clinical suspicion and confirmed the diagnosis of AL lambda amyloid deposition (Mayo stage IIIA). Despite rapid initiation of chemotherapy with Rituximab-Bortezomib-Dexamethasone (R-VD), the patient showed only partial response after the 3rd cycle and experienced worsening heart failure with NYHA class III symptoms. An echocardiogram demonstrated new-onset severe biventricular systolic dysfunction. The case was discussed in the Heart Team with the hematologists: because of rapid disease progression, a second-line chemotherapy with Rituximab-Bendamustine (RB) was initiated along with the checklist for possible cardiac transplant. A CPET showed moderately reduced functional capacity (peak VO_2 19.6 mL/min/kg; 57% predicted) and signs of impaired pulmonary efficiency (VE/VCO_2 slope 32.4). After the 2nd cycle, lambda FLCs declined to 297 mg/dl with normalization in systolic function (EF 50%) and improved HF signs and symptoms. The checklist for heart transplant was put on hold, a Life Vest was used for primary prevention of sudden cardiac death, and the patient continued on the same chemotherapy regimen.

This clinical case is unique in demonstrating key aspects of diagnosis, management and prognostic stratification: a) systemic AL amyloidosis may rarely stem from WM-related; b) cardiac involvement is the main determinant of survival, c) rapid disease progression may occur despite chemotherapy, d) delayed treatment response may occur, with satisfactory hematological response, and e) despite limited therapeutic options, if production of precursor protein is halted or suppressed, AL-CA – even with advanced cardiac amyloid infiltration - can be a reversible model of cardiomyopathy.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 496
MIOCARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
PERICARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

MYOPERICARDITIS IN ADULT-ONSET STILL'S DISEASE: EARLY RECOGNITION AND DIAGNOSTIC CHALLENGES

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Introduction: Adult-Onset Still's Disease (AOSD) is a rare systemic autoinflammatory syndrome, clinically characterized by high-spiking fever, evanescent cutaneous rash, arthralgia, and markedly elevated inflammatory markers. Pleuro-pericardial involvement occurs in approximately 15–40% of cases, most commonly as pericarditis, whereas myocarditis is less frequent, with an estimated prevalence of 7%. We report a case of myopericarditis occurring in the context of AOSD.

Case report: A 28-year-old woman presented to the Emergency Department with persistent fever unresponsive to antibiotic therapy and diffuse arthralgia. Laboratory tests revealed normocytic anemia (Hb 8.9 g/dL), neutrophilic leukocytosis (18.63 × 10^3/μL), markedly elevated inflammatory markers (CRP 248 mg/L; PCT 0.85 ng/mL), and increased hs-troponin (1250 pg/mL). Initial electrocardiogram (ECG) and transthoracic echocardiogram (TTE) were within normal limits. The patient was admitted to the University Cardiology Unit with a diagnosis of myocarditis during febrile illness and was empirically started on broad-spectrum antibiotics, with no clinical or laboratory improvement: she persisted with high-grade fever especially in the morning and diffuse arthralgia.
During hospitalization, she developed pleuritic chest pain and dyspnea, relieved by leaning forward. Chest X-ray revealed bilateral pleural effusion, while repeat TTE demonstrated a pericardial effusion of approximately 100 mL without hemodynamic compromise, consistent with pericarditis. Ibuprofen and colchicine were initiated, followed by corticosteroids due to persistent symptoms. Moreover, during the hospitalization, she developed a non-itchy cutaneous rash on the back.
Cardiac PET/CT with myocardial suppression showed focal uptake in the left ventricular wall (SUVmax 20.4). Cardiac MRI, performed one month later, did not demonstrate myocardial edema. Extensive infectious (blood cultures, bone marrow cultures, serology) and autoimmune (ANA, ANCA, ENA, AMA, ASMA, anti-CCP, anti-dsDNA, anti-LKM, LC1, SLA/LP, anti-transglutaminase IgA/IgG) workup was negative.
Application of Yamaguchi criteria supported the diagnosis of AOSD. The patient was treated with high-dose corticosteroids, anakinra, colchicine, and methotrexate, achieving rapid defervescence, resolution of serosal effusions, and normalization of inflammatory markers and troponin.

Conclusions: This case highlights that myopericarditis may represent an initial manifestation of AOSD, guiding the diagnostic process toward an otherwise challenging systemic disease. The combined use of echocardiography and PET/CT was pivotal in documenting inflammatory cardiac involvement. Early initiation of corticosteroids and anti-IL-1 therapy achieved effective disease control and prevented potentially severe cardiovascular complications.

CardioSic

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 33
ARITMIE VENTRICOLARI (ARITMIE)
DEFIBRILLATORE IMPIANTABILE (ARITMIE)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

A CASE SUGGESTIVE OF ARRHYTHMOGENIC LEFT VENTRICULAR CARDIOMYOPATHY

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A 71-year-old patient with a history of atrial fibrillation (AF), on treatment with flecainide, apixaban, and metoprolol, was admitted to the emergency department presenting with dizziness. There was no family history of heart disease. The initial electrocardiogram (ECG) revealed a wide QRS complex tachycardia with a right bundle branch block (RBBB) morphology lasting a few minutes, leading to the discontinuation of flecainide. The arrhythmia responded promptly to intravenous amiodarone. The patient remained hemodynamically stable throughout.

He was admitted to the cardiology unit for further evaluation. The baseline ECG showed atrial flutter. Transthoracic echocardiography showed mild left ventricular (LV) dysfunction without other significant abnormalities. Coronary angiography excluded significant epicardial coronary artery disease. Continuous electrocardiographic monitoring showed evidence of atrial flutter with variable conduction. After ruling out left atrial appendage thrombus via transesophageal echocardiography, successful electrical cardioversion was performed.

Due to persistent mild LV dysfunction, cardiac magnetic resonance imaging (CMRI) was scheduled. T1-weighted sequences demonstrated extensive subepicardial fat infiltration affecting the inferolateral and anterolateral walls of the left ventricle. Late gadolinium enhancement (LGE) revealed widespread subepicardial enhancement in the same regions, partially extending into the mid-inferior and anterior segments, producing a ring-like pattern. The right ventricle appeared structurally normal.

Although no universally accepted diagnostic criteria currently exist for arrhythmogenic left ventricular cardiomyopathy (ALVC), the Padua criteria require LV structural criterion plus the identification of a pathogenic mutation in a gene associated with arrhythmogenic cardiomyopathy. In this case, despite the absence of genetic testing, the clinical presentation and imaging strongly support a diagnosis of ALVC.

The initial arrhythmia was interpreted as a sustained monomorphic ventricular tachycardia with RBBB morphology, a hallmark feature of ALVC. Therefore, an implantable cardioverter-defibrillator (ICD) was placed for secondary prevention.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 38
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MIOCARDICO-PERICARDICO
(MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
CARDIOLOGIA DELLO SPORT
(ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)

A JUVENILE PRESENTATION OF SUSPECTED BIVENTRICULAR ARRHYTMOGENIC CARDIOMIOPATHY

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(a) UNIVERSITÀ DEGLI STUDI DI MILANO; (b) IRCCS OSPEDALE GALEAZZI SANT'AMBROGIO, MILANO

PATIENT PRESENTATION. A 14-year-old girl performing horse riding was referred from a sports medicine office to the cardiology clinic after she was detected with frequent multifocal resting ectopic beats originating from the left ventricle, that increased at ergometric test. Medical and familiar history were unremarkable. The echocardiography revealed biventricular dilatation, diffuse hypokinesia, moderate reduction of ejection fraction and mild right systolic dysfunction.
She did not report any symptoms, and her physical exam was normal.

INITIAL WORK UP. Electrocardiogram showed incomplete right bundle branch block, low QRS voltages and QRS fragmentation. Cardiac Magnetic Resonance showed biventricular dilatation with diffuse hypokinesia and mild to moderate systolic dysfunction; no signs of fibro-fatty myocardial replacement; extensive left ventricle late gadolinium enhancement (LGE) with subendocardial distribution in the segments of the inferior wall and the lateral wall, diffuse right ventricle LGE.

DIAGNOSIS AND MANAGEMENT. This girl presented a phenotype of dilated cardiomyopathy, with biventricular systolic dysfunction. Blood tests showed mild elevation of proBNP, mild troponin elevation and eosinophilia; genetic test showed no pathogenic/likely pathogenic variant. A multi-system involvement (diffuse telangiectasia, late scleroderma pattern at the capillaroscopy, pulmonary fibrosis) was identified, leading to the diagnosis of systemic scleroderma with cardiac involvement. Heart failure therapy was initiated, together with corticosteroids. After one month, patient did not report any symptoms. No ventricular tachycardia was registered.

CONCLUSIONS. This is a case juvenile presentation of suspected biventricular arrhythmogenic cardiomyopathy, with extensive myocardial fibrosis and frequent ventricular ectopic beats as part of a systemic scleroderma. When looking for etiology is very important not to forget possible cardiac involvement of multisystemic diseases.

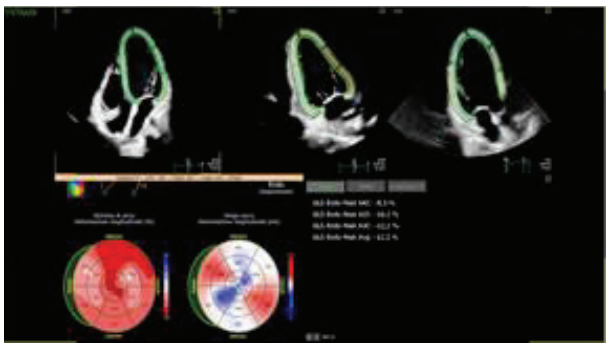


Figure 1



Figure 2

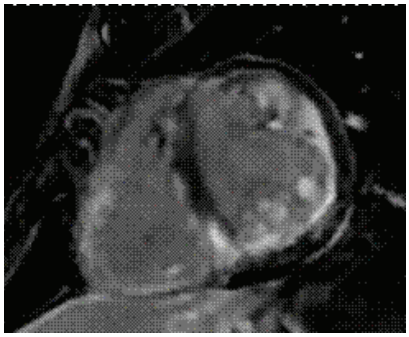


Figure 3

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 735
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)

PHENOTYPE-GENOTYPE CHARACTERIZATION AND LONG-TERM EVOLUTION OF NON-DILATED LEFT VENTRICULAR CARDIOMYOPATHY

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Background: Non-dilated left ventricular cardiomyopathy (NDLVC) is a recently introduced phenotype-based cardiomyopathy, characterized by non-ischemic myocardial abnormalities without LV dilatation. Its clinical, genetic, and prognostic characterization remains limited, with the current arrhythmic risk stratification largely derived from dilated cardiomyopathy (DCM).

Purpose: Our aim was to define the clinical, phenotypic, and genetic characteristics of NDLVC and assess their prognostic impact on arrhythmic events and progression to DCM.

Methods: We retrospectively enrolled patients ≥18 years diagnosed with NDLVC from 2001 to 2024 across ten Italian tertiary centers. All underwent genetic testing and CMR. Patients were divided into three phenotypic groups based on preserved/reduced LV ejection fraction (p/rEF) and late gadolinium enhancement (LGE): pEF/LGE+, rEF/LGE+, rEF/LGE–. Pathogenic/likely pathogenic (P/LP) genetic variants were clustered as Cytoskeletal, Desmosomal, LMNA, Sarcomeric, or Gene-elusive. The primary endpoint was sudden cardiac death (SCD)/first major ventricular arrhythmia (MVA); secondary endpoint was progression to DCM.

Results: A total of 372 NDLVC patients were included (median age 43 [IQR 32–54] years, 64% male, median LVEF 56% [IQR 46-61]. 71% were pEF/LGE+, 21% rEF/LGE+, and 8% rEF/LGE-. P/LP variants were identified in 34% of patients, most commonly Desmosomal (46% of P/LP variants). Over a median follow-up of 57 months, 61 (16%) experienced MVA/SCD and 87 (25%) progressed to DCM. MVA/SCD were experienced more by LGE-positive compared to LGE-negative patients (10-year estimated cumulative incidence: 30% vs 4.2%, p=0.026) and in those carrying LMNA, Desmosomal, and Cytoskeletal variants ("Arrhythmic genotypes"), while Gene-elusive and Sarcomeric variants showed an intermediate and low risk (47% vs 20 vs 0%, respectively, p<0.001). Patients with both LGE and an Arrhythmic genotype had the highest arrhythmic risk. DCM progression was more frequent int the rEF/LGE+ group (69% vs 34% and 23% in rEF/LGE- and pEF/LGE+; p<0.001) and in carriers of LMNA and Cytoskeletal variants (64% and 52%, vs 32%, 31% and 25% in Sarcomeric, Desmosomal and Gene elusive, respectively; p=0.015). Independent predictors of arrhythmic events were male sex, proband status, ring-like LGE, and arrhythmogenic genotype; while reduced baseline LVEF predicted DCM progression.

Conclusions: In this large multicenter cohort of NDLVC patients, the presence of LGE and of Arrhythmogenic variants (LMNA, Desmosomal, and Cytoskeletal) identified patients at highest arrhythmic risk. Reduced baseline LVEF predicted progression to DCM. Combined assessment of CMR and genetic testing improves risk stratification and allows personalized management of NDLVC patients.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 895
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
IMAGING MIOCARDICO-PERICARDICO
(MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)

CALCIFICAZIONI MIOCARDICHE, RILEVANZA CLINICA E CORRELAZIONE CON PREGRESSE NEOPLASIE E SEPSI: UN RARO CASO CLINICO

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Le calcificazioni miocardiche (MC) sono un reperto raro, solitamente individuato incidentalmente alla TC. Possono derivare da processi distrofici, con deposito di calcio su tessuto danneggiato (post-infarto, miocarditi, sepsi), oppure da forme metastatiche, correlate a disordini del metabolismo calcio-fosforo. In letteratura è descritto lo sviluppo rapido di MC in corso di sepsi e infezioni polmonari gravi, mentre in pazienti oncologici trattati con radioterapia toracica è stata segnalata un'associazione con calcificazioni coronariche e pericardiche, meno frequentemente intramiocardiche.

Il caso clinico proposto riguarda una donna di 60 anni, con anamnesi di pregresso carcinoma mammario trattato con chirurgia, radioterapia e chemioterapia, che giungeva in pronto soccorso per insorgenza di astenia ingravescente e febbre. Veniva posta diagnosi di polmonite virale complicata da sovrainfezione batterica, evoluta durante il ricovero in insufficienza respiratoria acuta e shock settico. Alla TC torace, eseguita per indagine del parenchima polmonare, si riscontravano incidentalmente calcificazioni miocardiche estese in sede settale, a livello della parete libera del ventricolo sinistro e dei muscoli papillari, in assenza di pregressi eventi ischemici noti o cardiopatie strutturali.

Il riscontro di MC diffuse in questo contesto clinico rappresenta un'evenienza eccezionale. La distribuzione (setto, parete libera, muscoli papillari) coincide con quanto riportato nei casi presenti in letteratura di "sepsis-related myocardial calcification". La concomitanza di sepsi e storia oncologica solleva l'ipotesi di un meccanismo multifattoriale: danno distrofico legato allo stato settico acuto, con possibile contributo dei trattamenti oncologici pregressi. Sebbene la correlazione diretta tra radioterapia per carcinoma mammario e calcificazioni intramiocardiche non sia ancora chiaramente dimostrata, alcuni studi suggeriscono un potenziale legame. La paziente è stata indirizzata a percorso di follow-up trimestrale con esecuzione di ecocardiogramma transtoracico, TC torace e RMN cardiaca.

Questo caso evidenzia l'importanza di considerare la diagnosi differenziale delle calcificazioni miocardiche, un reperto raro ma clinicamente rilevante. L'osservazione sottolinea la necessità di ulteriori studi per chiarire i meccanismi patogenetici che collegano sepsi, infezioni polmonari severe e pregressi trattamenti oncologici allo sviluppo di calcificazioni intramiocardiche.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 410
INFIAMMAZIONE E IMMUNITÀ (ATEROTROMBOSI)
PERICARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
BIOLOGIA CELLULARE (GENETICA E BIOLOGIA MOLECOLARE)
BIOLOGIA MOLECOLARE CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
FARMACI CARDIOVASCOLARI (FARMACI CARDIOVASCOLARI E NUTRACEUTICI)

SHORT-TERM VERSUS LONG-TERM EFFECT OF PREDNISOLONE ON IL-1BETA RELEASE: FROM ANTI- TO PRO-INFLAMMATORY

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(a) UNIVERSITA' CAMPUS BIO-MEDICO DI ROMA; (b) UNIVERSITY OF VIRGINIA

Background: Pericarditis refers to the inflammation of the pericardium. The activation of the NLRP3 inflammasome signaling pathway, which regulates Interleukin-1β (IL-1β) release, has been demonstrated in this condition. The administration of corticosteroids has been associated with relapses, and long-term treatment with the powerful anti-inflammatory glucocorticoid prednisolone in patients affected by Systemic Lupus Erythematosus is linked to an increased risk of pericarditis.

Aim of the study: To evaluate the effects of prednisolone (Pred) on NLRP3 inflammasome activation and IL-1β release in cultured macrophages, hypothesizing that prolonged Pred treatment does not suppress IL-1β release.

Methods: J774A.1 mouse macrophages were primed with lipopolysaccharide (LPS, 1 μg/mL, 6 h) to mimic pro-inflammatory conditions, followed by treatment with prednisolone (Pred; 10, 1, or 0.1 μM) for 24 h, and subsequent NLRP3 activation with adenosine triphosphate (ATP; 5 mM, 30 min). To assess the short- and long-term preventive effects of Pred, cells were pre-treated with Pred (10, 1, or 0.1 μM) for either 24 hours or 4 weeks prior to LPS and ATP stimulation. Interleukin-1β (IL-1β) concentrations were quantified by enzyme-linked immunosorbent assay (ELISA).

Results: When administered following LPS priming, prednisolone induced a dose-dependent reduction in IL-1β release at 24 h (pg/mL: LPS+ATP, 1136 ± 12; Pred 10 μM, 299 ± 5; 1 μM, 294 ± 7; 0.1 μM, 439 ± 6; all $p < 0.0001$; Fig. 1A). Similarly, pre-treatment with Pred 24 h prior to LPS stimulation resulted in a dose-dependent suppression of IL-1β (pg/mL: LPS+ATP, 983 ± 2; Pred 10 μM, 31 ± 1; 1 μM, 57 ± 3; 0.1 μM, 402 ± 4; all $p < 0.0001$; Fig. 1B). In contrast, prolonged Pred pre-treatment (4 weeks) paradoxically led to a significant increase in IL-1β levels at all tested doses (pg/mL: LPS+ATP, 632 ± 78; Pred 10 μM, 734 ± 17; 1 μM, 923 ± 25; 0.1 μM, 763 ± 74; all $p < 0.01$; Fig. 1C).

Conclusion: Short-term prednisolone leads to a dose dependent inhibitor effect on IL-1β release in macrophages. Paradoxically, prolonged exposure to Pred does not inhibit IL-1β release. This observation may help understand the reduced therapeutic effect of glucocorticoids during extended treatments and the increased rate of relapses of pericarditis in patients with long-term prednisone regimens. Further investigation is needed to better define the underlying mechanism.

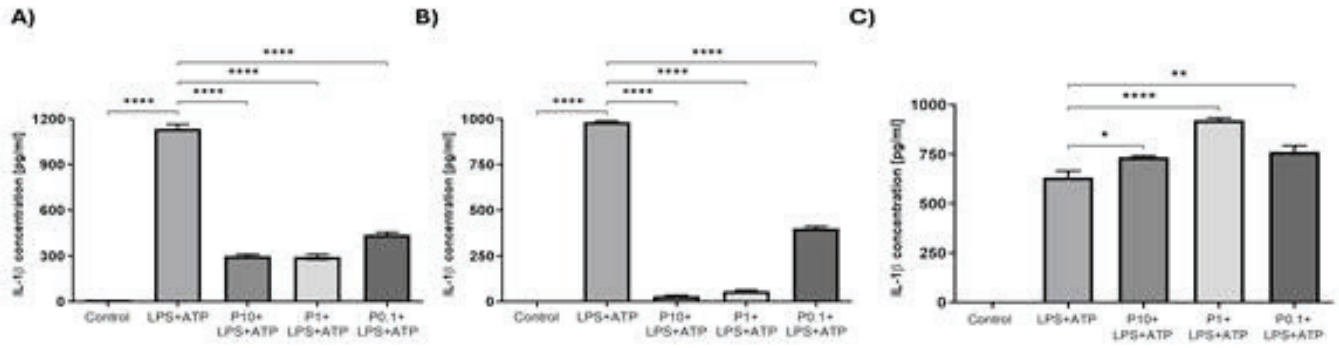


Figure 1. A) Pred administered 24 h after LPS; **B)** Pred administered 24 h before LPS+ATP stimulation; **C)** Pred administered for 4 weeks prior to LPS+ATP. Data represent mean ± SEM. *p<0.01; **p<0.002; ****p<0.0001.

Figure 1

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 599
MINOCA (MYOCARDIAL INFARCTION WITH NORMAL CORONARY ARTERIES)
(CARDIOPATIA ISCHEMICA)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE
(IMAGING CARDIOVASCOLARE)

RECURRENT TAKOTSUBO SYNDROME WITH IDENTICAL MORPHOLOGY INDUCED BY PERFORMANCE ANXIETY

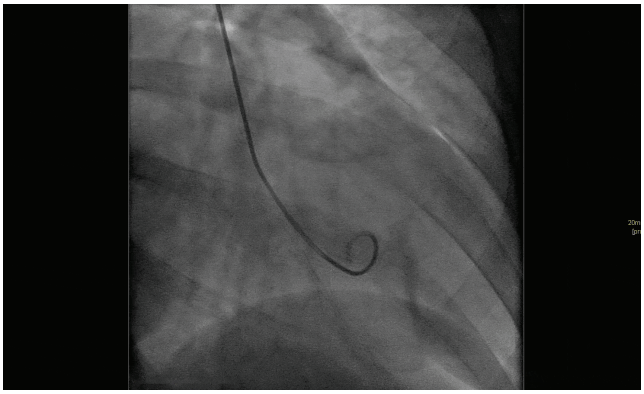
Eugenio Refrigeri (a, b), Michele Marchetta (b), Michele Golino (b, c), James Mbualungu (b), Antonio Abbate (b)
(a) UNIVERSITA' CAMPUS BIO-MEDICO DI ROMA; (b) UNIVERSITY OF VIRGINIA;
(c) VIRGINIA COMMONWEALTH UNIVERSITY

Introduction. Takotsubo syndrome (TTS) is characterized by a reversible regional ventricular dysfunction that mimics an acute coronary syndrome but is not caused by atherothrombosis. Classically characterized by apical ballooning, TTS is often preceded by emotional or physical stress and carries a mortality risk comparable to that of acute coronary syndromes. Although infrequent, approximately 2% of patients will have a recurrence each year, raising the critical question of how best to prevent new episodes.

Case report. We describe a case of a 44-year-old woman with situational anxiety who developed TTS during a musical performance, presenting with dyspnea and fatigue. Echocardiography revealed a mid-ventricular akinesis pattern with reduced left ventricular ejection fraction (LVEF, 30-35%) and mild troponin I elevation. Coronary angiography excluded obstructive disease. She recovered completely (LVEF 60% at one-year follow-up). Six years later, she experienced a recurrence triggered during another musical performance. Echocardiography revealed again mid-ventricular akinesis (LVEF 40-45%), with elevated troponin T levels (309 ng/L, normal range: 0–19 ng/L). Coronary angiography showed again no obstructive lesions and cardiac MRI excluded the presence of infarcts, myocarditis, or infiltrative disease. Notably, both episodes occurred in the context of performance anxiety. At the time of recurrence, she was on bisoprolol, a β1 blocker, and using short-acting propranolol as needed. Management was tailored by discontinuing bisoprolol, introducing long-acting propranolol β1/2 blocker, and adding escitalopram alongside psychotherapy. The LVEF recovered and she had no subsequent recurrences for the following three years.

Conclusion. This case highlights that: (1) TTS recurrence, though rare, may manifest with the same anatomical variant in a given patient; (2) episodes may be repeatedly triggered by the same emotional stressor, whose recognition is essential; and (3) individualized management may be considered part of the comprehensive therapy to reduce relapse risk and improve long-term outcomes. Additional clinical trials are, however, needed to test the different approaches.


Adult Echo
X5-1
50Hz
17cm
2D
TIS0.4 MI 1.2
M3
1.3 2.6
1/49
28/30 fps
78 bpm



Figures

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 221
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)

PSYCHO-EMOTIONAL FEATURES OF PATIENTS WITH TAKOTSUBO SYNDROME: DATA FROM AN INTERNATIONAL COHORT

Valentina Urbano (a), Francesco Santoro (a), Melania Severo (b), Giuseppe D´elia (a), Gianluigi Vannella (a), Matilde Di Peppo (a), Martina Molinari (a), Sabrina Gammone (c), Daniela Giallanella (c), Giulia Del Vecchio (a), Antonio Ventriglio (c), Antonello Bellomo (c), Annamaria Petito (b), Natale Daniele Brunetti (a)
(a) CARDIOLOGY UNIT, FACULTY OF MEDICINE, UNIVERSITY OF FOGGIA, ITALY; (b) CLINICAL PSYCOLOGY UNIT, FACULTY OF MEDICINE, UNIVERSITY OF FOGGIA, ITALY; (c) PSYCHIATRIC UNIT, FACULTY OF MEDICINE, UNIVERSITY OF FOGGIA, ITALY

Background: Takotsubo Syndrome (TTS) is an acute, reversible form of myocardial dysfunction often triggered by emotional or physical stress. Although increasingly studied from a psychocardiological perspective, systematic investigations using validated psychometric tools remain scarce.

Aim of the study: To characterize the psychological and emotional profile of TTS patients, with a specific focus on anxiety, alexithymia, personality traits, illness representation, and early traumatic experiences.

Methods: A total of 143 patients with confirmed TTS diagnosis were recruited across two Italian cardiology centers and via an international online support group. Standardized self-report instruments were used, including the STAI-Y, HADS, TAS-20, DS14, IPQ-R, CTQ-SF, Holmes & Rahe, SF-36, ADL, and IADL.

Results: Key findings included elevated levels of trait anxiety in 61.2% of the sample and clinically significant alexithymia in 20.3%. Only 13.6% met criteria for Type D personality, although 50% reported high negative affectivity. Illness perceptions revealed that patients tended to view TTS as chronic, emotionally burdensome, and impactful on daily life, yet partially controllable. Notably, one third of the patients reported at least moderate childhood trauma, particularly in emotional dimensions. The overall psychological profile was characterized by elevated emotional reactivity, impaired affective processing, and maladaptive illness beliefs.

Conclusion: This study represents one of the largest and most comprehensive assessments of psychological characteristics in TTS patients using validated instruments.
The findings highlight the need for multidisciplinary management approaches that integrate psychological screening and individualized interventions, aimed at reducing emotional burden, improving quality of life, and possibly mitigating cardiovascular risk.

CardioSic

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 636
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE (IMAGING CARDIOVASCOLARE)
PROGNOSI (SCOMPENSO CARDIACO)

MITRAL VALVE PROLAPSE AS A STRUCTURAL SUBSTRATE IN TAKOTSUBO SYNDROME: DATA FROM A PROSPECTIVE MULTICENTER REGISTRY

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Background: Mitral valve prolapse (MVP) is the most common primary valvular abnormality, affecting 2–3% of the general population. It frequently results in mitral regurgitation and, less commonly, may predispose individuals to arrhythmias or even sudden cardiac death. Whether structural cardiac abnormalities may predispose to Takotsubo Syndrome (TTS) is still debated. MVP could represent a potential structural substrate for the disease.

Aim of the study to assess the prevalence of MVP in patients with TTS and its impact on clinical outcomes.

Methods: Data were extracted from the multicenter GEIST registry, with major contributions from the University Hospitals of Foggia and Verona. All patients underwent standard transthoracic echocardiography during hospitalization and at 3–6 months follow-up. Baseline demographics, cardiovascular risk factors, and long-term major adverse cardiovascular events (MACE: cardiovascular death, stroke, LV thrombus, and TTS recurrence) were recorded.

Results. We included 304 consecutive patients with TTS (mean age 74 ± 12 years, 9.8% male). At follow-up echocardiography, MVP was identified in 42 patients (13%). Patients with and without MVP were comparable in age, sex distribution, and cardiovascular risk profile. Among patients with MVP, 20% developed systolic anterior motion (SAM) of the mitral leaflet and 5% had left ventricular outflow tract obstruction (LVOTO) during hospitalization. In-hospital complications occurred in 6/42 (14%) MVP patients (pulmonary edema n=4, stroke n=1, LV thrombus n=2), not significantly different from the non-MVP group (14% vs 17%, p=0.82). During long-term follow-up, 8/42 (19%) MVP patients experienced MACE (CV death n=3, TTS recurrence n=5), similar to the non-MVP group (19% vs 21%, p=0.84).

Conclusions: In this multicenter registry, the prevalence of MVP among TTS patients was higher than in the general population, reaching 13%. During the acute phase of TTS, MVP was associated with SAM and LVOTO; however, it was not linked to in-hospital complications or long-term MACE. These findings suggest that MVP may represent a structural substrate predisposing to TTS, although it does not appear to worsen long-term prognosis.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 662
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)

SHORT-ACTING Β1-BLOCKERS IN TAKOTSUBO SYNDROME WITH LEFT VENTRICULAR OUTFLOW TRACT OBSTRUCTION: SYSTEMATIC REVIEW AND CASE REPORT

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Background. Takotsubo syndrome (TTS) is an acute heart failure syndrome that mimics acute myocardial infarction in absence of coronary artery disease (CAD). This syndrome is often described as a benign condition but sometimes life-threatening events, such as left ventricular out-flow tract obstruction (LVOTO) as complication, can occur and correlates with poor outcomes. Short-acting β1-blockers, particularly landiolol and esmolol, have been proposed as targeted therapies for LVOTO treatment, but data remain limited.

Methods. We performed a systematic review of PubMed and Embase (through August 2025) according to PRISMA guidelines. Eligible studies included patients with confirmed TTS and LVOTO treated with landiolol or esmolol, reporting quantitative hemodynamic outcomes. Data extracted included demographics, clinical triggers, LVOT gradients, treatment regimens, and outcomes. Our own illustrative case was integrated for context.

Results. Seven studies were identified, including 17 patients (8 treated with landiolol, 9 with esmolol). Patients were predominantly elderly women, often presenting after physical stressors such as stroke, surgery, or dialysis. Baseline LVOT gradients ranged from 47 to 80 mmHg. Esmolol, evaluated in a multicenter registry (n=9), reduced gradients from 47.6 ± 16.6 to 18.2 ± 2.3 mmHg without adverse events. Landiolol, reported in case series and reports (n=8), consistently lowered gradients from 60–70 mmHg to <20 mmHg within minutes, with rapid hemodynamic stabilization. No major drug-related complications were described. Mortality, when present, was linked to comorbidities rather than therapy. Our case report confirmed these findings, showing landiolol effectively relieved severe LVOTO (66 → 14 mmHg) in an elderly post-stroke patient with shark-fin EKG.

Conclusions. Short-acting β1-blockers are safe and effective in TTS with LVOTO. Esmolol is supported by registry data, while landiolol offers greater β1-selectivity and ultra-short half-life, making it attractive in fragile patients. Larger prospective studies are needed to confirm optimal use.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 752
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
PROGNOSI (SCOMPENSO CARDIACO)

CLINICAL FEATURES AND OUTCOMES OF FOCAL TAKOTSUBO SYNDROME. DATA FROM A PROSPECTIVE EUROPEAN REGISTRY OF 3741 PATIENTS

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BACKGROUND: Focal forms of Takotsubo syndrome (TTS) have a relatively low incidence and are not well characterized.

OBJECTIVES: To describe clinical features and outcomes of focal TTS.

METHODS: TTS patients were enrolled from the international multicenter GEIST (German-Italian-Spanish Takotsubo) registry. Focal TTS was defined as reversible focal hypo-, a- or dyskinesia of any segment of the left ventricle with no circumferential distribution. Clinical features and in-hospital and long-term outcomes were compared between focal TTS and other ballooning patterns.

RESULTS: Among 3741 patients enrolled, 62 (1.6%) were diagnosed with focal TTS. Patients with focal TTS were younger (64±14 vs 70±11 y, p=0.01) and had higher admission LVEF (53±8% vs 33±20%,p<0.01) than the control TTS group. Prevalence of emotional stressor was higher in the focal group (49% vs 35%,p=0.02) while physical triggers were more common in the control TTS group (36% vs 22%, p=0.03). Admission serum levels of NT-proBNP were lower in patients with focal TTS than the control TTS group (1434±688 vs 8699±1553 pg/ml, p<0.01).
Focal TTS forms involved 2.1±1 left ventricular wall segments and were distributed among antero-lateral (75%) and infero-septal (25%) LV segments.
In-hospital complications, including death, pulmonary edema, cardiogenic shock, or stroke were lower in the focal group (8% vs 23%, p=0.01), while 30-days and long-term mortality was similar between groups (log-rank p=0.45 and p=0.07, respectively).

Conclusions: Focal TTS is rare and more often involves the antero-lateral left ventricular segments. Although this form has lower rate of in-hospital complication, long-term outcome is similar to other TTS forms.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 753
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MIOCARDICO-PERICARDICO
(MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)

ATRIAL DYSFUNCTION AND PROGNOSIS AFTER TAKOTSUBO SYNDROME. DATA FROM A MULTICENTER PROSPECTIVE REGISTRY

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Background: Takotsubo syndrome (TTS) is characterized by transient left ventricular systolic dysfunction. Recent studies have suggested that a subset of patients may develop a persistent, long-term heart failure phenotype. However, data on long-term atrial function remain limited.

Aim: To evaluate left atrial (LA) function using echocardiographic parameters in patients with TTS after complete recovery of left ventricular systolic function.

Methods: One hundred consecutive TTS patients were prospectively enrolled in a multicenter registry and matched for age, sex, and cardiovascular risk factors with 100 healthy controls. Echocardiographic assessments in TTS patients were performed six months after hospital discharge.

Results: TTS patients were predominantly female (95%), with a mean age of 70 ± 11 years. Compared with controls, TTS patients had a higher LA volume index (34.5 ± 8.3 vs 24.7 ± 10 mL/m², p<0.01). All phases of LA strain were significantly reduced in TTS patients versus controls (reservoir: 30 ± 11% vs 43 ± 12%; conduit: –15 ± 8% vs –18 ± 7%; contraction: –17 ± 7% vs –23 ± 10%; all p=0.01). During long-term follow-up, 14 of 100 TTS patients (14%) experienced major adverse cardiovascular events (MACE), including death, cardiovascular rehospitalization, and TTS recurrence.

In multivariable analysis adjusting for age, sex, admission LVEF, and LA reservoir strain, only LA reservoir strain was independently associated with MACE (RR=0.93, 95% CI 0.88–0.99, p=0.02). Patients with LA reservoir strain below the median value had a significantly higher incidence of MACE (log-rank p<0.01). Median values of LASr provided good discrimination for MACE (AUC=0.76, 95% CI 0.64–0.87; p<0.001).

Conclusion: Patients with TTS exhibit long-term alterations in LA function despite recovery of left ventricular systolic function. LA reservoir strain may represent a novel prognostic marker for risk stratification in this population.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 1012 CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO) IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO) ARITMIE VENTRICOLARI (ARITMIE)

NON COMPATTAZIONE DEL VENTRICOLO SINISTRO COME PRESENTAZIONE CLINICA DELLA CARDIOMIOPATIA DA MUTAZIONE DELLA LAMINA

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Background: Il ventricolo sinistro non compatto (LVNC) secondo le attuali linee guida ESC 2023, non rappresenta una cardiomiopatia a sé, ma è stato sostituito dalla dizione "non compattazione" o "ipertrabecolatura" del ventricolo sinistro, osservabile in contesti parafisiologici o in alcune forme di cardiomiopatia. Il rischio aritmico di questa entità morfologica, pertanto, è difficilmente valutabile e richiede un approccio integrato volto ad escludere l'associazione con cardiomiopatie a rischio di aritmie e di morte improvvisa.

Caso clinico: Un uomo di 56 anni, con una storia familiare di morte cardiaca improvvisa, si presentava al pronto soccorso nel giugno 2021 per dolore toracico in emitorace sinistro irradiato alla spalla omolaterale. In anamnesi non erano presenti eventi cardiovascolari maggiori e non riportava episodi di angina o dispnea, né storia di cardiopalmo o sincope. In pronto soccorso è stato eseguito un elettrocardiogramma a 12 derivazioni e sono stati dosati i markers di miocardionecrosi; entrambi risultati nei limiti. Il paziente è stato quindi sottoposto a valutazione cardiologica con esecuzione di ecocardiogramma, il quale ha evidenziato un ventricolo sinistro di normali dimensioni e spessori parietali, ma con accentuata trabecolatura dei segmenti della parete antero-laterale a livello apicale. La funzione sistolica globale era conservata (FE > 60%) e non sono state riscontrate alterazioni della cinetica distrettuale. In seguito, il paziente è stato ricoverato per ulteriori accertamenti diagnostici. È stata effettuata una risonanza magnetica cardiaca (RMC) che ha mostrato una marcata ipertrabecolatura laterale e infero-laterale ai limiti della significatività per non compattazione secondo i criteri RMC di Petersen, in assenza di aree di fibrosi (LGE). Considerata la storia familiare di morte cardiaca improvvisa e il non chiaro referto della RMC, si procedeva ad esecuzione di coronarografia che non ha mostrato stenosi a carico dell'albero coronarico. Contestualmente veniva eseguiva una ventricolografia ed una biopsia endomiocardica (BEM) che mostrava un quadro aspecifico di ipertrofia e fibrosi extracellulare in assenza di ulteriori elementi patognomonici. Il paziente veniva quindi dimesso in buone condizioni ed è stato avviato un follow up periodico presso l'ambulatorio di cardiomiopatie del nostro dipartimento. Durante il follow up il quadro clinico strumentale si è dimostrato stabile ed è stato infine effettuato un test genetico per il panel di geni associati a cardiomiopatia. Il referto del test genetico ha mostrato una mutazione variante missenso (classe 4) in eterozigosi c1367A>G (pAsn456Ser) nel gene LMNA. Il paziente è stato ricontattato ed è stata effettuata una stratificazione del rischio aritmico con LMNA-risk VTA calculator, con un risultato del 6% del rischio di aritmie life-threatening a 5 anni. In base a questi risultati il paziente è stato sottoposto ad impianto di defibrillare.

Conclusioni: Questo caso clinico evidenzia la complessità diagnostica del LVNC, una condizione che richiede un approccio integrato che includa ecocardiografia, risonanza magnetica e, in alcuni casi, biopsia endomiocardica per una diagnosi accurata. È bene, inoltre, sottolineare che, specialmente in presenza di una storia familiare, è importante eseguire il test genetico, in quanto l'associazione del pattern fenotipico con mutazioni ad elevato rischio aritmico ci consente di migliorare la prognosi a lungo termine dei pazienti affetti e di effettuare screening genetici a tutela dei familiari.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 500 CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO) DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO) FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO) PROGNOSI (SCOMPENSO CARDIACO)

LONGITUDINAL EVOLUTION OF CARDIOPULMONARY EXERCISE TEST IN TTN-RELATED CARDIOMYOPATHY

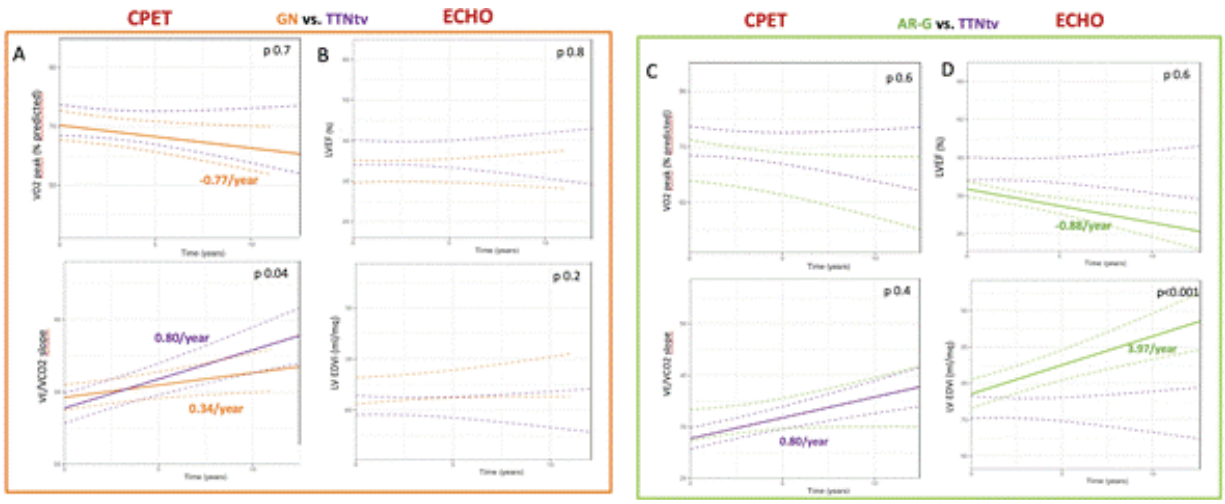
Martina Setti (a), Laura Trento (a), Ilaria Gandin (c), Maddalena Rossi (b), Cosimo Carriere (b), Matteo Dal Ferro (b), Flavio Ribichini (a), Piegiuseppe Agostoni (d), Gianfranco Sinagra (b), Marco Merlo (b)
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Background. Titin-truncating variants (TTNtv)-related dilated cardiomyopathy (DCM) are historically considered to confer a milder phenotype, but recent data suggest a less benign long-term course. The role of cardiopulmonary exercise testing (CPET) TTNtv-related DCM remains unclear.

Methods. We retrospectively analyzed 83 DCM patients (mean age 52±12 years, 84% male) from the Trieste and Verona registries, each undergoing ≥2 CPET and concomitant echocardiograms over a median follow-up of 3.4 years. Patients were stratified into TTNtv carriers, arrhythmogenic gene variant carriers (AR-G), and genotype-negative (GN). Longitudinal changes in CPET and echocardiographic parameters were assessed using mixed-effects models.

Results. Eighty-three patients (mean age 52±12 years, 84% male) were included, with a median follow-up of 3.4 years and an average of 3.4 CPET per patient. At baseline, clinical and echocardiographic features were similar across subgroups. Over time, TTNtv patients showed a significantly greater increase in VE/VCO_2 slope compared with GN (+0.80 vs. +0.34/year, p=0.039) and AR-G (+0.80 vs. +0.34/year, p=0.039, despite stable $peakVO_2$% and preserved echocardiographic parameters. Comparing TTNtv with AR-G, while peakVO2% remained stable in both groups, VE/VCO2 slope increased significantly in TTNtv (+0.80/year) but showed no-change in AR-G.

Conclusions. In TTNtv-related DCM, despite stable LVEF, ventilatory efficiency progressively worsened, despite stable ventricular function and peakVO2. CPET, particularly VE/VCO_2 slope, should be integrated into longitudinal monitoring of genetically determined DCM to refine prognostic stratification and guide timely clinical decisions.


CPET
GN vs. TTNtv
ECHO
A
p 0.7
-0.77/year
B
p 0.8
p 0.04
0.80/year
0.34/year
p 0.2
CPET
AR-G vs. TTNtv
ECHO
C
p 0.6
D
p 0.6
-0.88/year
p 0.4
0.80/year
p<0.001
3.97/year

Figures

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 963 CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO) ELETTROCARDIOGRAFIA/ CARDIOVERSIONE/ DEFIBRILLAZIONE (ARITMIE) FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)

PATHOLOGICAL CORRELATES OF QRS ALTERATIONS ON THE ELECTROCARDIOGRAM IN CARDIAC AMYLOIDOSIS

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Background: 12-leads electrocardiogram (ECG) is a valuable tool in cardiac amyloidosis (CA) diagnosis and management. Typical alterations include low precordial QRS voltages, anterior pseudo-infarction pattern and QRS prolongation. Whether a variable burden of amyloid load might explain these features remains unknown.

Methods: This is a retrospective study of whole heart specimens of CA patients who died and underwent autopsy. Amyloid load was quantified by histomorphometry in each left ventricle segment on sulphated alcian blue stained slides, and compared with QRS parameters derived from 12-lead ECG. QRS amplitude was defined as the total amplitude of the complex, measured from its lowest to its highest deflection.

Results: Histopathological analysis of 28 explanted hearts with CA [15 immunoglobulin light chain (AL) and 13 transthyretin (ATTR) cases] revealed a significant base-to-apex amyloid gradient (p = 0.006) (Figure 1). Among 12 CA patients who had a 12-lead ECG (n=6 with ATTR-CA), the median precordial QRS amplitude and duration were 67 mm (50 – 71) and 129 ms (107 – 147), respectively. An anterior pseudo-infarction pattern was observed in only 2 AL-CA patients (17%). In the overall cohort, myocardial amyloid load correlated with QRS duration (Spearman's ρ = 0.63, p = 0.027) (Figure 2A). Conversely, no significant association was found between amyloid load and QRS amplitude (Spearman's ρ = – 0.085, p = 0.80); however, in ATTR-CA patients alone, a strong inverse correlation was demonstrated (Spearman's ρ = –0.84, p = 0.048) (Figure 2B).

Conclusions: myocardial amyloid load contributes significantly to QRS alterations on ECG in CA patients. QRS prolongation correlates with amyloid deposition in both AL-CA and ATTR-CA, whereas reduced QRS amplitude is specifically associated with ATTR-CA, suggesting disease-related differences pathophysiological mechanisms.

Longitudinal left ventricle amyloid distribution at histology.

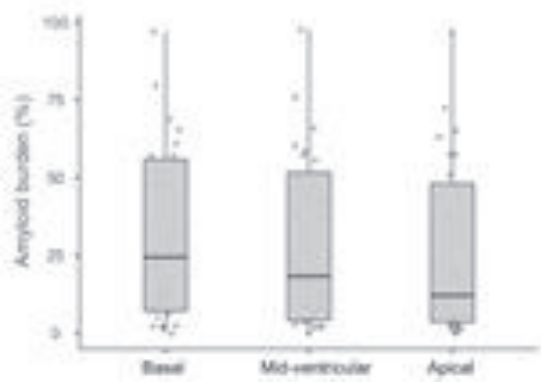


Figure 1

Panel A: correlation between QRS duration and left ventricular amyloid burden in the overall population. Panel B: correlation between precordial QRS amplitude and left ventricular amyloid burden in ATTR-CA patients.

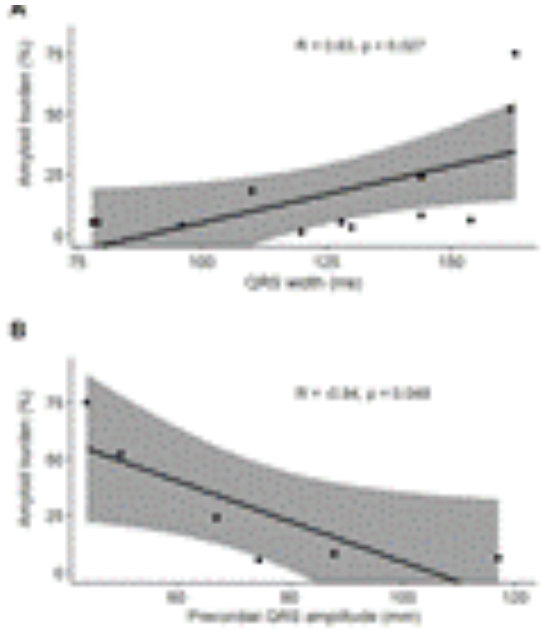


Figure 2

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 966
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)

HISTOPATHOLOGICAL CORRELATES OF RIGHT VENTRICLE SYSTOLIC FUNCTION BY ECHOCARDIOGRAPHY IN CARDIAC AMYLOIDOSIS

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Background: Echocardiogram-assessed right ventricular (RV) systolic function has prognostic value in patients with cardiac amyloidosis (CA). Whether a variable amyloid load deposition might contribute to its impairment remains poorly investigated.

Methods: This is a retrospective study of whole heart specimens of CA patients who died and underwent autopsy. Amyloid load was quantified by histomorphometry in each RV segment on sulphated alcian blue stained slides, and compared with RV systolic function parameters derived from M-mode and speckle tracking echocardiography.

Results: Histopathological examination of 28 explanted hearts with CA [15 immunoglobulin light chain (AL) and 13 transthyretin (ATTR)] demonstrated a significant base-to-apex gradient of amyloid deposition in the RV ($p = 0.046$) (Figure 1). Among 20 CA patients who underwent echocardiography (9 with ATTR-CA), the median tricuspid annular plane systolic excursion (TAPSE) and RV free wall longitudinal strain (RVFWLS) were 14.0 mm (11.0 – 17.3) and 16.8% (12.7 – 20.3), respectively. In the overall cohort, myocardial amyloid load correlated inversely with both TAPSE (Spearman's $\rho = -0.65$, $p = 0.002$) and RVFWLS (Spearman's $\rho = -0.64$, $p = 0.003$) (Figure 2A). These associations were stronger in ATTR-CA patients (Figure 2B) compared with AL-CA patients (Figure 2C).

Conclusions: RV myocardial amyloid burden is a key determinant of RV systolic dysfunction. The inverse correlation is more pronounced in ATTR-CA than in AL-CA, suggesting different, disease-specific, pathophysiological mechanisms.

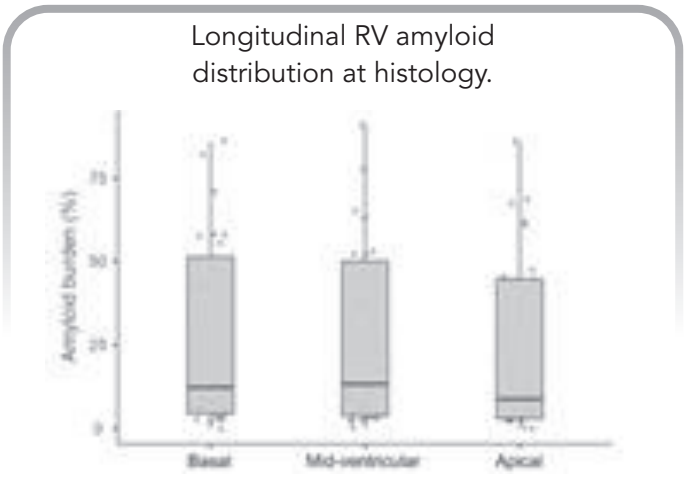


Figure 1

Panel A: correlation between TAPSE (left) and RVFWLS (right) and right ventricular amyloid burden in the overall population. Panel B: correlation between TAPSE (left) and RVFWLS (right) and right ventricular amyloid burden in the AL-CA patients. Panel C: correlation between TAPSE (left) and RVFWLS (right) and right ventricular amyloid burden in ATTR-CA patients.

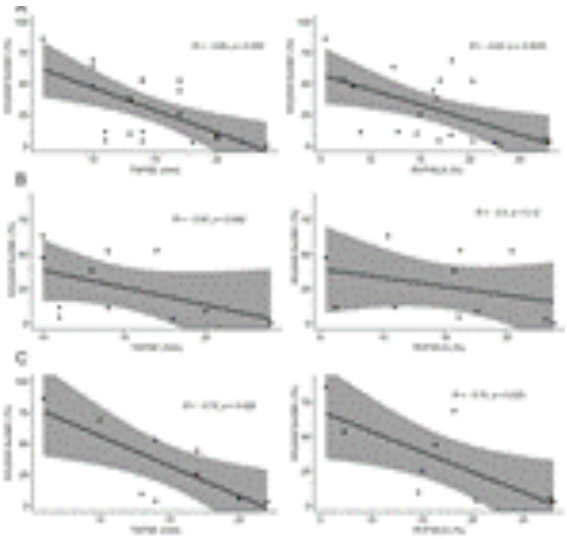


Figure 2

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 970
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)

LEFT ATRIAL VOLUMETRIC-MECHANICAL COUPLING INDEX FOR INCIDENT ATRIAL FIBRILLATION PREDICTION IN CARDIAC AMYLOIDOSIS

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(a) DEPARTMENT OF CARDIO-THORACO-VASCULAR SCIENCES AND PUBLIC HEALTH, UNIVERSITY OF PADUA, PADUA, ITALY

Background: Atrial fibrillation (AF) is common in patients with cardiac amyloidosis (CA) and is a significant risk factor for heart failure (HF) hospitalization and thromboembolic events. Echocardiographic functional predictors of AF in patients with CA are poorly investigated.

Methods: A monocentre, retrospective study including consecutive patients with light-chain (AL) and transthyretin (ATTR) CA with adequate echocardiography at diagnosis' time. Left atrial volumetric/mechanical coupling index (LACI) was defined as the ratio between left atrial volume indexed to body surface area and tissue Doppler a' and used as feasible surrogate for left atrial function. The study outcome was AF occurrence.

Results: Overall, 93 patients (age 75 years, 70% males, ATTR-CA n=49) were analyzed. During a median follow-up of 25 months (Q1-Q3: 16 - 46), 19 (20%) had AF occurrence. Compared with those without, patients with AF were more commonly with ATTR-CA (74% vs 47%, p = 0.040), lower left ventricle ejection fraction (55% vs 59%, p = 0.034), higher left ventricular mass (272 vs 245 gr/m2, p = 0.008), E/A ratio (1.9 vs 1.0, p = 0.002), left atrial diameter (LAD) (60 vs 51 mm, p = 0.005), and LACI (13.4 vs 5.6, p < 0.001). At bivariate analysis with LAD, LACI emerged as independent predictor of AF occurrence (HR 1.10, 95% CI 1.01 – 1.20, p = 0.026). Patients with a value of LACI over 6.5 showed a significant higher cumulative incidence of AF at 12 months (14% vs 7%, p = 0.002) (Figure 1).

Conclusions: in AL- and ATTR-CA patients, 20% had a first AF event within 25 months after diagnosis. On echocardiography, LACI predicted AF occurrence, suggesting potential utility in clinical practice.

Cumulative incidence of atrial fibrillation according to left atrial volumetric/mechanical coupling index (LACI) on echocardiography at diagnosis' time.

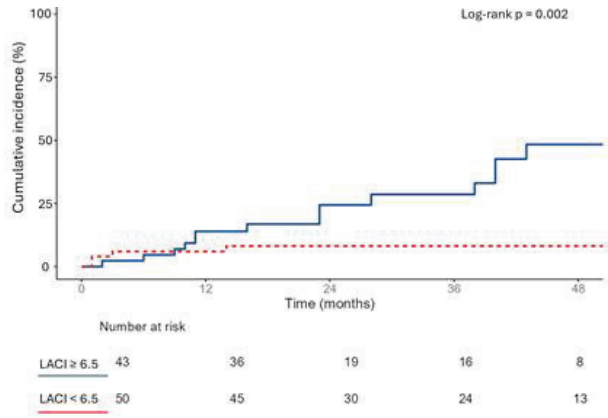


Figure 1

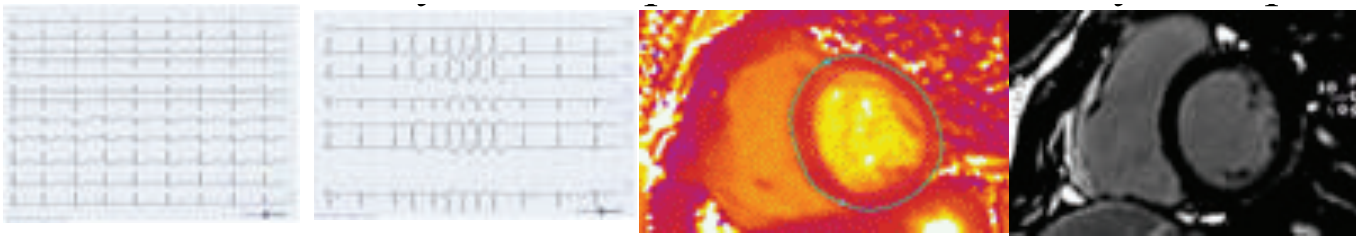
MALATTIE DEL MIOCARDIO E DEL PERICARDIO 353
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
ARITMIE VENTRICOLARI (ARITMIE)
CARDIOLOGIA DELLO SPORT
(ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)

A NOVEL HOTSPOT DSP VARIANT OF UNCERTAIN SIGNIFICANCE IN A YOUNG ATHLETE WITH ARRHYTHMOGENIC CARDIOMYOPATHY: IS A VARIANT LOCATION KEY TO RECLASSIFICATION?

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Arrhythmogenic cardiomyopathy (ACM) is an inherited myocardial disease involving desmosomal proteins and strongly associated with ventricular arrhythmias and sudden cardiac death (SCD). Among them, desmoplakin (DSP) anchors intermediate filaments to desmosomal cadherins at the intercalated disc, ensuring both mechanical cohesion and electrical stability. DSP variants and their location are increasingly recognized as modulators of phenotype and arrhythmic risk. We describe a 19-year-old competitive athlete with recurrent hot phases of ACM. She presented with pericarditic chest pain and elevated high-sensitivity troponin I (HSTnI) (peak: 1243 pg/mL). Family history was notable for SCD in her grandfather. At age 18, she had been hospitalized for a first hot phase with HSTnI peak 30,932 pg/mL and negative serology/virology. CMR showed normal biventricular volumes with preserved systolic function. The RV demonstrated mildly reduced systolic function, with regional hypokinesis and focal bulging of the mid-basal free wall. There was LGE involving the inferolateral RV wall, as well as a subepicardial stria of the LV inferolateral basal segment. She developed inhospital non-sustained ventricular tachycardia and was discharged with a wearable defibrillator, antiarrhythmic therapy, and exercise restriction. Genetic testing revealed a heterozygous missense DSP variant in exon 11 (c.1397T>G, p.Leu466Arg), located in the N-terminal plakin domain, a proposed hotspot, essential for desmosomal stability and cytoskeletal tethering. The leucine-to-arginine substitution at a highly conserved residue may disrupt local folding and protein–protein interactions. The variant is absent from population databases (gnomAD, ClinVar) and was classified as a Variant of Uncertain Significance (VUS) by Franklin ACMG criteria. Of note, other substitutions at the same residue (p.Leu466Phe/Pro) have been reported as VUS and associated with dilated cardiomyopathy or myocarditis-like presentations with persistent LGE. Most pathogenic DSP variants are loss-of-function, destabilizing desmosomal plaques and weakening mechanical coupling, promoting cardiomyocyte detachment, inflammation, fibro-fatty replacement, and arrhythmogenesis. Residues 299–511, where this variant falls, represent a proposed mutational hotspot associated with protein degradation. In silico prediction tools converge toward a deleterious effect, although functional studies are lacking. To our knowledge,

p.Leu466Arg variant has not been previously reported. According to 2024 ETF criteria, the patient met major electrocardiographic, structural, and morpho-functional criteria for ACM. Given her arrhythmic burden, family history, and the supportive genetic finding, a subcutaneous ICD was implanted for primary prevention. Although the DSP p.Leu466Arg variant is currently unclassified, codon-specific evidence, absence in population databases, deleterious in silico predictions, and phenotypic concordance with ACM collectively support its potential pathogenic role. Careful interpretation of VUS, integrated with clinical features and family history, allows refinement of diagnosis, guides preventive strategies, and informs family counselling. Continuous re-evaluation through segregation studies, functional assays, and international data-sharing may enable reclassification, underscoring the dynamic importance of VUS analysis in precision cardiogenetics.



Figures

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 581
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
GESTIONE DELLA COMPLICANZE PM / ICD (ARITMIE)

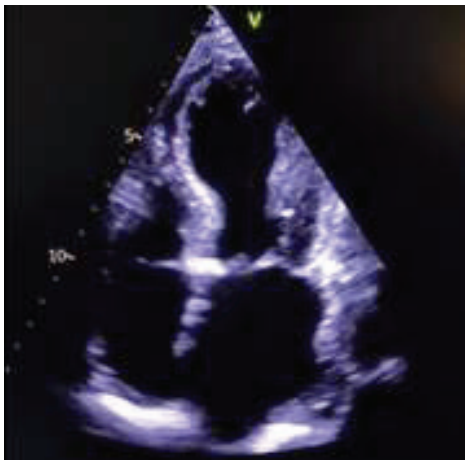
TAKOTSUBO SYNDROME MASKING APICAL HYPERTROPHIC CARDIOMYOPATHY

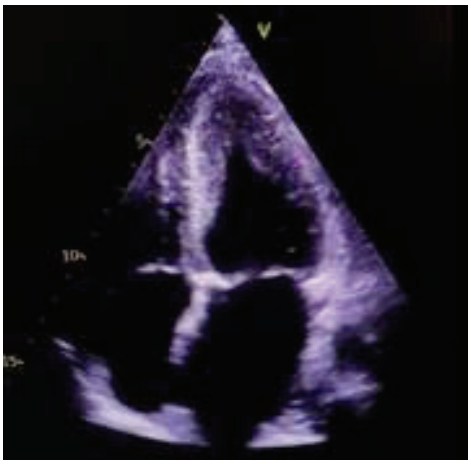
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Case overview: An 86-year-old woman with no previous cardiological history presented to the Emergency Department with syncope and advanced atrioventricular block. A focused cardiac ultrasound showed preserved left ventricular ejection fraction (LVEF). She was hospitalized and received a permanent pacemaker (PM) implantation.
In the first few days following PM implantation, she developed left ventricle (LV) wall motion abnormalities with an 'apical ballooning' pattern (akinesis of apical segments and hypercontractility of basal segments), accompanied by a significative rise in troponin levels. The ECG showed a progression with negative symmetrical T waves and QTc prolongation. A diagnose of suspected Takotsubo Syndrome (TS) was made. However, due to the patient's elderly age and frailty, no further diagnostic tests were performed to exclude obstructive coronary artery disease.

In the following five days, echocardiography showed a recovery of LVEF and regression of wall motion abnormalities, along with the appearance of increased wall thickness and systolic obliteration of the left ventricle (LV) apex. These findings raised the suspicion of an apical subtype of Hypertrophic Cardiomyopathy (HCM), transiently masked by the apical dilatation and akinesis during the acute phase of the TS.
After discharge, follow up echocardiography at one and three months showed normal LV wall motion and persistence of LV apical hypertrophy, reinforcing our suspect of apical HCM, while the ECG showed progressive normalization of the T wave inversion previously described.

Discussion: Several previous case reports have documented apical thickening due to severe myocardial edema during the subacute phase of a TS, which can mimic an apical form of HCM. Rare cases have also been described in which an apical subtype of HCM is masked by apical akinesis during the acute phase of a TS. Cardiac Magnetic Resonance (CMR) can be useful in the differential diagnosis, by identifying myocardial edema in the LV apex.
Our case highlights the complex and dynamic echocardiographic presentation of these two uncommon conditions who both affect the LV apex. To our knowledge, only two more cases of apical HCM masked by TS are described in literature. If confirmed by longer-term follow up echocardiography or by CMR (which we did not perform initially because of the patient's advanced age and comorbidities), the diagnosis of apical HCM could have significant implications for familial screening and for the early recognition of HCM in relatives.





Figures

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 130
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
ARITMIE VENTRICOLARI (ARITMIE)
ABLAZIONE TRANSCATETERE (ARITMIE)
STUDI ELETTROFISIOLOGICI INVASIVI (ARITMIE)
PROGNOSI (SCOMPENSO CARDIACO)

L'ALTRA FACCIA DELLA MEDAGLIA: STORM ARITMICO IN CARDIOMIOPATIA IPERTROFICA SARCOMERICA NON OSTRUTTIVA

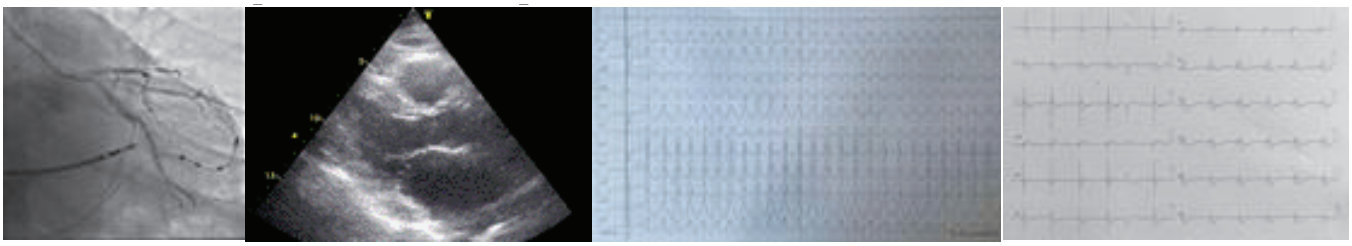
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INTRODUZIONE: La cardiomiopatia ipertrofica (HCM) nel 60–70% dei casi è attribuibile a mutazioni di geni sarcomerici, tra cui MYBPC3 e MYH7. Sebbene la forma ostruttiva sia la più rappresentata, una minoranza dei pazienti senza ostruzione possono sviluppare una cardiopatia dilatativo-ipocinetica associata a prognosi sfavorevole e ad elevato rischio aritmico. Le tachicardie ventricolari e lo storm aritmico rappresentano una delle più temibili complicanze cliniche, con impatto prognostico negativo nonostante la presenza di ICD. Le strategie terapeutiche comprendono l'ottimizzazione farmacologica e l'ablazione transcatetere, fino al trapianto cardiaco nei casi refrattari. Presentiamo il caso di un paziente con HCM sarcomerica non ostruttiva in fase ipocinetica, complicata da storm aritmico e sepsi nosocomiale, che ha richiesto un approccio multidisciplinare intensivo.

CASO CLINICO: Uomo di 56 anni con HCM non ostruttiva geneticamente determinata (mutazione MYBPC3), recentemente evoluta in cardiopatia dilatativo-ipocinetica (FE 35–40%), in follow-up per FA permanente e portatore di ICD dal 2018. Negli ultimi mesi incremento degli episodi di tachicardia ventricolare sostenuta, con multiple terapie appropriate del device per cui si ricoverava a giugno 2025. Durante la degenza il paziente ha manifestato storm aritmico, gestito mediante infusione di lidocaina e successiva terapia orale con mexiletina e metoprololo. Contestualmente sono stati eseguiti upgrade a CRT-D e, nel sospetto di una componente ischemica, coronarografia con rivascolarizzazione del ramo postero-laterale di arteria circonflessa. Nonostante ciò, nelle settimane seguenti si sono ripetuti multipli interventi appropriati del device, inizialmente gestiti con passaggio a nadololo. Ad agosto nuova ospedalizzazione per recidiva di storm aritmico in corso di sepsi da Pseudomonas oryzihabitans a partenza flebitica, trattata con terapia antibiotica e.v. Nonostante la complessità clinica, è stata eseguita ablazione endocardica di TV con ricostruzione elettro-anatomica del ventricolo sinistro (CARTO), che ha evidenziato ampia cicatrice in sede infero-laterale. Nonostante al termine si evidenziasse assenza di inducibilità, nei giorni successivi il paziente ha presentato recidiva aritmica precoce. Alla luce della persistenza di storm aritmico e della progressione ipocinetica della HCM, il paziente è stato trasferito presso centro di riferimento per ablazione epicardica, purtroppo complicata da rottura di cuspide aortica sottoposta a CCH.

CONCLUSIONI: Il caso mette in evidenza come, a differenza della HOCM, più spesso al centro dell'attenzione clinica, l'evoluzione dilatativo-

ipocinetica della HCM rappresenti una sfida gestionale complessa, con complicanze che dipendono dalla progressiva disfunzione ventricolare sinistra e dal substrato aritmogeno cicatriziale. Lo storm aritmico in questo contesto è spesso refrattario alla sola terapia farmacologica e richiede strategie multimodali. È quindi cruciale un follow-up strutturato e precoce in centri di riferimento, al fine di anticipare il deterioramento clinico e proporre tempestivamente le strategie terapeutiche più appropriate, fino al trapianto cardiaco.



Figure

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 131
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE) (IMAGING CARDIOVASCOLARE)
ECOCARDIOGRAFIA 3-D (IMAGING CARDIOVASCOLARE)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)

OLTRE L'AMILOIDOSI: UN CASO COMPLESSO DI CARDIOPATIA INFILTRATIVA

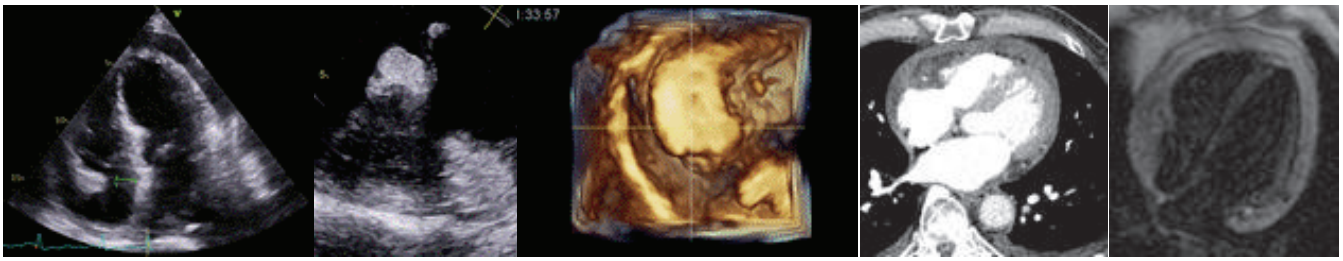
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INTRODUZIONE: L'amiloidosi cardiaca rappresenta una sfida diagnostica di grande attualità: una cardiomiopatia infiltrativa rara, associata a prognosi sfavorevole, che richiede un alto grado di sospetto clinico e un approccio multimodale, in cui la diagnosi definitiva continua spesso a dipendere dall'analisi istologica. Il percorso diagnostico del caso riportato, caratterizzato da risultati contrastanti e da reperti eccezionali, sottolinea l'importanza di una tempestiva presa in carico dai centri di riferimento e come la diagnostica non invasiva, seppur indispensabile, non sempre basti a definire la natura della cardiomiopatia.

CASO CLINICO: Uomo, 80 anni, da gennaio 2025 multipli ricoveri presso altro centro per dispnea da sforzo ed edemi declivi. L'ETT mostrava iniziale ipertrofia del SIV (13 mm) con modesto versamento pericardico ed FE preservata. All'ECG bassi voltaggi periferici e agli esami ematochimici troponina I 5,4 ng/L e BNP 41 ng/L. Per lieve incremento delle catene leggere libere seppur con rapporto normale (0,97 ed immunofissazione urinaria con evidenza di ridotta eterogeneità catene leggere K sono state eseguite: biopsia del grasso periombelicale (analizzata presso anatomia patologica locale) con evidenza di depositi focali perivascolari compatibili con amiloide e BOM con presenza di clone plasmacellulare 9%. Eseguite inoltre: TC con MdC (versamenti polisierosi); PET-TC (non aree di captazione patologica) ed EMG (polineuropatia sensitivo-motoria assonale di grado moderato). E' stata eseguita RM cardiaca: spessori parietali lievemente aumentati, tempo T1 mapping elevato, diffuso LGE sub-endocardico e medio-miocardico. Veniva inviato ad altro centro amiloidosi di riferimento nazionale dove il test genetico risultava negativo per mutazioni TTR e ApoAI e dove veniva ripetuto prelievo di grasso periombelicale risultato tuttavia negativo, anche alla rianalisi ultrastrutturale del primo campione. Il paziente accedeva quindi nel nostro centro con indicazione a BEM. All'ETT si evidenziava persistente versamento pericardico (2,2 cm) e riscontro incidentale di massa iperecogena, centimetrica a livello dell'anello tricuspidalico. Veniva quindi eseguito ETE che mostrava materiale iperecogeno adesso all'atrio destro. Veniva eseguita TC con MdC che descriveva il reperto ecografico come verosimile grasso epicardico. E' stato eseguito anche cateterismo cardiaco con riscontro di normale portata cardiaca ma ipertensione polmonare combinata moderata, in assenza di costrizione pericardica. Una prima indagine del prelievo bioptico endomiocardico ha evidenziato cardiomiociti di dimensioni conservate con vacuolizzazione citoplasmatica, con ispessimento fibroso dell'endocardio, in assenza di flogosi o necrosi

miocitaria e con negatività alla colorazione Rosso Congo (in corso di refertazione l'indagine ultrastrutturale). Per il contestuale riscontro di ipereosinofilia è stato posto a questo punto il sospetto di endocardite di Loeffler come ipotesi diagnostica più probabile.

CONCLUSIONI: Il paziente indirizzato con sospetto di amiloidosi si è rivelato portatore di un quadro potenzialmente compatibile con endocardite di Loeffler, patologia che, sebbene rara, va sempre considerata di fronte ad ispessimento endocardico, fibrosi ed ipereosinofilia. Il caso illustra le difficoltà nell'iter diagnostico di amiloidosi e sottolinea l'importanza della presa in carico precoce nel centro esperto e dell'integrazione di tutti i dati a disposizione. La sequenza diagnostica evidenzia infine come ancora oggi gli esami di imaging non possano in alcuni casi sostituirsi alle indagini istologiche.



Figure

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 132
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
FUNZIONE VENTRICOLARE, RIMODELLAMENTO E DANNO D'ORGANO (IPERTENSIONE ARTERIOSA)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)
TRATTAMENTO DELL'IPERTENSIONE ARTERIOSA (IPERTENSIONE ARTERIOSA)

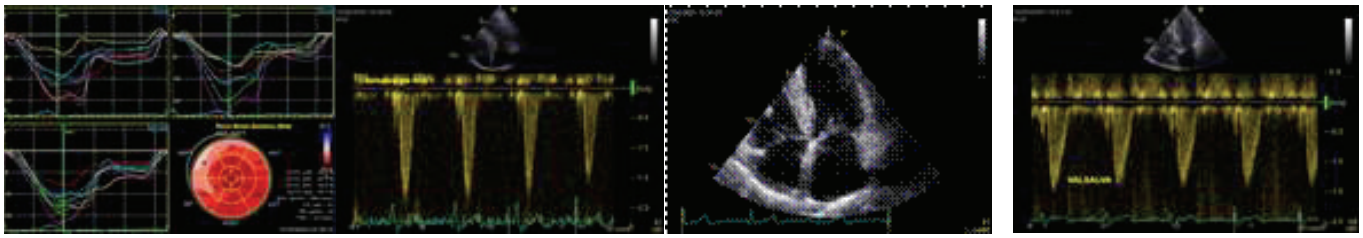
CARDIOMIOPATIA IPERTROFICA ED IPERTENSIONE ARTERIOSA: COME MAVACAMTEN HA CAMBIATO LA STORIA CLINICA DI UN PAZIENTE COMPLESSO

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INTRODUZIONE: La cardiomiopatia ipertrofica è una cardiomiopatia genetica con una prevalenza stimata di 1:500, caratterizzata da un aumento dello spessore delle pareti del ventricolo sinistro, in assenza di aumentate condizioni di carico. Circa 2/3 dei pazienti presentano ostruzione in LVOT, a riposo o dopo manovre provocative. La gestione farmacologica si fonda tradizionalmente su β-bloccanti, calcio-antagonisti e disopiramide. Tuttavia, la presenza di comorbidità, come l'ipertensione arteriosa, che peggiora la prognosi nei pazienti con HCM, può rendere complessa la titolazione terapeutica, poiché i farmaci antipertensivi possono indurre vasodilatazione e accentuare l'ostruzione. In questo contesto, i nuovi inibitori della miosina cardiaca, come il mavacamten, si pongono come una reale opportunità terapeutica.

CASO CLINICO: Uomo di 69 anni, affetto da HOCM diagnosticata nel 2022 a seguito di accertamenti per dispnea da sforzo. La RM cardiaca evidenziava severa IVS (SIV 21 mm) con LVOTO e SAM inducente insufficienza mitralica moderata. La genetica risultava negativa così come lo screening per cardiopatie infiltrative. Il paziente presentava inizialmente un beneficio clinico con disopiramide, che determinava una riduzione del gradiente e un miglioramento funzionale. Tuttavia, la concomitante ipertensione arteriosa richiedeva l'introduzione e la titolazione di farmaci antipertensivi, che aggravavano l'ostruzione e inducevano la ricomparsa dei sintomi e multipli ricoveri per scompenso. Negli anni, nonostante vari schemi terapeutici (metoprololo, verapamil, disopiramide), il paziente rimaneva altamente sintomatico, con dispnea da sforzo (NYHA III), ridotta capacità funzionale e ricoveri ripetuti per scompenso cardiaco. Nel 2024 il paziente è stato quindi arruolato nel programma di uso compassionevole di Mavacamten. Dopo introduzione del farmaco e sospensione graduale della disopiramide, si osservava un rapido e stabile beneficio clinico. A 12 settimane, l'ecocardiogramma documentava: assenza di SAM, insufficienza mitralica lieve, riduzione della FE VS (60%→56%; GLS 25%→18,7%) e un drastico calo del gradiente in LVOT (85→11 mmHg a riposo; 192→20 mmHg dopo Valsalva). Il paziente riferiva un miglioramento radicale della qualità di vita: da una condizione di intolleranza anche a minimi sforzi quotidiani, era tornato a svolgere regolare attività fisica aerobica senza sintomi (NYHA III→I; QoL score 70→90). Grazie alla risoluzione stabile dell'ostruzione, è stato possibile reintrodurre e titolare farmaci antipertensivi a dosaggi adeguati senza peggioramento clinico né ricomparsa del gradiente, consentendo così un miglior controllo pressorio e quindi un impatto prognostico favorevole.

CONCLUSIONI: Il caso evidenzia come mavacamten, oltre a determinare una netta riduzione dell'LVOTO, cambiando radicalmente la qualità di vita dei pazienti, possa consentire una gestione ottimale dell'ipertensione arteriosa, spesso difficile da trattare in questo contesto e associata ad un peggioramento prognostico. Ciò rafforza l'idea che gli inibitori della miosina rappresentino una vera svolta terapeutica, con un beneficio che va oltre la sola riduzione del gradiente LVOT.



Figure

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 134
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)

TRA BENEFICIO TARDIVO E REBOUND CLINICO - L'IMPORTANZA DEL TIMING DELLA TERAPIA CON TAFAMIDIS

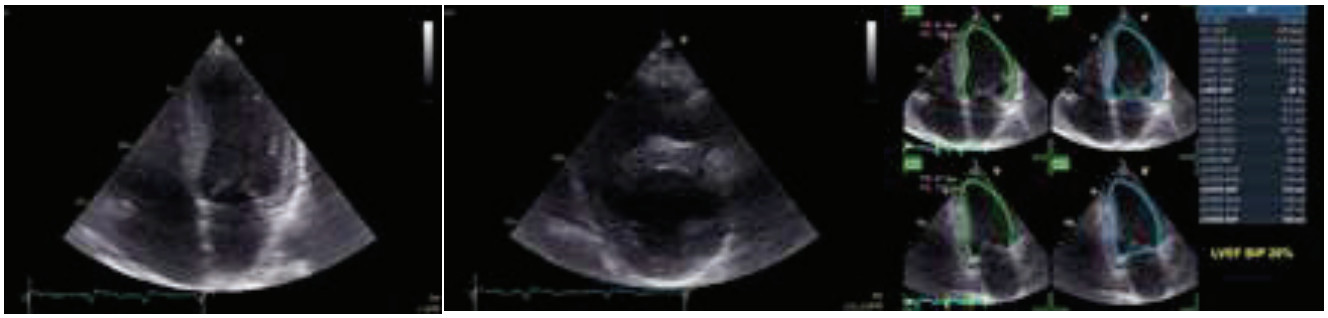
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INTRODUZIONE: L'amiloidosi cardiaca da transtiretina wild-type (ATTR-wt) con compromissione progressiva della funzione ventricolare sinistra rappresenta una sfida terapeutica significativa, soprattutto in età avanzata, quando l'obiettivo è sia stabilizzare il quadro clinico sia considerare l'impatto economico e gestionale di terapie come Tafamidis. Il caso stimola una riflessione sul timing del trattamento e sulla potenziale tossicità rebound dovuta all'interruzione del farmaco, con implicazioni pratiche e socio-economiche rilevanti.

CASO CLINICO: Uomo di 89 anni, con diagnosi di ATTR-wt dal 2023 dopo indagini eseguite per precordialgia atipica con riscontro ecocardiografico di IVS, disfunzione ventricolare sinistra (FE 30%), disfunzione diastolica di I grado e lievi insufficienze valvolari. Coronarografia negativa per malattia ateromasica critica e scintigrafia ossea con captazione cardiaca grado Perugini 3. Il test genetico per TTR risultava negativo e l'EMG, effettuata per disestesie degli arti superiori, risultava compatibile con neuropatia periferica amiloidotica. Agli esami ematochimici NT-proBNP 8100 pg/mL. Nel 2023 il paziente inizia trattamento con Tafamidis. A 12 mesi il paziente si presenta stabile clinicamente (nessuna ospedalizzazione, classe NYHA II, 6MWT 300m KCCQ-S 75; NT-proBNP in calo 6200 pg/mL) con blanda dose di diuretico a domicilio (25 mg a giorni alterni). All'ECG: ritmo sinusale stabile. All'ETT: miglioramento della funzione sistolica VS (FE 40%), spessori parietali stabili (SIV 16 mm), VD normocinetico e lievi insufficienze mitralica e tricuspidale. A luglio 2024, Tafamidis viene sospeso. Nei due mesi successivi rapido deterioramento clinico: multipli ricoveri per scompenso, passaggio in classe NYHA III, incremento del fabbisogno di diuretico (furosemide fino a 100 mg/die), peggioramento della neuropatia ed insorgenza di fibrillazione atriale con necessità di anticoagulazione. All'ETT: severa disfunzione biventricolare (FEVS 15 %; TAPSE 10 mm), incremento delle pressioni di riempimento stimate (E/e' 21) ed insufficienza mitralica e tricuspidale severa. Valori di TnHS e NT-proBNP raddoppiati (12 000 pg/mL). In corso di trattamento con Tafamidis, i livelli circolanti di TTR aumentano poichè continua ad essere prodotta a livello epatico (con aumento della pre-albumina). Si ipotizza che l'interruzione brusca del farmaco possa portare ad un deposito rapido del surplus prodotto, soprattutto nelle aree già interessate, potendo determinare tossicità miocardica acuta e rapido deterioramento clinico. Sebbene i dati diretti sull'effetto rebound dopo interruzione di Tafamidis siano limitati in letteratura, questa ipotesi biologica trova plausibilità nella fisiologia del turnover della transtiretina e nei meccanismi di danno cardiaco secondari all'accumulo della stessa.

CONCLUSIONI: Il caso documenta come il trattamento con Tafamidis possa determinare una significativa stabilizzazione clinica anche in pazienti con importante

coinvolgimento cardiaco. Tuttavia, considerando che i benefici prognostici si manifestano dopo circa 18 mesi, i pazienti fragili, con bassa aspettativa di vita o difficoltà nel mantenere l'aderenza terapeutica, potrebbero beneficiare di un approccio più conservativo, evitando trattamenti che, se interrotti, porterebbero ad un potenziale effetto rebound. In un contesto in cui l'amiloidosi cardiaca è sempre più frequente e i costi per Tafamidis sono elevati è cruciale valutare l'impatto sul sistema sanitario e sull'aderenza terapeutica. Il caso suggerisce una riflessione approfondita sul timing del trattamento con Tafamidis nella ATTR-wt, specialmente in pazienti anziani e con cardiomiopatia avanzata. È un invito a considerare non solo "quando" iniziare la terapia, ma "se" avviarla e come affrontarne eventuali interruzioni, tenendo in considerazione la qualità di vita del paziente, i benefici prognostici ed i costi sanitari.



Figure

CardioSic

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 826 MIOCARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO) IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO) RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)

MIOCARDITE EOSINOFILA IGG4 CORRELATA: UNA SFIDA DIAGNOSTICA

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La miocardite eosinofila (ME) è una rara ed eterogenea cardiomiopatia infiammatoria caratterizzata da infiltrazione eosinofila del miocardio, frequentemente associata a eosinofilia periferica, asma o disordini allergici. ME ha una rilevanza clinica elevata per il rischio di evoluzione verso forme fulminanti con shock cardiogeno, trombosi intracardiache, disfunzione ventricolare o morte improvvisa. Può mimare una sindrome coronarica acuta o presentarsi come cardiomiopatia dilatativa non ischemica a prognosi infausta. Riportiamo il caso di una donna di 74 anni con anamnesi positiva per asma e allergie multiple, ricoverata per astenia e dolore toracico migrante. All'ingresso, gli esami ematochimici evidenziavano marcata eosinofilia periferica (1.5x103 U/l 15.6% v.n 0.0-0.5), incremento della troponina ad alta sensibilità (4119.7ng/L v.n <15.6) e rialzo degli indici di flogosi (PCR 6.52 mg/Dl v.n <0.5). L'elettrocardiogramma mostrava alterazioni aspecifiche della ripolarizzazione, mentre l'ecocardiogramma documentava funzione sistolica ventricolare sinistra conservata, senza versamento pericardico né trombi endocavitari. Allo studio coronarografico coronarie indenni da stenosi significative. La risonanza magnetica cardiaca (CMR) evidenziava diffuse aree di edema alle sequenze T2 pesate con un pattern subendocardico di late gadolinium enhancement, maggiormente rilevante nei segmenti apicali e medi, altamente suggestivo per ME. La biopsia endomiocardica ha confermato la diagnosi, dimostrando infiltrati infiammatori focali costituiti da granulociti eosinofili associati a figure di danno miocellulare ed edema interstiziale. Durante il ricovero veniva, inoltre, riscontrato un significativo incremento delle immunoglobuline G4 (IgG4: 539 mg/dL; v.n. 8–140 mg/dL). Sulla base del quadro clinico, laboratoristico e di imaging, è stata posta diagnosi presuntiva di ME. La paziente è stata prontamente sottoposta a terapia corticosteroidea sistemica, con rapido miglioramento clinico, normalizzazione degli indici di flogosi e riduzione della conta eosinofilica. La funzione ventricolare sinistra è rimasta preservata al follow-up, con risoluzione della sintomatologia e stabilità clinica.

Questo caso mette in evidenza alcuni punti chiave: (I) la ME dovrebbe essere considerata nei pazienti che presentano dolore toracico, incremento inspiegato della troponina ed eosinofilia periferica, anche in assenza di disfunzione sistolica; (II) la CMR rappresenta un metodo diagnostico non invasivo di grande valore; (III) la biopsia endomiocardica è attualmente l'unico strumento che ci permette di identificare la forma specifica di miocardite e quindi di avviare la terapia immunosoppressiva; (IV) la somministrazione precoce di corticosteroidi può risultare decisiva nel modificare il decorso della malattia e nel prevenire la progressione verso esiti necrotizzanti o fibrotici; (V) la rilevazione successiva di IgG4 elevate apre il quesito di una possibile forma di miocardite eosinofila associata a malattia correlata a IgG4, evenienza rara ma descritta in letteratura, che merita ulteriori approfondimenti. Il nostro report contribuisce ad ampliare le evidenze sulla miocardite eosinofila, sottolineando l'importanza di un elevato livello di sospetto clinico, di una valutazione multidisciplinare e dell'avvio tempestivo della terapia corticosteroidea. Sono auspicabili studi prospettici per definire protocolli terapeutici condivisi ed esplorare il ruolo degli agenti biologici diretti contro l'asse dell'interleuchina-5 nei casi recidivanti o steroido-dipendenti.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 828
MIOCARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
CARDIOTOSSICITA' DA FARMACI
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO)
ECMO (ASSISTENZA CARDIACA IN ACUTO)

SEVERE DRUG REACTION WITH EOSINOPHILIA AND SYSTEMIC SYMPTOMS (DRESS) SYNDROME WITH FULMINANT EOSINOPHILIC MYOCARDITIS REQUIRING VA-ECMO: A CASE REPORT

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Introduction: Drug Reaction with Eosinophilia and Systemic Symptoms (DRESS) is a rare but severe drug-induced hypersensitivity, typically presenting with fever, widespread skin eruption, hematologic abnormalities, and internal organ involvement. Fulminant eosinophilic myocarditis is one of the most dangerous complications. We report a DRESS case after trimethoprim-sulfamethoxazole, with multiorgan involvement and eosinophilic myocarditis.

Case report: A 49-year-old man of Moroccan origin, active smoker, with previous history of treated pulmonary tuberculosis, was started on trimethoprim-sulfamethoxazole in mid-April, after a sputum sample tested positive for Nocardia farcinica. Two weeks later he developed persistent fever and was admitted to the Emergency Department where, due to drug-related fever suspicion, the antibiotic was withdrawn. At the end of May he returned with fever, asthenia, presyncopal episodes, dyspnoea and during the evaluation also reported a short episode of chest pain. Blood tests showed leukocytosis, increased inflammatory markers, high-sensitivity troponin elevation (peak around 11.000ng/L), liver and kidney dysfunction. The admission electrocardiogram demonstrated incomplete right bundle branch block, low peripheral voltages and flat T waves in the inferolateral leads. Chest computed tomography was unremarkable, and transthoracic echocardiogram revealed mild wall thickening, mildly reduced left ventricular ejection fraction (LVEF45%) and mild pericardial effusion. After microbiological investigations, empirical antibiotics with piperacillin/tazobactam were started. Due to further LVEF deterioration to 20%, multiorgan dysfunction with hypotension, hypoperfusion and metabolic acidosis, he was admitted to the CICU. Vasoactive therapy with adrenaline was started, blood tests showed leukocytosis with marked eosinophilia (4110/mm³), raising suspicion

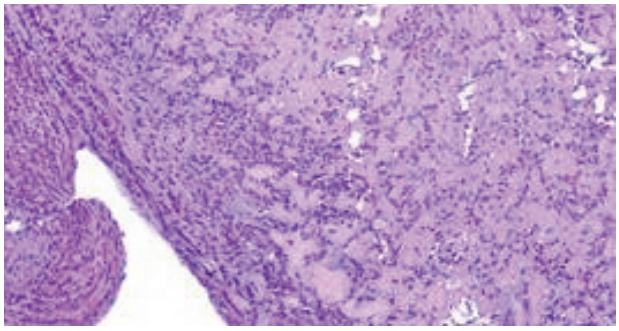


Figure 1

of eosinophilic myocarditis. Urgent endomyocardial biopsy confirmed the diagnosis. He was treated with high-dose methylprednisolone (1g/day) and IV immunoglobulins (2g/kg/day) for 3 days. The intra-aortic balloon pump, intubation and VA-ECMO were necessary due to refractory shock, eventually leading to a progressive recovery and weaning from mechanical and pharmacological support in 7 days. Screening for eosinophilia showed positive IgG for Toxocara, Schistosoma and Strongyloides stercoralis, considered not the main cause but treated anyway. No previous eosinophilia, lymphadenopathy, splenomegaly, clonal lymphocytes or molecular alterations were found, allowing exclusion of hypereosinophilic syndrome. The absence of asthma/nasal polyps, a nondiagnostic BAL, negative autoimmune markers made eosinophilic granulomatosis with polyangioitis unlikely. Interleukin-5 and eosinophil cationic protein levels were found to be low, not conclusive in the context of steroid therapy. Considering recent trimethoprim-sulfamethoxazole exposure (2–8 weeks), fever ≥38 °C, multi-organ involvement, with a regiSCAR score of 4, the case was classified as probable DRESS complicated by fulminant eosinophilic myocarditis. To target eosinophil activity, in agreement with rheumatology colleagues, monthly mepolizumab was started for 6 months with clinical improvement and prednisone was tapered off within 2 months.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 486
ELETTROSTIMOLAZIONE (ARITMIE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
TERAPIA DI RESINCRONIZZAZIONE (ARITMIE)

STIMOLAZIONE DELLA BRANCA SINISTRA NEI PAZIENTI CON AMILOIDOSI CARDIACA: L'ESPERIENZA DI DUE CENTRI

Antonio Vernile (a), Nicola Pierucci (a), Marco Valerio Mariani (a), Carlo Lavalle (a), Cristina Chimenti (a)
(a) POLICLINICO UMBERTO 1

Introduzione: L'amiloidosi cardiaca (CA), dovuta principalmente alla deposizione di transtiretina (ATTR) o di catene leggere di immunoglobuline (AL), causa infiltrazione miocardica ed anomalie del sistema di conduzione, rendendo spesso necessaria una terapia di stimolazione. La stimolazione ventricolare destra convenzionale (RVP) comporta il rischio di indurre dissincronia ventricolare e cardiomiopatia, portando a un crescente interesse per la stimolazione della branca sinistra (LBBAP) come alternativa più fisiologica. Sebbene i primi rapporti abbiano dimostrato che la LBBAP può essere fattibile e sicura, anche in cuori strutturalmente compromessi, le prove specifiche per i pazienti con CA rimangono scarse. Questo studio si propone di valutare la sicurezza, la praticità e gli esiti a breve termine della LBBAP in una coorte di pazienti con CA trattati in due centri.

Metodi: In questo studio prospettico condotto in due istituti, 18 pazienti con amiloidosi cardiaca confermata dalla biopsia sono stati sottoposti a LBBAP tra gennaio 2023 e gennaio 2025. Sono stati registrati sistematicamente i parametri procedurali chiave, come la soglia di stimolazione, il rilevamento dell'onda R, l'impedenza e i tempi fluoroscopici. Dopo la procedura, i pazienti sono stati sottoposti a valutazione ECG, controlli del dispositivo e monitoraggio di eventuali complicazioni. Sono stati utilizzati sia elettrocateteri senza lume sia elettrocateteri con stiletto. Il successo della LBBAP è stato definito dal raggiungimento di una morfologia di blocco di branca destro (RBBB) stimolato con un soddisfacente tempo di attivazione del ventricolo sinistro (LVAT) e del QRS

Risultati: Tutti i 18 pazienti hanno ricevuto con successo LBBAP. La durata mediana della procedura è stata di 85 minuti. I parametri dell'impianto hanno dimostrato soglie di stimolazione stabili (0,85 V) e rilevamento dell'onda R (9,0 mV). Nel corso di un follow-up mediano a 120 giorni, i parametri dell'elettrocatetere sono rimasti stabili, con soglie di stimolazione persistentemente basse (0,8 V), alte percentuali di stimolazione ventricolare (98,5%) e nessuna complicazione significativa.

Discussione: Nonostante la significativa ipertrofia settale caratteristica dell'ATTR-CA (spessore settale mediano di 18 mm), l'impianto di LBBAP ha avuto un successo costante, sottolineando la sua fattibilità tecnica anche in un miocardio ampiamente infiltrato. Il mantenimento di un QRS stimolato stretto e di profili elettrici stabili è in linea con gli studi precedenti, rafforzando i vantaggi fisiologici della LBBAP rispetto alla RVP tradizionale. Dal momento che le terapie che modificano la malattia estendono la durata della vita dei pazienti affetti da CA, cresce anche la richiesta di soluzioni di stimolazione affidabili e fisiologiche

Conclusioni: Questo studio dimostra che LBBAP è una strategia di stimolazione sicura, efficace e tecnicamente realizzabile nei pazienti affetti da amiloidosi cardiaca da transtiretina, anche nei casi di significativo ispessimento settale. Questi risultati incoraggiano una più ampia adozione clinica della LBBAP in questo difficile gruppo di pazienti e sostengono la necessità di futuri studi su larga scala per convalidare i vantaggi clinici a lungo termine osservati

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 956
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

LEFT ATRIAL STRAIN REVEALS EARLY MYOCARDIAL INVOLVEMENT IN SYSTEMIC SCLEROSIS

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Background: Systemic sclerosis (SSc) is a rare systemic autoimmune disease that may result in primary scleroderma cardiomyopathy (SSc-CMP), a leading cause of adverse outcomes and impaired quality of life. However, its clinical definition is not yet universally established. Left atrial strain (LAS), an echocardiographic parameter reflecting global left atrial function, has been proposed as an early marker of myocardial involvement in other inflammatory conditions, but its role in SSc-CMP remains unclear. Considering the presumed inflammatory pathogenesis of SSc-CMP, we aimed to assess whether LAS can enable the early detection of this condition.

Materialandmethods: Inthissingle-centerretrospective study, 179 patients fulfilling the 2013 ACR/EULAR classification criteria for SSc, presenting with dyspnea and suspected cardiovascular involvement, underwent comprehensive clinical assessment, laboratory testing, transthoracic echocardiography with speckle-tracking analysis of LAS, cardiopulmonary exercise testing, and, when indicated, cardiac magnetic resonance (CMR). Patients with overlap syndromes, dyspnea attributable to other cardiac diseases or interstitial lung disease, or any other pulmonary pathology, were excluded. Based on CMR findings, patients were classified as SSc-CMP+ if myocardial damage was detected, or SSc-CMP– if no cardiopulmonary involvement was identified. Continuous variables were compared either by the Student's t test or the Mann Whitney U test if normally or non-normally distributed, respectively. Categorical variables were compared by means of Fisher's exact test. Statistical analysis was conducted using IBM SPSS statistics version 29.0.2.0 (20).

Results: Out of 179 patients included in the analysis, 16 patients (9%) were classified as SSc-CMP+. Compared with the SSc-CMP– group, they exhibited significantly reduced LAS-reservoir (LAS-R) and higher LAS-conduit (LAS-CD) values, while LAS-contractile (LAS-CT) and left atrial volume index were not significantly different. NT-proBNP and troponin T levels were also significantly elevated in SSc-CMP+ patients. ROC analysis demonstrated good discriminatory ability for NT-proBNP (AUC 0.85), LAS-R (AUC 0.81), and LAS-CD (AUC 0.82), whereas LAS-CT did not reach statistical significance. No association was found between SSc-CMP status and specific autoantibody profiles.

Conclusions: Echocardiographic assessment of LAS represents a non-invasive and practical screening tool for the early identification of SSc patients at risk of primary myocardial involvement. This approach may help guide selective use of CMR in clinical practice. Moreover, our findings indicate that SSc-CMP can occur irrespective of autoantibody status, supporting the need to screen ACA-positive patients when suggestive symptoms are present.

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 688
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
PROGNOSI (SCOMPENSO CARDIACO)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)

ROMA: A CARDIOPULMONARY EXERCISE TESTING BASED RISK TOOL IN HYPERTROPHIC CARDIOMYOPATHY

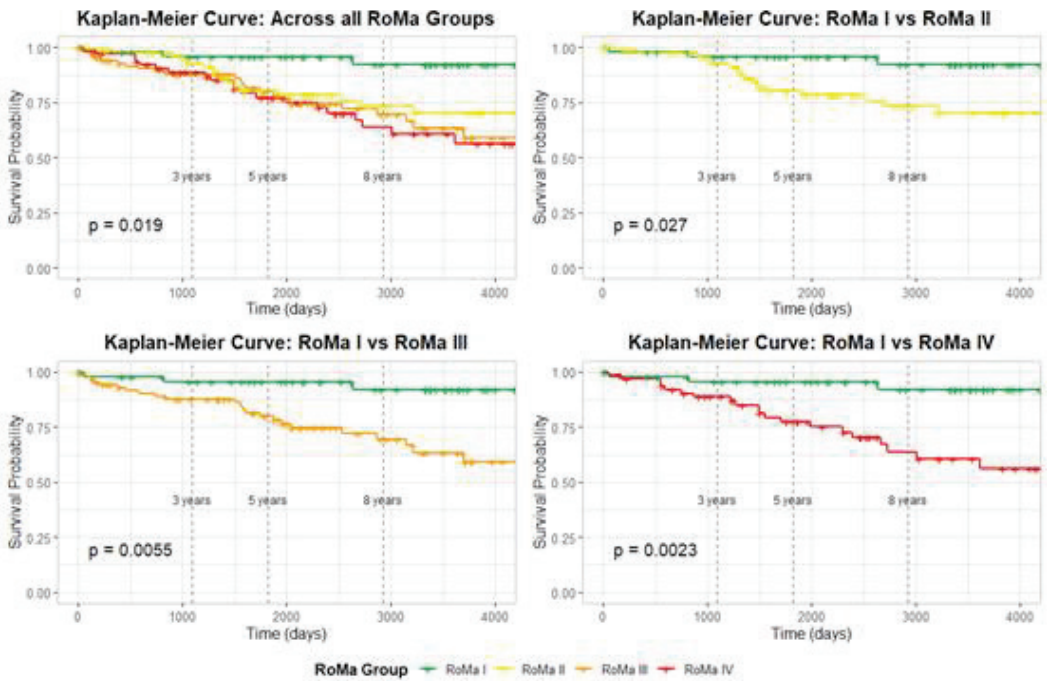
Robin Willixhofer (a), Massimo Mapelli (a), Nikita Baracchini (c), Nicola Campana (a), Teresa Maria Capovilla (c), Alessandro Nava (c), Elisabetta Salvioni (a), Carlo Vignati (a), Filippo Maria Rubbo (c), Damiano Magri (f), Emiliano Fiori (f), Beatrice Pezzuto (a), Irene Mattavelli (a), Anna Apostolo (a), Pietro Palermo (a), Jeness Campodonico (a), Mauro Contini (a), Simona Costantino (a), Cosimo Carriere (c), Irena Tavcar (c), Maddalena Rossi (c), Christian Cadeddu Dessalvi (d), Marco Merlo (c), Gianfranco Sinagra (c), Piergiuseppe Agostoni (a)
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Background: Hypertrophic cardiomyopathy (HCM) exhibits heterogeneous clinical profiles. The RoMa classification, derived from peak heart rate and oxygen pulse during CPET, was proposed to stratify patients by exercise reserve.

Methods: We retrospectively analyzed 292 HCM patients (median age 51 years, 70% male, 30% obstructive) from three centers (2009–2020). All underwent baseline CPET and were categorized into RoMa I–IV. The primary endpoint was a composite of death, sudden cardiac death (SCD)/aborted SCD, heart failure hospitalization, stroke, embolism, myectomy, or transplantation over a median follow-up of 6 years.

Results: Functional capacity declined progressively across RoMa groups (peak VO_2 29.2 to 17.9 mL/kg/min; p-trend <0.001). During follow-up, 68 events occurred. Kaplan–Meier analysis showed significant survival differences between groups (log-rank p = 0.019). In multivariable models, RoMa II–IV independently predicted higher event risk vs RoMa I (HR 3.89–5.37; all $p < 0.05$), whereas genotype, LVEF, sex, and LVOT obstruction were not predictive.

Conclusion: The RoMa classification independently predicts long-term adverse outcomes in HCM, regardless of LVOT obstruction, and may serve as a novel risk stratification tool.


Kaplan-Meier Curve: Across all RoMa Groups
p = 0.019
Kaplan-Meier Curve: RoMa I vs RoMa II
p = 0.027
Kaplan-Meier Curve: RoMa I vs RoMa III
p = 0.0055
Kaplan-Meier Curve: RoMa I vs RoMa IV
p = 0.0023
Survival Probability
Time (days)
3 years
5 years
8 years
RoMa Group
RoMa I
RoMa II
RoMa III
RoMa IV

Figure

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 456
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
ARITMIE VENTRICOLARI (ARITMIE)
SINCOPE (ARITMIE)

UNA AMILOIDOSI CARDIACA ELETTRICAMENTE INSTABILE

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Presentiamo il caso di un uomo di 64 anni, iperteso e con storia di tunnel carpale bilaterale, la cui storia cardiologica inizia nel 2019 con segni e sintomi di scompenso cardiaco, per cui eseguiva accertamenti cardiologici risultati negativi. A fine 2021 peggioramento del quadro clinico con dispnea per minimi sforzi ed edemi declivi; eseguiva ecocardiografia (FEVS conservata, ipertrofia ventricolare sinistra simmetrica con "apical sparing" all'analisi GLS (Fig.1), pattern diastolico restrittivo, dilatazione bi-atriale) e RMN cardiaca (LGE transmurale a carico del SIV e della parete libera del ventricolo sinistro e del ventricolo destro). Veniva avviata terapia diuretica con beneficio ed esclusa la forma di amiloidosi cardiaca (AC) da catene leggere; a completamento del percorso diagnostico eseguiva scintigrafia scheletrica con SPECT (grado Perugini 3) ed esame genetico per ricercare varianti TTR, risultato negativo. Posta diagnosi di AC da transtiretina wild-type (ATTRwt), si avviava terapia specifica con tafamidis ad aprile 2022 (NAC score I) e si sospendeva bisoprololo per incompetenza cronotropa. A luglio 2022 episodio sincopale con riscontro di tachicardia ventricolare sostenuta (TVS) defibrillata e successivo ricovero ospedaliero con esecuzione di coronarografia (indenne), impianto di defibrillatore bicamerale e reintroduzione di bisoprololo. A marzo 2023 comparsa di fibrillazione atriale sintomatica per cui veniva effettuata cardioversione elettrica risultata inefficace. All'ecocardiografia di giugno 2023 riscontro di disfunzione sistolica bi-ventricolare per cui veniva avviata terapia con SGLT2i e potenziata terapia di neuro-modulazione ormonale, con miglioramento della funzione. A dicembre 2023 tre episodi sincopali aprodromici: all'interrogazione del dispositivo riscontro di TVS (fig.2), due trattate con ATP e una interrotta da DC shock. È stata pertanto titolata la terapia beta-bloccante e, a fini prognostici, è stato sottoposto a test cardiopolmonare (CPET) con riscontro di ridotta capacità funzionale (VO2 picco 16.8 ml/kg/min, 72% del predetto), segni di limitazione cardiogenica e decondizionamento (polso O2 13.4 ml/b, 84% del predetto) e segni di limitazione vascolare polmonare (VE/VCO2 slope 44.9).

Il nostro caso rappresenta un quadro avanzato di coinvolgimento cardiaco da ATTRwt caratterizzato da disfunzione sisto-diastolica bi-ventricolare e aritmie ipercinetiche. Il fenotipo pro-aritmico, sia sopraventricolare che ventricolare, rappresenta ad oggi una sfida nella gestione di questi pazienti in quanto si deve tener conto delle reazioni avverse delle terapie antiaritmiche e cronotrope negative nelle cardiopatie restrittive.

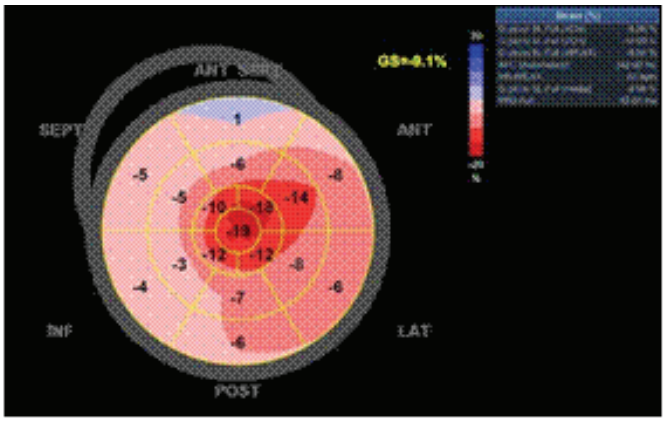


Figura 1: «apical sparing» all'analisi GLS

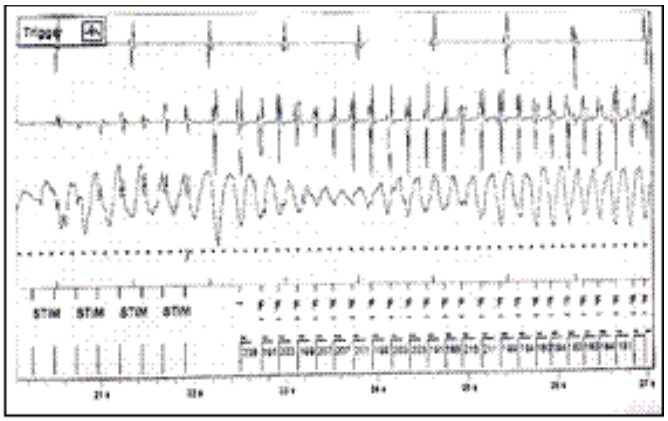


Figura 2: TVS all'interrogazione del dispositivo

Figure

MALATTIE DEL MIOCARDIO E DEL PERICARDIO 310
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
BIOMARCATORI DELLO SCOMPENSO (SCOMPENSO CARDIACO)

CHARACTERIZATION OF PATIENTS WITH EARLY-STAGE TRANSTHYRETIN AMYLOIDOSIS WITH HEART INVOLVEMENT REFERRING TO ITALIAN TERTIARY CENTRES: THE ATTRITE RETROSPECTIVE COHORT STUDY

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Background: Transthyretin amyloid cardiomyopathy (ATTR-CM) is the most common form of amyloidosis with heart involvement. Despite increased clinical suspicion and diagnostic advances, it remains underrecognized, particularly in older adults. Delayed diagnosis limits appropriate management, affecting prognosis and survival. Beyond age itself, frailty has increasingly been recognized as a relevant factor influencing clinical decision-making and outcomes.

Purpose: This retrospective cohort study aims to describe the clinical features and management of patients with wild-type (wt) or variant (v) ATTR-CM presenting with New York Heart Association (NYHA) class I or II, with a specific focus on age and frailty, over the 24 months preceding patient enrolment.

Methods: Eligible patients (≥18 years, ATTR-CM NYHA class I or II) attending routine visits at tertiary centres in Italy were consecutively enrolled upon providing informed consent (T0). Medical records were retrospectively reviewed at T0, and at 12 (T-12) and 24 (T-24) months prior. Extracted data included sociodemographic and clinical characteristics, such as ATTR-CM type, NYHA class, time from symptom onset to diagnosis, initial presenting symptoms, systems involved, and results of bone scintigraphy. Laboratory parameters included troponin I, N-terminal pro–B-type natriuretic peptide, and estimated glomerular filtration rate. Cardiac assessments comprised electrocardiography and echocardiography. Additional evaluations included functional capacity, health status, and frailty, assessed using the 6-minute walk test, the Kansas City Cardiomyopathy Questionnaire, and the Clinical Frailty Scale, respectively. Data on concomitant medications and healthcare utilization were also collected.

Results: Nine Italian tertiary centres participating in the study between October 2024 and April 2025 enrolled a total of 268 patients. This preliminary analysis includes data from the first 100 consecutive patients at T0, with available data for 97 at T-12 and 67 at T-24. At T0, the median age was 80.0 years (IQR 74.8-84.0), 92% were male, and 95% had ATTRwt-CM. Among those with ATTRv, the I68L genetic variant was identified in 60% of cases. Disease-modifying therapies and beta-blockers were more frequently used in patients aged <80 years (75% and 31%, respectively) compared to those aged ≥80 years (54% and 15%, respectively). The use of diuretics and direct factor Xa inhibitors was similar, though slightly more common in the younger (44% and 33%, respectively, in patients <80 years; 41% and 31%, respectively, in those ≥80 years). Data on frailty were limited, with assessments conducted in 4 centres, involving a total of 16 patients.

Conclusions: Preliminary findings suggest that, upon completion of the full analysis, this study will offer novel perspectives on the clinical management of early-stage ATTR-CM in Italian tertiary centres. The focus on age and frailty is expected to provide valuable, actionable insights to optimize patient care.

CardioSic

86° CONGRESSO NAZIONALE SIC
Roma, 4-7 dicembre 2025

MISCELLANEA

CardioSic

MISCELLANEA 541
CARDIOTOSSICITA' DA FARMACI
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)
DIAGNOSI, PREVENZIONE E TRATTAMENTO DELLA CARDIOTOSSICITA'
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')
INFIAMMAZIONE E IMMUNITÀ (ATEROTROMBOSI)

BEYOND ISCHEMIA: A CHALLENGING CASE OF PERSISTENT TROPONIN ELEVATION IN A RHEUMATOLOGIC PATIENT

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(a) IRCCS MULTIMEDICA SESTO SAN GIOVANNI; (b) UNIVERSITÀ DEGLI STUDI MILANO STATALE

Background: High-sensitivity cardiac troponins are the most specific biomarkers of myocardial injury. While transient rises are usually linked to acute events, persistent elevation in clinically stable patients without structural abnormalities or inducible ischemia remains an uncommon and poorly characterized finding, raising important diagnostic and prognostic questions.

Case presentation: We report the case of a 74-year-old woman with arterial hypertension and rheumatoid arthritis (RA) on hydroxychloroquine therapy, whose routine evaluations revealed persistently elevated cardiac troponin I levels (peaking at 1240 ng/L; ULN < 14 ng/L) since July 2024. Laboratory tests, including kidney, liver, and thyroid function, were normal, and immunofixation was negative. The only reported symptom was mild exertional dyspnea (NYHA II). ECG and Chest-X Ray were within normal limits. Coronary CT angiography revealed non-obstructive atherosclerosis, and invasive coronary angiography with iFR confirmed a functionally non-significant LAD stenosis (0.99). Echocardiography was normal. A first cardiac MRI, performed at another center without T1/T2 mapping, showed normal chamber volumes, wall thickness, and preserved ventricular function with no signs of active inflammation or fibrosis. Troponin levels were reassessed using alternative cTn assays, confirming consistent elevation. Heterophile antibody testing ruled out assay interference, while macrotroponin evaluation is still ongoing.

Discussion: The evaluation of persistently elevated troponin without overt pathology requires a systematic approach. Systemic conditions such as chronic kidney disease, hypertensive heart disease, pulmonary hypertension, and chronic inflammatory states should also be considered.
Cardiac causes beyond obstructive CAD include HFpEF, infiltrative cardiomyopathies such as amyloidosis and sarcoidosis, and immune-mediated inflammatory diseases. Notably, rheumatoid arthritis has been associated with elevated hs-cTn levels even in the absence of clinically apparent cardiovascular disease, suggesting chronic low-grade myocardial injury. Furthermore, hydroxychloroquine-induced cardiotoxicity has been identified as a potential contributor to sustained troponin elevation in this context. Additionally, the presence of macrotroponins—complexes of troponin bound to immunoglobulins—and heterophile antibodies can interfere with immunoassays, leading to falsely elevated cardiac troponin levels.

Conclusion: The overlap of systemic inflammation, chronic hydroxychloroquine use, and potential assay interference underscores the diagnostic complexity in evaluating rheumatologic patients with cardiovascular risk factors but no significant CAD or structural heart disease. Beyond the macrotroponin evaluation, the patient is awaiting a repeat cardiac MRI with T1/T2 mapping, crucial to assess potential hydroxychloroquine cardiotoxicity or RA-related myocardial injury. If macrotroponin testing is negative and mapping abnormalities emerge, hydroxychloroquine-induced cardiotoxicity should be considered, and confirmation through myocardial biopsy may be warranted, potentially leading to drug discontinuation.

CardioSic

MISCELLANEA 100
SINCOPE (ARITMIE)
MECCANISMI DELLE ARITMIE (ARITMIE)
CARDIOLOGIA PEDIATRICA
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)

DIAGNOSTIC YIELD OF NITROGLYCERIN-POTENTIATED HEAD-UP TILT TEST IN A PEDIATRIC POPULATION WITH SUSPECTED REFLEX SYNCOPE

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Background: Syncope is a prevalent issue in pediatric patients. The nitroglycerin (NTG)-potentiated head-up tilt test (HUTT) is widely used in adults for diagnosing reflex syncope; however, few and contrasting data are available in pediatric populations. The aim of our study was to evaluate the positivity rate and types of responses to NTG-potentiated HUTT in pediatric patients with suspected reflex syncope.

Methods: We conducted a retrospective multicenter analysis of 307 pediatric patients (mean age: 14.4 ± 2.8 years; 57.6% female) who underwent HUTT at two syncope units in Naples, Italy. A group of 16 healthy pediatric subjects (13 ± 3.2 years; 37.5% female) with no history of syncope was used as a control. We described the HUTT overall positivity rate and responses; moreover, the positivity rate, sensitivity, and specificity were evaluated. A multivariate analysis was performed to test the association of positive response to HUTT with a set of clinical covariates.

Results: The overall HUTT positivity rate was 74.9%, ranging from 51.5% to 81.6% among pediatric patients with non-classical and classical presentation, respectively. The HUTT positivity rate among healthy control group was 18.7%; consequently the HUTT specificity was 81.3%. Younger age (OR: 0.84; $p = 0.005$) and female sex (OR: 2.3; $p = 0.005$) were independent predictors of HUTT positivity; in contrast, the non-classical presentation of syncope (OR: 0.23; $p < 0.001$) and situational syncope (OR: 0.2; $p = 0.006$) correlated negatively with HUTT positivity.

Conclusions: NTG-potentiated HUTT showed a high positivity rate, good sensitivity, and specificity in pediatric patients with suspected reflex syncope. Some patients and syncope-related features independently correlated with HUTT positivity. Cardioinhibitory response was more prevalent in pediatric patients with a non-classical presentation of reflex syncope.

MISCELLANEA 101
SINCOPE (ARITMIE)
MECCANISMI DELLE ARITMIE (ARITMIE)
APPS IN CARDIOLOGIA (TELECARDIOLOGIA ED E-HEALTH)

BAROREFLEX SENSITIVITY PREDICTS THE HEAD-UP TILT TEST INDUCED ASYSTOLE AMONG PATIENTS WITH SOSPECTED VASOVAGAL SYNCOPE

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The impairment of baroreflex sensitivity (BRS) has been hypothized in patients with vasovagal syncope (VVS). The aim of our study was to assess the baroreflex sensitivity in patients with suspected vasovagal syncope who underwent head up tilt test (HUTT) and its role in predicting the HUTT response. Baroreflex sensitivity (BRS) was calculated using the sequence method in 224 consecutive patients (mean age 40.2 ± 22.6 years, 47.3% males) with suspected VVS who underwent NTG potentiated HUTT and 20 consecutive controls (mean age 37.5 ± 22.6 years, 66% males) with no history of syncope. BRS values at rest and during HUTT were compared across the subgroups of study population. A ROC curve analysis was performed to a BRS cutoff value for HUTT positivity and HUTT induced asystole. Multivariable analysis was performed to independent association of BRS cutoff values with HUTT results. At baseline, VVS patients showed higher BRS values compared to controls (7 ± 3.5 vs 4.4 ± 1.9 ms/mmHg; p= 0.0013). BRS values were higher (8.1 ± 3.7 vs 4.8 ± 2.1 ms/mmHg; p: 0.0001) among 145 patients with HUTT positivity (64.73%) compared with those with negative result. A BRS value > 6.95 ms/mmHg served as independent predictor of HUTT positivity; a BRS value > 8.2 ms/mmHg showed a sensitivity of 66.7% and specificity of 82.1% in predicting HUTT induced asystole. In conclusion VVS patients showed an enhanced baroreflex sensitivity compared to those with no history of syncope. Among VVS patients, BRS served as independent predictor of positive HUTT response and asystole.

MISCELLANEA 102
ELETTROSTIMOLAZIONE (ARITMIE)
MECCANISMI DELLE ARITMIE (ARITMIE)
SINCOPE (ARITMIE)
GESTIONE DELLA COMPLICANZE PM / ICD (ARITMIE)

SYNCOPAL RECURRENCE IN PATIENTS TREATED WITH DUAL CHAMBER PACEMAKER FOR REFLEX SYNCOPE WITH ASYSTOLE

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Background and Aims: Permanent cardiac pacing is recommended for highly symptomatic vasovagal syncope (VVS) patients older than 40 years who present with asystole to mitigate the recurrence of syncopal episodes. However, a subset of these patients continues to experience recurrent syncope despite pacemaker (PM) implantation. This study aimed to assess the incidence and clinical predictors of recurrent syncope.

Methods: We reviewed the records of 167 patients (mean age 61.8 years; 59.9% male) with reflex syncope and asystole, diagnosed via head-up tilt test (HUTT) (n: 136) or implantable loop recorder (ILR) (n: 31), who received dual chamber PM at five Italian centers. Follow-up included data on syncopal recurrences, medication, and clinical management.

Results: During a median follow-up period of 4.8 years (interquartile range [IQR] 3–6.4 years), 37 patients (22.1%) experienced syncope recurrence, with a 5-year estimated recurrence rate of 15% (95% confidence interval [CI], 7%–24%). At Cox multivariable analysis, the use of three or more hypotensive medications (odds ratio [OR]: 2.4 [1.2–5.3], p=0.01) and the use of diuretics (OR: 2.3 [1.2–4.5], p=0.01) were independently associated with an increased risk of syncope recurrence; conversely, the CLS mode was independently associated with a reduced risk (OR: 0.36 [0.19–0.7], p=0.03). The recurrence rate was not affected by the diagnostic method used for detection of asystole.

Conclusion: In patients with dual-chamber PM for asystolic reflex syncope, three or more hypotensive therapies, in particular diuretics, raised recurrence risk, whereas CLS mode lowered it.

MISCELLANEA 361
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
DISLIPIDEMIE (DIABETE E MALATTIE DEL METABOLISMO)
INFIAMMAZIONE E IMMUNITÀ (ATEROTROMBOSI)
NUTRACEUTICI (FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)

VITAMIN D MODULATION OF STATIN-INDUCED MUSCLE DAMAGE: CLINICAL EVIDENCE

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Background: Statins significantly reduce cardiovascular risk, yet Statin-Associated Muscle Symptoms (SAMS) affect up to 20% of patients, limiting tolerability and compromising long-term adherence to therapy. Emerging evidence suggests that vitamin D deficiency may exacerbate muscle symptoms through inflammatory and immunomodulatory pathways. Correcting this deficiency represents a potential therapeutic strategy to optimize statin tolerance and cardiovascular protection.

Objective: This study investigates whether vitamin D3 supplementation in patients with documented deficiency (serum 25(OH)D <25 ng/mL) alleviates statin-associated muscle symptoms. Secondary endpoints included changes in lipid profile, inflammatory markers, muscle damage biomarkers, and health-related quality of life.

Methods: This prospective, single-center interventional study was conducted at Fondazione Policlinico Universitario Campus Bio-Medico in Roma between March 2024 and May 2025. Thirty patients on stable statin therapy with serum vitamin D levels <25 ng/mL were enrolled. Exclusion criteria included recent vitamin D supplementation, severe kidney/liver disease, and concurrent myopathy. The supplementation protocol consisted of an initial high-dose booster, followed by maintenance dosing of 1,000 IU/day for a minimum of three months. Three validated instruments were administered at baseline and follow-up: the SAMS-CI questionnaire (statin-symptom association), the SF-36 questionnaire (quality of life), and the Numerical Rating Scale (NRS) for pain intensity. Laboratory assessments included lipid profile, CPK, and inflammatory markers.

Results: Vitamin D levels increased significantly at follow-up compared to baseline ($p<0.001$). Patients experienced marked reductions in both SAMS-CI scores ($p<0.001$) and NRS pain scores ($p<0.001$), reflecting improved statin tolerability. SF-36 scores rose across all domains ($p<0.0001$), consistent with enhanced quality of life. Improved adherence enabled optimization of lipid-lowering therapy, resulting in significant reductions in LDL cholesterol and total cholesterol ($p<0.001$), as well as serum CPK levels ($p=0.01$). These benefits were more pronounced in "good responders" (individuals with a >25% increase in serum vitamin D levels), who tended to be younger and had lower baseline vitamin D levels.

Conclusions: Vitamin D3 supplementation in patients with vitamin D deficiency represents a simple, cost-effective intervention that significantly reduces SAMS, improves statin adherence, and enhances lipid control. These benefits are particularly pronounced in younger

patients with severe deficiency. Our findings support the routine assessment and correction of vitamin D as an integral component of personalized cardiovascular risk management strategies. Further randomized controlled trials are warranted to confirm these promising results and establish optimal supplementation protocols.

MISCELLANEA 961
INFIAMMAZIONE E IMMUNITÀ (ATEROTROMBOSI)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
DIAGNOSI, PREVENZIONE E TRATTAMENTO DELLA CARDIOTOSSICITA' (CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')

CORRELAZIONE TRA PATOLOGIE ASBESTO CORRELATE E MALATTIE CARDIOVASCOLARI: ANALISI RETROSPETTIVA SU UNA COORTE DI EX ESPOSTI ALL'AMIANTO

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Background: L'esposizione professionale all'amianto rappresenta un importante problema di salute pubblica, poiché è correlata allo sviluppo di patologie pleuro-polmonari, come placche pleuriche, asbestosi, tumori polmonari e mesotelioma. Negli ultimi anni, maggiore attenzione viene rivolta anche alle possibili correlazioni tra l'esposizione ad amianto e le patologie cardiovascolari; in particolare al possibile ruolo dello stress ossidativo indotto dalla prolungata inalazione delle fibre di amianto dimostrabile con la presenza di placche pleuriche.

Obiettivo: Lo studio intende approfondire la distribuzione delle patologie asbesto-correlate ed indagare le possibili associazioni con le malattie cardiovascolari.

Materiale e metodi: Studio osservazionale retrospettivo di tipo descrittivo. Sono stati inclusi nello studio 108 pazienti ex esposti ad amianto seguiti, nell'ambito della Sorveglianza Sanitaria, presso la UOC Medicina Preventiva e Sorveglianza Sanitaria della Azienda Ospedaliera Universitaria Senese (AOUS) tra aprile 2017 e dicembre 2024. Per ciascun paziente sono stati raccolti dati anagrafici, anamnesi lavorativa, abitudine tabagica e risultati clinici, funzionali e radiologici. Sono state analizzate le prove di funzionalità respiratoria con valutazione della DLCO, le diagnosi di patologie asbesto-correlate e altre comorbidità respiratorie. La valutazione cardiologica ha incluso parametri di funzione ventricolare sinistra e destra (TAPSE, s', diametro telediastolico e telesistolico, frazione di eiezione, E/E'), pressione arteriosa polmonare e presenza di valvulopatie. La popolazione è stata suddivisa in tre sottogruppi: soggetti negativi per patologia polmonare asbesto correlata (26 pazienti), soggetti con solo placche pleuriche (42 pazienti) e soggetti con asbestosi associata a placche pleuriche (40 pazienti).

Risultati: La valutazione cardiologica ha mostrato due risultati: (1) una tendenza a una maggiore prevalenza di ipertensione e dislipidemia nel gruppo con sole placche e di cardiopatia ischemica nei pazienti con asbestosi e placche; (2) una correlazione significativa tra la capacità polmonare totale (TLC%) e la funzione sistolica ventricolare destra, valutata tramite TAPSE (r=0,25; p=0,02) e onda s' (r=0,31; p=0,014).

Conclusioni: I risultati mostrano che la funzionalità cardiaca è influenzata sia dal quadro respiratorio che dal quadro infiammatorio-ossidativo. In particolare, la più elevata incidenza di cardiopatia ischemica osservata negli individui con pregressa esposizione ad amianto supporta l'ipotesi che i meccanismi patogenetici implicati nella genesi dell'aterosclerosi coronarica siano strettamente associati a un persistente stato infiammatorio sostenuto dalla produzione cronica di specie reattive dell'ossigeno (ROS) conseguente all'inalazione e alla ritenzione di fibre di asbesto a livello polmonare e sistemico.

MISCELLANEA 74
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
BIOMARCATORI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
BIOLOGIA MOLECOLARE CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)

CARDIOVASCULAR STRUCTURAL AND FUNCTIONAL PARAMETERS IN IDIOPATHIC PULMONARY FIBROSIS AT DISEASE DIAGNOSIS

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Introduction: The prevalence of cardiac and vascular fibrosis in patients with Idiopathic Pulmonary Fibrosis (IPF) has not been extensively evaluated.

Aim: In this study, we aimed to evaluate the heart and vessels' functional and structural properties in patients with IPF compared to healthy controls. An exploratory analysis regarding disease severity in IPF patients has been done.

Methods: We enrolled 50 patients with IPF (at disease diagnosis before antifibrotic therapy initiation) and 50 controls matched for age and gender. Heart was evaluated through echocardiography and plasmatic NT-pro-brain natriuretic peptide that, together with patients' symptoms, allows to define the presence of Heart Failure (HF) and diastolic dysfunction. Vessels were evaluated through Flow Mediated Dilation (FMD – endothelial function) and Pulse Wave Velocity (PWV – arterial stiffness).

Results: patients with IPF had a prevalence of diastolic dysfunction of 83.8%, HF of 37.8% and vascular fibrosis of 76.6%. No statistically significant difference was observed in comparison to the control group, which showed prevalence of diastolic dysfunction, HF and vascular fibrosis of 67.3%, 24.5% and 84.8%, respectively. Disease severity seems not to affect PWV, FMD, diastolic dysfunction and HF.

Conclusions: Patients with IPF early in the disease course do not present a significant CV fibrotic involvement when compared with age- and sex-matched controls. Bigger and adequately powered studies are needed to confirm our preliminary data, and longitudinal studies are required in order to understand the time of appearance and progression rate of heart and vascular involvement in IPF subjects.

MISCELLANEA 1102
INFIAMMAZIONE E IMMUNITÀ (ATEROTROMBOSI)
INFARTO NSTEMI (CARDIOPATIA ISCHEMICA)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)

SINDROME DA OVERLAP SCLERODERMIA-MIOSITE

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(a) MATERA

INTRODUZIONE La sclerodermia o sclerosi sistemica è una rara patologia autoimmune caratterizzata da fibrosi della cute e di organi interni (cuore, polmoni, tratto gastrointestinale). Le miopatie infiammatorie idiopatiche (IIMs) rappresentano un gruppo eterogeneo di connettivopatie. Sebbene la sclerosi sistemica possa interessare anche il tessuto muscolare causando miopatia o miosite, è molto importante diagnosticare l'overlap tra la sclerodermia e le IIMs poiché tale sovrapposizione rappresenta una diversa patologia a sé stante con prognosi peggiore1. Riportiamo il caso clinico di una paziente affetta da sindrome da overlap sclerodermia-miosite con coinvolgimento multiorgano.

CASO CLINICO Ad aprile 2025, la paziente di 72 anni con anamnesi positiva per cardiopatia ipertensiva, BBSx, fibrosi polmonare, artrite reumatoide e IRC accedeva presso il PS della nostra A.O. per sincope traumatica. In seguito al rialzo dei markers di miocardiocitonecrosi con andamento a curva veniva posta diagnosi di SCA NSTEMI. La paziente veniva, pertanto, sottoposta ad angioplastica con impianto di DES su IVA. L'ecocardiogramma mostrava ipertrofia parietale concentrica del ventricolo sinistro (SIVd 14 mm), acinesia del SIV e dell'apice in toto con moderata riduzione della funzione contrattile globale (FE 38%) e disfunzione diastolica di II grado. Per valori elevati di CPK veniva sospesa la terapia con statina. Veniva, così, dimessa asintomatica in discrete condizioni cliniche. A maggio 2025, in seguito a dolori muscolari localizzati agli arti inferiori praticava esami di laboratorio con riscontro di elevati livelli di TnT (5114 ng/dL) e CPK (333 U/L) per cui veniva nuovamente ricoverata e sottoposta a esame coronarografico con evidenza di pervietà dello stent su IVA. Per il sospetto di connettivopatia venivano ricercati autoanticorpi con riscontro di positività per ANA ad alto titolo, anti PM/Scl 100 e anti-SSA (Ro). L'elettromiografia mostrava sofferenza miopatica in quadro di polineuropatia sensitivo-motoria mista ai 4 arti. Alla capillaroscopia delle pieghe ungueali venivano evidenziati capillari dilatati con aree di retrazione. Veniva, pertanto, posta diagnosi di sclerodermia-miosite con interessamento della muscolatura prossimale, rash cutaneo e fenomeno di Raynaud. Tuttavia la degenza si complicava con arresto cardiocircolatorio trattato mediante RCP, DC-shock e IOT con ripristino di circolo spontaneo. Trasferita in Rianimazione, la paziente manifestava un quadro di sepsi, di IRA, ipertensione arteriosa maligna ed anemia emolitica autoimmune con diagnosi di crisi renale sclerodermica,per cui veniva avviata antibioticoterapia, ACEi (ramipril 10 mg/die), CVVHDF, immunoglobuline per via e.v. e aferesi evitando così l'utilizzo di CCS ad alte dosi e terapia immunosoppressiva con notevole miglioramento delle condizioni cliniche. La paziente veniva così dimessa dopo 3 mesi di ricovero in discrete condizioni cliniche generali in terapia con acido micofenolico senza indicazione a praticare emodialisi per ripresa spontanea della diuresi e notevole miglioramento degli indici di funzionalità renale.

CONCLUSIONI Tale caso clinico di notevole complessità sottolinea l'importanza di un approccio multidisciplinare integrato per la gestione di tali pazienti con malattie a patogenesi autoimmune.

CardioSic

MISCELLANEA 719
ECO-CONTRASTO (IMAGING CARDIOVASCOLARE)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE) (IMAGING CARDIOVASCOLARE)
CARDIOPATIE CONGENITE NELL´ADULTO (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
PATOLOGIA DELL´AORTA (MALATTIE DEI VASI)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)

A CASE OF POSTURE-DIPENDENT HYPOXEMIA

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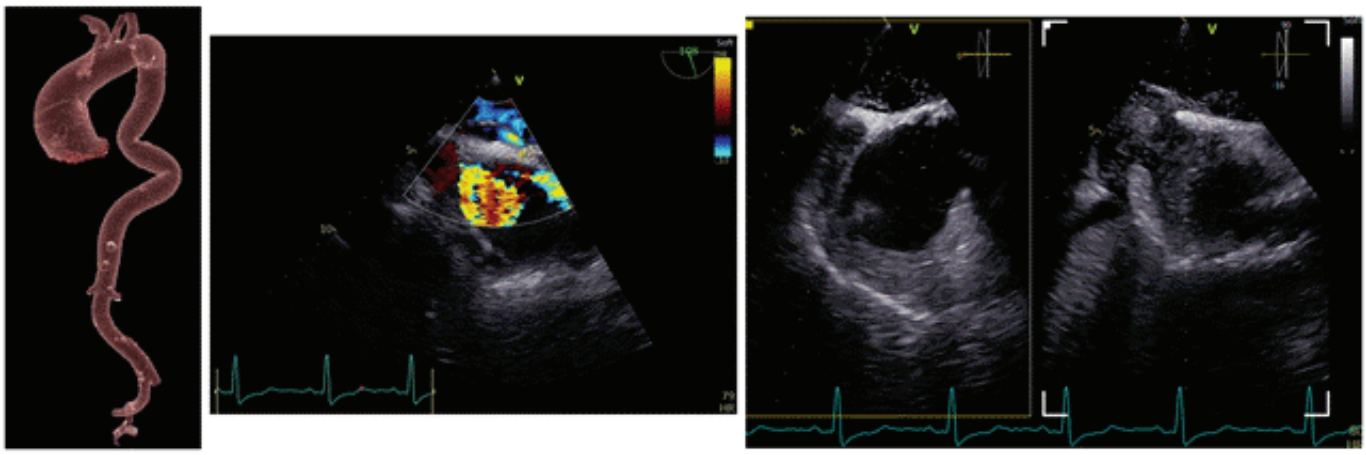
Background: Platypnea-orthodeoxia syndrome (POS) is a rare condition characterized by dyspnoea and arterial desaturation that worsen in the upright position, caused by posture-dependent right-to-left shunting. Its pathophysiology requires the coexistence of an anatomical intracardiac or intrapulmonary shunt and a functional substrate, which unmask the shunt when standing. Imaging plays a pivotal role for diagnosis revealing the underlying mechanism, mostly contrast transthoracic echocardiography (TTE) and transoesophageal echocardiography (TEE), but also other techniques like computed tomography (CT) are essential.

Case Report: A 74-year-old woman, without cardiovascular risk factors, was admitted for acute ischemic stroke due to multiple lesions in the left frontal lobe. She also experienced positional hypoxemia and dyspnoea. CT pulmonary angiogram excluded pulmonary embolism but revealed an ascending aortic aneurysm (55 x 52 mm), confirmed by thoraco-abdominal CT angiography. To further investigate the cause of positional hypoxemia, transcranial color-Doppler ultrasound and contrast-enhanced TTE with agitated saline solution were executed, both showing a severe right to left shunt in basal conditions. TEE provided a detailed diagnostic assessment, confirming the presence of a shunt across the interatrial septum and demonstrating the presence of both a stretched patent foramen ovale (PFO) and a prominent residual Eustachian valve. The combination of posture-dependent hypoxemia, PFO and ascending aortic aneurysm responsible for the PFO stretching, led to the diagnosis of POS. The patient underwent a successful ascending aortic surgery and concomitant surgical closure of PFO.

Discussion: In this case the coexistence of a stretched PFO and an ascending aortic aneurysm provided the anatomical and functional substrates necessary for both POS and ischemic stroke. In the setting of POS, PFO may present a "stretched" form, which transforms what usually may be a silent alteration into a more persistent channel between the atria, with a continuous or intermittent flow that may be detected with color-Doppler. Moreover, the presence of embryogenic atrial residuals (eg. Eustachian valve) provides a further factor favouring flow through the shunt. POF deformation may be determined by conditions such as an ascending aortic aneurysm, which stretches the interatrial septum redirecting blood flow through the PFO by narrowing the angle between atrial septum and inferior vena cava. POS represents a diagnostic challenge, and its diagnosis requires the demonstration of a right-to-left

shunt. Contrast-enhanced TTE with agitated saline solution represents first-line investigation. TEE provides greater sensitivity allowing a detailed visualization of the interatrial septum and the identification its anatomical alterations. Moreover, the integration of other imaging techniques, like CT, plays a pivotal role in the diagnostic work-up, as it allows the identification of the underlying substrates, thereby refining both diagnosis and therapeutic planning.

Conclusions: POS should be considered in patients with unexplained posture-dependent hypoxemia. The coexistence of a PFO and an aortic aneurysm, causing interatrial septum atrial distortion, favours the development of this condition. Diagnosis requires confirmation through imaging. TTE contrast echocardiography and TEE remains the cornerstone for detecting interatrial communications, while integration with other imaging modalities is crucial to define underlying mechanisms, and treatment planning.



Figures

CardioSic

MISCELLANEA 490
ENDOCARDITI (VALVULOPATIE)
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE (IMAGING CARDIOVASCOLARE)

SEVERE BACTERIAL ENDOCARDITIS COMPLICATED BY SUBARACHNOID HEMORRHAGE IN A YOUNG ADULT WITH MITRAL VALVE PROLAPSE

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Infective endocarditis (IE) is a rare but severe cardiac condition associated with significant morbidity and mortality. Its highly variable clinical presentation often delays diagnosis, with more than one month elapsing between symptom onset and diagnosis in approximately 25% of cases.

Case report: A 24-year-old male presented with chest pain, arthralgia, and persistent fever lasting approximately 40 days, unresponsive to broad-spectrum antibiotics and anti-inflammatory therapy. His medical history was significant for congenital mitral valve prolapse.
Initial laboratory evaluation revealed mild troponin elevation and increased inflammatory markers. ECG was unremarkable. Transthoracic echocardiography demonstrated a small, hemodynamically insignificant pericardial effusion and confirmed mitral valve prolapse with moderate regurgitation. The patient was admitted to the Rheumatology Unit with a presumptive diagnosis of pericarditis and started on ibuprofen and colchicine. During hospitalization, he experienced recurrent chest pain with further troponin elevation (371 pg/mL). Repeat echocardiography revealed a mobile mass on the anterior mitral leaflet (AML). The patient was transferred to the Cardiology Unit and started on empirical antibiotic therapy. Blood cultures grew Streptococcus sanguinis. Follow-up echocardiography showed a large (16×14×29 mm) hyperechoic mass attached to the atrial surface of the AML, causing severe mitral regurgitation due to impaired leaflet coaptation. A diagnosis of IE was confirmed according to the Duke criteria.
Cardiac surgery consultation recommended urgent intervention. Following the onset of right upper limb paresthesia, neuroimaging (CT, CT-angiography, and brain MRI) revealed a fronto-parietal subarachnoid hemorrhage associated with septic emboli. Close clinical and imaging follow-up documented regression of neurological symptoms, although distal middle cerebral artery septic emboli persisted.
Given the severity of the clinical course and the high risk of cardioembolic events, the patient underwent mitral valve replacement with a 33-mm St. Jude mechanical prosthesis. Postoperative recovery was uneventful.

Discussion: This case highlights the ongoing diagnostic challenges of IE, particularly in young adults with congenital valvular abnormalities. Intracranial hemorrhage secondary to septic embolization is a rare but severe complication, occurring in 2–6% of cases. Early recognition, prompt targeted antibiotic therapy, and timely surgical intervention are critical for improving outcomes and reducing mortality in this patient population.

MISCELLANEA 618
SCINTIGRAFIA MIOCARDICA (IMAGING CARDIOVASCOLARE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
PROGNOSI (SCOMPENSO CARDIACO)

L'IMPORTANZA DELL'APPROCCIO MULTIDISCIPLINARE NELLA VALUTAZIONE DI UN PAZIENTE AFFETTO DA AMILOIDOSI CARDIACA DA TRANSTIRETINA (ATTR)

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INTRODUZIONE: L'amiloidosi cardiaca da transtiretina (ATTR-CA) è una patologia progressiva e spesso sottodiagnosticata, caratterizzata da prognosi sfavorevole e complessità clinica. La gestione richiede un approccio multidisciplinare che integri più specialisti, al fine di garantire diagnosi tempestiva, trattamento personalizzato e ottimizzazione della qualità di vita [1–5].

PRESENTAZIONE DEL CASO CLINICO: Uomo di 84 anni, da oltre 20 anni presentava parestesie periferiche, diagnosi di neuropatia sensitiva assonale lieve non responsiva a trattamenti (2022). La storia cardiologica era significativa per cardiopatia ischemica con posizionamento di stent, pacemaker ventricolare e fibrillazione atriale trattata più volte con ablazione e chiusura di auricola. Nel 2022 effettuata scintigrafia con Tecnezio che documentava lieve accumulo in ventricolo sinistro (Perugini score 1), suggestivo per amiloidosi da transtiretina, con test genetico negativo. Non altre indicazioni e ulteriori trattamenti a riguardo. Tre anni dopo giunge alla nostra attenzione per valutazione geriatrica globale. In considerazione dei dati anamnestici, si ripeteva ecocardiogramma, con evidenza di GLS -15% ridotto e apical sparing, Veniva, quindi, dato il forte sospetto diagnostico, ripetuta scintigrafia, compatibile con ATTR cardiaca (Perugini score 2). Si ripeteva test genetico a completamento, in corso (cfr. Fig. 1–2).

DISCUSSIONE: Porre particolare attenzione ai sintomi extracardiaci, può cambiare le sorti del paziente con amiloidosi cardiaca, perché spesso sono presenti come manifestazione iniziale di malattia. Se correttamente interpretati, possono indirizzare verso una diagnosi più tempestiva. È noto, infatti, che il 10–15% dei pazienti anziani con scompenso cardiaco può celare una forma di amiloidosi da transtiretina non diagnosticata [6]. Riconoscere precocemente la patologia è essenziale per avviare un trattamento efficace e migliorare la prognosi.

CONCLUSIONI: Questo caso clinico mette in evidenza il ruolo centrale dell'approccio multidisciplinare nel percorso diagnostico, che consente di integrare anamnesi e sintomi in un quadro complessivo orientato al benessere globale del paziente. In questo contesto, la capacità di mantenere vivo il sospetto clinico, anche di fronte a indagini precedenti non dirimenti, ha permesso di giungere alla diagnosi definitiva. Nei casi con elevato sospetto e probabile progressione della malattia, appare pertanto indicato ripetere gli accertamenti a distanza di tempo (cfr. Fig. 3)

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Figura 1

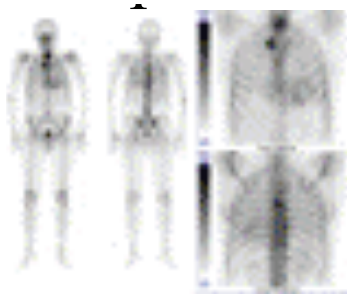


Figura 2

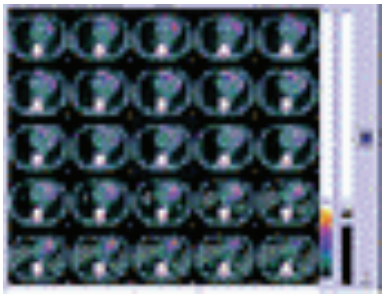


Figura 3

MISCELLANEA 625
MINOCA (MYOCARDIAL INFARCTION WITH NORMAL CORONARY ARTERIES) (CARDIOPATIA ISCHEMICA)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
TUMORI CARDIACI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

AORTIC VALVE FIBROELASTOMA PRESENTING WITH MYOCARDIAL INFARCTION WITH NON-OBSTRUCTIVE CORONARY ARTERIES (MINOCA)

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We describe the case of a 35-year-old woman who presented with recurrent, self-limiting chest pain at rest, associated with elevated high-sensitivity cardiac troponin I levels. Electrocardiography showed sinus rhythm with incomplete right bundle branch block and isolated ventricular ectopy, while initial laboratory tests were otherwise unremarkable. Coronary angiography revealed non-obstructive coronary artery disease, fulfilling the diagnostic criteria for myocardial infarction with non-obstructive coronary arteries (MINOCA).
A comprehensive imaging work-up was pursued. Transthoracic and transesophageal echocardiography identified a mobile, pedunculated 10×8×8 mm mass attached to the right coronary cusp of the aortic valve. Serial troponin measurements demonstrated an oscillating trend, consistent with transient obstruction of the right coronary ostium. Cardiac magnetic resonance imaging confirmed preserved biventricular function and excluded myocarditis or other myocardial injury, while characterising the mass as hyperintense on late gadolinium enhancement.
The patient continued to experience anginal episodes despite medical therapy. Following Heart Team discussion, surgical excision of the mass was performed under cardiopulmonary bypass. Histopathological examination demonstrated papillary fronds composed of fibroelastic tissue with an endothelial covering, confirming the diagnosis of cardiac papillary fibroelastoma (CPF). Postoperatively, recovery was uneventful; the patient was discharged on single antiplatelet therapy and referred to cardiac rehabilitation. At two-month follow-up, she remained asymptomatic, with echocardiography revealing only mild aortic regurgitation. Six-month assessment confirmed clinical stability, and an annual follow-up was planned.

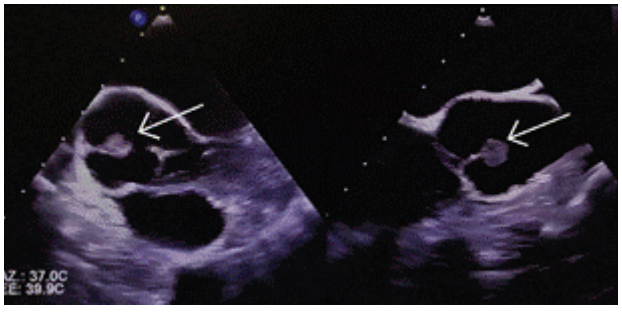


Figure 1

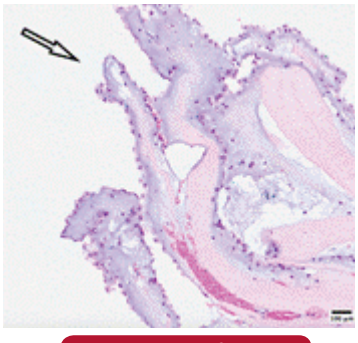


Figure 2

This case illustrates a rare but clinically relevant cause of MINOCA, in which an aortic valve fibroelastoma produced intermittent coronary ostial obstruction and myocardial injury. The report highlights the central role of multimodality imaging in uncovering uncommon etiologies of MINOCA. It also raises broader questions about the underrecognized contribution of valvular tumours to acute coronary syndromes and the need for tailored diagnostic strategies in atypical MINOCA presentations.

MISCELLANEA 766
ATTIVITÀ FISICA E PREVENZIONE CARDIOVASCOLARE (ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT) FISIOPATOLOGIA DELL'IPERTENSIONE ARTERIOSA (IPERTENSIONE ARTERIOSA) TELEMEDICINA IN CARDIOLOGIA (TELECARDIOLOGIA ED E-HEALTH)

RISPOSTA CARDIORESPIRATORIA ALL'ESPOSIZIONE ACUTA ALL'ALTA QUOTA: DATI PRELIMINARI

Vignati Carlo (a, b), Irene Mattavelli (a), Beatrice Pezzuto (a), Elisabetta Salvioni (a), Massimo Mapelli (a), Piergiuseppe Agostoni (a, b)
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Introduzione: L'accessibilità alle alte quote è aumentata negli ultimi decenni grazie allo sviluppo di impianti di risalita, esponendo un numero crescente di persone, incluse quelle con fattori di rischio cardiovascolare, a condizioni ipossico-ipobariche. Una migliore comprensione delle risposte fisiologiche acute è cruciale per la sicurezza dei turisti e dei lavoratori.

Metodi: Sono stati reclutati 1560 partecipanti volontari presso la stazione della funivia dello Skyway Monte Bianco. Tutti hanno compilato un questionario anamnestico e sono stati sottoposti a misurazioni antropometriche e fisiologiche (pressione arteriosa, frequenza cardiaca, saturazione periferica di ossigeno – SpO_2), eseguite mediante due stazioni biometriche automatizzate Keito K9 (a valle Entrèves, 1300 m, in quota Punta Helbronner, 3466 m). Di un sottogruppo di 290 soggetti le misurazioni sono disponibili e complete per l'analisi.

Risultati: L'età media era 35,2±22,5 anni, con il 43% di donne; il 18% presentava patologie cardiovascolari note, principalmente ipertensione. Nel confronto valle-monte (Tabella 1).

Conclusioni: La rapida ascesa a 3466 m determina un aumento significativo della frequenza cardiaca (+4,4 bpm) e della pressione diastolica (+2,7 mmHg), insieme a una rilevante riduzione della saturazione periferica di ossigeno (–12,9%). Queste risposte fisiologiche, osservate in una popolazione eterogenea con un'ampia gamma di condizioni cliniche, sottolineano l'importanza

Parametro	Valle (media ± DS)	Monte (media ± DS)	Δ (Monte – Valle)	p-value
Pressione sistolica (mmHg)	120,96 ± 19,01	122,51 ± 18,38	+1,55	0,103
Pressione diastolica (mmHg)	70,07 ± 8,35	72,76 ± 7,43	+2,69	<0,001
Frequenza cardiaca (bpm)	80,78 ± 15,51	85,19 ± 15,92	+4,41	<0,001
SpO_2 (%)	98,20 ± 1,83	85,35 ± 7,13	–12,85	<0,001

Tabella 1

della valutazione preventiva e del monitoraggio dei soggetti con fattori di rischio cardiovascolare esposti ad alta quota. L'incremento degli arruolamenti consentirà di identificare, attraverso parametri non invasivi rilevati a bassa quota, le variazioni fisiologiche attese in alta quota.

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86° CONGRESSO NAZIONALE SIC
Roma, 4-7 dicembre 2025

PREVENZIONE E RIABILITAZIONE

PREVENZIONE E RIABILITAZIONE 27
ECOSTRESS (IMAGING CARDIOVASCOLARE)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
ECOCARDIOGRAFIA E COVID-19 (COVID-19)

CARDIO PSYCHE-NEUROLOGY. NEUROPSYCHICS DISORDERS AND CARDIOVASCULAR RISK FACTORS: GENDER DIFFERENCES AND PROGNOSTIC PERSPECTIVES. AN OBSERVATIONAL SURVEY EXPERIENCE

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Introductions: Stress effects appears in society with psychosomatic and physiopathological implications and symptoms involving the cardiovascular sphere. The anxiety and depression tracts are recognized as independent cardiovascular risk factors. How much the clinical manifestations accidents in the cardiovascular health and diagnostic therapeutic paths has not been well defined in the clinical reality, although the cardiologist is more often the first person called to answer these clinical necessities.

Purpose: This study is a real life report of the neuropsychological implications and therapeutic cardiac pathways in the clinical relationship.

Methods: Cardiology outpatient analysis in patients (pts) without major cardiovascular events in the history. Analysis and verification of risk factors, cardiovascular diagnosis, anamnestic and clinical presence of anxious depressive tract stress and frank depressive psychosis. ECG assessments, heart rate therapies. Observational period from 2010 to early 2022. 5.800 pts observed.

Results: Were analysed 2.500 pts in primary evaluations (without major cardiovascular event) - male 1000 (40%), female 1500 (60%). Risk factors: hypertension 1.650 (65%) - m. 830 (50%), f. 850 (50%), dyslipidemia: 1.150 (45%) - m. 400 (35%), f. 750 (65%), diabetes 500 (20%), m. 300 (60%) - f. 200 (40%), anxiety syndrome/ depression (ADS) 1.500 (60%) - m. 450 (30%), f. 1.150 (70%), depressive psychosis 200 (8%) - m. 95 (48%), f. 105 (52%), smoking 500 (20%) - m. 215 (43%), f. 285 (57%), sedentary lifestyle 1.350 (54%) - m. 405 (30 %), f. 945 (70%). The Average Heart Rate (AHR) detected is 85 bpm. 75 bpm media for male, 90 media for female. 1.100 (70%) of the pts, with Small Artery Disease (SAD), correlates with the presence of hypertension. 1.300 pts (87%) has symptoms of cardiopalmus / hypertension / tachycardias / tachyarrhythmias (TSV) - female 1050 (80%) versus male 250 (20%). In 200 (15%) associated with supraventricular tachyarrhythmia (T35): 165 female (83%) versus male 35(17%). Theraphies: Antihypertensive in 60% (900 pts) with SAD, m. 650 (70%), f. 250 (30%). Only 200 pts (12%), among which 65 with SAD, taked anxiolytic or antidepressive therapy.

Conclusion: Stress and SAD have clinical and cardiological relevance in cardiovascular health with implications in diagnostic and therapeutic appropriateness, quality of life and in the cardiovascular prognosis. The woman has higher cardioneuropsycological incidence regardless fertile or menopausal period and less cardiovascular therapeutic adherence.

PREVENZIONE E RIABILITAZIONE 29
ATTIVITÀ FISICA E PREVENZIONE CARDIOVASCOLARE (ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
CARDIOLOGIA DELLO SPORT (ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
NUTRACEUTICI (FARMACI CARDIOVASCOLARI E NUTRACEUTICI)

CARDIOMETABOLISM: PROBIOTICS, CARDIOVASCULAR RISK AND OXIDATIVE STRESS. AN OBSERVATIONAL STUDY IN PRACTICAL MEDICINE

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Introductions: There are several, even recent, basic research studies that have demonstrated the microbiota's cause for the predisposition and development of degenerative disorders and risk factors: cardiovascular diseases, obesity, metabolic syndrome and diabetes. Studies, knowledge and communication on probiotics have gone and are increasingly growing, so much so that almost a "trend" of the probiotic has developed. The importance of defining the "probiotic", developing knowledge and clinical research, or evaluating the results in real clinical practice, is essential for the appropriate use for the benefit of the person. The doctor has and must have a central and primary role.

Purpose: The study, conducted in clinical practice, is observational type, and has as its primary outcome that of evaluating the impact of nutraceutical integration with probiotics on risk factors of inflammatory and metabolic markers and as a secondary outcome the functional capacity and perception of psychophysical health.

Methods: Out of 70 patients followed, 50 patients were selected and evaluated for homogeneity and adherence characteristics. Eligibility characteristics was: risk profile, familiarity for cardiovascular diseases, dysendocrine disorders, overweight and obesity, hypertension, diabetes, hypercholesterolemia, hypertriglyceridemia, fatigue syndrome, neurovegetative dystonia. The evaluation of probiotic therapy was carried out in two stages on the basis of the following parameters: psychophysical perception of the state of health, using the SF-36 Questionnaire, functional capacity by means of the physical ability test (Six Minute Walking Test 6MWT or Walking Test) , blood tests: PCR, Vitamins, lipid profile. The nutraceutical scheme consists of taking 2cps of one specific probiotics after breakfast and 2 cps after dinner for a week, then change the probiotics type for another week and another one again for the third week. After this 1 cps of a specifics probiotics for maintenance was prescribed.

Results: and conclusion The observational study in real practice indicated an efficacy of the probiotic nutraceutical treatment on patients with regard to the reduction of the measurable risk profile, improvement of the perception of health including objective level of functional capacity, stabilization of the levels of vitamins (vit B and D).

CardioSic

PREVENZIONE E RIABILITAZIONE 932
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
FARMACI CARDIOVASCOLARI (FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
RIABILITAZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)

CARDIOVASCULAR RISK IN PEOPLE LIVING WITH HIV: GAPS IN RISK PERCEPTION, THERAPEUTIC ADHERENCE, AND TREATMENT TARGETS ACHIEVEMENT - A RETROSPECTIVE OBSERVATIONAL STUDY

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Background: The introduction of combination antiretroviral therapy (cART) transformed HIV from an acute fatal disease to a chronic manageable condition. However, people living with HIV (PLWH) face a rising incidence of non-AIDS-related conditions, particularly cardiovascular disease (CVD). Chronic inflammation, antiretroviral drug toxicity, traditional risk factors, and poor risk perception contribute to this burden. Our study assessed the cardiovascular (CV) risk profile of PLWH and evaluate the achievement of therapeutic targets for blood pressure and LDL cholesterol, in light of current European Society of Cardiology (ESC) and European AIDS Clinical Society (EACS) guidelines.

Methods: We conducted a retrospective, single-center observational study involving 258 PLWH on cART, followed at the Infectious Diseases Clinic of Ss. Annunziata Hospital (Chieti, Italy). Clinical, demographic, and biochemical data were collected. CV risk was estimated using SCORE2/SCORE2-OP and EACS guidelines. Blood pressure and LDL cholesterol levels were compared with recommended targets. Treatment adherence and guideline concordance were also analyzed.

Results: The population had a mean age of 52.6 ± 11.2 years, with 78.7% male. Hypertension was present in 56.9% of subjects; 50.8% were current or former smokers. According to ESC guidelines, 49.2% had high and 24.4% very high CV risk; EACS stratified 21.3% as high and 5.8% very high. Only 12–19% of patients reached LDL targets, and 41.9–46.5% met blood pressure goals. Among hypertensive patients, over 90% failed to reach the blood pressure target, and lipid-lowering therapy was prescribed in less than 30% of those with elevated LDL. In more than 55% of cases, guideline targets were discordant. Poor adherence significantly correlated with failure to reach therapeutic goals ($p<0.01$).

Conclusions: Our findings highlight a suboptimal management of CV risk in PLWH. The majority of patients do not achieve therapeutic targets, and there is poor adherence to antihypertensive and lipid-lowering therapies. Discrepancies between ESC and EACS guidelines further complicate risk stratification. There is a clear need for improved education, adherence strategies, and personalized treatment approaches to reduce CV morbidity in PLWH.

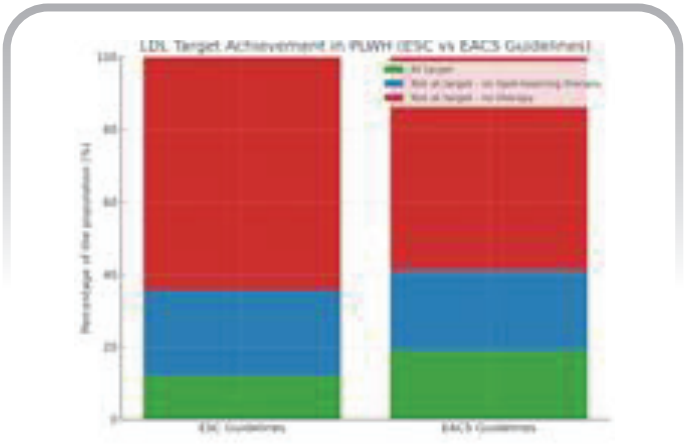


Figure 1

PREVENZIONE E RIABILITAZIONE 31
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
ATTIVITÀ FISICA E PREVENZIONE CARDIOVASCOLARE (ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
DIABETE E MALATTIE CARDIOVASCOLARI (DIABETE E MALATTIE DEL METABOLISMO)

ASSOCIAZIONE TRA METRICHE DI SALUTE CARDIOVASCOLARE E DIFFICOLTÀ NEL CAMMINO AUTORIFERITA IN ADULTI DI MEZZA ETÀ E ANZIANI RESIDENTI IN COMUNITÀ

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Introduzione: La mobilità è una componente essenziale dell'autonomia funzionale e dell'invecchiamento sano. Vi è evidenza che la difficoltà nel cammino auto-riferita possa precedere il declino funzionale oggettivabile e rappresentare un indicatore precoce, particolarmente utile nei contesti in cui non siano disponibili valutazioni dirette. Mantenere una buona salute cardiovascolare può offrire benefici che vanno oltre il solo apparato cardiovascolare, contribuendo al benessere complessivo e al mantenimento dell'autonomia. Questo studio trasversale ha indagato l'associazione tra salute cardiovascolare, misurata attraverso un punteggio a 8 fattori ispirato al modello Life's Essential 8 (8F–CVH), e la difficoltà nel cammino autoriferita in adulti di mezza età (40–64 anni) e anziani (≥65 anni) che vivono in comunità.

Metodi: La salute cardiovascolare è stata valutata tramite un punteggio composito (range 0–100) che include otto componenti: dieta, attività fisica, indice di massa corporea, pressione arteriosa, colesterolo totale, glicemia, fumo e qualità del sonno. Analogamente al modello Life's Essential 8, il punteggio è stato suddiviso in tre categorie: salute cardiovascolare elevata per valori pari o superiori a 80 punti, salute cardiovascolare moderata per valori compresi tra 50 e 79,9 punti, e salute cardiovascolare bassa per valori inferiori a 50 punti. La difficoltà nel cammino è stata rilevata attraverso la domanda: "Ha difficoltà a camminare per 400 metri?", con risposta dicotomica (sì/no).

Risultati: Su un totale di 7372 partecipanti (età media 60,2 ± 11,3 anni; 53,3% donne), il 15,8% ha riferito difficoltà nel cammino, con una prevalenza in aumento dal 10,5% negli adulti di mezza età al 26,1% negli anziani (p per trend <0,001). La difficoltà nel cammino è stata riportata dal 31,4% dei soggetti con punteggi 8F–CVH bassi, rispetto al 14,1% con punteggi moderati e al 4,8% con punteggi elevati (p <0,001). L'analisi delle curve ROC ha mostrato una capacità discriminativa modesta per il punteggio totale [area sotto la curva (AUC) 0,68; IC 95% 0,66–0,70], con l'attività fisica che ha ottenuto il valore di AUC più elevato (0,71; IC 95% 0,69–0,72). Nei modelli di regressione logistica, aggiustati per età, sesso, ridotta massa muscolare e dinapenia, i punteggi CVH moderati e alti sono risultati associati a una riduzione del 60% (odds ratio [OR] 0,40; IC 95% 0,33–0,47) e dell'84% (OR 0,16; IC 95% 0,11–0,22), rispettivamente, della probabilità di riportare difficoltà nel cammino.

Conclusioni: Una salute cardiovascolare ottimale si associa in modo indipendente a una minore probabilità di difficoltà nel cammino riferita dai partecipanti. Promuovere la salute cardiovascolare potrebbe rappresentare una strategia efficace per preservare la mobilità e ritardare il declino funzionale.

PREVENZIONE E RIABILITAZIONE 450
BIOLOGIA MOLECOLARE CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
ECOCARDIOGRAFIA 3-D (IMAGING CARDIOVASCOLARE)
BIOLOGIA CELLULARE (GENETICA E BIOLOGIA MOLECOLARE)

THE VALUE OF METABOLIC PROFILING AND ECHOCARDIOGRAPHIC MONITORING IN THE LONG TERM MANAGEMENT OF SYSTEMIC LUPUS ERYTHEMATOSUS

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Introduction. Cardiac involvement represents one of the leading causes of morbidity and mortality in systemic lupus erythematosus (SLE). Echocardiography, a non-invasive and repeatable imaging modality, is fundamental for its assessment; however, evidence regarding its ability to predict long-term clinical progression and cardiovascular risk remains limited.
Objectives. To identify echocardiographic parameters and metabolomic profiles associated with systemic disease progression in SLE.

Materials and Methods. In this prospective, single-center study, 25 patients with SLE and no known cardiac disease were enrolled and assessed at baseline (T0, 2019) and follow-up (T1, 2025). Clinical, laboratory, advanced echocardiographic, and metabolomic data (plasma profiling by mass spectrometry) were collected. Disease progression was evaluated using The SLICC/SDI score, which includes clinical manifestations in the domains of ocular, neuropsychiatric, renal, pulmonary, cardiovascular, peripheral vascular, gastrointestinal, musculoskeletal, cutaneous, gonadal/endocrine, and neoplastic. Clinical and instrumental variables were reported as mean ± SD or median (IQR). Statistical analyses included Student's t-test for normally distributed continuous variables and the Mann–Whitney test for non-normally distributed continuous variables.

Results. The cohort was predominantly female (88%), with a mean age of 51 ± 13 years and a median disease duration of 27 years [10–30]. At baseline, echocardiographic parameters were within normal ranges, whereas at follow-up a slight increase was observed in right ventricular end-diastolic volume (RVEDV: 55 mL [23–60] vs 51 [54–74], +11%), right ventricular end-systolic volume (RVESV: 28 mL [23–32] vs 24 mL [20–26], +18%), right ventricular end-diastolic diameter (RVEDD: 33 mm [31–34] vs 30 mm [29–32], +10%), and systolic pulmonary arterial pressure (sPAP: 23 mmHg [20–27] vs 22 mmHg [20–26], +2%) ($p < 0.05$). Clinical disease progression, defined as an increase in SDI score ≥1, was associated with a reduction in TAPSE (–3.3 ± 4.3 mm) and S' velocity (–2.6 ± 2.9 mm) compared to stable patients, who showed significant changes in TAPSE (+1 ± 2.8 mm) and S' velocity (–0.4 ± 1.7 mm) ($p < 0.05$). Metabolomic analysis revealed a correlation between baseline echocardiographic parameters, metabolites, and disease progression, showing a significant clustering between clinically worsened and stable patients ($R^2Y = 0.772$; $Q^2 = 0.483$). Variable Importance in Projection (VIP) analysis indicated that this clustering was associated with a specific metabolic fingerprint, characterized by higher levels of fructose and glucopyranose in the stable group, and by elevated fumaric acid and glucose in the clinically worsened group.

Conclusions. Baseline metabolomic profiling, combined with prospective echocardiographic

monitoring, may represent a key tool in the follow-up of SLE patients. Serial echocardiography enables early detection of even subtle reductions in right ventricular longitudinal systolic function, which are associated with clinical deterioration. Integration with metabolomic data could allow the identification of patients with a predictive clinico-metabolic profile of disease progression, warranting closer clinical and instrumental surveillance.

PREVENZIONE E RIABILITAZIONE 558
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
TOMOGRAFIA AD EMISSIONE DI POSITRONI (PET) (IMAGING CARDIOVASCOLARE)
BIOMARCATORI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)

SYSTEMATIC SCREENING FOR CARDIAC AMYLOIDOSIS IN THE ELDERLY: PREVALENCE, COLLATERAL FINDINGS, AND COST-EFFECTIVENESS

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Background: Transthyretin amyloid cardiomyopathy (ATTR-CA) is increasingly recognized in older adults, but its prevalence in the general population and the broader clinical and economic implications of systematic screening remain unclear.

Methods: The CATCH study prospectively screened 1,000 unselected individuals aged 65–90 years from Pisa, Italy. All underwent cardiology evaluation, electrocardiogram, echocardiography, and blood tests (hs-troponin T, NT-proBNP, creatinine). Subjects with ≥1 red flag underwent monoclonal protein testing and bone scintigraphy. In addition to identifying ATTR-CA, we analyzed collateral cardiac findings and assessed the cost-effectiveness profile of the program.

Results: Four patients were diagnosed with wild-type ATTR-CA (prevalence: 0.46%). Collateral findings included diastolic dysfunction (3.1%), systolic dysfunction of the left (1.4%) or right ventricle (1.5%), valvular disease (1.2%), aortic dilation (6.6–8.9%), pericardial effusion (1.9%), atrial fibrillation (0.3%), left bundle branch block (0.6%), and two cardiac masses. Previously unknown stage 3–5 chronic kidney disease was detected in 15.6%. Many patients required specialist referral or interventional management, including valve and aortic replacement, device implantation, and anticoagulation. The standardized cost of screening totaled ~€252,000, while tafamidis therapy for four patients over five years added €1,080,000. The incremental cost-effectiveness ratio (ICER) was ~€94,000 per quality-adjusted life year (QALY) when only ATTR-CA treatment was considered. Including additional 10–15 QALYs from incidental findings reduced the ICER to €46,000–55,000/QALY.

Conclusions: Systematic screening in the elderly identified both ATTR-CA and a wide range of clinically significant, previously unrecognized conditions. The cost-effectiveness of such programs is primarily driven by tafamidis pricing. Substantial reductions in drug costs, or broader recognition of QALY gains from incidental findings, are required for adoption within European thresholds.

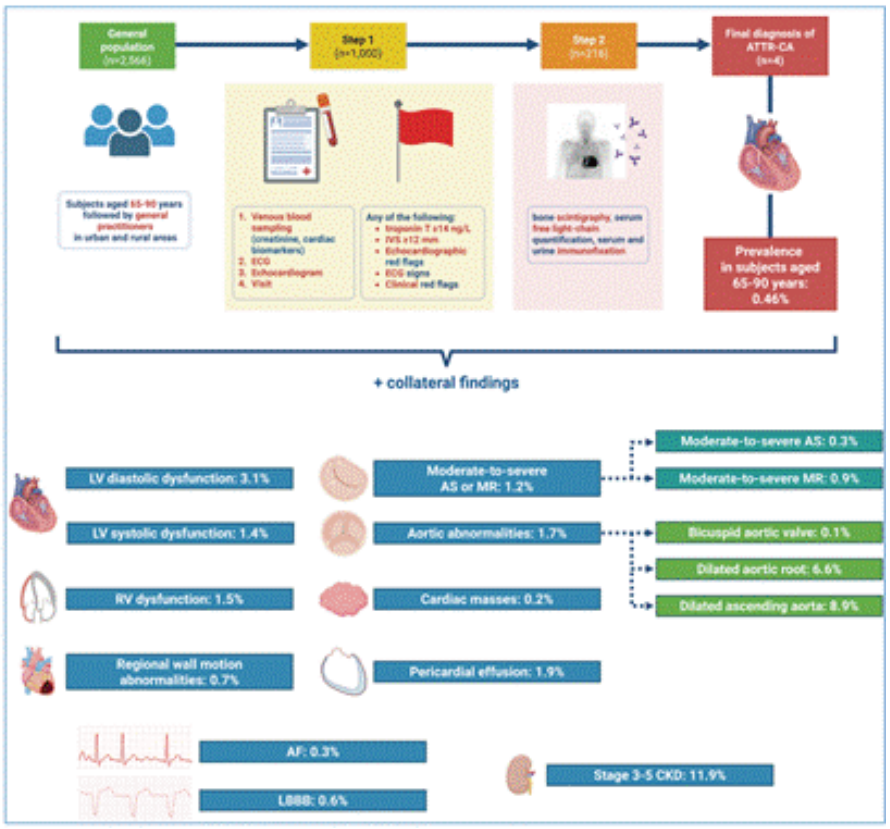

General population (n=2,566)
Step 1 (n=1,000)
Step 2 (n=216)
Final diagnosis of ATTR-CA (n=4)
Subjects aged 65-90 years followed by general practitioners in urban and rural areas
1. Venous blood sampling (creatinine, cardiac biomarkers)
2. ECG
3. Echocardiogram
4. Visit
Any of the following:
• Troponin T ≥14 ng/L
• IVS ≥12 mm
• Echocardiographic red flags
• ECG signs
• Clinical red flags
bone scintigraphy, serum free-light-chain quantification, serum and urine immunofixation
Prevalence in subjects aged 65-90 years: 0.46%
+ collateral findings
LV diastolic dysfunction: 3.1%
LV systolic dysfunction: 1.4%
RV dysfunction: 1.5%
Regional wall motion abnormalities: 0.7%
Moderate-to-severe AS or MR: 1.2%
Aortic abnormalities: 1.7%
Cardiac masses: 0.2%
Pericardial effusion: 1.9%
Moderate-to-severe AS: 0.3%
Moderate-to-severe MR: 0.9%
Bicuspid aortic valve: 0.1%
Dilated aortic root: 6.6%
Dilated ascending aorta: 8.9%
AF: 0.3%
LBBB: 0.6%
Stage 3-5 CKD: 11.9%

Figure 1

CardioSic

PREVENZIONE E RIABILITAZIONE 299
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
DISLIPIDEMIE (DIABETE E MALATTIE DEL METABOLISMO)
TRATTAMENTO POST-INFARTO (CARDIOPATIA ISCHEMICA)

THE VISION PROJECT: A BEHAVIOR CHANGE WHEEL-INFORMED STUDY TO ENHANCE LP(A) TESTING IN SECONDARY CARDIOVASCULAR PREVENTION

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BACKGROUND: Lipoprotein(a) [Lp(a)] is a genetically determined, independent risk factor for major adverse atherosclerotic cardiovascular events. The European Atherosclerosis Society recommends at least one-time measurement of Lp(a) levels in all adults to facilitate risk stratification. Lp(a) test requires a standard venous blood draw and is reimbursed by the Italian National Health Service. Despite the robust evidence supporting its clinical utility, the adoption of Lp(a) testing in routine clinical practice in Italy remains limited.

OBJECTIVES: The VISION project (Validation of Implementation Strategies for INcreasing Testing Rates) aims to identify current barriers and facilitators to Lp(a) testing in secondary cardiovascular prevention in Italy to develop actionable and scalable implementation strategies to foster evidence-based clinical adoption.

MATERIALS AND METHOD: The Behavior Change Wheel (BCW) framework was adopted to guide this study. A narrative literature review was conducted on Pubmed and integrated with desk research, with a specific focus on the Italian healthcare context. Twelve Italian healthcare professionals (i.e., cardiologists, internists, and clinical pharmacologists) were engaged in a Multistakeholder Working Group (MWG). An initial workshop with the MWG generated quantitative and qualitative insights into barriers and facilitators to Lp(a) testing, including a Likert-scale survey based on the Theoretical Domains Framework to assess perceived impact. Barriers were then mapped to the COM-B domains of the BCW: capability, opportunity, and motivation. Following the structured approach of the BCW, a set of activities was developed and scored on a 1–5 scale for affordability, practicability, and scalability. In a second workshop, the MWG scored each activity (1–5) to assess effectiveness and acceptability through a survey. The results were then integrated and visualized in a scatter plot to support prioritization and inform the action plan.

RESULTS: The findings identified multiple critical barriers to the prescription of Lp(a) testing in the setting of secondary cardiovascular prevention. Among the most impactful barriers were limited clinician awareness and understanding of Lp(a) (4.04/5), lack of assay standardization and absence of specific therapeutic interventions (4.04/5), limited

motivation to modify entrenched prescribing behaviors (4.35/5), and challenges in initiating patient-centered discussions regarding Lp(a) (4.25/5). The prioritization process identified key areas of intervention, including structured educational programs and collaborative workshops for healthcare professionals, dissemination of clinical decision support tools, engagement with laboratory services to promote the integration of Lp(a) testing into routine workflows, and patient-focused educational initiatives.

DISCUSSION: The VISION project successfully identified barriers to Lp(a) testing in the context of secondary cardiovascular prevention through a systematic and theory-informed approach guided by the BCW framework. Nevertheless, the study presents some limitations, notably the constrained sample size of participating clinicians and the absence of empirical validation of the proposed strategies in real-world clinical settings. Future research should prioritize piloting these strategies in clinical settings to assess their practical impact, effectiveness, and acceptability in improving Lp(a) testing rates and patient outcomes.

PREVENZIONE E RIABILITAZIONE 150
INFIAMMAZIONE E IMMUNITÀ (ATEROTROMBOSI)
DIABETE E MALATTIE CARDIOVASCOLARI (DIABETE E MALATTIE DEL METABOLISMO)
BIOLOGIA CELLULARE (GENETICA E BIOLOGIA MOLECOLARE)
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)

ENDOTHELIAL NITRIC OXIDE SYNTHASE DEFICIENCY DRIVES CHANGES IN GALECTIN-3-BINDING PROTEIN ISOFORMS AND INFLAMMATORY RESPONSE IN ENDOTHELIAL CELLS UNDER METABOLIC STRESS

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Background: Galectin-3-binding protein (LGALS3BP) is a multifunctional glycoprotein involved in extracellular matrix remodeling, cell adhesion, and modulation of the inflammatory response. Proteomic data from our lab showed LGALS3BP as uniquely expressed protein in the peripheral blood of patients with heart failure and preserved ejection fraction (HFpEF) compared with healthy controls matched for sex, age and BMI, along with up-regulation of the inflammatory signaling pathway (p-value = 1.3267x10-4, z-score = -2.12) and nitric oxide synthase type 2, and a significant downregulation of anti-inflammatory proteins such as IL10-RA and LXR (liver X receptor)/RXR (retinoid). Alterations in endothelial nitric oxide synthase (eNOS) may influence LGALS3BP expression and its post-translational modifications, potentially affecting endothelial function under metabolic stress.
Aims: Given the inflammatory and metabolic nature of HFpEF, we set up an in vitro model of insulin resistance and hyperinsulinemia in murine aortic endothelial cells, wild-type and knock-out for eNOS with the aim of examining the effect of metabolic stress on LGALS3BP expression and whether eNOS deletion impacts its expression.

Methods: Wild-type (WT) and eNOS knockout (KO) murine aortic endothelial cells (MAECs) were treated for 24 h with basal glucose (5.5 mM), high glucose (HG, 30.5 mM), high insulin (HI, 10 nM), and the combination of high glucose and high insulin. Protein lysates were collected and analyzed by Western blot.

Results: In WT cells, full-length LGALS3BP expression increased under HG (1.28-fold relative to basal) and HI (1.20-fold relative to basal), showing the highest increase under combined HG+HI treatment (2.68-fold relative to basal). In KO cells, full-length LGALS3BP showed moderate increase under HG (1.29-fold relative to basal), HI (1.32-fold relative to basal), and HG+HI (1.44-fold relative to basal), whereas its truncated isoform consistently increased twofold under all metabolic stressors. Under these conditions, endothelial activation, assessed by total VCAM-1, was markedly increased in KO cells (1.8-fold with insulin; 3.5-fold with combined treatment), indicating enhanced endothelial activation.

Conclusions/interpretation: Deletion of eNOS shifts the balance from full-length to truncated LGALS3BP isoform and upregulates VCAM-1 expression in endothelial cells under metabolic stress. Further studies are needed to clarify the differential role of LGALS3BP isoforms in endothelial activation and their potential as therapeutic targets for vascular dysfunction.

PREVENZIONE E RIABILITAZIONE 73
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
DISLIPIDEMIE (DIABETE E MALATTIE DEL METABOLISMO)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI
(PREVENZIONE E RIABILITAZIONE)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)

PLEIOTROPIC EFFECTS OF INCLISIRAN ON ARTERIAL STRUCTURAL AND FUNCTIONAL PARAMETERS

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Background and objectives: Inclisiran is the latest PCSK9 inhibitor available for reducing LDL-cholesterol. Its effects on arterial structural and functional properties are not yet known. The purpose of our study is to longitudinally evaluate these properties in patients starting therapy with this new drug for dyslipidaemia.

Methods: Prospective longitudinal study enrolling all patients who started Inclisiran therapy at our department. Inclisiran injections were administered at baseline, after 3 months and then every 6 months. Carotid-femoral Pulse Wave Velocity (PWV), carotid Intima Media Thickness (IMT) and brachial Flow Mediated Dilation (FMD) were evaluated before the first injection, after 6 months (T1) and after 1 year (T2). The preliminary data from 15 patients at 1 year were analysed.

Results: The mean age was 69±7.1 years, 72.7% of the subjects were men, and the basal LDL-C was 102.7±49.6 mg/dL, while BP was 140.6±13.3/79.1±6.1 mmHg. 90.9% of patients were in secondary prevention (acute or chronic coronary syndrome). 86.4% were on high-intensity statin therapy and 81.8% on ezetimibe. At the 1-year evaluation, a significant reduction of LDL-C (49.3±16.4 mg/dL, p<0.001) and BP (126.9±10.1/71.2±6.5 mmHg, p<0.001) was observed. Among the arterial biomarkers, only PWV showed a significant reduction (from 10.9±2.0 to 9.8±1.4 m/s, p<0.001) while the changes in IMT (from 705.9±151.3 to 696.0±202.1 μm, p=0.333) and FDM (from 7.5±8.9 a 6.9±8.0%, p=0.449) were not statistically significant.

Conclusions: Inclisiran has been confirmed as an excellent LDL-C lowering drug that could also significantly reduce PWV and, consequently, arterial stiffness. However, studies with a larger number of patients are needed to confirm our findings.

CardioSic

PREVENZIONE E RIABILITAZIONE 75
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
ANGINA INSTABILE (CARDIOPATIA ISCHEMICA)
INFARTO NSTEMI (CARDIOPATIA ISCHEMICA)
INFARTO STEMI (CARDIOPATIA ISCHEMICA)

EVALUATION OF DIAGNOSTIC ACCURACY OF EXTREME CARDIOVASCULAR RISK DEFINITIONS IN ACUTE CORONARY SYNDROME PATIENTS

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Background: In 2022, the European Society of Cardiology published a consensus paper with six definitions of extreme cardiovascular (CV) risk. In secondary prevention, the gold standard is definition 2: two cardiovascular events within two years. Commonly used are also acute coronary syndrome (ACS) combined with peripheral or polyvascular disease (definition 3) and ACS with multivessel coronary artery disease (definition 4). The aim of our study was to evaluate the diagnostic accuracy of definitions 3 and 4 compared to the gold standard in a population of ACS patients.

Methods: The study included 1061 ACS patients admitted to the intensive cardiac care unit (ICCU) of our hospital from 2014 to 2020. The primary composite outcome was time to first ischaemic event (myocardial infarction, stroke or peripheral artery event) or CV death. The follow-up was updated in June 2021, and events in the first 2 years since diagnosis were registered.

Results: Among the 1061 ACS patients analysed, the primary composite outcome was observed in 225 (21%) patients, with a higher incidence in patients fulfilling criteria of definitions 3 and 4 compared to the general ACS cohort. At multivariate analysis, the increased risk was still significant only for definition 4 (HR 1.44; 95% CI 1.03 - 2.01, p=0.031) while the increase in risk was not significant for definition 3 (HR 1.31; 95% CI 0.94 - 1.82, p=0.114). When definitions 3 and 4 were compared to definition 2 in order to test their discrimination accuracy for early recurring events, we found that they both presented poor predictive performance (definition 3: sensitivity 23.5%, specificity 87.5%, positive predictive values 35.7%; definition 4: sensitivity 25.5%, specificity 85.3%, positive predictive values 32.1%; the percentage of correctly classified patients was 73% for both definitions).

Conclusion: Among the current definitions of extreme CV risk, the one based on the presence of ACS combined with multivessel coronary artery disease most effectively identifies subjects likely to experience early (within 2 years) recurrence. Both definitions, however, showed higher specificity than sensitivity, highlighting their limitations in detecting all individuals at extreme risk within ACS populations. These findings underscore the need for refinement of extreme risk criteria to improve prognostic accuracy and guide targeted interventions.

PREVENZIONE E RIABILITAZIONE 77
FUNZIONE VENTRICOLARE, RIMODELLAMENTO E DANNO D'ORGANO (IPERTENSIONE ARTERIOSA)
DISLIPIDEMIE (DIABETE E MALATTIE DEL METABOLISMO)
ARTERIOPATIA DEI TRONCHI SOVRA-AORTICI (MALATTIE DEI VASI)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)

ASSOCIATION BETWEEN CAROTID INTIMA-MEDIA THICKNESS AND NOVEL LIPID PARAMETERS IN HYPERTENSIVE PATIENTS

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Introduction: Carotid Intima-Media Thickness (IMT) is a marker of subclinical atherosclerosis and cardiovascular risk. Dyslipidemia is a well-established risk factor for atherosclerosis, and novel lipid parameters have recently emerged.

Aim: The aim of our study was to assess the association between IMT and novel lipid parameters in hypertensive patients.

Methods: We analysed the IMT of 848 hypertensive patients followed at the Hypertension Unit of our hospital. Both classic (total, HDL, LDL and non-HDL cholesterol and triglycerides) and novel indices (non-HDL/HDL, LDL/HDL, total cholesterol/HDL, log triglycerides/HDL and triglycerides-glycemia index) were measured and calculated.

Results: Univariable analyses showed a significant correlation between IMT and most lipid parameters. Multivariable linear regression with IMT as continuous dependent variable revealed a significant association with total cholesterol (β=0.108, p=0.001), LDL cholesterol (β=0.119, p<0.001), non-HDL cholesterol (β=0.126, p<0.001), non-HDL/HDL (β=0.134, p<0.001), LDL/HDL (β=0.140, p<0.001) and total cholesterol/HDL (β=0.134, p<0.001). Logistic multivariable regression with IMT categorized as ≥ or < 0.9 mm demonstrated a significant association with total cholesterol (OR=1.100 per 10 mg/dL increase, p=0.003), LDL cholesterol (OR=1.130 per 10 mg/dL increase, p=0.001), non-HDL cholesterol (OR=1.110 per each unit increase, p=0.001), non-HDL/HDL (OR=1.368 per each unit increase, p=0.002), LDL/HDL (OR=1.583 per each unit increase, p=0.001) and total cholesterol/HDL (OR=1.368 per each unit increase, p=0.002).

Conclusions: Carotid IMT is significantly associated with various lipid parameters, with the strongest association observed for non-HDL/HDL, LDL/HDL and total cholesterol/HDL.

PREVENZIONE E RIABILITAZIONE 78
DISLIPIDEMIE (DIABETE E MALATTIE DEL METABOLISMO)
FUNZIONE VENTRICOLARE, RIMODELLAMENTO E DANNO D'ORGANO (IPERTENSIONE ARTERIOSA)
FISIOPATOLOGIA DELL'IPERTENSIONE ARTERIOSA (IPERTENSIONE ARTERIOSA)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)

PULSE WAVE VELOCITY PROGRESSION DETERMINANTS: NO SIGNIFICANT ASSOCIATION WITH NOVEL LIPID PARAMETERS

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Background and Aims: Lipid profiles, including both traditional and novel parameters, have been linked to arterial stiffness (pulse wave velocity-PWV) over time. This study aimed to evaluate the relationship between standard and emerging lipid parameters (e.g., non-HDL/HDL, LDL/HDL, total cholesterol/HDL, Log TG/HDL, and the triglyceride-glucose index [TyG]) and changes in PWV (ΔPWV) during a 3.8-year follow-up among hypertensive patients.

Methods: We included 469 hypertensive outpatients aged 18-80 years from the Hypertension Unit of our hospital, recruited from September 2006 to October 2010. PWV was measured at baseline and after a mean follow-up of 3.8 years (I-III quartiles: 3.5 – 4.2 years). Changes in PWV (ΔPWV) between baseline and follow-up were then calculated, and the population was divided accordingly to the best predictive values for CV outcomes (0.5 m/s).

Results: The study cohort was 58.4% male, with a mean age of 53.6±12.9 years. Baseline fasting glucose, total cholesterol, HDL, LDL, and triglycerides averaged 89.1±21.4, 198.0±34.7, 53.0±13.5, 120.2±31.5, and 123.4±72.6 (all mg/dL), respectively. PWV significantly increased from baseline to follow-up (8.6±2.1 vs 9.2±2.3 m/s; p=0.0001), with 51.6% of patients exhibiting a ΔPWV≥0.5 m/s. Patients with ΔPWV ≥ 0.5 m/s had a significantly lower baseline PWV (8.0±1.5 vs 9.2±2.3 m/s) and HDL (51.5±13.5 vs 54.7±13.3 mg/dL) with higher LDL/HDL ratio (2.46±0.89 vs 2.30±0.86), non-HDL/HDL ratio (3.0±1.1 vs 2.8±1.1), total cholesterol/HDL ratio (4.0±1.1 vs 3.8±1.1), and logTG/HDL (0.043±0.015 vs 0.040±0.014, p<0.05 for all comparison). However, no significant univariate association was observed between lipid parameters and baseline PWV, analysed either as a continuous or dichotomous variable (PWV>10 m/s). Univariate analysis found a modest correlation between ΔPWV and ΔPWV≥0.5 and logTG/HDL (r=0.121, p=0.009 and r=0.094, p=0.042, respectively) but did not persist at multivariate analysis adjusted for age, sex, ΔSBP, ACE inhibitor or ARB use, lipid-lowering therapy, diabetes, and GFR.

Conclusions: This study found no significant associations between emerging lipid parameters and PWV, assessed either as a continuous or dichotomous variable. Age and blood pressure values remain the main determinants of PWV and its changes over time.

PREVENZIONE E RIABILITAZIONE 80
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
RIABILITAZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
DISLIPIDEMIE (DIABETE E MALATTIE DEL METABOLISMO)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)

LOW DENSITY LIPOPROTEIN TARGET ACHIEVEMENT IN VERY HIGH AND EXTREME CARDIOVASCULAR RISK PATIENTS DURING A CARDIAC REHABILITATION PROGRAM

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Background: Low-Density lipoprotein (LDL) cholesterol is one of the most relevant CardioVascular (CV) risk factors. Very low therapeutic targets have been set by guidelines in the secondary prevention setting in order to reduce the risk of ischemic event recurrence. However, many studies demonstrate that these targets are largely unreached in the real-life setting, particularly in the higher cardiovascular risk classes. Our aim was to evaluate the LDL target achievement in very high and extreme CV risk patients during a Cardiac Rehabilitation (CR) program.

Methods: A total of 940 patients with recent acute coronary syndrome or a diagnosis of chronic coronary syndrome who participated in a CR program were enrolled between January 2012 and December 2023 at our hospital. For each patient, LDL and Lipid Lowering Therapies (LLT) were evaluated at the beginning and at the end of the CR program, together with anthropometric, clinical, biochemical, and instrumental parameters. LDL targets were considered <70 mg/dL for patients before August 2019, <55 mg/dL after 2019 and <40 mg/dL for extreme CV risk subjects.

Results: The mean age was 66.9±0.6 years, 82.9% of the subjects were males, and LDL cholesterol changed from 107.3±39.3 to 64.5±24.6 from the beginning to the end of CR. At CR discharge, 88% of the subjects were on high-intensity statin (atorvastatin or rosuvastatin) therapies, and 38.1% were on ezetimibe, while only 4.6% of the subjects were treated with PCSK9 inhibitors and 0.9% with bempedoic acid. 53.1% of the patients reached the LDL therapeutic target with particularly positive peaks in 2018 (72.8%, the year before the release of the latest dyslipidaemia guidelines that reduced the target) and 2022 and 2023 (78.8% and 75.7% respectively). 29.8% of the patients had extreme CV risk, they achieved the target of LDL <40 mg/dL only in 16.4%, with a higher prevalence in the latest years (32% in 2022 and 22.7% in 2023).

Conclusions: Our results demonstrate a higher achievement of LDL cholesterol target in a secondary prevention program when compared to previous observational studies. The longer distance from guidelines publication, together with the new pharmacological treatment, could be the reason for these positive results. However, more attention should be paid to extreme CV risk both in terms of identification and treatment.

CardioSic

PREVENZIONE E RIABILITAZIONE 81
INFIAMMAZIONE E IMMUNITÀ (ATEROTROMBOSI)
DISLIPIDEMIE (DIABETE E MALATTIE DEL METABOLISMO)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
BIOLOGIA MOLECOLARE CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
FUNZIONE VENTRICOLARE, RIMODELLAMENTO E DANNO D'ORGANO (IPERTENSIONE ARTERIOSA)

ASSESSMENT OF SUBCLINICAL CARDIOVASCULAR TARGET ORGAN DAMAGE IN PRIMARY PREVENTION: THE ROLE OF LIPOPROTEIN(A) AND LOW-GRADE INFLAMMATION

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Introduction: Elevated lipoprotein(a) [Lp(a)] levels and low-grade inflammation markers, such as interleukin-6 (IL-6) and C-reactive protein (CRP), have been strongly linked to cardiovascular (CV) risk. However, their association with subclinical target organ damage (TOD) in primary prevention populations remains unclear.

Aim: to evaluate the relationship between Lp(a), IL-6 and CRP levels, and markers of cardiac and vascular TOD in a primary prevention setting.

Methods: Between 2009 and 2012, asymptomatic and low CV risk subjects were recruited, and biochemical markers were evaluated. Furthermore, TOD was assessed through pulse wave velocity (PWV), carotid intima-media thickness (IMT), presence of carotid plaques, left ventricular hypertrophy (LVH), left ventricular mass index (LVMI), left ventricular ejection fraction (LVEF), and glomerular filtration rate (GFR).

Results: A total of 747 subjects (466 females) were analysed, with a median age of 51 years (Q1-Q3: 42-61). Few significant correlations were found between the evaluated biomarkers and indices of subclinical TOD. Lp(a) levels showed a significant correlation with LVEF, IL-6 levels were significantly associated with carotid IMT, while CRP levels correlated with the presence of carotid plaques. Furthermore, both IL-6 and CRP levels were significantly associated with PWV. However, at multivariable analysis with age and blood pressure as covariates, all these associations lost their significance.

Conclusions: In our primary prevention cohort, elevated Lp(a), IL-6, and CRP levels were not associated with significant structural damage to the heart, carotid arteries, or increased aortic stiffness. These findings suggest a limited role of these biomarkers in detecting early subclinical TOD in low-risk populations.

PREVENZIONE E RIABILITAZIONE 846
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
DIABETE E MALATTIE CARDIOVASCOLARI (DIABETE E MALATTIE DEL METABOLISMO)
ATTIVITÀ FISICA E PREVENZIONE CARDIOVASCOLARE (ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)

ASSOCIAZIONE TRA ADERENZA ALLA DIETA MEDITERRANEA ED I FATTORI DI RISCHIO CARDIOVASCOLARE: EVIDENZE DAL LONGEVITY CHECK UP 7+

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Obiettivo: Lo scopo del presente studio è valutare l'associazione tra il livello di aderenza alla dieta mediterranea e la salute cardiovascolare in soggetti adulti e anziani residenti in comunità.

Metodi: Lo studio è stato condotto su una coorte di individui adulti arruolati nel Progetto Longevity Check-up 7+, uno studio osservazionale volto a valutare i fattori di rischio cardiovascolare modificabili con lo stile di vita e i parametri funzionali come elementi fondamentali di un invecchiamento in salute. L'aderenza alla dieta mediterranea è stata valutata mediante una versione modificata del punteggio Medi-Lite, a partire dal questionario alimentare somministrato ai partecipanti. L'aderenza è stata classificata come bassa (≤8), intermedia (9–11) o elevata (≥12). Sette fattori di rischio cardiovascolare (ipertensione, iperlipidemia, iperglicemia, BMI elevato, abitudine al fumo, dieta non salutare, inattività fisica) sono stati rilevati tramite metodi standardizzati (questionari e/o misurazioni dirette). Uno score composito (Total_HM con valori da 0 a 7) è stato calcolato basato sulla presenza (0 punti) o sull'assenza (1 punto) dei singoli 7 fattori di rischio. L'associazione tra lo score Medi-Lite e il Total_HM è stata valutata mediante correlazione di Spearman. Le frequenze dei vari fattori di rischio cardiovascolari sono state confrontate tra gli individui adulti e anziani con differenti terzili di aderenza alla dieta mediterranea tramite test del Chi-Quadro. Una regressione logistica è stata condotta per valutare l'associazione dei singoli fattori con i terzili dello score Medi-Lite.

Risultati: Le analisi sono state condotte su 15.638 partecipanti (età media 55,8 ± 14,9 anni; 55,2% donne), di cui 6476 di età ≥ 65 anni. I partecipanti sono stati suddivisi in tre gruppi in base al livello di aderenza alla dieta mediterranea: basso (n=6605), medio (n=5804) e alto (n=3229). L'analisi statistica ha mostrato una correlazione positiva significativa tra il punteggio Medi-Lite e il profilo di salute cardiovascolare. In particolare, i soggetti con elevata aderenza alla dieta mediterranea avevano valori medi più favorevoli di BMI, maggiore probabilità contemporanea di essere fisicamente più attivi, non fumatori e di consumare quotidianamente almeno tre porzioni di frutta e verdura. Nei soggetti ≥ 65 anni, con un'aderenza alta alla dieta mediterranea, sono emerse differenze statisticamente significative rispetto agli altri due terzili (medio e bassa) per quanto riguarda i valori di glicemia, oltre che per quanto riguarda il BMI, l'attività fisica, l'abitudine al fumo e il consumo quotidiano di almeno tre porzioni di frutta e verdura. La regressione logistica ha mostrato che i soggetti nei terzili medio e alto di aderenza avevano una probabilità significativamente maggiore di essere non fumatori, seguire una dieta sana, mantenere un BMI nella norma, avere valori glicemici, pressori e lipidici favorevoli, e di praticare attività fisica regolare.

PREVENZIONE E RIABILITAZIONE 958
RIABILITAZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)
RIANIMAZIONE CARDIOPOLMONARE (ASSISTENZA CARDIACA IN ACUTO)

FEASIBILITY OF CENTRALIZED SUB-REGIONAL SYSTEM FOR SCREENING NON-PHISICAL DISABILITY AND QUALITY OF LIFE OF OUT-OF-HOSPITAL CARDIAC ARREST SURVIVORS - THE REVIVE PROJECT

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Introduction: Most out-of-hospital cardiac arrest (OHCA) survivors suffer from fatigue, cognitive and emotional problems, negatively impacting their quality of life. These aspects are often underrecognized and underrepresented in studies involving this category of patients. Our multicentre prospective study aims to assess the feasibility and appropriateness of a centralized, sub-regional screening system for OHCA survivors in Italy and to measure the prevalence and incidence of these problems.

Methods: After providing informed consent, patients with good neurological outcomes [cerebral performance category (CPC) ≤2 or modified Rankin scale (mRS) ≤3] are evaluated by a clinical psychologist, either in-person or remotely, at discharge and then at 1, 3, 6, and 12 months. Assessments include the Montreal Cognitive Assessment (MoCA), Hospital Anxiety and Depression Scale (HADS), EQ-5D-5L for quality of life, and the Impact of Event Scale-Revised (IES-R). Feasibility is defined as a recruitment rate ≥80%, and acceptability as a retention rate ≥50% over 12 months. The study employs a centralized hub-and-spoke model, assigning each hospital a clinical referent who is contacted biweekly to confirm patient status and contact details, aiming to enhance follow-up consistency, reduce disparities in care, and provide a scalable framework.

Results: 41 of 49 eligible patients (83.7%) were contacted, 27 (65.9%) consented to join REVIVE study. Median MoCA at discharge was 25 (IQR 23–27). Median HADS scores for anxiety and depression at discharge were 3 (IQR 1–6) and 3 (IQR 1–5), respectively. Median IES-R at discharge was 10 (IQR 8–30), and median EQ-VAS was 70 (IQR 50–85). Main recruitment barriers included patient refusals/hesitancy, lack of response/absence of clinical referents, missing patient contact details, and consented patients becoming unreachable post-discharge.

Conclusions: This multicentre prospective study demonstrates adequate control of both global and event-related stress and a reasonable subjective quality of health, while revealing mild cognitive impairment. Nevertheless, the current recruitment rate (65.9%) is actually below the 80% target reflecting the need to optimize the screening program and management of this category of patients. Planned measures to enhance recruitment include optimizing timing for patient and referent contact, providing tablets to facilitate baseline assessments at discharge in spoke hospitals, assigning referent clinicians in hospitals previously lacking coverage.

PREVENZIONE E RIABILITAZIONE 318
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
ATTIVITÀ FISICA E PREVENZIONE CARDIOVASCOLARE (ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
GRAVIDANZA E CARDIOPATIA (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)

MODIFICAZIONI CARDIACHE INDOTTE DALL'ESERCIZIO FISICO IN DONNE CON PREGRESSA PREECLAMPSIA E RECIDIVA DI PREECLAMPSIA NELLA GRAVIDANZA SUCCESSIVA

Giorgia Di Bartolomeo (b), Federico Moretti (b), Andrea Giovanni Parato (b), Laura Colarocchio (b), Valerio Marongiu (b), Diego De Angelis (b), Gian Paolo Novelli (a), Giuseppe Stifano (a), Andrea Natale (b), Gaetano Chiricolo (b)
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Backgorund: La gravidanza induce notevoli adattamenti cardiovascolari per sostenere l'unità feto-placentare; tuttavia, circa il 20% delle gravidanze evolve verso esiti avversi, come ipertensione e preeclampsia.
Tali esiti possano rivelare disfunzioni cardiovascolari sottostanti e asintomatiche che potenzialmente precedono la gravidanza. Sebbene l'esercizio fisico sia ampiamente riconosciuto per migliorare la salute cardiovascolare e prevenire diverse malattie croniche, il suo ruolo specifico nella riduzione del rischio di complicazioni in gravidanza rimane incerto. Lo scopo di questo studio è stato quello di determinare se l'esercizio aerobico strutturato, eseguito tra una gravidanza e l'altra, possa ridurre la ricorrenza della preeclampsia in donne con una storia di preeclampsia precoce nella precedente gravidanza.

Disegno dello studio: È stato condotto uno studio di coorte prospettico su 256 donne normotese e non obese (BMI<30) con precedente preeclampsia ad insorgenza precoce, che stavano pianificando una nuova gravidanza. Tutte le partecipanti sono state invitate a seguire un programma strutturato di allenamento aerobico a partire da sei mesi dopo la gravidanza indice. Di queste, 82 donne hanno aderito al programma, mentre 174 no. La funzione cardiaca è stata valutata tramite ecocardiografia transtoracica prima dell'inizio del programma e nuovamente dopo 8–12 mesi, prima della gravidanza successiva. Gli esiti della gravidanza sono stati registrati.

Risultati: Non sono state osservate differenze significative nelle caratteristiche cardiovascolari di base tra i gruppi. Dopo 12–18 mesi di allenamento, il gruppo che ha svolto esercizio ha mostrato miglioramenti significativi rispetto al gruppo sedentario, tra cui: maggiore volume sistolico (71 ± 12 vs. 65 ± 11 ml, $p<0.05$); aumento della gittata cardiaca a riposo (5.3 ± 1.3 vs. 4.8 ± 1.1 L/min, $p<0.05$); volume atriale sinistro indicizzato più ampio (23.1 ± 4.7 vs. 21.7 ± 5.3 ml/m², $p<0.05$); miglior strain longitudinale globale (–23.1 ± 1.6 vs. –21.9 ± 2.0, $p<0.05$); riduzione delle resistenze vascolari periferiche totali (1258 ± 295 vs. 1427 ± 313 dyne·s/cm², $p< 0.05$).Nella gravidanza successiva, la preeclampsia ricorrente si è verificata nel 12% del gruppo esercizio rispetto al 28% del gruppo sedentario, comportando una riduzione del 45% nelle probabilità di ricorrenza (OR =0.45; IC 95%: 0.22–0.90; p = 0.025).

Conclusioni: L'esercizio aerobico svolto tra le gravidanze può migliorare significativamente il profilo cardiovascolare nelle donne con una recente storia di preeclampsia. I miglioramenti osservati nel volume sistolico, nella gittata cardiaca, nella resistenza vascolare e nello strain longitudinale globale indicano adattamenti cardiovascolari favorevoli che potrebbero ridurre la probabilità di preeclampsia ricorrente. Questi risultati supportano l'adozione di programmi strutturati di esercizio aerobico come intervento per migliorare gli esiti delle gravidanze successive in questa popolazione
ad alto rischio.

PREVENZIONE E RIABILITAZIONE 634
ATTIVITÀ FISICA E PREVENZIONE CARDIOVASCOLARE (ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
RIABILITAZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)

IL TEST CARDIORESPIRATORIO (CPET) COME GUIDA ALLA PRESCRIZIONE DELL'ESERCIZIO FISICO

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In ambito di Riabilitazione Cardiologica, ma non solo, è di fondamentale importanza disporre di parametri respiratori e di capacità funzionale derivati da esami strumentali che possano guidare alla corretta prescrizione dell'esercizio fisico. Uno tra i test strumentali più completi nella valutazione funzionale è il test da sforzo cardiopolmonare (CPET).
Durante l'esecuzione del CPET è possibile misurare numerosi parametri: la cinetica dei gas O2 e CO2, la ventilazione, il carico di lavoro, il monitoraggio dell'elettrocardiogramma e della frequenza cardiaca, la saturazione dell'emoglobina. La rappresentazione grafica e l'analisi dei dati respiro per respiro e la loro relazione/rapporto compone il pannello finale di 9 Plot sul quale si basa in ultima istanza il referto finale.
La misura del consumo di ossigeno al picco (PeakVO2) definisce la capacità funzionale del soggetto ma l'analisi completa dei dati e dei grafici ottenuti consente di identificare altri numerosi parametri e soprattutto di definire il passaggio attraverso le diverse fasi dell'esercizio.
Le fasi che possono essere evidenti durante il CPET sono: 1) l'identificazione della soglia anaerobica (1Vt); 2) la fase di tamponamento isocapnico durante la quale l'acido lattico viene tamponato dai bicarbonati con conseguente produzione di CO2 e H2O; 3) il punto di compenso respiratorio CP (o seconda soglia 2 Vt); 4) il compenso respiratorio all'acidosi. Il comportamento degli equivalenti ventilatori (VE/VO2 e VE/VCO2) rappresentati in figura 1 definiscono le diverse fasi e queste sono strettamente relate all'intensità dell'esercizio. Nella figura 2 sono rappresentate e correlate l'intensità dell'esercizio suggerita nelle diverse condizioni cliniche.

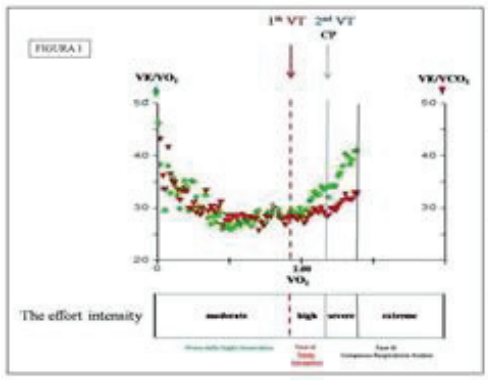


Figura 1

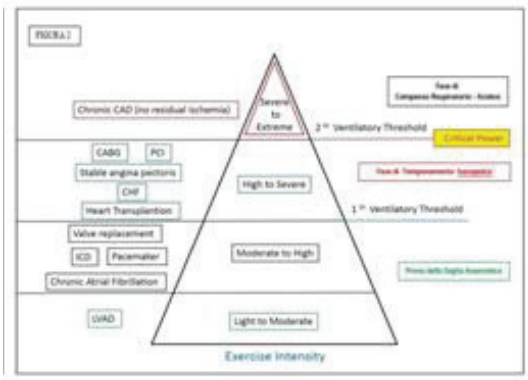


Figura 2

CONCLUSIONI

L'esecuzione del CPET oltre al ruolo diagnostico, prognostico e di valutazione funzionale, offre l'opportunità di ottenere numerosi parametri sui quali impostare una corretta e guidata prescrizione dell'esercizio fisico non solo nei pazienti (esercizio riabilitativo) ma anche in soggetti sani (esercizio di allenamento). Certamente non tutti i pazienti che accedono alla riabilitazione cardiologica avranno eseguito un CPET, tuttavia quando disponibile nella nostra esperienza risulta di particolare aiuto. Oltretutto è consigliabile eseguire un CPET di follow up a distanza (4-6 mesi) dopo un ciclo di riabilitazione fisica o di allenamento al fine di documentare i risultati e gli eventuali miglioramenti funzionali e validare la corretta prescrizione della tipologia di esercizio.

PREVENZIONE E RIABILITAZIONE 235
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
FUNZIONE VENTRICOLARE, RIMODELLAMENTO E DANNO D'ORGANO (IPERTENSIONE ARTERIOSA)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)

BEYOND SLEEP: THE CARDIOVASCULAR IMPACT OF OBSTRUCTIVE SLEEP APNEA SYNDROME

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Introduction: Obstructive Sleep Apnea Syndrome (OSAS) is a chronic respiratory disorder that is strongly associated with various cardiovascular comorbidities. The aim of this study was to compare echocardiographic findings and the prevalence of selected clinical conditions between patients with OSAS and a control group without the syndrome.

Patients and methods: We enrolled 105 consecutive patients diagnosed with OSAS and 100 consecutive control patients without OSAS. All participants underwent echocardiographic evaluation with Doppler imaging.

Results: Hypertension was more prevalent in the OSAS group (85 out of 105, 81%) compared to the control group (74 out of 100, 74%). Left ventricular diastolic dysfunction was observed in 59 patients with OSAS (56.2%) versus 26 controls (26%), indicating a significant difference. Similarly, left atrial enlargement was more frequent in the OSAS group (22 out of 105, 21%) compared to the controls (13 out of 100, 13%). Left ventricular hypertrophy was detected in 54 OSAS patients (51.4%), whereas only 5% of controls (5 out of 100) presented this structural alteration, highlighting the cardiac remodeling associated with OSAS. Finally, permanent atrial fibrillation was more common among OSAS patients (18 out of 105, 17.1%) than in the control group (7 out of 100, 7%), suggesting a potential link between OSAS and arrhythmic burden.

Discussion: These findings confirm that OSAS is significantly associated with an increased prevalence of cardiovascular abnormalities detectable by echocardiography, with statistically and clinically relevant differences compared to individuals without OSAS. The results underscore the importance of routine cardiovascular screening in patients with OSAS, even in the absence of overt symptoms, due to the heightened risk of structural cardiac remodeling and diastolic dysfunction.

Conclusion, this study supports the view that OSAS is not merely a sleep-related breathing disorder but a systemic condition with substantial cardiovascular implications. A multidisciplinary approach is essential for early diagnosis and optimal management.

PREVENZIONE E RIABILITAZIONE 1049
DISLIPIDEMIE (DIABETE E MALATTIE DEL METABOLISMO)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
INFARTO STEMI (CARDIOPATIA ISCHEMICA)
INFARTO NSTEMI (CARDIOPATIA ISCHEMICA)

EXPLORING RESIDUAL CARDIOVASCULAR RISK BEYOND LDL CHOLESTEROL IN PATIENTS WITH ACUTE DESTABILIZATION OF KNOWN SIGNIFICANT ATHEROSCLEROSIS

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(a) IRCCS AZIENDA OSPEDALIERA SANT'ORSOLA-MALPIGHI DI BOLOGNA; (b) DIMEC, ALMA MATER STUDIORUM DI BOLOGNA; (c) UNITÀ DI CARDIOLOGIA, OSPEDALE UNIVERSITARIO PIERANTONI-MORGAGNI DI FORLÌ

Background: High LDL cholesterol (LDLc) is a well-established risk factor for coronary and peripheral atherosclerosis. The European Society of Cardiology recommends lowering LDLc to below 55 mg/dL in patients with established atherosclerotic cardiovascular disease (ASCVD). However, many patients do not achieve such a stringent target, and even in those who do, an acute coronary syndrome is not uncommon.

Aim: To assess the residual risk beyond LDLc in patients with known ASCVD and acute coronary syndrome.
Methods: Patients with acute myocardial infarction (AMI) and known ASCVD (previous ischaemic stroke, peripheral atherosclerotic disease, or known coronary atherosclerosis) from the AMIPE registry were included. The population was stratified based on admission LDLc with a cut-off of 55 mg/dL. The modified Duke Jeopardy Score (mDJS) was used to quantify coronary artery disease. Logistic regression was used to assess predictors of in-hospital mortality. Patients were followed up for at least 12 months, considering all-cause death and a composite of major adverse cardiac events (MACE; all-cause death, acute coronary syndrome, stroke, or heart failure). Cox regression models were used to calculate the hazard ratio (HR) and 95% confidence intervals (95% CI) for death and MACE. An interaction term was included in the regression models to assess possible risk factors specific to the population with LDLc <55 mg/dL.

Results: 1742 subjects admitted for AMI, with known ASCVD, and available LDLc on admission were enrolled. 242 (14%) patients had LDLc <55 mg/dL. These patients were more often male, diabetic, have lower haemoglobin (Hb), higher white blood count and creatinine (p<0.05 for all), while mDJS was comparable (p=0.169). 46 patients (3%) died in hospital. LDLc <55 mg/dL was associated with in- hospital mortality (odds ratio 2.00, 95% CI 1.00-3.99), but not after adjustment for other risk factors including GRACE score, left ventricle ejection fraction, Hb, and atrial fibrillation. Percutaneous revascularisation was more beneficial in patients with LDLc <55 mg/dL (p for interaction = 0.045). After a 60-month follow-up, 430 (27%) patients died and 690 (43%) had a MACE. An LDLc <55 mg/dL on admission was associated with a higher risk of both death (HR 1.46, 95% CI 1.11-1.91) and MACE (HR 1.27, 95% CI 1.02-1.59), but these findings were not confirmed after adjustment for confounders.

Conclusions: Many patients with known ASCVD who experienced an AMI had not achieved the

recommended LDLc target. However, experimenting an AMI while having LDLc <55 mg/dL was associated with a higher risk of in-hospital and long-term adverse outcomes, possibly due to the residual risk which may not be adequately targeted. In these patients, revascularisation was more beneficial probably due to the lack of other mechanism-directed therapeutic options. Specific management for patients who experience an AMI in spite of having reached the recommended LDLc target is required.

PREVENZIONE E RIABILITAZIONE 116
RIABILITAZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)
ATTIVITÀ FISICA E PREVENZIONE CARDIOVASCOLARE (ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)

OLTRE IL PEAKV02:IL TEMPO DI TOLLERANZA ALL'ESERCIZIO A CARICO COSTANTE SUBMASSIMALE RIVELA I MIGLIORAMENTI NASCOSTI POST RIABILITAZIONE CARDIOLOGICA

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Introduzione: La riabilitazione cardiologica è un intervento comprovato per migliorare la capacità di esercizio e la fitness cardiorespiratoria nei pazienti cardiopatici. Il test ergospirometrico massimale (CPET), con la sua misurazione del consumo di ossigeno di picco (PeakVO2), è considerato il gold standard per valutare l'efficacia di questi programmi. Tuttavia, una percentuale significativa di pazienti è classificata come "non-responder" in base a una mancata variazione significativa del PeakVO2 post-intervento. Questo solleva un interrogativo: il PeakVO2 è sufficientemente sensibile per rilevare i miglioramenti della capacità di esercizio a intensità submassimale?

Scopo: Lo scopo di questo studio è stato quello di valutare la sensibilità del tempo di tolleranza all'esercizio (TTE) a intensità submassimale nel rilevare le variazioni della capacità di esercizio in pazienti che non avevano mostrato un aumento significativo del PeakVO2 dopo un programma di riabilitazione.

Metodi: Sono stati arruolati 29 pazienti (23 M, 6 F; età media 64,2 anni) per un programma di riabilitazione ambulatoriale. Il 44,8% dei partecipanti aveva una diagnosi di scompenso cardiaco (30,7% HFpEF, 23,1% HFmrEF, 46,2% HFrEF). Prima dell'inizio del programma, tutti i pazienti hanno eseguito un CPET su cicloergometro per la prescrizione dell'allenamento.

Il programma, della durata di 8 settimane, prevedeva:
Training al cicloergometro: 90% del volume a intensità moderata (80% della prima soglia ventilatoria - GET) e 10% ad alta intensità (95% del PeakVO2).
Training di forza: 40% della ripetizione massimale (1RM) nel primo mese e 75% nel secondo.
Training dei muscoli respiratori con incentivatore di volume. Alla quarta seduta di training, è stato condotto un TTE per valutare la capacità di esercizio a un carico di lavoro costante corrispondente all'80% del picco ottenuto al CPET. Al termine del programma, il CPET massimale e un TTE allo stesso carico del TTE iniziale sono stati ripetuti

Risultati: Tutti i pazienti hanno completato il protocollo. L'intervento riabilitativo ha portato nell'intera popolazione ad un incremento del PeakVO2 superiore al 15% e ad un miglioramento significativo della capacità di lavoro (superiore al 20%) sia al picco, che alla prima soglia (GET) che alla seconda soglia (RCP). 5/29 pazienti, tuttavia, sono stati classificati come non-responder in ragione di un aumento del PeakVO2 post riabilitazione inferiore a 1 mL/kg/min. In questi il TTE ha rivelato un aumento significativo (oltre il 45%) della durata di esercizio a carico costante sub massimale.

Conclusioni: Sebbene il PeakVO2 sia un parametro chiave per la valutazione e la stratificazione progno-

stica nei pazienti cardiopatici, in alcuni casi può non essere abbastanza sensibile per rilevare i miglioramenti nella resistenza all'esercizio a intensità submassimali. Il TTE, grazie anche alla sua semplicità di esecuzione, può essere considerato un valido complemento al CPET per una valutazione più completa e accurata dell'efficacia riabilitativa.

PREVENZIONE E RIABILITAZIONE 36
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
DIABETE E MALATTIE CARDIOVASCOLARI (DIABETE E MALATTIE DEL METABOLISMO)
DISLIPIDEMIE (DIABETE E MALATTIE DEL METABOLISMO)
FISIOPATOLOGIA DELL'IPERTENSIONE ARTERIOSA (IPERTENSIONE ARTERIOSA)

TRANSIZIONE DI GENERE: IMPATTO E INTERAZIONI SUL PROFILO METABOLICO E CARDIOVASCOLARE

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Background: Gli effetti precoci sul profilo cardiovascolare e metabolico della terapia ormonale di affermazione di genere (Gender-Affirming Hormone Therapy, GAHT) sono poco chiari. Questo studio si propone di valutare l'impatto della terapia ormonale a distanza di un anno su parametri metabolici, pressione arteriosa, elettrocardiogramma (ECG a 12 derivazioni).

Metodi: È stato condotto uno studio prospettico, monocentrico e osservazionale su 20 persone transgender (10 AFAB, 10 AMAB) all'inizio della GAHT. Le valutazioni sono state effettuate al basale (T0) e dopo 12 mesi (T1). Gli endpoint primari hanno incluso variazioni pressorie, del profilo lipidico e glucidico, e dei parametri elettrocardiografici.

Risultati: Dopo 12 mesi di GAHT, non sono emerse variazioni pressorie statisticamente significative né nei soggetti AFAB né AMAB. A livello elettrocardiografico, è stato osservato un incremento del QTc nella popolazione AMAB (p = 0.050). Il profilo metabolico non ha mostrato variazioni significative. Sono emerse alterazioni significative della funzionalità epatica e renale, comunque nel range di normalità. Il peso corporeo e il BMI sono aumentati in entrambi i gruppi.

Conclusioni: La terapia ormonale di affermazione di genere induce modificazioni precoci e differenziate del profilo metabolico e cardiovascolare nei soggetti transgender. Si osservano adattamenti coerenti con i profili cisgender del genere di destinazione,

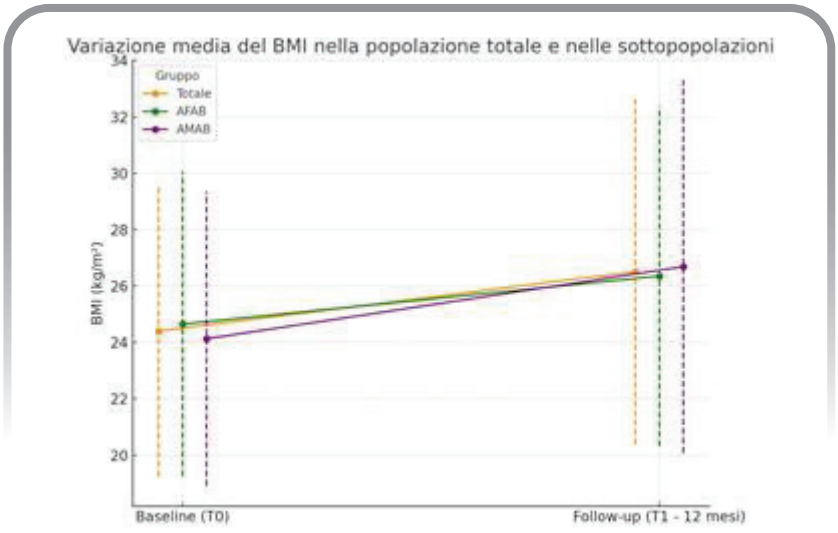


Figura 1

sia sul piano elettrocardiografico, con un allungamento significativo del QTc negli AMAB, sia metabolico. L'incremento del BMI, in particolare tra gli AFAB, appare correlato a un miglioramento dello stile di vita. Le alterazioni di funzionalità epatica e renale, seppur lievi, sottolineano la necessità di un monitoraggio regolare. Questi risultati supportano l'importanza di un approccio clinico integrato, multidisciplinare e trans-competente, volto a garantire la sicurezza e l'efficacia della GAHT nel lungo termine.

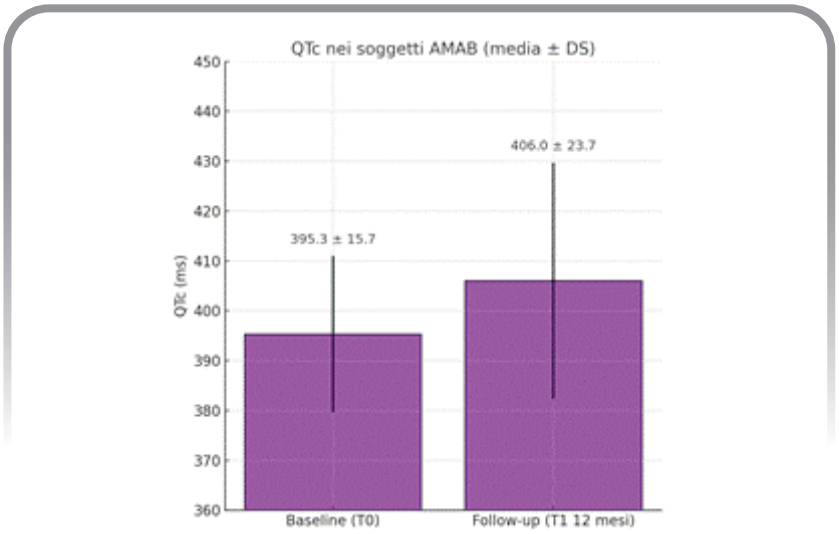


Figura 2

PREVENZIONE E RIABILITAZIONE 113
FISIOLOGIA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
INFIAMMAZIONE E IMMUNITÀ (ATEROTROMBOSI)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI
(PREVENZIONE E RIABILITAZIONE)
ARTERIOPATIA DEI TRONCHI SOVRA-AORTICI (MALATTIE DEI VASI)
PLACCA VULNERABILE (ATEROTROMBOSI)

MICRO E NANOPLASTICHE: UNA COMPONENTE DELLA PLACCA ATEROSCLEROTICA DA CONSIDERARE

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Background: Le micro- e nanoplastiche (MNPs) sono particelle derivanti dalla degradazione e/o produzione di materiali plastici, rilevabili nell'ambiente, negli alimenti e nei tessuti umani. Evidenze scientifiche suggeriscono un potenziale ruolo delle MNPs nello sviluppo di patologie cardiovascolari, ma i dati clinici e sperimentali sono ancora limitati.

Metodi: Il presente abstract è stato preparato per descrivere un'ipotesi patogenetica di un nuovo modello di placca aterosclerotica potenzialmente associata a patologie cardio- e cerebro-vascolari di natura ischemica. A questo scopo sono stati considerati i seguenti studi: a) "Microplastics and Nanoplastics in Atheromas and Cardiovascular Events", Marfella et al., N Engl J Med, 2024; b) "Marine microplastic levels and the prevalence of cardiometabolic diseases in US coastline counties", Makwana et al., Journal of the American Heart Association, 2025; c) "The potential impacts of micro-and-nano plastics on various organ systems in humans", Ali et al., eBioMedicine, 2024; d) "Micro-nanoplastics and cardiovascular diseases: evidence and perspectives", Prattichizzo et al., European Heart Journal, 2024.

Risultati: Marfella et al. hanno dimostrato che la presenza di polietilene e/o PVC nelle placche carotidee era associata a un aumento del rischio di infarto miocardico, ictus o morte a 34 mesi. Makwana et al. hanno mostrato una maggiore prevalenza di diabete di tipo 2, coronaropatia e ictus in aree con più alti livelli di microplastiche marine. Ali et al. hanno evidenziato



Figura 1

che i meccanismi patogenetici includono stress ossidativo, infiammazione, apoptosi, carcinogenesi, alterazioni del metabolismo energetico e del microbiota intestinale, con potenziali effetti su sviluppo e funzione d'organo, sottolineando, tuttavia, che gli studi sono condotti sulle microplastiche non contaminate e non degradate, non rappresentative di quelle ambientali. Prattichizzo et al. hanno sottolineato che le MNPs possono penetrare nei tessuti umani, favorendo infiammazione e disfunzione endoteliale e che la loro presenza in placche aterosclerotiche è associata a un aumento di infarto, ictus e mortalità.

Conclusioni: Pertanto, le MNPs sono un fattore di rischio emergente per le malattie cardiovascolari e metaboliche, come parte dell'esposoma ambientale. Questo è attualmente poco considerato nella prevenzione primaria delle malattie CV e per nulla in quella secondaria dove ad oggi non esistono terapie mirate alla riduzione delle MNPs presenti nelle placche aterosclerotiche.

Proposta: Approfondire le conoscenze sull'esposizione di un individuo alle MNPs utilizzando strumenti standardizzati che consentano di confrontare popolazioni differenti e predire il rischio cardiovascolare anche in base all'interazione con le MPNs. La scala numerica riportata è una proposta basata su semplici informazioni: "Usi ed in che misura contenitori per alimenti, piatti, bicchieri, pellicole o bottiglie di plastica?", "Usi prodotti dermatologici e cosmetici contenenti MNPs?", "Vivi in regioni con alta probabilità di MNPs disperse nella atmosfera?".

PREVENZIONE E RIABILITAZIONE 668
ATTIVITÀ FISICA E PREVENZIONE CARDIOVASCOLARE (ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)

SALUTE CARDIOVASCOLARE IDEALE E RISCHIO DI PROBABILE SARCOPENIA: IL CONTRIBUTO DEL LIFE'S ESSENTIAL 8 NEI RISULTATI DELLO STUDIO LOOK-UP 8+

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OBIETTIVO DELLO STUDIO: Le malattie cardiovascolari sono tuttora la principale causa di morte a livello globale (1). Abbiamo, pertanto, bisogno di una strategia di intervento volta soprattutto alla prevenzione. A tal proposito, l'American Heart Association nel 2010 ha ideato il programma Life's Simple 7 con l'obiettivo principale di prevenire le patologie cardiovascolari considerando i 7 fattori di rischio cardiovascolare (2). Nel 2022 è stato aggiunto il sonno, dando origine al Life'Essential 8. E' ormai noto che la sarcopenia progredisca più rapidamente in presenza di comorbidità croniche come le malattie cardiovascolari. Recentemente definiamo la cardiosarcopenia come la coesistenza di alterazioni strutturali miocardiche e la sarcopenia del muscolo scheletrico (3). L'obiettivo del nostro lavoro è, quindi, valutare l'associazione tra Life'Essential 8 e la probabile sarcopenia.

MATERIALI E METODI :Il presente studio ha impiegato un'analisi retrospettiva cross-sectional, utilizzando i dati dell'iniziativa Lookup 8+, un progetto in corso promosso dal Dipartimento di Geriatria dell'Università Cattolica del Sacro Cuore e dalla Fondazione Policlinico Universitario "Agostino Gemelli" IRCCS di Roma, Italia. L'iniziativa è stata sviluppata per sensibilizzare la popolazione generale sui fattori di rischio prevenibili per le malattie croniche e per promuovere l'adozione di stili di vita più sani.

RISULTATI :Sono stati analizzati 2522 pazienti, di cui 2030 non sarcopenici (80.5%) e 492 sarcopenici (19.5%), di questi ultimi 241 donne e 251 uomini. L'analisi della varianza (ANOVA) ha mostrato una differenza statisticamente significativa tra i pazienti sarcopenici e non sarcopenici rispetto a Life'Essential 8 analizzati ($p < 0.01$), evidenziando come la sarcopenia si associ ad un profilo cardiovascolare potenzialmente più sfavorevole. Ogni singolo fattore di rischio cardiovascolare analizzato ha un peso differente in senso protettivo o di rischio aumentato di sarcopenia. All'avanzare dell'età aumenta il rischio di sarcopenia: ogni anno la probabilità di essere sarcopenico aumenta del 12-15.7%. Il diabete e i disturbi del sonno risultano anch'essi associati in modo statisticamente significativo ad un rischio aumentato di sviluppare la sarcopenia. Una dieta sana e l'attività fisica, invece, si sono rivelate protettive. Il sesso, il fumo, il BMI, la pressione arteriosa, il colesterolo, invece, non sono risultati statisticamente significativi.

CONCLUSIONI: L'analisi condotta conferma che la sarcopenia è significativamente associata ad alcuni fattori modificabili e non modificabili di rischio cardiovascolare, come l'avanzare dell'età, il diabete e i disturbi del sonno. Al contrario, la presenza di una dieta equilibrata e un'attività fisica regolare, hanno un ruolo protettivo sul mantenimento della massa e funzionalità muscolare. Pertanto, dai risultati ottenuti, si evince e rafforza l'importanza di un intervento precoce ed integrato sullo stile di vita in termini di prevenzione delle patologie cardiovascolari e della sarcopenia.

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2) Defining and setting national goals for cardiovascular health promotion and disease reduction: the American Heart Association's strategic impact goal through 2020 and beyond. Circulation. 2010; Lloyd-Jones DM et al.
3) Cardio-sarcopenia: A syndrome of concern in aging. Front Med (Lausanne)2022 Oct 25;Loh R et al.

PREVENZIONE E RIABILITAZIONE 103
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE (IMAGING CARDIOVASCOLARE)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)

TRANSIZIONE DI GENERE: IMPATTO SUI PARAMETRI ECOCARDIOGRAFICI E SULL'ASSETTO ORMONALE

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Background: L'impatto della terapia ormonale di affermazione di genere (Gender-Affirming Hormone Therapy, GAHT) sul sistema cardiovascolare delle persone transgender è ancora poco definito. Questo studio valuta l'impatto della GAHT, dopo 12 mesi, sull'assetto ormonale e su parametri ecocardiografici nei soggetti AFAB (Assigned Female At Birth) e AMAB (Assigned Male At Birth), analizzando le relative correlazioni.

Metodi: Studio prospettico, osservazionale, monocentrico su 20 soggetti transgender adulti (10 AFAB, 10 AMAB), seguiti per 12 mesi. Sono stati raccolti dati clinici, ormonali ed ecocardiografici prima dell'inizio della GAHT e al follow-up. L'analisi statistica ha incluso confronti intra- e inter-gruppi e regressioni multivariate.

Risultati: Diciannove partecipanti hanno completato il follow-up (12,9 ± 2,3 mesi). Prima dell'inizio della GAHT, i soggetti AMAB presentavano valori significativamente più elevati di massa ventricolare sinistra indicizzata (IMVS), mentre dopo 12 mesi si è osservata una significativa riduzione di questo parametro ($p = 0.002$). Il valore medio della velocità di rilasciamento diastolico miocardico (e') è aumentato significativamente nella coorte totale ($p < 0.001$), senza alterazioni significative del pattern flussimetrico transmitralico. Frazione di eiezione (FE) e stroke volume indicizzato (SVi) sono rimasti invariati in entrambi i sottogruppi. Una correlazione significativa è emersa tra la variazione del testosterone e dell'IMVS nei soggetti AMAB ($\beta = -0.714$; $p = 0.013$; $R^2 = 0.739$).

Conclusioni: La GAHT determina modificazioni ecocardiografiche differenziate in base al sesso assegnato alla nascita e al genere esperito, mantenendo un buon profilo di sicurezza in termini di performance sisto-diastolica cardiaca nel breve termine. L'ecocardiografia si conferma uno strumento essenziale per il monitoraggio strutturale e funzionale del cuore in questa popolazione, e può supportare un approccio personalizzato e multidisciplinare per la presa in carico clinica delle persone transgender.

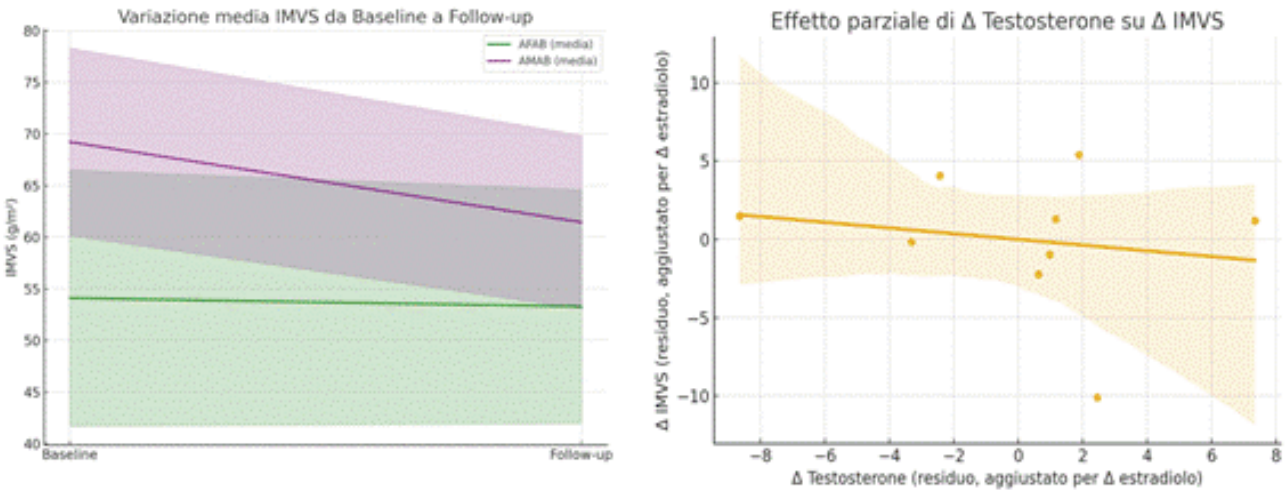

Variazione media IMVS da Baseline a Follow-up
AFAB (media)
AMAB (media)
IMVS (g/m²)
80
75
70
65
60
55
50
45
40
Baseline
Follow-up
Effetto parziale di Δ Testosterone su Δ IMVS
Δ IMVS (residuo, aggiustato per Δ estradiolo)
10
5
0
−5
−10
−8
−6
−4
−2
0
2
4
6
8
Δ Testosterone (residuo, aggiustato per Δ estradiolo)

Figure 1

PREVENZIONE E RIABILITAZIONE 855
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)
INFARTO NSTEMI (CARDIOPATIA ISCHEMICA)
INFARTO STEMI (CARDIOPATIA ISCHEMICA)

QUANDO LO STENT NEL PAZIENTE GIOVANE PUÒ DIVENTARE UN'OPPORTUNITÀ PER IL PARENTE SANO

Riccardo Vigna (a), Alberto Cervone (a), Francesco Cuccia (a), Francesco Paparazzo (a), Paolo Cimaglia (a)
(a) CARDIOLOGY UNIT, AZIENDA OSPEDALIERO UNIVERSITARIA DI FERRARA, FERRARA, ITALY

INTRODUZIONE L'esordio della malattia coronarica (CAD) in età precoce suggerisce una possibile componente genetica oltre ai tradizionali fattori di rischio.
Con la stessa logica dello screening a cascata che si applica in alcune patologie genetiche, utilizzare l'episodio di CAD precoce per innescare la valutazione del rischio cardiovascolare nei familiari di tali pazienti, potrebbe essere una strategia efficace di prevenzione primaria.

METODI Nell'ottica di avviare un progetto di prevenzione rivolto ai familiari dei pazienti, tra il 1/1/2025 e il 20/7/2025 è stata indagata l'anamnesi familiare di tutti i pazienti con diagnosi di CAD precoce (definita come esordio <60 anni per i maschi e <70 anni per le femmine) ricoverati nel reparto di Cardiologia del nostro Centro. Per ogni paziente è stato raccolto il numero di familiari di primo grado, la loro età, ed eventuali ostacoli ad un programma di prevenzione primaria.

RISULTATI Sono stati ricoverati nel reparto di Cardiologia 106 pazienti con CAD precoce (in media uno ogni 2 giorni), di cui 43 (41%) femmine. La diagnosi più comune era la sindrome coronarica acuta (61, 56%). Per 81 (76%) si trattava del primo evento coronarico mentre 25 (24%) avevano già diagnosi di CAD in media da 9 anni. Trentadue (30%) dei pazienti avevano familiarità per malattia cardiovascolare precoce.
Escludendo 4 (4%) pazienti non intervistabili per barriera linguistica completa, gli altri 102 avevano in totale 191 fratelli e 149 figli. Di questi 340 soggetti, solo 22 (6%) avevano già avuto un evento cardiovascolare. Questo significa che 318 erano eleggibili per una valutazione del rischio CV. Tuttavia, eventuali percorsi di prevenzione primaria potrebbero essere ostacolati da alcuni fattori quali minore età (36, 11%), barriera linguistica completa (39, 12%) o familiari non in contatto (36, 11%).

CONCLUSIONI Nella nostra esperienza per ogni caso di malattia coronarica ad esordio precoce vi erano in media tre soggetti apparentemente sani che avevano almeno un fattore di rischio cardiovascolare (la familiarità per CAD). Questi soggetti potrebbero beneficiare di una valutazione del rischio cardiovascolare. È importante sottolineare che un terzo di questi soggetti risulterebbe escluso dal nostro progetto di prevenzione primaria per difficoltà logistico-organizzative.

CardioSic

PREVENZIONE E RIABILITAZIONE 692
RIABILITAZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
ATTIVITÀ FISICA E PREVENZIONE CARDIOVASCOLARE (ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)
FARMACI CARDIOVASCOLARI (FARMACI CARDIOVASCOLARI E NUTRACEUTICI)

CARDIAC REHABILITATION: A FUNDAMENTAL PILLAR TO MANAGE MEDICATION REGIMENS

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Cardiac rehabilitation (CR) is a fundamental pillar in the therapeutic pathway for patients with cardiovascular disease, significantly contributing to improving quality of life and reducing the risk of recurrence. Over the past decades, this approach has progressively evolved, integrating multidisciplinary strategies based on scientific evidence and tailored to the needs of the individual patient.
Precisely, this study aimed to evaluate the effectiveness of CR through a retrospective analysis of patients enrolled in the CR program of Heart Failure and Cardiac Rehabilitation of our University Hospital.

Specifically, the anthropometric, clinical, laboratory, and instrumental (echocardiography, EKG, CPET) data of 63 patients (age 66.30 ± 1.20 years, 78% male) who underwent the rehabilitation program between 2023 and 2025 were analyzed.
Patients had various diagnoses at entry into the CR program: 10 patients (16%) had heart failure, 12 (19%) had cardiac surgery, 10 (16%) had acute coronary syndrome, 9 (14%) had chronic coronary syndrome, and 22 (35%) had dyspnea.
Moreover, most of the patients had numerous comorbidities and risk factors: 79% hypertension, 76% dyslipidemia, 39% diabetes mellitus, 36% smoking, 11% thyroid dysfunction, 46% coronary artery disease (CAD), 20% chronic kidney disease (CKD), 16% chronic obstructive pulmonary disease (COPD).
Laboratory data showed a reduction in LDL cholesterol values post-CR (pre-CR 71.00 ± 4.71 mg/dl vs post-CR: 56.58 ± 4.93 mg/dl; p=0.06), which, however, did not reach statistical significance.
From a functional standpoint, at baseline CPET, on average patients showed a moderately reduced functional capacity (VO2peak: 13.93 ± 0.70 ml/min/kg; VO2% predicted: 59.91 ± 3.22%), and a significant improvement was recorded in meters walked at the 6MWT (pre-CR 312 ± 11.66 m vs. post-CR 380.49 ± 14.28 m; $p<0.05$).
Finally, we recorded no changes in blood pressure and heart rate; nevertheless, was observed a significant reduction (post-CR) in three drug categories (Figure 1): ACE-inhibitors (pre-RC 25.39% vs post-RC 14.28%; $p<0.05$), loop diuretics (pre-CR 33.33% vs post-CR 14.28%; $p<0.05$), and mineralocorticoid receptor antagonist (MRA) (pre-CR 42.85% vs post-CR 26.98%; $p<0.05$).

These data confirm the key role of CR in the management of cardiac patients, and in the optimization of medication regimens, especially for older adults, through its potential to address several aspects of care; however, optimization of therapy in the CR context is underexplored in the literature, giving this study a pioneering status.

CardioSic

86° CONGRESSO NAZIONALE SIC
Roma, 4-7 dicembre 2025

SCOMPENSO CARDIACO

SCOMPENSO CARDIACO 142
PROGNOSI (SCOMPENSO CARDIACO)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)

EVENT RATES IN MAJOR HEART FAILURE PHASE 3 TRIALS OVER THE LAST 20 YEARS

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(a) FONDAZIONE TOSCANA GABRIELE MONASTERIO; (b) SCUOLA SUPERIORE SANT'ANNA;
(c) OSPEDALE CAREGGI

Background: The prognosis of patients with heart failure (HF) has significantly improved over the last decades. However, whether this trend has translated into lower event rates in HF randomized controlled trials (RCTs) has not been investigated.

Methods: Phase 3 RCTs enrolling stable HF patients published in the New England Journal of Medicine from 2004 to 2024 were identified. The following enrichment criteria (i.e., patient characteristics associated with a higher likelihood of events) were considered: New York Heart Association class III-IV, any age threshold ≥40 years, any natriuretic peptide cut-off, prior recent HF event, and pulmonary congestion or elevated filling pressures.

Results: We identified 31 RCTs on HF with reduced ejection fraction (HFrEF) and 7 on HF with mildly reduced or preserved EF (HFmrEF/HFpEF). In HFrEF RCTs, baseline EF and prescription of beta-blockers and mineralocorticoid receptor antagonists increased over time. Median annual rates of all-cause mortality were 0.09 events/patient/year (interquartile range 0.06-0.12) in the treatment arm and 0.10 events/patient/year (0.08-0.13) in the control arm. Event rates did not change significantly over time (patients, p=0.697; controls, p=0.456). No relationship between the year of study initiation and number of enrichment criteria emerged (p=0.226), while the use of natriuretic peptide cut-offs became increasingly common (p=0.006, beta=0.641). The number of enrichment criteria predicted all-cause mortality rates in the control arm (p=0.037, beta=0.376).

Conclusions: The lack of decrease in mortality rates in HFrEF trials likely reflects the combination of better background therapies that improve prognosis and growing reliance on some enrollment criteria that capture higher-risk patients.

SCOMPENSO CARDIACO 736
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)

UNDERUSE OF VERICIGUAT IN HFREF: INSIGHTS FROM A MONOCENTRIC RETROSPECTIVE STUDY

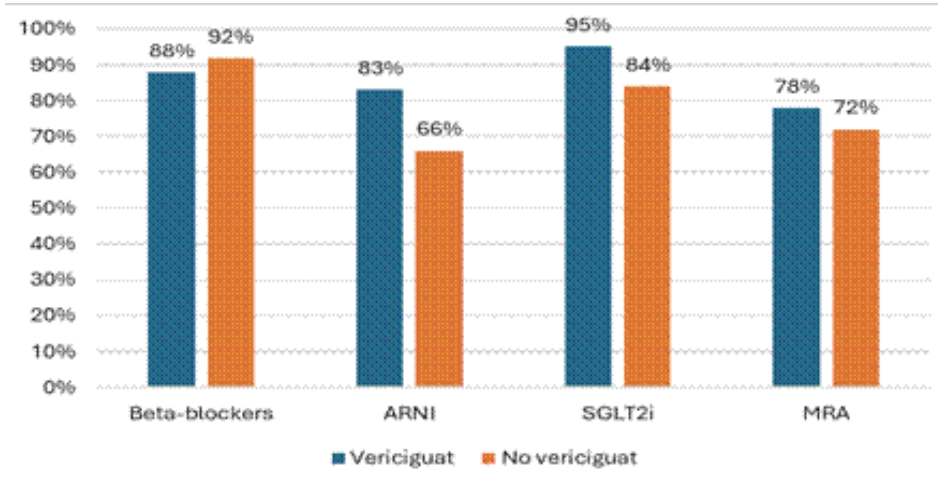
Lorenzo Alunni Solestizi (a), Enrico Manoni (a), Federico Maria Sopranzi (a), Samuele Principi (a), Alessandro Barbarossa (a), Giulia Stronati (a), Michela Casella (a), Antonio Dello Russo (a), Federico Guerra (a)
(a) UNIVERSITA' POLITECNICA DELLE MARCHE

Background: Heart failure with reduced ejection fraction (HFrEF) is associated with high morbidity and mortality. Vericiguat, a soluble guanylate cyclase stimulator, has been shown to reduce adverse outcomes in patients with recent worsening HFrEF, but real-world evidence in Italy is still limited.

Methods: Data regarding all consecutive patients with were retrospectively collected from A&E consultations or hospitalizations for HF admitted in the Clinica di Cardiologia ed Aritmologia, Ancona, Italy. Patients with an indication to vericiguat according to the ESC guidelines and Italian reimbursement regulations (episode of worsening HFrEF despite optimal treatment requiring hospitalization or e.v. diuretic treatment) were divided into those who were prescribed vericiguat and those who were not. Data gathering were snapshotted from August 2024 to August 2025.

Results: Of 78 patients included in the snapshot, 41 (52%) were prescribed vericiguat before discharge while 37 (48%) were not. Mean age was 70±16 years and 71% were males. Concomitant pharmacological treatment at the time of HF worsening are showed in Figure 1. Variables associated with a missed prescription were a history of HF of less than 12 months (40.5% vs. 14.6%; p=0.01) and a history of atrial fibrillation (63.9% vs. 43.9%; p = 0.04); whereas an implanted ICD (8.1% vs. 31.7%, p=0.01), high levels of NT-proBNP (1625 vs 802 pg/ml; p =0.04) and intolerance/missed therapy with ARNI (66% vs. 83%; p = 0.01) were associated with higher rates of vericiguat prescription.

Conclusions: This study suggests that vericiguat is probably underutilized and sGC agonist treatment is more likely to be prescribed in later stages of the disease, or when HFrEF is not associated with a potential arrhythmic comorbidity such as atrial fibrillation. Patients who are not tolerating ARNI therapy are more likely to be prescribed vericiguat.



Concomitant pharmacological treatment at the time of HFrEF: vericiguat and the four pillars.

Figure 1

CardioSic

SCOMPENSO CARDIACO 653
FARMACI ANTIARITMICI (ARITMIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
PROGNOSI (SCOMPENSO CARDIACO)

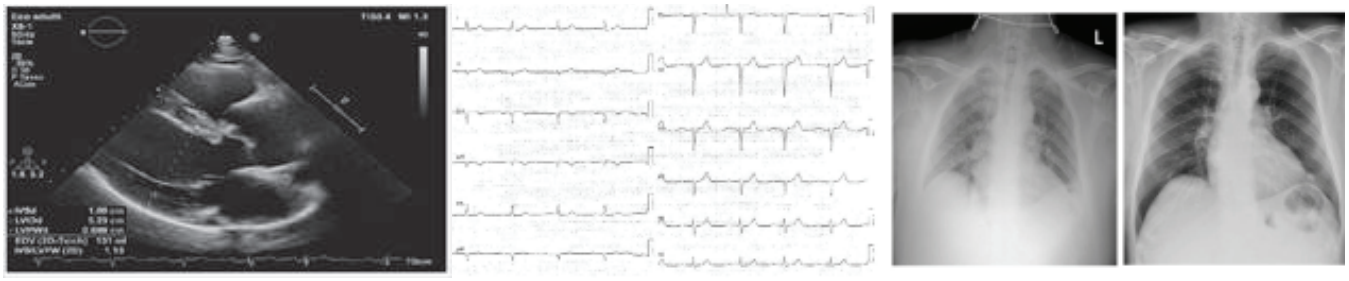
ACUTE HEART FAILURE INDUCED BY FLECAINIDE: A CASE OF REVERSIBLE BIVENTRICULAR DYSFUNCTION

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BACKGROUND: Flecainide is an effective antiarrhythmic agent for atrial fibrillation (AF) cardioversion, particularly in patients without significant structural heart disease. However, it may cause biventricular dysfunction and hemodynamic compromise.

CASE PRESENTATION: A 71–years–old man presented to the emergency department with worsening dyspnea and asthenia two days after undergoing electrical cardioversion for AF, during which flecainide therapy was initiated. The patient had previously undergone electrical cardioversion with amiodarone, which resulted in early recurrence. Additionally, coronary angiography performed a few months earlier had revealed no significant coronary artery disease, and a prior echocardiogram had shown normal findings.
At presentation, echocardiography showed moderate–to–severe biventricular dysfunction, mild mitral insufficiency, and mild–to–moderate tricuspid insufficiency with reduced caval collapsibility (Fig 1). The ECG revealed sinus bradycardia at 52 bpm, first–degree atrioventricular block, left axis deviation, poor R–wave progression in the precordial leads, normal repolarization, and a QTc of 484 ms (Fig 2). Arterial blood gas analysis indicated hyperventilation and reduction of bicarbonates (pH 7.45, pO2 97 mmHg, pCO2 27 mmHg, HCO3– 18.8 mmol/L, Lac 1.3 mmol/L). A chest X–ray showed hilar congestion with a small left pleural effusion (Fig 3). Laboratory tests revealed acute kidney injury stage 2 and worsening liver function parameters (creatinine 2.02 mg/dL, urea 110 mg/dL, AST 81 U/L, ALT 171 U/L) compared to values from two days earlier (creatinine 0.97 mg/dL, urea 50 mg/dL, AST 33 U/L, ALT 58.7 U/L).
On admission to the ward, diuretic therapy with low–dose furosemide was initiated, resulting in rapid symptomatic relief. Flecainide therapy was discontinued. Liver and kidney function showed marked improvement within two days. A follow–up echocardiogram revealed a significantly improved cardiac function profile, with normal biplane ejection fraction (FE 58%), mild mitral regurgitation, normal right ventricular dimensions and systolic function (TAPSE 21 mm), and mild tricuspid regurgitation.

CONCLUSION: This case highlights acute biventricular dysfunction likely induced by flecainide, with complete recovery following drug discontinuation. It underscores the importance of vigilance regarding this potential adverse effect of flecainide.



Figures

SCOMPENSO CARDIACO 815
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
ECOCARDIOGRAFIA 3-D (IMAGING CARDIOVASCOLARE)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
PATOLOGIA DELLA VALVOLA TRICUSPIDE (VALVULOPATIE)
IPERTENSIONE POLMONARE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)

RIGHT VENTRICULAR CONTRACTILE RESERVE IN HEART FAILURE WITH PRESERVED EJECTION FRACTION

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Background. Right ventricular (RV) dysfunction is relevant in patients with heart failure with preserved ejection fraction (HFpEF). However, markers of RV dysfunction may fail in identifying early RV failure when evaluated in resting conditions only. Additionally, even less than severe tricuspid regurgitation (TR) might complicate proper assessment of RV function.
Aim. To characterize RV function and exercise contractile reserve in HFpEF.

Methods. HFpEF patients without severe TR underwent simultaneous three-dimensional echocardiography (3DE) and right heart catheterization (RHC) at rest and during exercise. HFpEF were subdivided according to rest-exercise RV ejection fraction (EF) changes: exhausted RV reserve, RVEF- (ΔRVEF≤0%); preserved RV reserve, RVEF+ (ΔRVEF>0%). Effective RVEF (eRVEF) was calculated as RV forward stroke volume / RV end-diastolic volume.

Results. Sixty-five patients were included (49% RVEF-). Prevalence of atrial fibrillation was higher in RVEF- (69% vs 33%, p<0.05). At rest, RVEF- had higher TR regurgitant volume, RegVol, (p<0.05) and RVEF (p<0.05). eRVEF was similar between groups (49±15% vs 47±14%, p=0.636). At rest, RVEF- presented with higher pulmonary artery (PA) pressure, PA wedge pressure and right atrial pressure (RAP) (p<0.05). During exercise, RVEF- showed larger RV volumes dilation, higher RAP and blunted increase of systemic and PA pressures, as well as of cardiac output (p<0.05). Resting eRVEF was associated (p<0.01) with resting mean PA pressure (r=-0.45) and resting RAP (r=-0.35). Exercise eRVEF was associated with HFpEF-ABA probability (r=-0.49), NTproBNP (r=-0.54), exercise RAP (r=-0.51), TR VolReg (r=-0.72) and TR regurgitant fraction (r=-0.77).

Conclusions. Exhausted RV reserve is frequent in HFpEF and associated with more advanced HFpEF characteristics, including worse rest and exercise cardiopulmonary hemodynamics, and TR severity. Exhausted RV reserve led to exercise-induced RV dilation, as well as blunted forward flow and pressure increase.

SCOMPENSO CARDIACO 910
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

EFFECTS ON ECHOCARDIOGRAPHIC PARAMETERS AFTER 6 MONTHS OF TREATMENT WITH VERICIGUAT IN CHRONIC HEART FAILURE: A PILOT STUDY

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Background: Vericiguat represents nowadays the fifth pillar of medical therapy for patients with heart failure (HF). The VICTORIA study, a large randomized controlled trial, demonstrated that it may induce a significant reduction of cardiovascular mortality and HF exacerbations in subject with reduced left ventricular ejection fraction (LVEF) and a recent HF hospitalization. This drug, acting on the nitric oxide pathway, may have important cardioprotective effects. However, the exact mechanism of action remains unknown, requiring in-dept investigations. The aim of our pilot study was the identification of potential cardiac direct effects of this drug using transthoracic echocardiography.

Materials and Methods: A perspective, observational, monocentric, pilot study was conducted enrolling 9 patients with chronic HF from January 2024 to January 2025 eligible for Vericiguat treatment due to the presence of reduced LVEF and a recent hospitalization for HF. Each patient underwent a clinical and laboratory assessment together with a transthoracic echocardiography, before the drug initiation and after 6 months of treatment.

Results: The median age of the population was 61 (IQR 25) years, with a marked prevalence of male sex (88% of cases). An ischemic aetiology of HF was found in about one half of patients (44%). Cardiovascular risk factors were greatly represented, as demonstrated by the high rate of arterial hypertension and dyslipidaemia (88% in both) in the enrolled population. A common comorbidity was chronic kidney disease, which was found in about one third of cases. The four disease-modifying drugs of HF therapy (beta blockers, SGLT2i, ACEi/ARB/ARNI, MRA) were taken by the majority of patients (78%). A NYHA class 3 was present in about 75% of cases, the remaining were a NYHA class 2. Regarding echocardiographic parameters, the median value of LVEF was 32% (IQR 12), the median value of LVEDV was 154 mL (IQR 54), while for LVESV was 91mL (IQR 44). Increased values of PAPS were observed [median value 40 mmHg (IQR 21)] with a mild reduction of contractility [median value of TAPSE 16 mm (IQR 8)] and a trivial increase of dimensions [mean value of RVD1 45 ± 9 mm] of the right ventricle (RV). After 6 months of treatment, no HF worsening was reported in enrolled patients. Moreover, no significant variations were observed on clinical parameters (p=1.000 for NYHA class) and laboratory data (p=0.180 for NTproBNP). A statistically significant improvement of LVEF (p=0.018) and right ventricular dimensions (p=0.035) was pointed out. In addition, a trend towards a reduction in PAPS values and an increase of RV contractility was observed.

Conclusions: Vericiguat represents a novel disease-modifying drug for patient with high-risk HF. Beyond its demonstrated positive effect on prognosis, a potential direct cardioprotective action was highlighted in our small population, requiring further larger studies to confirm these preliminary results.

SCOMPENSO CARDIACO 675
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)

GUIDELINE-DEFINED DIASTOLIC HEART FAILURE PREVALENCE IN ACUTE HEART FAILURE: A COHORT STUDY OF PATIENTS WITH LVEF > 40%

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Background: Heart failure with preserved or mildly reduced ejection fraction (HFpEF/HFmrEF) accounts for a large share of acute heart failure (AHF) admissions. However, it remains uncertain how often decompensation is attributable to isolated diastolic dysfunction, without relevant structural or arrhythmic disease, as required by guideline-based definitions. Although HFmrEF is classified separately in guidelines, we included patients with LVEF >40%, consistent with major HFpEF trials and registries.

Objective: To assess the prevalence ofAHF driven solely by diastolic dysfunction in patients with LVEF >40% and congestion.

Methods: We retrospectively analyzed 773 consecutive AHF admissions (January 2022–November 2023) with complete echocardiography at entry. Of these, 323 had LVEF >40%. Systemic congestion was defined as inferior vena cava (IVC) diameter >21 mm with reduced inspiratory collapse. A structured algorithm identified significant cardiac pathology (severe valvular disease, precapillary pulmonary hypertension, cardiomyopathy, arrhythmias with hemodynamic impact) and stage V kidney disease. Patients without these conditions were classified as guideline-defined HFpEF/HFmrEF. This variable was tested in multivariable logistic regression against systemic congestion.

Results: Among 323 patients with LVEF >40%, 252 (78%) had systemic congestion. Of these, 206 (81.7%) had severe valvular disease, 26 (10.3%) had other significant cardiac disease or stage V renal failure, and only 20 (8%) had no identifiable cause and thus fulfilled guideline-defined HFpEF/HFmrEF. Guideline-defined HFpEF/HFmrEF was inversely associated with congestion (OR 0.037, 95% CI 0.017–0.078, p<0.001).

Conclusions: In LVEF >40%, systemic congestion is rarely due to isolated diastolic dysfunction. Guideline-defined HFpEF appears uncommon as a cause of acute decompensation, underscoring the need for comprehensive diagnostic evaluation

CardioSic

SCOMPENSO CARDIACO 582
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE
(IMAGING CARDIOVASCOLARE)

EFFECTS OF SGLT2 INHIBITORS ON ATRIAL FUNCTION ASSESSED BY ECHOCARDIOGRAPHIC IN PATIENTS WITH HEART FAILURE WITH REDUCED EJECTION FRACTION

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Background: Type 2 sodium-glucose cotransporter inhibitors (SGLT2i) have shown clinical benefits in patients affected by chronic heart failure (CHF), but the mechanisms underlying their beneficial effects are still debated. Over the last years, SGLT2i showed its ability to improve left and right ventricular function, whereas its impact on atrial function remains less defined.

Objective: The aim of this study was to evaluate the effects of SGLT2i on echocardiographic parameters of left atrial function in outpatients affected by CHF with reduced ejection fraction (HFrEF).

Methods: At baseline, all patients underwent a medical visit, an ECG and an echocardiographic examination. The evaluations were repeated at 3, 6, 12, and 24 months after the introduction of SGLT2i. In a subgroup of patients, an echocardiographic evaluation was performed 6-12 months before SGLT2i introduction. Left atrial function was assessed by two-dimensional speckle tracking analysis by calculating left atrial reservoir (LAr), conduit (LAcd) and contraction (LAct). Left atrial volume was also calculated. Changes in the repeated measures were evaluated by linear mixed models. A $p<0.05$ was considered significant.

Results: Sixty HFrEF patients (83% males, age 61 ± 13, mean LVEF 31 ± 7%, NYHA class II in 75% and III in 25%) were enrolled. All were in conventional medical therapy (sacubitril/valsartan or ACE inhibitors or angiotensin II receptor blockers in 100%, beta-blockers in 100%, mineralcorticoid receptor antagonists in 87%, loop diuretics in 62%). As shown in the figure, LAr increased from 3 months onwards, with sustained benefit up to 24 months. LAcd improved significantly at 3 and 12 months ($p<0.05$), while LAct showed a progressive and persistent improvement from month 3 to month 24. Left atrial volume (LAV) remained unchanged throughout the follow-up.

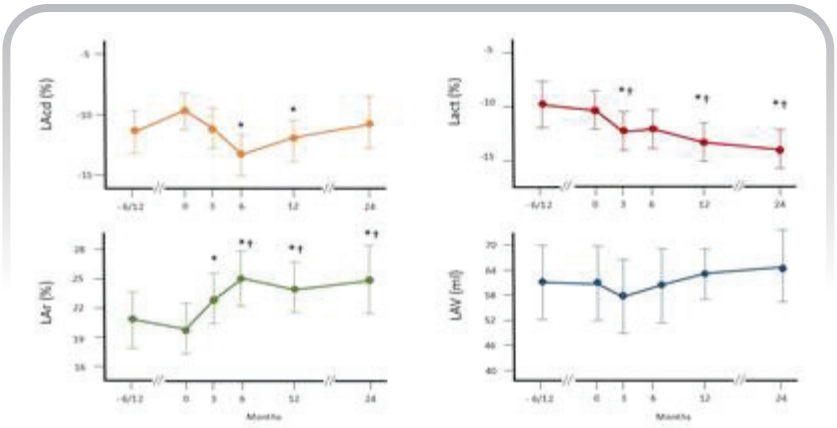


Figure legend: *p<0.05 vs. baseline. †p<0.05 vs. -6/12 months.

Figure 1

SCOMPENSO CARDIACO 589
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
PROGNOSI (SCOMPENSO CARDIACO)

EFFECTS OF TYPE 2 SODIUM GLUCOSE COTRANSPORTER INHIBITORS ON RENAL FUNCTION AND RENAL RESISTANCE INDEX

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Background. Type 2 sodium glucose cotransporter inhibitors (SGLT2i) have demonstrated cardiorenal protection in patients affected by type 2 diabetes mellitus (T2DM), chronic kidney disease (CKD) and chronic heart failure (CHF). Among the mechanisms underlying this benefit, there is the possible restoration of tubuloglomerular, which contrasts glomerular hyperfiltration and the progression of CKD.

Aim of the study. To evaluate the relationship between the introduction of SGLT2i, the estimated glomerular filtration rate (eGFR) and the arterial renal resistance index (RRI) in CHF outpatients with reduced ejection fraction (HFrEF).

Methods. Fifty-two patients (mean age 60±13, 81% males, NYHA class 2.2±0.39, 21% with T2DM and 31% with CKD) affected by HFrEF (mean left ventricular ejection fraction, LVEF, 31±7%) and in conventional therapy (100% ACE-inhibitors or ATII receptor antagonists or sacubitril/valsartan, 100% beta-blockers, 86% mineralcorticoid receptor antagonists) were enrolled. Before and 1 or 3, 6, 12, and 24 months after SGLT2i prescription, eGFR by serum creatinine levels and the renal resistance index (RRI) by echo Doppler were evaluated. Changes in the repeated measures were evaluated by linear mixed models. A $p<0.05$ was considered significant.

Results. In comparison with baseline values, a non-significant reduction in eGFR but a significant increase in RRI values was observed at 1-3, 6 and 12 months (see Figure panels A and B). During early follow-up, 13% of patients showed early worsening of renal function (WRF, defined as an increase of serum creatinine > 0.3 mg/dl with an eGFR reduction >25%). Among patients with and without WRF, eGFR diverged, whereas a similar trend in change of RRI was observed.

Conclusions. In HFrEF patients, after SGLT2i introduction a significant increase in RRI observed in patients with and without early WRF. These data strengthen the possible effects of SGLT2i on afferent arterioles and hyperfiltration, considering that afferent and efferent arterioles are mainly responsible for renal resistance variations.

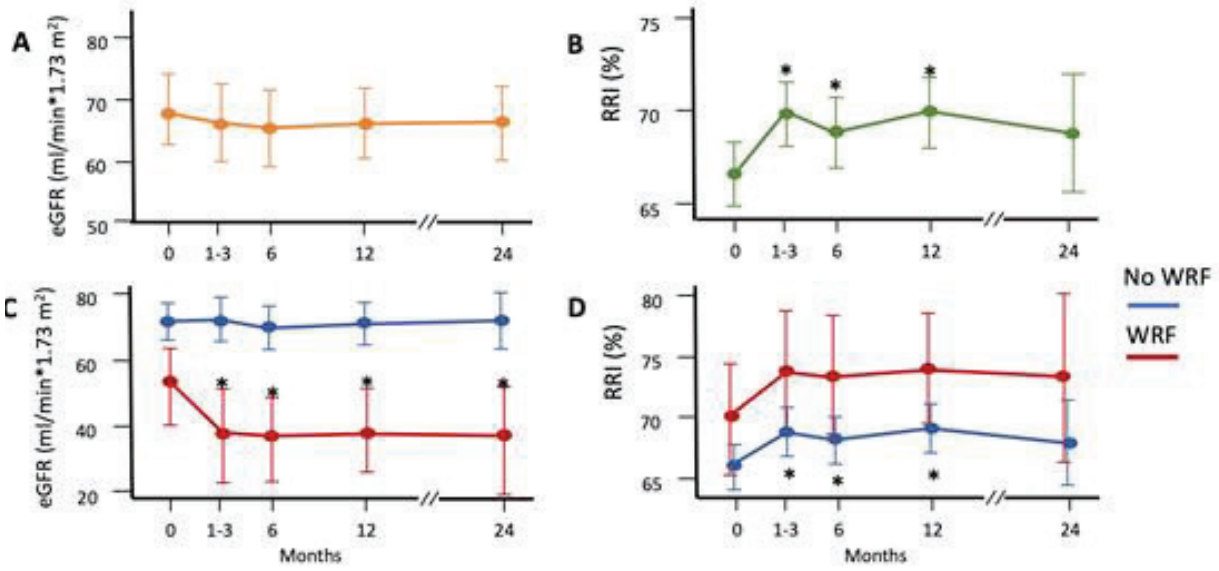


Figure legend: *p<0.05 vs. baseline.

Figure 1

SCOMPENSO CARDIACO 888
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
BIOMARCATORI DELLO SCOMPENSO (SCOMPENSO CARDIACO)

THORACIC AND TOTAL-BODY BIOIMPEDENCE FOR THE ASSESSMENT OF CARDIAC OUTPUT IN PATIENTS WITH HEART FAILURE: CORRELATION WITH RIGHT HEART CATHETERIZATION DATA AND AN ANALYSIS IN PATIENTS WITH AND WITHOUT ATRIAL FIBRILLATION

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Background and Aim of the Study: Right heart catheterization (RHC) remains the gold standard for measuring stroke volume (SV) and calculating cardiac output (CO). However, various non-invasive techniques have been introduced. Among these, bioimpedance, both total and thoracic, is emerging as a pivotal method. Nevertheless, real-world comparative data on its reliability in HF patients remain limited, which is crucial for future clinical decision-making based on these CO measurement techniques, especially in the presence of atrial fibrillation (AF).

Methods: In our clinical practice, we collected data from HF patients undergoing RHC, followed by SV assessment using non-invasive measurement techniques, specifically thoracic impedance (TI) and total-body bioimpedance (TbI). We performed descriptive and correlation analyses (Pearson) comparing these methods with RHC-derived parameters, and between patients with and without AF.

Results: A total of 76 patients were included, with a median age of 70 years [IQR 62-78]; 40.8% were female, with a median BMI of 26.0 [23.7-29.4]. The median heart rate was 70 bpm [61-81], median LVEF 45% [32-47%] median systolic blood pressure was 130 mmHg [116-150], and median SpO_2 was 98% [95-99]. Atrial fibrillation (AF) was present in 34 patients (44.7%). The median SV values obtained were 62.0 mL [48.3-73.5] via RHC, 68.4 mL [58.1-86.6] via TI, and 58.0 mL [45.8-72.9] via TbI. Despite a general concordance among the measurements, TI and TbI SV values demonstrated a low-to-moderate Pearson correlation with RHC-derived SV [Figure 1]. In patients with AF compared to those in sinus rhythm, correlation coefficients with RHC were weaker, with values of 0.42 (p=0.022) for TI and 0.27 (p=0.212) for TbI.

Conclusions: In an unselected cohort of HF patients undergoing RHC, SV measurements obtained using TI and TbI exhibited a low-to-moderate correlation with RHC-derived values. Among patients with AF, only TI demonstrated a weak yet significant correlation with RHC measurements.

Characteristics	Total cohort (n=76)
Female, n (%)	31 (40.8)
AF, n (%)	34 (44.7)
Age, m [IQR]	70 [IQR 62-78]
BMI, m [IQR]	26.0 [23.7-29.4]
sBP, m [IQR]	130 [116-150]
O_2a, m [IQR]	98% [95-99]

SV measurements		Correlation coeff.	p
RHC, m [IQR]	62.0 mL [48.3-73.5]		-
Tbl, m [IQR]	58.0 mL [45.8-72.9]	0.52	<0.001
Tl, m [IQR]	68.4 mL [58.1-86.6]	0.41	<0.001
SV measurements in AF group			
RHC, m [IQR]	49.2 mL [40.7-62.2]		-
Tbl, m [IQR]	53.8 mL [45.8-42.3]	0.27	0.212
Tl, m [IQR]	72.6 mL [62.3-85.5]	0.42	0.022

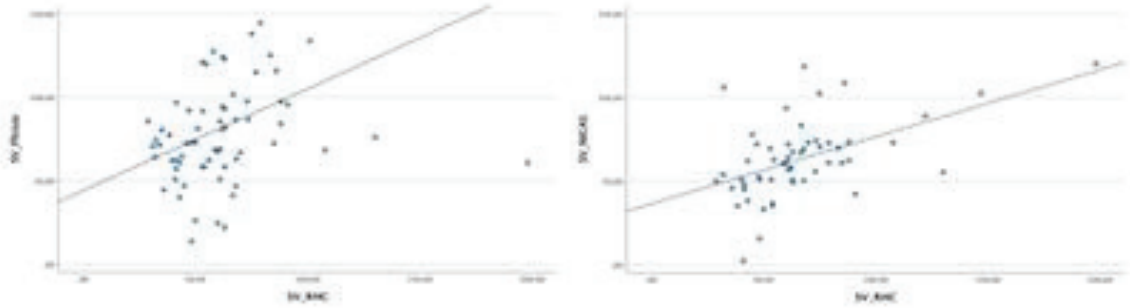


Figure 1

SCOMPENSO CARDIACO 762
SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)
ASSISTENZA CARDIACA IN ACUTO NEL DIPARTIMENTO DI EMERGENZA (ASSISTENZA CARDIACA IN ACUTO)
ASSISTENZA INTENSIVA CARDIOVASCOLARE IN ACUTO (ASSISTENZA CARDIACA IN ACUTO)

ACCURACY OF NON-INVASIVE CARDIAC INDEX ESTIMATION IN CARDIOGENIC SHOCK PATIENTS WITH IMPELLA SUPPORT

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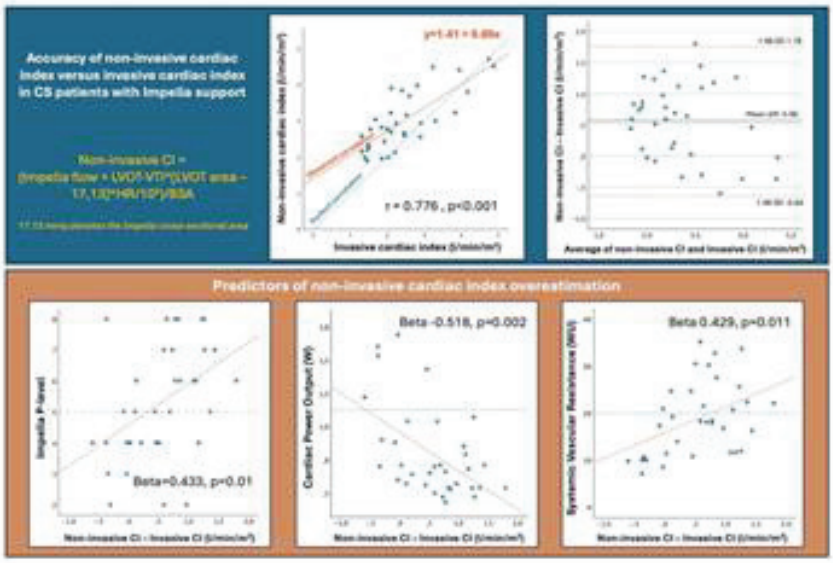
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Purpose. Cardiac index (CI) helps guiding escalation and weaning strategies in cardiogenic shock (CS) patients supported with a microaxial flow pump (Impella, Abiomed). Non-invasive echocardiographic CI assessment by the left ventricular outflow tract velocity-time integral (LVOT-VTI) method is a highly accurate modality. However, its performance among CS patients supported with Impella is unknown.

Methods. Consecutive CS patients on Impella support with a pulmonary artery catheter were included. CI was non-invasively estimated as the sum of Impella flow on device console and native CI using the LVOT-VTI method corrected for the Impella head cross-sectional area (17.13 mm2): eCI = (Impella flow + LVOT-VTI*[LVOT area – 17,13]*heart rate/105)/body surface area. The accuracy of eCI was compared with CI invasively determined by the thermodilution method within 30 minutes from echocardiography.

Results. 34 coupled eCI and CI measurements were obtained in 14 CS patients on Impella support (female gender 14.3%, median age 69 years, acute myocardial infarction-CS 57.1%, Impella 5+ 21.4%). Median eCI was 2.8 (IQR 2.3-3.7) L/min/m2 and median CI was 2.1 (IQR 1.7-2.9) L/min/m2. A strong correlation was observed between eCI and CI (Pearson coefficient 0.776, $p<0.001$). eCI systematically overestimated CI (median difference 0.6, IQR 0.1-1.1 L/min/m2; pWilcoxon<0.001). At linear regression, Impella P level (beta 0.433, p=0.01), CI (beta -0.550, $p<0.001$), cardiac power output (beta -0.518, p=0.002), and systemic vascular resistance (beta 0.429, p=0.011) were associated with overestimation of true CI by eCI.

Conclusions. Despite being strongly correlated with invasive CI, eCI systematically overestimates it. Overestimation appears to be higher in patients with higher Impella support and poorer native cardiac function. Further research should assess whether this finding depends on Impella-flow estimation algorithms or on echo-based native CI, and define more accurate non-invasive CI metrics.



Accuracy of non-invasive cardiac index versus invasive cardiac index in CS patients with Impella support.

Figure 1

SCOMPENSO CARDIACO 465
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
PROGNOSI (SCOMPENSO CARDIACO)

AMILOIDOSI DA TRANSTIRETINA: RELAZIONE FRA DISFUNZIONE ENDOTELIALE, STRAIN VENTRICOLARE SINISTRO E OSPEDALIZZAZIONI CARDIOVASCOLARI

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Background: L'amiloidosi da transtiretina (ATTR) è una malattia causata dal deposito extracellulare di proteine di amiloide determinata da un difetto di ripiegamento della transtiretina. Negli ultimi anni si sono sviluppati farmaci mirati in grado di modificare il decorso della malattia. Tra questi il più importante è il Tafamidis, che stabilizza la transtiretina tetramerica impedendone la dissociazione e la formazione di fibrille. Il farmaco è associato ad una riduzione della mortalità e delle ospedalizzazioni nei pazienti con ATTR. Oltre agli effetti sul cuore, Tafamidis sembra avere un effetto favorevole anche sulla funzionalità endoteliale.

Obiettivo dello studio: Valutare la funzione endoteliale dei pazienti affetti da Amiloidosi TTR ed identificare la correlazione fra il grado di disfunzione endoteliale e parametri ecocardiografici funzionali (Global Longitudinal Strain - GLS) alterati nei pazienti affetti da amiloidosi TTR.

Materiali e metodi: Sono stati arruolati 92 pazienti affetti da amiloidosi TTR prima dell'inizio della terapia con Tafamidis. Al momento dell'arruolamento (T0) ogni paziente è stato sottoposto ad ecocardiografia transtoracica, applanazione e tonometria periferica arteriosa (PAT) per indagare la funzione cardiaca, la funzionalità endoteliale (Reactive Hyperemia Index – RHI) e la rigidità arteriosa (Pulse Wave Velocity carotideo-femorale - cfPWV). Il follow-up prevedeva la valutazione dei soli parametri ecocardiograficia 9 mesi (T1) dall'inizio della terapia.

Risultati: Per quanto riguarda la funzione endoteliale, si sono osservati valori medi di RHI e di cfWPV ridotti nei pazienti con amiloidosi cardiaca TTR (RHIm: 1.16 – IC: 0.92, 1.68, cut-off di normalità: > 2, WPVm: 10.75 m/s, IC: 9.1 – 12, cut-off di normalità > 10 m/s). Si è osservata una relazione lineare fra i valori di RHI e GLS (p value= 0.001), sottolineando come al peggiorare della funzione endoteliale corrisponda una riduzione dei valori di strain logitudinale ventricolare sinistro.
Dai dati ecocardiografici registrati al T0 e T1 non si è emersa una differenza significativa dei valori di GLS (GLS-T0: −11,7 ± 3,3% ; GLS-T1: −11,5 ± 3,0% ; p = 0,43).
Analizzando l'outcome rate per ospedalizzazioni da cause CV, si è evidenziato che nel gruppo di pazienti con RHI severamente ridotto (RHI < 1.55) vi sia un tasso di ospedalizzazione per eventi cardiovascolari maggiore (39% vs 11%, p value= 0,054).

Conclusioni: Nei pazienti affetti da amiloidosi TTR è stata riscontrata una marcata disfunzione endoteliale associata a un aumento della rigidità arteriosa e strettamente correlata alla compromissione della funzione ventricolare sinistra (GLS). La presenza di un RHI severamente ridotto si associa a un tasso più elevato di ospedalizzazioni cardiovascolari. Questi risultati suggeriscono che la valutazione della funzione endoteliale possa rappresentare un utile marker prognostico nei pazienti con amiloidosi TTR e supportano l'importanza di un monitoraggio integrato, volto non solo alla stabilizzazione cardiaca, ma anche alla salute vascolare.

CardioSic

SCOMPENSO CARDIACO 179
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)

SYSTEMIC AL AMYLOIDOSIS REVEALED BY CARDIORENAL SYNDROME: A CASE REPORT

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A 66-year-old patient with no previous medical history was admitted to the Emergency Room reporting progressive dyspnea on moderate to mild exertion over the past month. On examination, the patient showed mild pre-tibial edema, blood pressure of 120/70 mmHg, and oxygen saturation of 92% in ambient air. Auscultation of the chest revealed bilateral inspiratory crackles at the lung bases and bilateral jugular venous distension with evident hepatojugular reflux. The electrocardiogram showed sinus rhythm with a heart rate of 89 bpm, normal atrioventricular conduction, an incomplete left bundle block and low QRS voltage. Blood tests in the emergency room showed elevated creatinine (2 mg/dl), elevated NT-proBNP (8080 pg/ml) and elevated troponin T (128 ng/L) with consistent values in serial measurements. The echocardiogram revealed moderate concentric hypertrophy of left ventricle with a granular sparkling appearance, an ejection fraction of 55%, restrictive diastolic pattern with high filling pressures (E/A>2. E/e' 27), biatrial dilatation, elevated pulmonary systolic pressure (55 mmHg), dilated vena cava with reduced inspiratory collapse and in addition mild pericardial and pleural effusion. Speckle tracking assessment showed a reduction in global left ventricular strain with apical sparing. Serum electrophoresis showed a significant peak in the gamma zone. Considering the suspicious of cardiac amyloidosis, a bone scan with 99mtechnetium (99mTc-DPD) and immunofixation of both serum and urine were requested, as well as a serum free light chain (sFLC) assay. The bone scan with 99mTc-DPD showed no accumulation of the tracer in the heart, with a Perugini score of 0. Immunofixation of both serum and urine showed a monoclonal IgG band with a lambda light chain. In addition, the patient underwent a bone marrow biopsy, which was positive for the presence of a colony of plasma cells, and a periumbilical fat biopsy, which was positive for Congo red staining. Renal biopsy was not performed due to lack of availability at our center. In light of the diagnosis of AL-type amyloidosis with cardiac and renal involvement, the patient started immunosuppressive therapy with benefit. Renal involvement occurs in approximately two-thirds of AL-type amyloidosis cases, with 25% of these patients progressing to end-stage renal disease (ESRD) and requiring renal replacement therapy, including dialysis and kidney transplantation. Cardiac involvement is observed in 50-80% of patients with AL-type amyloidosis as a restrictive cardiomyopathy. The coexistence of cardiac and renal amyloidosis results in a worse prognosis, a poorer response to diuretic treatment, and requires rapid aetiological treatment of the disease. This highlights the importance of an early diagnosis of this rare disease, also called "the great pretender".

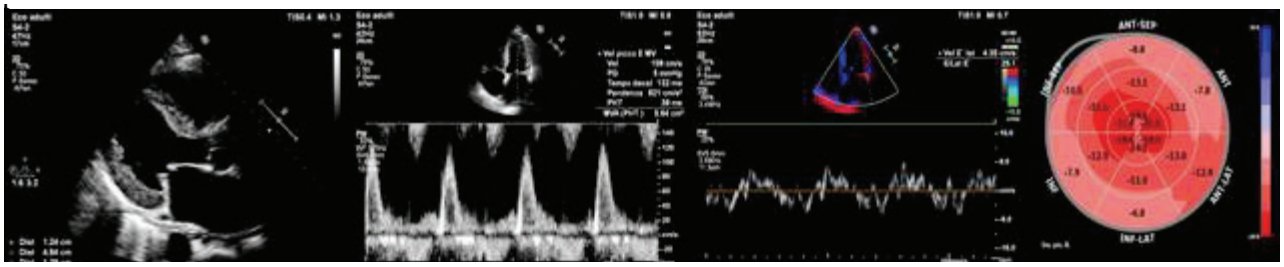


Figure 1

CardioSic

SCOMPENSO CARDIACO 325
DIAGNOSTICA INVASIVA INTRAVASCOLARE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)

PULMONARY ARTERY PULSATILITY INDEX RESPONSE TO VASODILATOR CHALLENGE PREDICTS EARLY RIGHT VENTRICULAR FAILURE AFTER LEFT VENTRICULAR ASSIST DEVICE

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Background: Vasodilator challenge during right heart catheterization (RHC), by improving right ventricular (RV) loading conditions, could provide an assessment of RV functional reserve. We hypothesized that a dynamic evaluation of RV function with sodium nitroprusside (NTP) infusion could enhance conventional risk stratification for post-LVAD early RV failure (RVF).

Methods: We performed an observational retrospective multi-center study including consecutive LVAD recipients undergoing vasodilator challenge within 3 months from surgery. We evaluated the association of clinical, echocardiographic, and hemodynamic data at baseline and after NTP infusion with post-LVAD early RVF.

Results: Of 160 patients, RVF occurred in 58 (36.3%) and was associated with higher in-hospital mortality (32.8% vs. 3.9%, p<0.001). Among baseline hemodynamics, pulmonary artery pulsatility index (PAPi)<2 was the single variable associated with RVF (p=0.038). In a multivariable model adjusted for in-study outcome predictors, a blunted PAPi response to vasodilator challenge (PAPi increase <2.2) emerged as the strongest independent RVF predictor (OR 4.56, 95%CI 1.88-11.07, p=0.001). Patients with a blunted PAPi response had an increased RVF risk both in the baseline PAPi <2 (61.9% vs. 12.5%, p=0.022) and in the baseline PAPi ≥2 (40.2% vs. 17.5%, p=0.004) groups. A blunted PAPi response provided incremental predictive value over the EUROMACS-RHF risk score (adj-OR 4.18, 95%CI 1.78-9.82, p=0.001).

Conclusions: Among patients undergoing LVAD implantation, a blunted PAPi response to vasodilator challenge was an independent RVF predictor, providing incremental risk stratification over baseline hemodynamics and conventional risk assessment. Vasodilator challenge, by unveiling RV functional reserve, could improve patient selection and optimization before LVAD implant.

SCOMPENSO CARDIACO 1078
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
CARDIOTOSSICITA' DA FARMACI
(CARDIO-ONCOLOGIA E CARDIO-TOSSICITA')

L'OTTIMO È NEMICO DEL BUONO: UN CASO DI SEVERA DISFUNZIONE VENTRICOLARE SINISTRA DOPO OTTIMA RISPOSTA A MAVACAMTEN

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Presentiamo il caso di un paziente di 73 anni che accedeva nel nostro centro per capogiri, astenia ed edemizzazione declive progressivamente ingravescente da circa un mese in un quadro di scompenso cardiaco acuto e insufficienza renale acuta. Il paziente, fumatore attivo, dislipidemico, con pregressa diagnosi di fibrillazione atriale parossistica, era noto al nostro centro per cardiomiopatia ipertrofica diagnosticata circa 5 anni prima, in terapia con Amiodarone, Bisoprololo, Edoxaban, Atorvastatina, Olmesartan. Circa 9 mesi prima, a seguito del peggioramento della nota dispnea da sforzo, eseguiva un ecocardiogramma transtoracico con riscontro di severa ipertrofia settale (21 mm) e severo gradiente all'efflusso ventricolare sinistro, in condizioni basali di 80 mmHg, con conservata funzione sistolica biventricolare e moderato-severo rigurgito mitralico. Veniva pertanto introdotta terapia specifica con Mavacamten al dosaggio di 5 mg/die attraverso l'"Early Access Program" per uso compassionevole, previa analisi del CYP2C19 che classificava il paziente come "normal metabolizer". Successivi ecocardiogrammi seriati a cadenza mensile mostravano progressiva riduzione del gradiente all'efflusso ventricolare sinistro che a 6 mesi dall'introduzione della terapia appariva non più campionabile con miglioramento del rigurgito mitralico che appariva di grado moderato.

All'arrivo in reparto l'ecocardiogramma mostrava moderata dilatazione del ventricolo sinistro con diffusa ipocinesia, acinesia del setto inferiore in toto e della parete inferiore medio-basale, condizionante moderato-severa riduzione della funzione sistolica (FE bp 34%, FE 3D 38%), senza segni di ostruzione all'efflusso. Veniva introdotta terapia diuretica prima parenterale, poi per os con progressivo miglioramento del quadro di compenso e dei valori di funzione renale e veniva sospesa la terapia con Mavacamten. Veniva eseguita una RM cardiaca, senza mezzo di contrasto in considerazione dei valori di funzione renale, che mostrava un quadro di diffusa ipocinesia biventricolare condizionante lieve-moderata disfunzione ventricolare sinistra e moderata disfunzione ventricolare destra, in assenza di regionalità. In considerazione dei fattori di rischio e del quadro clinico il paziente veniva sottoposto a coronarografia, previa nefroprotezione con Renal Guard, che escludeva stenosi epicardiche significative.

Dopo 5 giorni dalla sospensione del Mavacamten si ripeteva un ecocardiogramma che mostrava netto miglioramento della funzione ventricolare sinistra che appariva lievemente ridotta con sfumata ipocinesia diffusa più marcata a livello del setto medio-basale (FE bp 51%, FE 3D 39%).

Alla dimissione veniva pertanto confermata la sospensione del Mavacamten con introduzione di Sacubitril/Valsartan, Dapagliflozin e Canrenone.

Il caso conferma come l'utilizzo degli inibitori della miosina possa dare luogo ad un significativo peggioramento della funzione sistolica ventricolare sinistra, potenzialmente reversibile, con sviluppo di un quadro di scompenso cardiaco conclamato con necessità di ospedalizzazione e terapia diuretica parenterale, anche in assenza di condizioni intercorrenti come aritmie o infezioni sistemiche. In questo specifico caso la presenza di anomalie della cinetica regionale, oltre ai multipli fattori di rischio, facevano porre il sospetto di una coesistente cardiopatia ischemica, poi esclusa all'indagine angiografica invasiva con tali anomalie regionali attribuibili alla distribuzione asimmetrica dell'ipertrofia.

SCOMPENSO CARDIACO 568
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
BIOMARCATORI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)

IMPATTO DEL VERICIGUAT SU PARAMETRI EMODINAMICI, ECOCARDIOGRAFICI E CLINICI IN PAZIENTI CON SCOMPENSO CARDIACO AVANZATO: UNO STUDIO DI COORTE OSSERVAZIONALE MONOCENTRICO

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Background: Il ruolo di vericiguat nei pazienti con scompenso cardiaco avanzato candidati o in valutazione per trapianto cardiaco (HTx) o impianto dispositivo di assistenza ventricolare sinistra (LVAD) è poco esplorato. Abbiamo valutato l'impatto di vericiguat su parametri emodinamici, ecocardiografici, livelli di NTproBNP ed esiti clinici a medio termine, confrontando pazienti trattati con un gruppo di controllo.

Metodi: Studio retrospettivo–prospettico monocentrico su 34 pazienti (18 vericiguat; 16 controlli). Tutti hanno eseguito cateterismo destro ed ecocardiogramma al baseline e dopo un follow-up mediano di ~6 mesi. Abbiamo confrontato baseline, follow-up e variazioni (Δ/Δ%) di parametri emodinamici/ecocardiografici e degli indici di RV–PA (Ea, RAP/PAWP, sPAP/RAP, PAPi, SV/mPAP, RVSWI, TAPSE/PAPs). Esiti clinici considerati: ricoveri per scompenso e endpoint di stabilità clinica (assenza di ↑NT-proBNP e di ↑diuretico).

Risultati: Al follow-up, rispetto ai controlli, vericiguat si associa a: PAWP −12,8% vs +6,0% (p=0,004), TAPSE +6,46% vs −2,38% (p=0,027), SVi +2,64% vs −0,60% (p=0,026); mPAP, PVR, CO e NT-proBNP hanno variazioni non statisticamente significative (Δ NT-proBNP −12,1% vs +1,7%; p=0,248). Sugli indici di RV–PA: TAPSE/PAPs +10,17% vs 0%, (p=0,123); SVol/mPAP 11.52% vs -30,03% (p=0.004). L'endpoint di stabilità clinica è più frequente con vericiguat 61,1% vs 25,0% (p=0,045), i ricoveri per riacutizzazione di sono numericamente inferiori (16,7% vs 37,5%; p=0,25). Nei responder (61% dei trattati) si osservano PVR −15,9% vs +25,4% (p<0,001), Ea −10,3% vs +42,9% (p=0,004), SV/mPAP +11,5% vs −30,0% (p=0,004), NT-proBNP −31,2% vs +43,2% (p=0,007), con CO ~ invariata; RVSWI diminuisce (~−24%), indicando unloading del ventricolo destro a volume eiettato pressoché costante. L'analisi dose–risposta mostra benefici maggiori a 10 mg (LVEF p=0,013; TAPSE p=0,047; NT-proBNP p=0,028); la dose massima correla con CO/CI ↑ e NT-proBNP ↓ (ρ≈±0,50; p≈0,03–0,04).

Conclusioni: In pazienti con scompenso avanzato, vericiguat è associato a decongestione sinistra (PAWP ↓), miglior efficienza del coupling RV–PA (↑TAPSE/PAPs, ↑SV/mPAP) e maggiore stabilità clinica, con portata cserdiaca preservata. Nei responder, il calo di RVSWI a SV quasi costante suggerisce un'efficace riduzione dell'afterload polmonare. I dati supportano un segnale di dose–risposta (più evidente a 10 mg) e giustificano studi prospettici più ampi per confermare predittori di risposta e impatto sugli esiti duri.

SCOMPENSO CARDIACO 1022
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)

ASSESSING HEMODYNAMIC RESPONSES TO SGLT2 INHIBITORS IN CHRONIC HEART FAILURE USING IMPEDANCE CARDIOGRAPHY

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Background. Recent randomized clinical trials have consistently demonstrated that sodium-glucose cotransporter-2 inhibitors (SGLT2i), when administered in addition to guideline-directed medical therapy, significantly reduce the risk of heart failure (HF) hospitalization and cardiovascular mortality, irrespective of left ventricular ejection fraction (LVEF). Despite these benefits, the underlying mechanisms remain incompletely understood. Emerging evidence suggests that favorable hemodynamic modulation and cardiac remodeling may contribute to their therapeutic efficacy.

Purpose. This study aimed to investigate the hemodynamic and functional cardiac changes associated with SGLT2i therapy using a fully non-invasive, impedance-based hemodynamic monitoring system.

Methods. We conducted a prospective, observational, single-center study enrolling consecutive patients with chronic HF who initiated SGLT2i therapy between June 2024 and June 2025, in addition to standard HF treatment. Transthoracic echocardiography and non-invasive hemodynamic assessments were performed at baseline, 1 month, and 6 months using a whole-body impedance cardiography device (NICaS, NI Medical Ltd., Ra'anana, Israel).
Results. A total of 17 patients were included (median age 73.8 ± 7.3 years; 62% male). The HF phenotype was predominantly HFpEF (71%), with smaller proportions of HFmrEF (18%) and HFrEF (5%). After a median follow-up of 214 ± 35 days, a significant reduction in systolic blood pressure was observed, decreasing from 130 mmHg [IQR: 124–140] at baseline to 120 mmHg [IQR: 114–126] at follow-up (p = 0.018). Although a numerical reduction in NT-proBNP levels was noted from 870 pg/mL [IQR: 465–1428] to 474 pg/mL [IQR: 323–957], this change did not reach statistical significance (p = 0.412). Non-invasive impedance cardiography revealed significant improvements in several hemodynamic parameters. Total peripheral resistance index (TPRi) decreased from 3549 dyn·s·cm^{-5}/m² [IQR: 3019–4075] to 2902 dyn·s·cm^{-5}/m² [IQR: 2196–3140] (p = 0.006), while global hemodynamic efficiency (GGI) improved from 9.4 [IQR: 8.4–11.2] to 12.2 [IQR: 8.4–13.6], (p = 0.033). A statistically significant increase was also observed in cardiac index, rising from 2.11 L/min/m² [IQR: 1.83–2.21] to 2.46 L/min/m² [IQR: 2.13–2.80], (p = 0.028).
Transthoracic echocardiography confirmed meaningful structural and functional changes. Pulmonary artery systolic pressure (PASP) decreased from 33 mmHg [IQR: 25–35] to 25 mmHg [IQR: 23–27], (p = 0.003), and left atrial volume index (LAVi) was significantly reduced from 45 mL/m² [IQR: 38–50] to 36 mL/m² [IQR: 31–39], (p < 0.001). Modest but significant reductions were also noted in end-diastolic volume (EDV: from 86 mL [IQR: 76–120] to 83 mL [IQR: 72–100], p = 0.033) and end-systolic volume (ESV: from 38 mL [IQR: 32–61]

to 38 mL [IQR: 30–49], p = 0.038).Other conventional echocardiographic parameters remained unchanged during follow-up.

Conclusions. In patients with chronic HF, the addition of SGLT2i therapy was associated with meaningful mid-term improvements in both hemodynamic function and selected cardiac structural parameters, as assessed through non-invasive monitoring.

SCOMPENSO CARDIACO 390
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
ASSISTENZA CARDIACA IN ACUTO NEL DIPARTIMENTO DI EMERGENZA (ASSISTENZA CARDIACA IN ACUTO)
ASSISTENZA INTENSIVA CARDIOVASCOLARE IN ACUTO (ASSISTENZA CARDIACA IN ACUTO)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE) (IMAGING CARDIOVASCOLARE)

VANISHING AORTIC VALVE CUSP: A RARE CASE OF AORTIC VALVE INSUFFICIENCY IN A DURABLE LEFT VENTRICULAR ASSIST DEVICE RECIPIENT AFTER MICRO-AXIAL FLOW PUMP SUPPORT

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De novo aortic insufficiency (AI) is a frequent complication in patients with durable continuous-flow left ventricular assist devices (d-LVADs), occurring in up to 50% during the first year. It carries major clinical implications, worsening heart failure and increasing morbidity. Guidelines recommend surgical correction of moderate or greater AI at the time of d-LVAD implantation, yet the impact of temporary micro-axial flow pump (mAFP) support as a bridge to d-LVAD on subsequent valve injury remains uncertain.

We report the case of a 56-year-old man with hypertension and smoking history [GG1] admitted for refractory chest pain, diagnosed with anterior ST-elevation myocardial infarction (STEMI) and cardiogenic shock (SCAI stage D). He underwent urgent percutaneous coronary intervention with mAFP (Impella CP) support. Echocardiography showed left ventricular ejection fraction of 10% with preserved right ventricular function. Due to persistent instability, a HeartMate 3 d-LVAD was implanted on hospital day 12 as bridge to transplantation, and he was discharged on day 31. Over the following months, the patient deteriorated with new-onset severe AI and right heart failure. Transesophageal echocardiography revealed massive regurgitation from a large coaptation gap involving the non-coronary cusp (NCC), suspicious for erosion, along with echodense material in the corresponding sinus. Computed tomography confirmed an intraluminal "plus" image surrounded by thrombus. Given progressive symptoms, he underwent urgent orthotopic heart transplantation eight months after d-LVAD implantation. Intraoperative inspection showed a hypoplastic, retracted NCC with adherent organized thrombus. Histopathology demonstrated a tear at the cusp implantation site with intramural hemorrhage, endothelial disruption, elastic lamina fragmentation, and chronic inflammation. The thrombus was endothelialized and composed of fibrin and hemosiderin-laden macrophages, consistent

with recurrent hemorrhage and organization. No endocarditis or degenerative leaflet fusion was identified.

This case supports a two-step mechanism: initial subclinical trauma during mAFP implantation, most likely from guidewire manipulation across the valve and sinuses, followed by progression under turbulent flow and altered hemodynamics of d-LVAD support, amplified by anticoagulation. The result was chronic inflammation, thrombus organization, fibrosis, and eventual cusp retraction with severe AI.

Practical implications include careful pre-procedural imaging of the aortic root, meticulous wire manipulation under imaging guidance, and early postoperative echocardiographic surveillance. At d-LVAD implantation, direct valve inspection should be considered if injury is suspected. Recognition of this mechanism may help prevent long-term aortic valve dysfunction in d-LVAD recipients.

SCOMPENSO CARDIACO 156
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)
BIOMARCATORI DELLO SCOMPENSO (SCOMPENSO CARDIACO)

VERICIGUAT ADMINISTRATION IN ADVANCED HEART FAILURE PATIENTS WHO RECEIVE PERIODIC AMBULATORY LEVOSIMENDAN INFUSION: A RETROSPECTIVE OBSERVATIONAL REGISTRY

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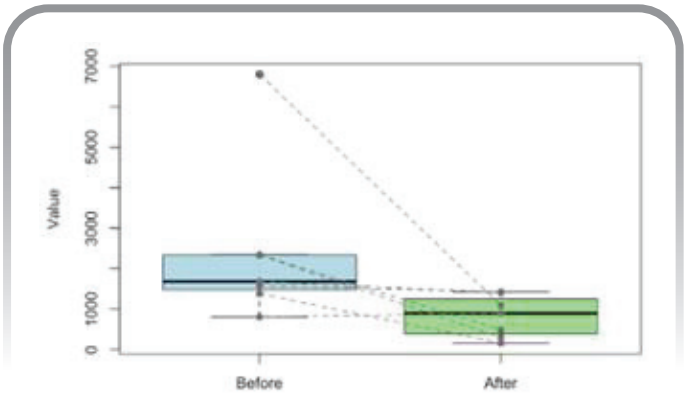
BACKGROUND: Vericiguat is a well-tolerated and widely used drug in patients with advanced heart failure; however, few data are available on its use in combination with periodic levosimendan infusions.

RATIONALE: This registry aims to evaluate the safety and tolerability of vericiguat in advanced heart failure patients who receive periodic infusion of levosimendan.

METHODS: Among patients who underwent monthly infusion of levosimendan, clinical evaluation, blood samples and echographic findings were collected immediately before the initiation of vericiguat and after 3 to 6 months of follow-up (FU). Tolerability and adverse effects data were also recorded.

RESULTS: 7 patients were included (6 were males, mean age was 74 ± 15 years). At baseline the mean LVEF was 26 ± 4%, the most common comorbidity was chronic kidney disease. The median FU was 5.5 months. Significant decrease in BNP was observed at follow-up (2415 ± 1856 ng/L Vs 823 ± 517 ng/L; p-value 0.03, Fig.1). No significant difference in lab tests like hemoglobin and creatinine nor in echo parameters was found before and after vericiguat administration. During follow-up, no changes were observed in diuretic dosage, nor in the use of SGLT2i or MRA. No patients had to discontinue levosimendan infusions at the end of FU. Two patients discontinued vericiguat at FU due to symptomatic hypotension. Among patients who discontinued vericiguat, one of them was receiving ARNIs therapy.

CONCLUSION: In this small cohort of patients with advanced heart failure undergoing periodic levosimendan infusions, the use of vericiguat was shown to be feasible, well-tolerated in the majority of patients, and with a significant benefit in terms of BNP reduction. Caution should be advised when politherapy is administered, due to the combination of the hypotensive effect of both drugs. Further studies are needed to confirm these findings.



BNP values before and after introduction of vericiguat (p <0.05)

Figure 1

CardioSic

SCOMPENSO CARDIACO 162
PROGNOSI (SCOMPENSO CARDIACO)
BIOMARCATORI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)

THE ROLE OF MITRAL REGURGITATION IN A NEW PREDICTIVE MODEL FOR MORTALITY AND HOSPITALIZATION RISK IN HEART FAILURE

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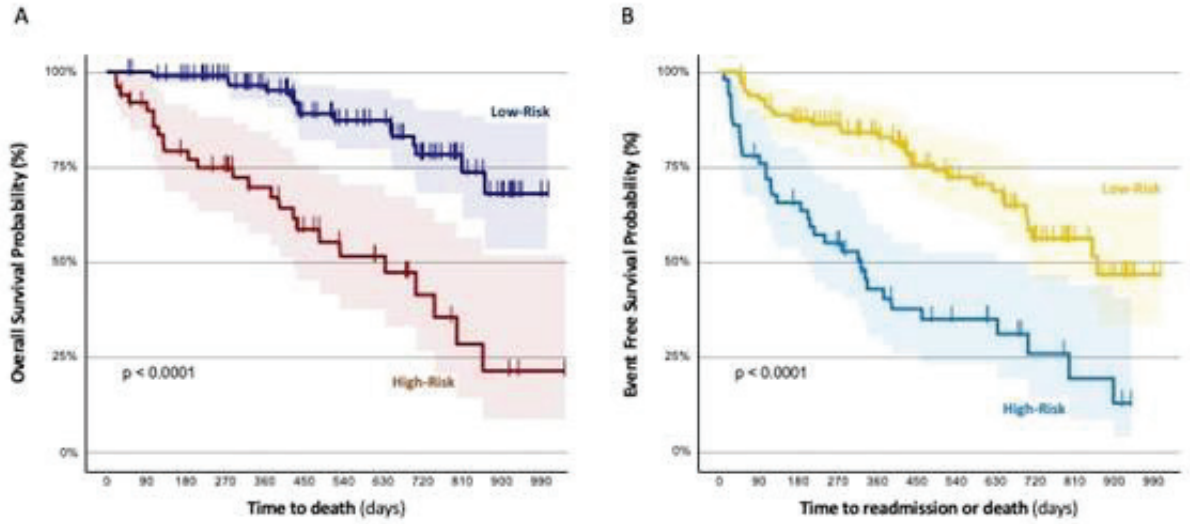
Background: Heart failure (HF) carries a high burden of re-hospitalization and mortality, with 1-year rates approximating 35% and 20%, respectively. Poor prognostic factors include age, biomarkers of renal impairment, congestion, and echocardiographic parameters of adverse cardiac remodeling. Nevertheless, predictive models in the era of modern treatments are still lacking.

Purpose: The primary objective was to develop an algorithm to predict a composite endpoint of 12-month re-hospitalization or death after acute HF hospitalization.

Methods: 231 patients with an acute HF diagnosis were retrospectively recruited (34% HFpEF, 66% HFrEF; mean age 78; 35.9% male). Demographic, biochemical, and echocardiographic data were collected. Univariate and multivariate analyses tested five clinical variables (age, creatinine, NT-proBNP, hemoglobin and moderate-to-severe mitral regurgitation aka MR) as predictors of 12-month re-hospitalization or death. Such variables were later included in a logistic regression–based risk calculator for outcome prediction.

Results: Age, creatinine, NT-proBNP, hemoglobin and moderate-to-severe MR were independently associated with the composite endpoint. A logistic regression-based risk-score was developed to predict the likelihood of being alive and free from HF hospitalization at 12 months. Youden's Index identified the optimal cut-off to distinguish between high- and low-risk patients (AUROC: 76.6%; 64% sensitivity and 79% specificity). High-risk patients showed lower 1-year overall survival than low-risk patients (69.6% vs. 95.1%, $p<0.01$) and shorter median survival (χ^2: 28.1, $p<0.001$, Fig.A). They also had significantly lower 1-year event-free survival rates (42.9% vs. 82.9%, $p<0.01$) and shorter median event-free survival ($\chi 2$: 23.7, $p<0.01$, Fig.B).

Conclusions: We proposed a risk prediction score in a HF population including a large proportion of subjects with preserved ejection fraction. Beyond the expected biomarkers of renal dysfunction, anemia, and congestion, significant mitral regurgitation emerged as the strongest prognostic factor, confirming the pathophysiological role of backward volume overload. Notably, systolic dysfunction was not prognostically relevant. Though pending prospective validation, the score may aid early risk stratification and treatment optimization of HF patients in the modern era.


A
Overall Survival Probability (%)
100%
75%
50%
25%
0%
Low-Risk
p < 0.0001
High-Risk
0 90 180 270 360 450 540 630 720 810 900 990
Time to death (days)
B
Event Free Survival Probability (%)
100%
75%
50%
25%
0%
Low-Risk
p < 0.0001
High-Risk
0 90 180 270 360 450 540 630 720 810 900 990
Time to readmission or death (days)

Figures

SCOMPENSO CARDIACO 82
DEFIBRILLATORE IMPIANTABILE (ARITMIE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)
ELETTROSTIMOLAZIONE (ARITMIE)

CARDIAC CONTRACTILITY MODULATION: NUOVE FRONTIERE TERAPEUTICHE IN SOTTOGRUPPI SELEZIONATI DI CARDIOMIOPATIE

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Background: La Cardiac Contractility Modulation (CCM) è una terapia non eccitatoria basata su impulsi elettrici ad alta tensione erogati durante il periodo refrattario assoluto, in grado di migliorare la contrattilità miocardica senza aumentare il consumo di ossigeno. Già approvata per lo scompenso a frazione di eiezione ridotta (HFrEF), recenti evidenze suggeriscono potenziali benefici anche in fenotipi complessi di cardiomiopatia

Obiettivi: Esplorare i meccanismi d'azione e le evidenze emergenti sull'utilizzo della CCM in quattro sottogruppi specifici: scompenso con frazione di eiezione preservata (HFpEF), cardiomiopatia dilatativa da mutazioni LMNA (LMNA-DCM), amiloidosi cardiaca da transtiretina (ATTR-CM), e cardiomiopatia non compattata del ventricolo sinistro (LVNC).

Risultati: In HFpEF, la CCM migliora la funzione

Cardiomyopathy Subtype	Key Pathophysiologic Features	Proposed CCM Mechanisms	Evidence Base	Clinical Considerations
HFpEF (Heart Failure with Preserved Ejection Fraction)	Diastolic dysfunction, fibrosis, oxidative stress, inflammation	Improved calcium handling (SERCA2a, PLB), Titin phosphorylation, reduced fibrosis, autonomic rebalancing	Small studies, CE Mark approval (2025)	Potential role in patients with diastolic dysfunction and comorbid burden; needs larger trials
LMNA-Related DCM	Nuclear structural defects, MAPK/AKT dysregulation, arrhythmias	p38 MAPK downregulation, improved calcium handling, AKT/mTOR pathway modulation	Case report, FIX-CHF-4 sub-study, CARDILAM-CCM Registry	May benefit patients with high arrhythmic risk, declining EF; evidence limited to small series
ATTR-CM (Transthyretin Amyloid Cardiomyopathy)	Amyloid fibril deposition, restrictive physiology, oxidative stress	p38 MAPK downregulation, HSP70 upregulation, antifibrotic, cytoprotective effects	Case reports, AMY-CCM Registry initiated	Complementary to Tafamidis; possible role in advanced HF stages
LVNC (Left Ventricular Noncompaction)	Sarcomeric disarray, Titin mutations, systolic dysfunction	Titin phosphorylation, SERCA2a/RyR2/PLB restoration, gene expression normalization	Case report, hypothesis-driven	Particularly relevant in TTN mutation carriers; needs genotype-guided prospective studies

Table 1

diastolica e la tolleranza allo sforzo mediante il rimodellamento del calcio intracellulare, la fosforilazione della Titina e la riduzione della fibrosi. In LMNA-DCM, la CCM modula l'espressione genica (MAPK, AKT/mTOR), attenua la fibrosi e migliora la funzione ventricolare, con casi documentati di recupero dell'EF. Nei pazienti con ATTR-CM refrattari a Tafamidis, la CCM mostra effetti molecolari favorevoli, inclusa l'inibizione di p38 MAPK e l'induzione di proteine chaperone (HSP70), potenzialmente modificando la progressione dell'amiloidosi. Infine, in pazienti con LVNC e mutazioni TTN, la CCM ha portato alla normalizzazione della funzione sistolica, indicando un possibile ruolo terapeutico genotype-guided

Conclusioni: Oltre alla sua indicazione consolidata nello scompenso HFrEF, la CCM si configura come una promettente opzione terapeutica nei pazienti con cardiomiopatie selezionate, soprattutto in caso di risposta subottimale alla terapia medica. Studi prospettici sono necessari per confermare l'efficacia e affinare i criteri di selezione

SCOMPENSO CARDIACO 83
ASPETTI GENETICI DELLE ARITMIE (ARITMIE)
ELETTROSTIMOLAZIONE (ARITMIE)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO

EFFICACIA DELLA CCM NEI PAZIENTI CON CARDIOMIOPATIA AMILOIDE DA TRANSTIRETINA, EF LIEVEMENTE RIDOTTA O RIDOTTA E CLASSE NYHA III E IV

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Efficacia della CCM nei pazienti con cardiomiopatia amiloide da transtiretina, frazione di eiezione lievemente ridotta o ridotta e classe NYHA III e IV. Studio pilota multicentrico, prospettico, per il registro AMY-CCM

Background: L'amiloidosi cardiaca da transtiretina (ATTR-CM) è una cardiomiopatia infiltrativa che evolve frequentemente verso uno scompenso cardiaco (HF) sintomatico, spesso con frazione di eiezione (FE) lievemente ridotta o ridotta. Le terapie mediche standard risultano limitate negli stadi avanzati (NYHA III–IV) e il Tafamidis è attualmente indicato solo per pazienti in fase precoce. La terapia di modulazione della contrattilità cardiaca (CCM) ha mostrato benefici nello scompenso cardiaco con FE ridotta, ma il suo ruolo nell'ATTR-CM non è ancora stato esplorato.

Metodi: Questo studio pilota multicentrico, prospettico, ha valutato sicurezza ed efficacia della terapia CCM in dieci pazienti con ATTR-CM, FE compresa tra 25–45% e sintomi in classe NYHA III–IV refrattari alla terapia medica ottimale. Tutti i pazienti sono stati sottoposti all'impianto del sistema Optimizer CCM e seguiti per un follow-up mediano di 12 mesi. L'endpoint primario era l'incidenza di peggioramento dello scompenso cardiaco (WHF); endpoint secondari includevano variazioni di FE, classe NYHA, test del cammino dei 6 minuti (6MWT) e parametri di qualità di vita.

Risultati: La terapia CCM ha determinato una significativa riduzione degli episodi di WHF (da 0,18±0,09 a 0,025±0,08 ricoveri/anno, p<0,001) e un netto miglioramento della classe NYHA (da 3,2±0,4 a 2,0±0,0, p<0,001). La FE è aumentata in media del 4,8±6,1% e il 6MWT è migliorato di 31,3±53,3%. È rilevante sottolineare che, dopo la terapia CCM, tutti i pazienti sono risultati eleggibili per il trattamento con Tafamidis sulla base del miglioramento dello stato funzionale.

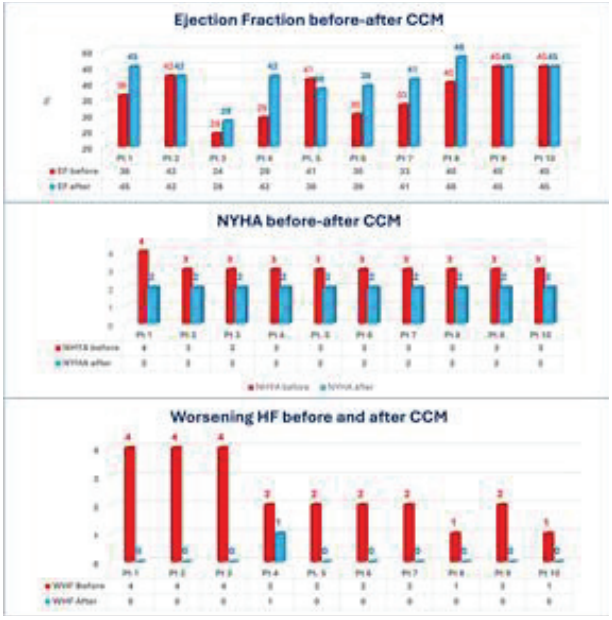


Figura 1

Conclusioni: Questo studio pilota suggerisce che la terapia CCM rappresenta un'opzione fattibile e potenzialmente efficace per pazienti con ATTR-CM e scompenso cardiaco avanzato non candidabili a terapie modificanti la malattia attualmente disponibili. Questi risultati supportano la necessità di studi più ampi, incluso il registro AMY-CCM in corso (NCT05167799), per validare il ruolo terapeutico della CCM in questa popolazione.

PARAMETER	*Delta*
EF (%)	+ 4.8±6.1
E/E' (%)	- 11.1±22.7
TAPSE (%)	+ 5.3±10.3
NYHA class	- 1.2±0.4
6MWT (%)	+ 31.3±53.3
KCCQs (%)	+121.0±252.8

Tabella 1

SCOMPENSO CARDIACO 50
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)

IMPROVED ENDOTHELIAN FUNCTION IN HEARTF FAILURE PATIENTS AFTER VERICIGUAT TREATMENT

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Background: Vericiguat, a soluble guanylate cyclase (sGC) stimulator, has been shown effective in improving prognosis of patients with heart failure with reduced ejection fraction (HFrEF) and worsening HF. We sought to evaluate possible changes in endothelial function assessed by flow-mediated dilation (FMD) in patients with HFrEF treated with vericiguat.

Methods: A prospective observational study was conducted from October 2023 to December 2024, focusing on patients with HFrEF admitted to our HF outpatients program. Forty consecutive outpatients with HFrEF were enrolled after adding vericiguat to standard HF therapy. In all patients, endothelial function was assessed by FMD at baseline and after 3 months of follow up.

Results: Three months of therapy with vericiguat were associated with a statistically significant improvement of FMD values (19±11% vs 15±10%, p=0.04). FMD variation in follow-up (FMDr: FMD follow-up /FMD baseline ratio) was related to baseline FMD values (r= -0.52, p: 0.001).

Conclusions: 3-month therapy with vericiguat in outpatients with HFrEF and worsening HF was associated with improved endothelial function assessed by FMD.

SCOMPENSO CARDIACO 435
PROGNOSI (SCOMPENSO CARDIACO)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)

MONITORAGGIO ECODINAMICO SERIATO NEI PAZIENTI IN SHOCK CARDIOGENO: UNO STUDIO PROSPETTICO OSSERVAZIONALE MULTICENTRICO

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Lo shock cardiogeno (SC) è caratterizzato da un'insufficienza acuta della funzione di pompa cardiaca, con bassa gittata e congestione polmonare e/o periferica, causando un apporto inadeguato di ossigeno e nutrienti ai tessuti. La valutazione emodinamica è essenziale per fenotipizzare e stadiare lo SC. Una valutazione non invasiva dell'emodinamica mediante ecocardiografia transtoracica (ecodinamica), offre un'alternativa al monitoraggio invasivo. Questo studio analizza l'impatto prognostico della valutazione ecodinamica seriata nei pazienti con SC. È uno studio prospettico osservazionale multicentrico che ha arruolato pazienti consecutivi ricoverati tra il 2020 e il 2024 con o a rischio di SC nelle unità di terapia intensiva cardiologica degli ospedali "San Raffaele" di Milano, "Molinette" di Torino e "Bellvitge University Hospital" di Barcellona. Sono stati inclusi pazienti con o a rischio di SC secondo la classificazione SCAI (stadi A-E). Sono stati eseguiti profili ecodinamici completi al basale e dopo 48 ore, analizzando la gittata sistolica indicizzata (stroke volume index SVi<35 ml/m2), l'indice cardiaco (cardiac index CI<2,2 L/min/m2), la potenza cardiaca (cardiac power output CPO<0,6 W), il rapporto E/e' (in ritmo sinusale: E/e' medio >14; in fibrillazione atriale: E/e' settale >11), la pressione arteriosa polmonare sistolica stimata (estimated sitolic pulmonary artery pressure eSPAP≥35 mmHg) e la pressione atriale destra stimata (estimated right atrial pressure eRAP ≥15 mmHg). L'outcome primario è composto da mortalità, impianto di dispositivo di assistenza ventricolare sinistra o trapianto cardiaco durante il ricovero. Tra 488 pazienti (27% donne, età media 67 anni, SC da infarto miocardico acuto nel 45,7%, stadio SC SCAI ≥B nel 75%, frazione di eiezione del ventricolo sinistro media 30%), l'outcome primario si è verificato nel 21,5% dei casi. Tutti i parametri ecodinamici sono risultati significativamente associati all'outcome primario sia al basale che a 48 ore, anche dopo aggiustamento per sesso, età, eziologia dello shock e stadio SCAI (p<0,05 per tutti). Nei modelli multivariati, che includevano i parametri ecodinamici al basale e a 48 ore, aggiustati per covariate cliniche, solo la valutazione a 48 ore è risultata indipendentemente associata all'outcome primario. La traiettoria di ciascun parametro tra il basale e le 48 ore si è dimostrata associata all'outcome primario, con un aumento incrementale degli eventi tra i pazienti con parametro persistentemente normale, in miglioramento, in peggioramento o persistentemente alterato (p <0,01 per tutti i parametri). Nei modelli aggiustati, i parametri indipendentemente associati all'outcome primario sono stati i seguenti. Alla valutazione basale: CPO <0,6 W (adj-HR 2,90, IC 95% 1,64-5,14, p<0,001), E/e'>14

(adj-HR 2,53, IC 95% 1,37-4,68, p=0,003), eSPAP>35 mmHg (adj-HR 2,32, IC 95% 1,15-4,71, p=0,019). Alla valutazione a 48 ore: CPO<0,6 W (adj-HR 2,80, IC 95% 1,39-5,62, p=0,004), E/e'>14 (adj-HR 3,23, IC 95% 1,67-6,27, p=0,001), eRAP ≥15mmHg (adj-HR 1,98, IC 95% 1,01-3,87, p=0,047). Il modello multivariato a 48 ore ha dimostrato la migliore performance predittiva (AUC 0,79, p<0,001). La valutazione ecodinamica non invasiva nello SC fornisce informazioni prognostiche indipendenti e additive rispetto alla valutazione clinica. Una potenza cardiaca persistentemente ridotta e pressioni di riempimento biventricolari persistentemente elevate a 48 ore dall'ingresso sono risultati predittori indipendenti dell'outcome primario. L'analisi delle traiettorie ecodinamiche rappresenta una potenziale guida per la stratificazione prognostica e l'ottimizzazione delle decisioni terapeutiche nello SC.

SCOMPENSO CARDIACO 395
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
PATOLOGIA DELLA VALVOLA TRICUSPIDE (VALVULOPATIE)
ECOCARDIOGRAFIA 3-D (IMAGING CARDIOVASCOLARE)
ECOSTRESS (IMAGING CARDIOVASCOLARE)

VOLUME-MEDIATED CHANGES IN TRICUSPID REGURGITATION AND INTERVENTRICULAR SEPTUM SHAPE DURING EXERCISE IN HFPEF

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Background and aims: In HFpEF, increasing severity of tricuspid regurgitation (TR) is associated with a worse prognosis independent of left ventricular function. Right ventricle (RV) shape reflected by an abnormal interventricular septum (IVS) displacement is associated with reduced exercise capacity in HF. We aimed to assess the IVS changes in different TR conditions during exercise performance in HF patients and to investigate how the degree of displacement is associated with impairment of TR at peak exercise and hemodynamic determinants.

Methods: 48 patients with HFpEF were recruited. All patients performed a combined cardiopulmonary exercise testing imaging (echoCPET) with RV 3D imaging analysis. The severity of TR was assessed at rest and during exercise performance using a severity score (0=absent; 1=minimal; 2=mild; 3=mild to moderate; 4=moderate; 5=moderate to severe; 6=severe). 3D images of the RV chamber were analyzed in off-line by using the 4D RV TomTec software and obtained 3D mesh of the RV model using custom software to obtain the mean curvature value of IVS in 4 regions of: inflow tract (RVIT), outflow tract (RVOT), apical and body. IVS curvature was realized during end-diastole (ED) and at end systole (ES) phases and obtained a parametric curvature map (Figure 1). IVS curvature was normalized to the 3D RV volume.

Results: HFpEF patients (mean age 74.5 ± 7.5 years, 60,4% female) typically showed a pathological septal curve, with a more leftward configuration both at rest and during exercise compared to controls (HF: ED peak curv= -0.25 ± 0.14; ES peak curv= -0.39 ± 0.51; Ctr: ED peak curv= −0.02±0.0.006; ES peak curv= −0.02±0.01; $p<0.05$).

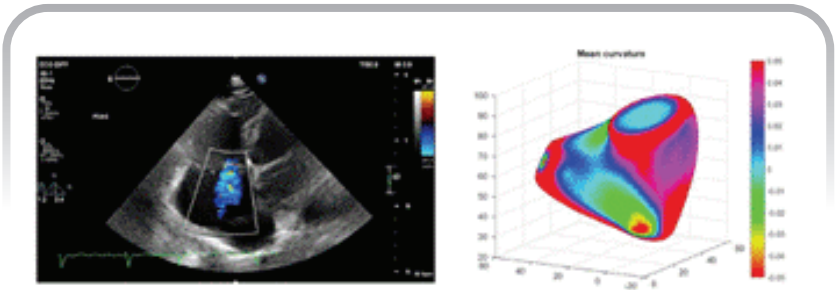


Figure 1

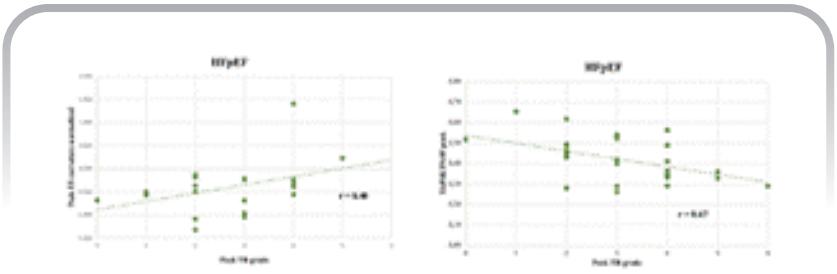


Figure 2

44 patients showed a mild to moderate TR and 23 patients had impaired regurgitation during exercise. The degree of the TR showed a linear correlation with leftward IVS displacement of TR, impairment of gas exchange performance as indicated by a lower peak VO2, and impairment of RV to pulmonary circulation coupling (TAPSE/PASP) in HF (Figure 2).

Conclusions: These findings provide new perspectives in the assessment of TR, and on how the IVS displacement adapts during exercise in TR patients vs controls. The degree of TR was linearly related to geometric changes and hemodynamic performance.

SCOMPENSO CARDIACO 398
PROGNOSI (SCOMPENSO CARDIACO)
ECOSTRESS (IMAGING CARDIOVASCOLARE)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)

RELATIONSHIP BETWEEN POST-EXERCISE OXYGEN UPTAKE AND HEMODYNAMIC RESPONSE IN HEART FAILURE

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Background: Dyspnea and fatigue are typical exercise limitation symptoms in heart failure (HF). During exercise performance, peak oxygen uptake (vO2 peak) is decreased, ventilatory threshold is reached early, and the slope of oxygen consumption augmentation is reduced according to the severity of HF. However, the oxygen kinetics in HF in the recovery phase is unknown.

Aims: We aimed to investigate the relationship between the kinetics of recovery of oxygen consumption by assessment of vO2 peak decay "τ" evaluation and gas exchange performance, peak exercise oxygen consumption (vO2) and cardiac output (CO).

Methods and results: We enrolled a population of 51 HF - 28 HFpEF and 23 HFrEF - and a control population. All subjects underwent a symptom-limited combined cardiopulmonary exercise testing imaging (echoCPET). We measured τ using the formula VO2(t)= VO2(b) + A [1 - e -(t-TD) τ], which is the recovery of normal breathing after exercise (Figure 1). HFpEF patients (mean age 74.5 ± 7.5, 60% female) and HFrEF patients (mean age 64.6 ± 11.4, 21% female) showed a lower vO2 peak than controls population (14.1 ± 3.2 ml/min/kg vs 16.9 ± 4.6 ml/min/kg vs 22,39 ± 5,31 ml/min/kg, respectively). As expected, HF exhibited a higher value of τ compared to the control population (τ mean= 151.3 in HFpEF; 188.2 in HFrEF; 90 in controls). In HF, τ value is strongly correlated with impairment of exercise performance, as

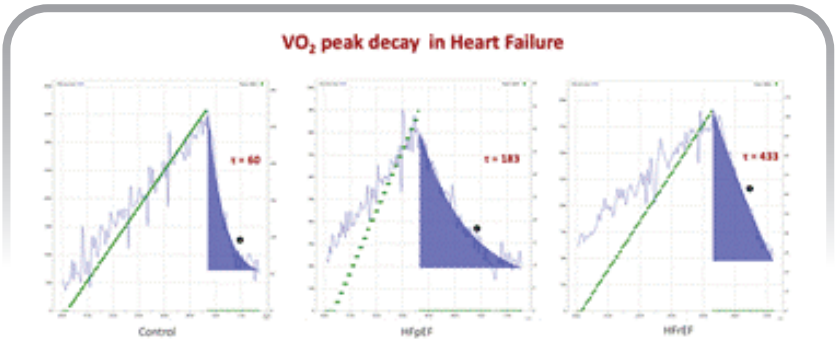


Figure 1

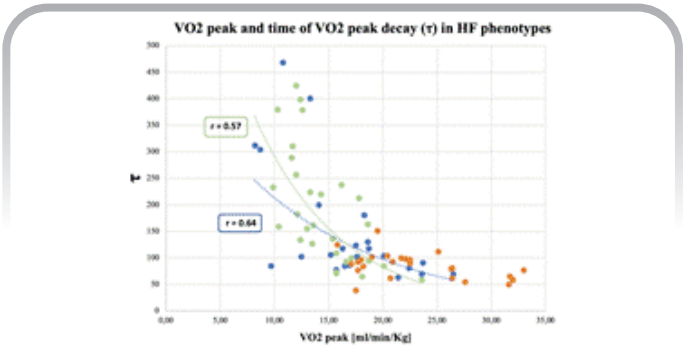


Figure 2

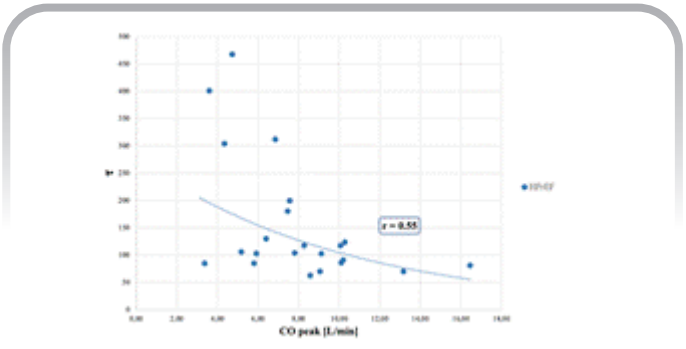


Figure 3

vO2peak and cardiac output, in both HF phenotypes (r=0.57 p<0.001; r=0.64 p<0.001, Figure 2; r=0.55 p<0.001, Figure 3).

Conclusions: Recovery oxygen consumption by τ value represents a simple parameter to measure the impairment of the circulatory response to exercise in HF.

SCOMPENSO CARDIACO 960
PROGNOSI (SCOMPENSO CARDIACO)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)

FRAILTY AS A PREDICTOR OF OUTCOMES IN SEVERE HEART FAILURE: COMPARATIVE PROGNOSTIC VALUE OF MULTIDOMAIN AND CONVENTIONAL SCORES

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Frailty is increasingly recognized as a determinant of prognosis in heart failure (HF), and its systematic assessment is recommended in patients considered for heart transplantation (HT). This study aimed to implement and validate a multidomain frailty screening protocol in an advanced HF outpatient service and to compare prognostic performance by applying the recently introduced ESC-HFA multidomain frailty score with other scores currently used in clinical practice but not HF-specific (Frailty score and Rockwood index).
Between May 2024 and September 2025, we prospectively enrolled patients referred to our tertiary HF center. Each patient underwent a standardized assessment including the 6-minute walk test (6MWT), handgrip strength test (HST), short physical performance battery (SPPB), mini-COG test, instrumental activities of daily living (IADL), Patient Health Questionnaire-9 (PHQ-9), and Kansas City Cardiomyopathy Questionnaire (KCCQ). Frailty was defined using the HFA tool across four domains (clinical, psycho-cognitive, functional, and social) and considered present if ≥2 domains were fulfilled. The primary endpoint was a composite of hospitalization for HF or ventricular arrhythmias, death, urgent transplantation, LVAD implantation, or intravenous diuretic therapy. A total of 170 patients were included (mean age 55±10 years, 71% male, 72% HFrEF, mean LVEF 35±13%). Overall, 52% of patients fulfilled ≥2 domains and were classified as frail.
During a median follow-up of 215 days, 40 events (24%) occurred. Patients with ≥2 HFA domains had significantly more events than non-frail patients (34% vs. 12%, p=0.001). In Cox regression, frailty (≥2 domains) was independently associated with higher risk (HR 2.30, 95% CI 1.12–4.71, p=0.023). Stratification of frailty according to the number of HFA domains (0–1, 2, and 3–4) showed a clear graded association with prognosis. In Cox regression, the presence of 2 domains was significantly associated with increased risk compared with 0–1 domain (HR 2.58, 95% CI 1.13–5.89, p=0.024), while the presence of 3–4 domains conferred an even greater risk (HR 4.03, 95% CI 1.85–8.82, p<0.001). Among single domains, psycho-cognitive (HR 2.47, p=0.007), functional (HR 2.19, p=0.017), and social frailty (HR 4.22, p=0.018) were significant predictors, while the clinical domain showed only a trend. When compared with established scores, the Frailty score also identified patients at higher risk (HR 2.30, p=0.023), whereas the Rockwood index (>3) was not predictive (HR 1.81, p=0.136). Nevertheless, ROC analysis demonstrated that the HFA multidomain score with our approach provided the highest discrimination possible (AUC 0.639, 95% CI 0.543–0.735, p=0.004). Concerning domains, psycho-cognitive (AUC 0.630, p=0.009) and functional (AUC 0.605, p=0.040) outperformed clinical and social domains. In contrast, the classical frailty score and the Rockwood index yielded modest, non-significant AUC values (0.559 and 0.555, respectively). In conclusion, in patients with HF referred to a tertiary center for advanced management strategies, frailty was common and strongly associated with adverse outcomes. The ESC-HFA multidomain score showed superior prognostic value compared with the classical frailty score and Rockwood index, supporting its role as the most accurate tool for risk stratification in this setting.

CardioSic

SCOMPENSO CARDIACO 311
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
MALATTIE DEL METABOLISMO (DIABETE E MALATTIE DEL METABOLISMO)

WHEN TWO CULPRITS CONCUR: SEVERE LEFT VENTRICULAR DYSFUNCTION IN THE SETTING OF ATRIAL FIBRILLATION AND CUSHING SYNDROME

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Background. Cushing syndrome is a rare condition that can occur when body is exposed to high levels of cortisol over a long time. Cushing syndrome causes, among others, an increased morbidity and mortality from cardiovascular events, most commonly myocardial infarction and stroke, but also arterial aneurysms and pulmonary emboli. However, it is also reported as a rare cause of left ventricular hypertrophy with concentric remodelling as well as of dilated cardiomyopathy with systolic dysfunction. Atrial fibrillation (AF) is also associated with an increased risk of new-onset ventricular dysfunction, namely tachycardiomyopathy, a clinically important consequence that portends significant morbidity and mortality to patients with AF.

Case report. We report a case of a 63-year-old male patient, active smoker, with poorly controlled arterial hypertension, dyslipidemia, chronic kidney disease, a history of mild left ventricular dysfunction with hypertrophic left ventricle and an incidental finding of left adrenal adenoma. The patient was admitted to our Cardiology Unit in January 2024 for shortness of breath and peripheral edema with early signs of heart failure. ECG and echocardiography showed AF not observed before and severe left and right ventricular dysfunction respectively. Following improvement and initiation of cardiac anti-remodelling therapy, a transesofageal echocardiography was performed and revealed a sludge effect within left atrial appendage, which precluded immediate electrical cardioversion. As part of the diagnostic work-up, coronary angiography revealed no significant coronary arteries stenosis.
After one month of optimal anticoagulation therapy (Apixaban), the patient underwent electrical cardioversion with restoration of sinus rythm. Before discharge, an echocardiography was performed, showing an ejection fraction (EF) of 29% with a diffusely hypokinetic left ventricle.
Given the clinical context and the presence of signs of Cushing syndrome (rounded "moon like" facial appearance, dorsocervical fat pad, marked visceral adiposity and significant wasting of limb musculature), which raised the suspition of a multifactorial cardiomyopathy, the patient underwent additional investigation including Nugent test and salivary cortisol measurement. Endocrinological evaluation confirmed the diagnosis of Cushing's syndrome and left adrenalectomy was planned and performed in December 2024. At six months of follow-up, echocardiography showed improvement of EF up to 40%. In January 2025 the patient underwent an invasive electrophisiological study and isolation of pulmonary veins using radiofrequency energy.
In May 2025, a repeated echocardiography demonstrated further improvement of the EF to 50% and the ECG showed persistence of sinus rythm.

Discussion. In this clinical case, Cushing syndrome represented an additional factor to left ventricular dysfunction, emphasizing the importance of taking a holistic view of the patient, carefully integrating all clinical, imaging and laboratory findings to guide optimal management in complex multifactorial cardiac dysfuntion. This case also underscores that with timely and targeted management of AF with isolation of pulmonary veins and of underlying Cushing syndrome with surgical adrenalectomy, substantial recovery of left ventricular function is achievable.

SCOMPENSO CARDIACO 343
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)

EARLY SGLT2I THERAPY FACILITATES IN-HOSPITAL ARNI INTRODUCTION IMPROVING 6-MONTHS SYSTOLIC FUNCTION IN PATIENTS WITH HFREF

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Abstract

Purpose: Heart failure with reduced ejection fraction (HFrEF) represents a complex clinical syndrome requiring timely initiation of disease-modifying therapies. However, the optimal timing for introducing these therapies in the hospital setting remains an area of investigation. This study aims to evaluate whether early in-hospital initiation of SGLT2i facilitates the introduction of ARNI during hospitalization and whether this strategy is associated with improved left ventricular systolic function at 6-months follow-up.

Methods: In this prospective, observational, single-centre study, consecutive HFrEF patients have been enrolled and divided into two groups based on the timing of SGLT2i initiation: Group 1 (in-hospital) and Group 2 (post-discharge). Differences in terms of ARNI introduction within hospitalization have been evaluated in the two groups. Changes in echocardiographic parameters (LVEF, LVEDV, LVESV, E/e' ratio) at 6-months follow up have been compared among patients treated with ARNI+SGLT2i and SGLT2i alone.

Results: 285 patients have been enrolled, 151 for G1 and 134 for G2. Early in-hospital use of SGLT2i was an independent predictor of ARNI initiation before discharge (OR=3.31; 95% CI: 1.87–5.84; p<0.001). Among the 89 patients of G1 who completed 6-months follow-up, early in hospital therapy with SGLT2i and ARNI represents an independent significant predictor of LVEF ≥ 10% improvement, compared to those treated with SGLT2i alone (OR=5.353; 95% CI: 1.504-12.070; p<0.003).

Conclusions: Early in-hospital initiation of SGLT2i in patients with HFrEF is associated with a higher likelihood of in-hospital ARNI introduction and with significant improvements in left ventricular systolic function at 6-months follow-up.

CardioSic

SCOMPENSO CARDIACO 349
PROGNOSI (SCOMPENSO CARDIACO)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)

EARLY EFFECTS OF VERICIGUAT IN HEART FAILURE WITH REDUCED EJECTION FRACTION- ANALYSIS OF CLINICAL AND ECHOCARDIOGRAFIC PARAMETERS

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Introduction: Heart failure (HF) is a complex clinical syndrome characterized by alternating phases of hemodynamic stability and clinical deterioration, which may occur even under optimized treatment regimens, referred to as Guideline-Directed Medical Therapy (GDMT). Episodes of clinical worsening, are marked by the exacerbation of symptoms and signs of congestion and/or hypoperfusion, often necessitating urgent medical attention. This may include unplanned outpatient evaluations or hospital admissions aimed at therapeutic adjustments, medication up-titration, or the administration of intravenous diuretics. Within this therapeutic landscape, Vericiguat represents a novel pharmacological agent, offering a promising and innovative strategy for the management of WHF.

Objective of the study: To evaluate the evolution of clinical, laboratory, and echocardiographic parameters in patients with heart failure (HF), three months after an episode of worsening and the initiation of Vericiguat in addition to Guideline-Directed Medical Therapy (GDMT) for Heart Failure with Reduced Ejection Fraction (HFrEF).

Study design and Methods: The present is an observational, prospective, single center study, enrolling patients with HFrEF who started Vericiguat in the outpatient setting, on top of the optimized medical therapy for HF, following a clinical/subclinical worsening episode. Patients represented a single study group. Clinical, laboratory and echocardiographic parameters have been assessed at baseline and at 3 months follow up.

Results: Among the 63 patients included in the study (84,1 % male, mean age 71,2 years), all had recently experienced a worsening heart failure (WHF) episode. After three months of treatment, a significant improvement was observed in NYHA functional class (p=0.021). Echocardiographic parameters also showed meaningful improvement, with an increase in LVEF (p = 0.002), a reduction in PAPs (p=0,002), GTT (p = 0.005), and an improvement in the TAPSE/PAPs ratio (p = 0.004). NT-proBNP levels and 6MWT remained stable, reflecting the recent episode of WHF at the baseline of the study. Although no statistically significant difference was observed in the overall KCCQ-12 score after 3 months of treatment, a focused subanalysis of individual responses of the questionaire revealed statistical significtive changes in three specific items that correspond to perceived dyspnea (K7), disease acceptance (K13) and mood (K14).

Conclusions: These preliminary findings suggest that Vericiguat may promote early and favorable cardiovascular adaptations in patients with worsening HFrEF. Specifically, Vericiguat appears to induce left ventricular systolic function improvement,

pulmonary pressure reduction, and enhancement of right ventricular-pulmonary arterial coupling, as demonstrated by significant improvements in LVEF, GTT, PAPs and TAPSE/PAPs ratio. Moreover, Vericiguat may contribute to early clinical stabilization, as indicated by improvements in NYHA functional class and patient-reported quality of life (KCCQ-12). From a biohumoral perspective, NT-proBNP levels remained stable over the follow-up period, a finding of particular interest given the high-risk post-worsening context, where biochemical deterioration is often expected. Overall, these results support the hypothesis that Vericiguat may exert beneficial cardiopulmonary effects in high-risk HFrEF patients and could represent a valuable therapeutic option in the early phase following a worsening event.

SCOMPENSO CARDIACO 355
PROGNOSI (SCOMPENSO CARDIACO)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)

INTERAZIONE CARDIO-RENALE E CONGESTIONE SUBCLINICA NEI PAZIENTI CON WORSENING HEART FAILURE CANDIDATI A VERICIGUAT- STUDIO ECOGRAFICO INTEGRATO

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Introduzione: L'insufficienza cardiaca è una sindrome clinica complessa, caratterizzata dall'alternanza tra periodi di stabilità e fasi di peggioramento, anche in presenza di una terapia farmacologica ottimizzata. Negli ultimi anni, il panorama terapeutico dell'HFrEF si è arricchito di nuove molecole mirate, tra cui il Vericiguat. Parallelamente, si è andato definendo un crescente interesse verso la comprensione della sindrome cardio-renale (CRS).

Obiettivo dello studio: Scopo primario di questo studio è descrivere e analizzare in modo integrato le caratteristiche cardiorenali di una popolazione di pazienti con HFrEF valutati al momento dell'inizio della terapia con Vericiguat in termini di stato di congestione sistemica e la perfusione renale, anche in assenza di segni clinici evidenti. Un secondo obiettivo è indagare l'esistenza di correlazioni significative tra i parametri ecocardiografici e i parametri renali e tra parametri ecocardiografici e di congestione subclinica.

Materiali e metodi: È stata condotta un'analisi su una coorte di 25 pazienti ambulatoriali con diagnosi di HFrEF, al momento dell'introduzione del Vericiguat in un contesto di terapia ottimizzata per lo scompenso cardiaco. Parametri clinici e di laboratorio, indici ecografici di congestione venosa ed eco-doppler renale e le relative correlazioni sono state valutate al basale, prima dell'inizio della terapia con Vericiguat.

Risultati: L'analisi dei dati basali ha evidenziato correlazioni statisticamente significative tra i parametri ecocardiografici indicativi di funzione ventricolare destra e accoppiamento ventricolo-arterioso destro (TAPSE e rapporto TAPSE/PAPs) e alterazioni morfologiche e vascolari renali (indice di atrofia renale, spessore cortico-midollare, indici di resistenza Doppler), nonché con indici ecografici di congestione venosa sistemica, quali il rapporto di variazione del diametro giugulare (JVD ratio) e la dilatazione della vena cava inferiore. In particolare, è stata riscontrata una correlazione inversa tra TAPSE/PAPs e JVD ratio ($r = –0.53$; $p = 0.010$) e una correlazione positiva tra TAPSE/PAPs e l'indice di atrofia renale (IA) ($r = 0.54$; $p = 0.009$). Inoltre, il volume telediastolico del ventricolo sinistro (EDV), è risultato significativamente associato all'aumento dei diametri giugulari sia a riposo ($r = 0.867$; $p = 0.012$) che post-Valsalva ($r = 0.796$; $p = 0.032$), mentre il volume telesistolico (ESV) ha mostrato una correlazione con il diametro giugulare post-Valsalva ($r = 0.876$; $p = 0.004$). È stata inoltre evidenziata un'associazione significativa tra il diametro telediastolico del ventricolo destro (DTD

RV) e l'indice di resistenza renale (IRR) (r = 0.47; p = 0.04).

Conclusioni: Un approccio integrato alla valutazione cardio-renale rappresenta uno strumento efficace per delineare lo stato clinico dei pazienti con HFrEF all'inizio di terapie avanzate. Le correlazioni emerse tra parametri ecocardiografici e indici Doppler renali e venosi indicano un'interazione fisiopatologica significativa tra funzione e rimodellamento ventricolare, congestione sistemica e compromissione della perfusione renale. In particolare, il rapporto TAPSE/PAPs si correla con il grado di congestione sistemica e renale. Il rimodellamento ventricolare sinistro si associa inoltre a un incremento delle pressioni di riempimento e alla congestione sistemica. L'integrazione tra ecocardiografia e sistema VExUS ha permesso di rilevare segni di congestione subclinica, potenzialmente utili per una più accurata stratificazione del rischio e una gestione terapeutica individualizzata. Tali risultati rappresentano la parte iniziale di uno studio prospettico mirato allo studio dell'impatto del Vericiguat sulla funzione cardiaca, sulla modulazione della flussimetria renale e sul controllo della congestione nei pazienti con HFrEF.

SCOMPENSO CARDIACO 357
PROGNOSI (SCOMPENSO CARDIACO)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
TRATTAMENTO POST-INFARTO (CARDIOPATIA ISCHEMICA)

SINDROME CORONARICA ACUTA COMPLICATA DA SCOMPENSO CARDIACO: UTILIZZO PRECOCE DELLE GLIFLOZINE E IMPATTO SU MORTALITÀ E OSPEDALIZZAZIONI

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Introduzione: Gli inibitori del co-trasportatore sodio-glucosio di tipo 2 (SGLT2i) hanno rivoluzionato il trattamento dell'insufficienza cardiaca, dimostrandosi efficaci in tutto lo spettro della patologia, indipendentemente dalla frazione di eiezione ventricolare sinistra. Tuttavia, mancano evidenze nel contesto reale per HF di eziologia ischemica, in particolare conseguente a sindrome coronarica acuta (SCA). Inoltre, il momento ottimale per l'avvio della terapia con SGLT2i in questo contesto rappresenta un aspetto ancora poco definito, nonostante l'eziologia ischemica sia la principale causa di HF.

Obiettivo dello studio: L'obiettivo primario dello studio è valutare, a 6 mesi di follow up la frequenza dell'endpoint composito mortalità cardiovascolare (CV death)/ricoveri per insufficienza cardiaca (HFH), in pazienti con scompenso cardiaco ad eziologia ischemica. Gli obiettivi secondari includono la valutazione separata dei due endpoint (CV death e HFH) e un'analisi di sottogruppo in pazienti con SCA che hanno iniziato la terapia con SGLT2i durante il ricovero ospedaliero.

Materiali e Metodi: Studio osservazionale, prospettico e monocentrico. I partecipanti sono stati suddivisi in due gruppi in base al momento di introduzione degli SGLT2i: il primo gruppo (G1) comprendeva i pazienti che avevano iniziato gli SGLT2i durante il ricovero; il secondo gruppo (G2) comprendeva coloro che non avevano iniziato la terapia durante il ricovero. È stata inoltre effettuata un'analisi secondaria su pazienti ricoverati per SCA, al fine di valutare l'effetto dell'introduzione ospedaliera degli SGLT2i sugli eventi cardiovascolari avversi. Durante un follow-up di 6 mesi sono stati monitorati la mortalità cardiovascolare e le ospedalizzazioni per insufficienza cardiaca presso l'ambulatorio scompenso cardiaco.

Risultati: Sono stati arruolati 222 pazienti consecutivi tra aprile 2023 e aprile 2024, seguiti per un periodo di 6 mesi. L'età mediana della popolazione era 73 anni (±15), con una frazione di eiezione media al ricovero del 35% (±17). 161 pazienti (72,5%) presentavano HFrEF, 39 (18%) HFmrEF, e 22 (9,5%) HFpEF. Confrontando i due gruppi, sono emerse differenze statisticamente significative per l'endpoint composito CV death/HFH (HR=0,24; IC95% [0,101-0,564]; p=0,001); per la mortalità CV (HR=0,318; IC95% [0,101-0,999]; p=0,045) e HFH (HR=0,31; IC95% [0,098-0,963]; p=0,043) tra i due gruppi. L'analisi di sopravvivenza ha confermato, nei pazienti trattati durante il ricovero, una riduzione statisticamente significativa del tasso di eventi per l'endpoint composito CV death/HFH (log-rank p=0,002), per la mortalità CV (log-rank p=0,038) e per le HFH (log-rank p=0,032) a 6 mesi di follow-up. Infine, nella sottopopolazione di pazienti SCA, il trattamento con SGLT2i prima della dimissione è risultato associato a una riduzione del tasso di mortalità CV (log-rank p=0,015), mentre non sono state osservate differenze

in termini di HFH (log-rank p=0,155).

Conclusioni: L'introduzione ospedaliera degli SGLT2i ha ridotto la frequenza dell'endpoint composito mortalità CV/HFH, nonché della mortalità CV e HFH, in pazienti con scompenso cardiaco a eziologia ischemica, indipendentemente dal valore della frazione di eiezione. Nei sottogruppi di pazienti ricoverati per SCA, l'introduzione degli SGLT2i durante il ricovero ha determinato una significativa riduzione della mortalità CV, senza tuttavia evidenziare benefici rilevanti sul composito CV death/HFH e HFH.

SCOMPENSO CARDIACO 1103
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)

INFUSIONE CONTINUA VS INTERMITTENTE DI DIURETICI DELL'ANSA NELLO SCOMPENSO CARDIACO ACUTO (DIUR-AHF): UN'ANALISI PROPENSITY MATCHED

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Continuous vs intermittent loop diuretics stepped protocol in acute Heart Failure (DIUR-AHF): a propensity matched analysis

BACKGROUND: Loop diuretic treatment remains the referenced treatment to solve congestion during acute heart failure (AHF), however no clear indication still exists about the best modality infusion administration, daily dose and treatment duration. This is a propensity score analysis of the DIUR-AHF study aims to investigate the effects of different diuretic regimen and administration modalities on congestion, renal function and post discharge outcome

METHODS: It is a prospective multi center open label study comparing intermittent (IiV) versus continuous furosemide infusion (CiV) . Patients received IiV or CiV combined as a 1:1 ratio for a period of 72-120 hours. High dose (HD) was defined as a high loop diuretic dose >120 mg/day Patients were eligible if they showed at least 2 clinical signs of volume overload associated with increased N-terminal pro–B-type natriuretic peptide (NT-proBNP) level >500 pg/ml. To address potential confounding factors, a propensity score was calculated for each patient using a logistic regression model based on variables including age, creatinine, blood urea (BUN), estimated glomerular filtration rate (eGFR) diabetes dyslipidemia and left ventricular ejection fraction (LVEF >40%) at admission cIV (n=189) iIV (n=181)

RESULTS: At the end of treatment CiV showed significant weight loss (4.0 [2.0- 6.0] vs 3.0 [2.0- 5.0] Kg, <0.001) and NTproBNP reduction>30% (61 vs 40% p<0.001) and reduced congestion persistence (25 vs 35 p=0.048), but this trend was associated with increased rate of WRF (34% vs 18% p<0.001) and prolonged hospital stay (13 [9- 15] vs 11 [8- 14] p=0.004). HD dose revealed similar congestion and weight loss but a reduced DR (-0.13 [-0.22- -0.07] vs -0.32 [-0.59- -0.20] kg/day p<0.001) urinary NA spot (65 [48- 78] vs 78 [66-86] mEq/l p<0.001) and increased rate of adverse event during followup (55 vs 20 p<0.001). Propensity score adjustment for renal function risk factors and additional treatment, confirmed increased risk for HD treatment (2.53 HR 1.64-3.90 p<0.001).

CONCLUSIONS: HD infusion showed an increased risk for adverse events together with reduced diuretic response extending previous findings about the association between HD diuretic and prognosis In chronic HF. Additional research may be warranted to optimize the best intravenous diuretic modality administration according to congestion status, diuresis response, urinary Na, and baseline renal function.

SCOMPENSO CARDIACO 871
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
PROGNOSI (SCOMPENSO CARDIACO)

IMPACT OF SGLT2 INHIBITORS ON CARDIAC FUNCTION AND STRUCTURAL REMODELLING IN DIFFERENT HFREF SUBPOPULATIONS: RESULTS FROM THE REWIN-HFREF STUDY

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Background: The use of SGLT2 inhibitors has been shown to improve survival and reduce adverse events in patients with heart failure with reduced ejection fraction (HFrEF). Less is known on the role of SGLT2i to promote cardiac structure and function changes in this population.

Aims of the Study: 1) to evaluate SGLT2-i's impact on cardiac function and structural remodeling in a cohort of real-world HFrEF ambulatory patients; 2) to evaluate possible different responses in SGLT2-i therapy in different HFrEF subpopulations.

Methods: We conducted a prospective multicenter observational cohort study, consecutively enrolling 152 HFrEF ambulatory patients from February 2022 to June 2022.
Baseline demographic, clinical, laboratory and echocardiographic parameters were collected at the time of enrollment and after six months of treatment with SGLT-2i. All participants underwent conventional, tissue-derived imaging (TDI), and strain echocardiography both at the time of enrollment and after six months of treatment with SGLT-2i.

Results: A total of 152 patients were enrolled. The mean age was 70 ± 13 years, and 28 patients (19%) were female. The baseline mean left ventricular ejection fraction was 32 ± 6.6%. After the six months follow-up several echocardiographic parameters resulted in statistically significant modifications: mean ejection fraction increased from 32% to 35% ($p < 0.001$); left ventricular end-diastolic and end-systolic volumes decreased (respectively LVEDV from 178.17 ± 62.69 mL to 161.80 ± 57.16 mL, $P < 0.001$; and LVESV from 122.33 ± 50.23 mL to 108.00 ± 46.23 mL, $P < 0.001$); right and left atrial volume decreased (respectively RAV from 54.63 ± 30.87 mL to 50.43 ± 27.68 mL P, 0.031; and LAV from 92.92 ± 41.92 mL to 86.19 ± 38.57, P 0.009). None of these parameters did show significant differential changes in diabetic compared to non-diabetic patients, nor in ischemic versus non-ischemic patients. LVEDV was the only parameter to exhibit a different change between with a greater reduction in males (from 187.50 ± 62.62 mL to 162.00 ± 57.59 mL, in males; from 128.50 ± 33.00 mL to 117.50 ± 36.53 mL in females, $P = 0.037$).

Conclusions: Treatment with SGLT2 inhibitors showed a significant improvement in left ventricular function and cardiac reverse remodeling after 6 months of therapy in a cohort of real-world ambulatory HFrEF patients. No significant difference in response to SGLT2-i therapy was observed between diabetic and non-diabetic patients and between ischemic and non ischemic patients; while male patients may derive greater benefits from SGLT2-i treatment.

SCOMPENSO CARDIACO 921
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)

REAL WORLD SAFETY AND EFFECTIVENESS OF SGLT2 INHIBITORS IN PATIENTS WITH HEART FAILURE WITH REDUCED EJECTION FRACTION: RESULTS FROM THE REWIN-HFREF STUDY

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Background: The use of SGLT2 inhibitors has been shown to improve survival and reduce adverse events in patients with heart failure across the ejection fraction (EF) spectrum, becoming part of the cornerstone of the treatment of HF. Yet, real-world evidence remains scarce.

Aim of the Study: To evaluate the efficacy and safety of SGLT2 inhibitors in a real-world cohort of HF with reduced EF (HFrEF) ambulatory patients.

Methods: We conducted a prospective multicenter observational cohort study, enrolling 151 consecutive patients with stable chronic HFrEF from February 2022 to June 2022. Demographic, clinical, laboratory, and echocardiographic parameters were collected at baseline and at six months follow-up.

Results: A total of 151 patients were enrolled, with a mean age of 70 ± 13 years and 28 (19%) female. Among these participants, 74 (50%) had a history of coronary artery disease, 90 (60%) had hypertension, 42 (28%) had chronic kidney disease, 35 (23%) had diabetes; mean LVEF was 32 ± 6.6%. After six months of SGLT2 inhibitor therapy, the treatment was well tolerated, with only 4 discontinuations (2.6%). Median NT-proBNP levels decreased from 1848 pg/mL to 1662 pg/mL ($p = 0.095$), while mean LVEF increased from 32% to 35% ($p < 0.001$). Additionally, hemoglobin levels rose from 13.6 g/dL to 14.1 g/dL ($p < 0.001$), and hematocrit levels increased from 41% to 43% ($p = 0.001$). There was a slight but significant increase in serum creatinine from 1.25 mg/dL to 1.36 mg/dL ($p < 0.001$), with no significant differences observed in electrolyte levels (sodium and potassium).

Conclusions: Our data confirms the safety and efficacy of SGLT2i in a cohort of real-world ambulatory HFrEF patients.

SCOMPENSO CARDIACO 300
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)

MECHANISMS AND PROGNOSIS OF INTOLERANCE TO ANGIOTENSIN RECEPTOR NEPRILYSIN INHIBITORS IN ADVANCED HEART FAILURE: INSIGHTS FROM VASODILATOR CHALLENGE

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Background: Angiotensin receptor-neprilysin inhibitor (ARNI) intolerance is common in patients with advanced heart failure (AdHF) and may be associated with worse prognosis. During right heart catheterization (RHC), afterload reduction induced by vasodilator challenge may reproduce the hemodynamic effects of ARNI. Through sodium nitroprusside (NTP) infusion, we characterized the hemodynamic mechanisms of ARNI intolerance and explored its prognostic relevance in AdHF.

Methods: We performed a retrospective, multicenter study evaluating AdHF patients undergoing RHC with NTP infusion. Hemodynamic ARNI intolerance was defined as symptomatic hypotension requiring ARNI cessation. We collected clinical, echocardiographic, and hemodynamic parameters at baseline and after vasodilator challenge and evaluated their association with ARNI intolerance and a composite clinical outcome of 1-year all-cause death, urgent heart transplantation, or LVAD implantation.

Results: Of the 116 consecutive patients, hemodynamic ARNI intolerance was seen in 26 (22.4%). Baseline hemodynamics were not associated with ARNI intolerance. After NTP infusion, a smaller increase in stroke volume index (ΔSVi; adjusted odds ratio [adj-OR] per mL increase: 0.89, 95% confidence interval [CI] 0.81-0.99, P = 0.031) and higher pulmonary elastance (post-NTP arterial elastance; adj-OR per mm Hg per mL increase: 6.49, 95% confidence interval [CI] 1.04-40.46, P = 0.045) were independently associated with hemodynamic ARNI intolerance. Patients with ARNI intolerance were more likely to experience the primary outcome (Kaplan-Meier estimates: 73.0% vs 36.2%, P = 0.021). Higher baseline right atrial pressure/pulmonary artery wedge pressure (hazard ratio [HR] 8.57, 95% CI 2.23-32.89, P = 0.002) and lower post-NTP SVi (HR 0.95, 95% CI 0.92-0.99, P = 0.015) were independent predictors of adverse events.

Conclusions: Among AdHF patients, ARNI intolerance is common and associated with worse outcomes. NTP infusion unveils exhausted hemodynamic reserve as its underlying mechanism and prognostic determinant.

CardioSic

SCOMPENSO CARDIACO 1074
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
ARITMIE SOPRAVENTRICOLARI (ESCLUSA FA) (ARITMIE)
ARITMIE VENTRICOLARI (ARITMIE)
PROGNOSI (SCOMPENSO CARDIACO)

RELATION BETWEEN ARRHYTHMIC BURDEN, CARDIAC AUTONOMIC FUNCTION AND LEFT VENTRICULAR FUNCTION TRAJECTORY IN PATIENTS WITH NEWLY DIAGNOSED HEART FAILURE WITH REDUCED EJECTION FRACTION

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Background: Heart failure with reduced ejection fraction (HFrEF) carries a poor prognosis. Although optimal medical therapy and etiological interventions can lead to significant improvement in left ventricular ejection fraction (LVEF) in a subset of patients, the mechanisms underlying such recovery remain poorly understood. In particular, the impact of arrhythmic burden and cardiac autonomic dysfunction, assessed through heart rate variability (HRV), on predicting LVEF recovery is not well established. This study aimed to explore the relationship between arrhythmic burden, HRV parameters and LVEF trajectory in patients with newly diagnosed HFrEF, and to identify additional clinical and laboratory predictors of LVEF changes.

Methods: We conducted a prospective, single-center, observational study including 37 patients with newly diagnosed HFrEF (LVEF <40%). At baseline, all patients underwent clinical and biochemical assessment, transthoracic Doppler echocardiography (TTDE) and 24-hour ECG Holter monitoring. TTDE was repeated at 3 months. Patients were classified as "improved" if LVEF increased by >5% at follow-up. Ventricular arrhythmic burden and HRV indices, including both time- and frequency-domain parameters, were analyzed in relation to LVEF changes.

Results: Twenty-four patients (mean age 70±8 years; 88% male) completed follow-up. Sixteen patients (66.7%) demonstrated significant LVEF improvement (mean increase 13.5±4.2%). Neither arrhythmic burden, including premature ventricular complex (PVC), non-sustained ventricular tachycardia (NSVT) and supraventricular arrhythmias, nor HRV parameters significantly predicted LVEF recovery, although trends suggested lower improvement in patients with sympathetic hyperreactivity and reduced parasympathetic modulation. Clinical and laboratory factors were more strongly associated with LVEF recovery: ischemic etiology ($p = 0.048$), dyslipidemia ($p = 0.008$), and anemia ($p = 0.046$) were linked to lower LVEF recovery, whereas higher leukocyte counts predicted greater LVEF improvement ($p = 0.049$).

Conclusions: In patients with newly diagnosed HFrEF, arrhythmic burden and cardiac autonomic dysfunction did not significantly predict short-term LVEF recovery, although autonomic imbalance may exert a negative influence. Clinical and laboratory factors, such as ischemic etiology, anemia, and inflammatory status were associated with the ventricular remodeling response.

SCOMPENSO CARDIACO 159
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
PROGNOSI (SCOMPENSO CARDIACO)

SGLT2 INHIBITORS AND COGNITIVE DECLINE: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Background: Chronic heart failure (HF) is a condition that is continuously growing globally, with incidence and prevalence increasing with age and life expectancy. It is estimated that approximately 40 million people worldwide are affected, with a growing trend due to the aging population and the rise in cardiovascular risk factors.
Sodium-glucose cotransporter 2 inhibitors (SGLT2i) initially developed for the treatment of type 2 diabetes, have also proven effective in the treatment of heart failure, reducing the risk of hospitalization and mortality. Frailty is a state of physiological vulnerability associated with aging, caused by an alteration in the body's homeostatic reserve capacity and a reduced ability to cope with stress, such as acute illnesses. Cognitive decline is an important element of aging and one of the crucial domains of frailty.
This systematic review and meta-analysis aimed to determine the association between cognitive frailty and the use of SGLT2i in patients with HF.

Methods: We searched for the most recent scientific literature on the main biomedical databases: PubMed/MEDLINE and Scopus about the use of SGLT2i in patients with HF.
We focused on selecting original articles found in the literature regarding the study of the effects of this class of drugs on cognitive decline in patients with HF.

Results: Three hundred thirty-six patients with HF treated with SGLT2i were identified.
Cognitive performance assessed by Montreal Cognitive Assessment (MoCA) at the end of the follow-up period, was significantly improved compared to baseline (Mean Differences: 1.03, 95% CI: 0.03–2.04 I^2 = 93.80% p=0.04).

Conclusions: This systematic review and meta-analysis indicate a potential role of SGLT-2i in ameliorating cognitive domain of frailty in patients with HF.
However the heterogeneity was high, which suggests that future studies are necessary to explore the role of SGLT-2i in cognitive frailty among patients with HF.

SCOMPENSO CARDIACO 87
PROGNOSI (SCOMPENSO CARDIACO)
APPS IN CARDIOLOGIA (TELECARDIOLOGIA ED E-HEALTH)
INTELLIGENZA ARTIFICIALE (TELECARDIOLOGIA ED E-HEALTH)

CONFRONTO TRA QUESTIONARI STANDARD E MODELLI LINGUISTICI DI GRANDI DIMENSIONI NEL VALUTARE LA QUALITÀ DELLA VITA E LA COMPLIANCE TERAPEUTICA NELL'INSUFFICIENZA CARDIACA CRONICA: UN PROTOCOLLO DI STUDIO

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(a) UNIVERSITÀ DEGLI STUDI DI PADOVA

Una scarsa qualità della vita (QoL) e l'aderenza alla terapia farmacologica giocano un ruolo fondamentale nella prognosi dello scompenso cardiaco (SC), e la loro valutazione nei trial clinici è aumentata significativamente nell'ultimo decennio. I modelli linguistici di grandi dimensioni (LLM) rappresentano una tecnologia promettente per migliorare il monitoraggio degli esiti riportati dai pazienti. Sebbene alcuni studi abbiano valutato le potenzialità di questi sistemi, le applicazioni in contesti clinici reali restano ancora limitate. Lo studio HEALING-LLM mira ad esplorare la fattibilità e le potenzialità di un sistema di LLM con raccolta remota dei dati per l'interpretazione codificata di testi liberi relativi alla QoL e all'aderenza terapeutica redatti da pazienti affetti da SC cronico. L'obiettivo primario è confrontare i PRO ottenuti tramite LLM con quelli ottenuti dai questionari standard, per verificare se le differenze tra gli strumenti si riflettano su differenze cliniche, valutandone affidabilità e riproducibilità nei diversi sottogruppi di pazienti. L'obiettivo secondario è verificare la fattibilità logistica e scientifica di un futuro studio randomizzato controllato su larga scala.

MATERIALI E METODI

Si tratta di uno studio di coorte prospettico, osservazionale, monocentrico che arruola pazienti dimessi dall'unità di cardiologia con diagnosi di scompenso cardiaco in stadio C o D. Il follow-up viene effettuato online a 1, 6 e 12 mesi dalla dimissione e prevede: 1. Il questionario EQ-5D-5L per la valutazione della QoL; 2. Una domanda a testo libero che rifletta le 5 dimensioni dell'EQ-5D-5L; 3. La scala MMAS-4 per l'aderenza terapeutica; 4. Una domanda a testo libero corrispondente agli item della MMAS-4. Il follow-up viene inviato automaticamente tramite l'app MyCap-RedCap® o via e-mail, e i dati clinici e i PRO vengono raccolti sulla piattaforma RedCap®. Ogni dominio dell'EQ-5D-5L è classificato in: assente, lieve, moderata, grave, difficoltà totale/presenza di sintomi. Per l'MMAS- 4 viene eseguita una clusterizzazione finale in probabilità lieve, moderata o alta di non aderenza. Le risposte a testo libero vengono elaborate tramite un LLM (ChatGPT-4o mini, OpenAI®), con un processo articolato in tre fasi: 1. I dati vengono importati in R tramite il pacchetto {REDCapTidieR}; 2. I testi liberi vengono inviati al LLM per l'estrazione delle informazioni predefinite corrispondenti alla categorizzazione EQ-5D-5L e MMAS-4, tramite un prompt a due componenti (sistema + utente) che definisce contesto, istruzioni e formato dell'output; 3. L'output generato viene analizzato e validato usando i pacchetti {tidyverse} e {jsonlite}, nel rispetto degli standard SQL di RedCap. Le analisi statistiche previste includono: valutazione della robustezza del modello a variazioni nei prompt; concordanza tra le classificazioni generate dal LLM e i punteggi dei questionari tramite kappa di Cohen pesata e plot di Bland-Altman; correlazioni di Spearman con standard clinici di riferimento.

CONCLUSIONI

L'integrazione dei LLM nei sistemi di raccolta dei PRO rappresenta un approccio innovativo per valutare QoL e aderenza terapeutica nello scompenso cardiaco. I risultati dello studio HEALING-LLM forniranno dati preliminari cruciali per la progettazione di futuri trial clinici randomizzati su larga scala.

SCOMPENSO CARDIACO 579
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE
(IMAGING CARDIOVASCOLARE)

IMPACT OF SGLT2 INHIBITORS ON LEFT VENTRICULAR FILLING PRESSURES ASSESSED BY THE COMBINATION OF LEFT ATRIAL STRAIN AND DOPPLER MEASURES IN PATIENTS WITH HEART FAILURE AND REDUCED EJECTION FRACTION

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Background. The type 2 sodium-glucose cotransporter inhibitors (SGLT2i) are milestone drugs in the treatment of heart failure with reduced ejection fraction (HFrEF). However, the mechanisms responsible for their beneficial effects are still to be clarified.

Aim of the study. To evaluate the effect of SGLT2i therapy on left ventricular filling pressure in a group of HFrEF outpatients by analysing changes in traditional and new echocardiographic parameters.

Methods. Before and 3, 6, 12, and 24 months after the introduction of SGLT2i, the following traditional and new echocardiographic indices reflecting left ventricular filling pressures were evaluated: - the ratio between early diastolic peak at pulsed Doppler (E) and the mean septal-lateral mitral early diastolic peak at TDI (E/e'); - the maximal deformation of the left atrium (left atrial reservoir, LAr) by two-dimensional speckle tracking analysis; - the ratio between E and LAr (E/LAr); - the ratio between LAr and E/e' (LAr/Ee'). In a subgroup of patients, an echocardiographic

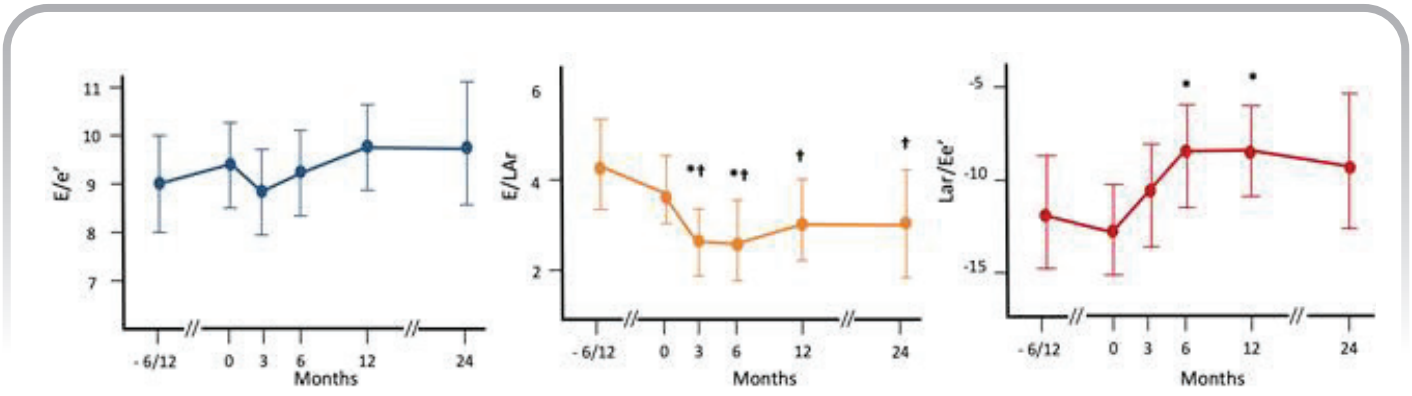


Figure legend: *p<0.05 vs. baseline. †p<0.05 vs. -6/12 months.

Figure 1

evaluation was performed 6-12 months before SGLT2i introduction. Changes in the repeated measures were evaluated by linear mixed models. A $p<0.05$ was considered significant.

Results. We enrolled 60 HFrEF outpatients (83% males, age 61 ± 13, mean LVEF 31 ± 7%, NYHA class II in 75% and III in 25%), all in conventional medical therapy (sacubitril/valsartan or ACE-inhibitors or angiotensin II receptor blockers in 100%, beta-blockers in 100%, mineralcorticoid receptor antagonists in 87%, loop diuretics in 62%). As shown in the Figure, E/e' did not significantly change during follow-up. In contrast, the E/LAr ratio significantly decreased from 3 months onward, while LAr/e' increased significantly over the same time period.

Conclusions. These findings indicate that SGLT2 inhibitors can reduce left ventricular filling pressure evaluated by new derived echocardiographic indices in HFrEF patients already receiving optimised medical therapy. These findings highlight the potential role of SGLT2i in improving diastolic function and atrial-ventricular coupling in HFrEF.

SCOMPENSO CARDIACO 403
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
PROGNOSI (SCOMPENSO CARDIACO)
IMAGING MIOCARDICO-PERICARDICO
(MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

PROGNOSI CARDIOVASCOLARE IN PAZIENTI STABILI CON AMILOIDOSI: UN SEMPLICE E NUOVO SCORE DI RISCHIO

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Introduzione: L'amiloidosi è una malattia sistemica caratterizzata dalla deposizione di fibrille amiloidi nello spazio intercellulare. Il coinvolgimento cardiaco si presenta in circa il 50% dei casi. L'obiettivo di questo studio è stato quello di sviluppare e validare uno score di rischio per identificare i pazienti con amiloidosi cardiaca a elevato rischio di ospedalizzazione per scompenso cardiaco ad un follow-up a medio termine.

Metodi: Sono stati arruolati 100 pazienti con diagnosi di amiloidosi cardiaca tra il 2018 e il 2021, reclutati prospetticamente da tre ospedali di terzo livello. All'inizio dello studio sono state raccolte le condizioni cliniche e sono stati eseguiti elettrocardiogramma ed ecocardiogramma transtoracico. Tutti i pazienti sono stati seguiti prospetticamente (a 6, 12, 24 e 36 mesi).

Risultati: Dei pazienti arruolati, il 31% presentava amiloidosi da catene leggere (AL), il 36% transtiretina wild-type (ATTRwt) e il 33% transtiretina mutata (ATTRm). Al momento della presentazione, una quota significativa di pazienti era solo lievemente sintomatica, ma durante il follow-up il 55% è stato ospedalizzato per scompenso cardiaco e il 30% è deceduto per scompenso cardiaco. All'analisi di regressione di Cox univariata, predittori significativi di ospedalizzazione per scompenso cardiaco sono risultati la presenza di bassi voltaggi e pattern pseudoinfartuale all'ECG, lo spessore del setto interventricolare e della parete posteriore, la frazione di eiezione ventricolare sinistra (LVEF) e il pattern pseudonormale di riempimento diastolico del ventricolo sinistro all'ecocardiogramma. Nel modello di regressione di Cox multivariato sono rimasti significativi i bassi voltaggi, la LVEF e lo spessore del setto interventricolare. Sono stati quindi considerati idonei per l'inclusione nel punteggio finale: bassi voltaggi all'ECG, LVEF ≤40% e spessore del setto interventricolare ≥14 mm. A ciascuna di queste variabili è stato attribuito un punteggio specifico, per un totale da 0 a 4. Un punteggio compreso tra 3 e 4 è risultato associato a una probabilità dell'80% di ospedalizzazione per scompenso cardiaco, mentre un punteggio tra 1 e 2 era associato a una probabilità del 50%. L'analisi di Kaplan–Meier ha evidenziato una probabilità significativamente più alta di eventi secondari (mortalità correlata allo scompenso e mortalità per tutte le cause) nel tempo nei pazienti con punteggio elevato (3-4). A tre anni di follow-up, l'84% dei pazienti con punteggio alto è stato ospedalizzato per scompenso cardiaco, il 53% è deceduto per scompenso e il 68% è deceduto per tutte le cause.

Conclusioni: Il punteggio proposto è uno strumento semplice e rapido che, utilizzato nella pratica clinica quotidiana, può migliorare in maniera significativa le informazioni prognostiche nei pazienti con amiloidosi cardiaca. La sua importanza risiede nella capacità di prevedere, grazie a esami strumentali cardiologici praticati di routine, come ECG ed ecocardiogramma, la prognosi di questi pazienti al follow-up intermedio.

Può essere utilizzato in pazienti stabili al momento dell'osservazione e, per questo motivo, riveste un valore molto importante per il clinico nella scelta della terapia più adeguata e nella definizione del timing del follow-up, al fine di prevenire l'insorgenza di eventi cardiaci avversi.

SCOMPENSO CARDIACO 814
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
ARITMIE VENTRICOLARI (ARITMIE)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)

MITOCHONDRIAL RED FLAGS IN A PATIENT WITH DILATED CARDIOMYOPATHY

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Background: Mitochondrial cardiomyopathies represent an uncommon but clinically relevant cause of heart failure with reduced ejection fraction (HFrEF). Their diagnosis is often challenging due to overlap with idiopathic dilated cardiomyopathy (DCM). The presence of systemic manifestations and maternal inheritance patterns may provide important diagnostic red flags.

Case presentation: A 49-year-old man with obesity, obstructive sleep apnea, sensorineural deafness, hepatic steatosis, cognitive delay and a family history of sudden cardiac death (mother at age 60) presented with abdominal pain and bilateral leg edema. Laboratory tests revealed elevated NT-proBNP, mild troponin rise, and increased CPK. ECG showed sinus rhythm with left axis deviation, borderline atrioventricular conduction, and nonspecific repolarization abnormalities. Echocardiography demonstrated a dilated left ventricle with severely reduced ejection fraction (15-20%) and biatrial enlargement. Coronary angiography excluded obstructive coronary artery disease. Cardiac magnetic resonance confirmed DCM with severe systolic dysfunction and late gadolinium enhancement. Continuous telemetry detected non sustained ventricular tachycardia.

Discussion: The combination of systemic features (sensorineural deafness, mild palpebral ptosis, hepatic involvement), elevated CPK, conduction abnormalities, maternal family history and cognitive delay raised suspicion of mitochondrial cardiomyopathy. Genetic testing for DCM-associated genes was negative. An ICD was implanted given severe LV dysfunction, myocardial fibrosis, and ventricular arrhythmias. At one-year follow-up, the patient remained clinically stable, with persistent LV dysfunction but improved symptoms. Importantly, a multidisciplinary evaluation prompted neurological consultation, which recommended a muscle biopsy to further investigate mitochondrial involvement.

Conclusion: This case underscores the importance of recognizing extracardiac red flags in patients with apparently idiopathic DCM. A multidisciplinary approach, integrating cardiology, genetics, and neurology, is essential to refine diagnosis, with muscle biopsy playing a pivotal role in confirming mitochondrial disease and guiding management.

SCOMPENSO CARDIACO 852
IMAGING DELLE CARDIOPATIE CONGENITE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)

EXPANDING THE SPECTRUM OF SYNDROMIC CARDIOMYOPATHY: DIAGNOSTIC COMPLEXITY AND PRECISION MEDICINE PERSPECTIVES

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Background: Cardiomyopathies remain a major diagnostic challenge for clinical cardiologists. Frequently asymptomatic for years, they may manifest abruptly with acute heart failure or malignant arrhythmias. Despite extensive investigations, the diagnostic process is often long and complex, and a clear etiologic profile is not always achieved.

Case Presentation: A 43-year-old male was admitted with severe dyspnea and acute respiratory failure. Cardiac evaluation revealed non-ischemic dilated cardiomyopathy with severe biventricular dysfunction. Clinical assessment also identified mild scoliosis and subtle neurocognitive delay. Transesophageal echocardiography demonstrated a bicuspid aortic valve (right-left cusp fusion) with a calcified raphe, associated with highly eccentric moderate commissural regurgitation and at least moderate stenosis. Initial management with optimized medical therapy improved hemodynamics, followed by dual-chamber ICD implantation, prompted by a high burden of ventricular ectopy and runs of non-sustained ventricular tachycardia. The patient was discharged in stable condition and enrolled in follow-up for potential future valvular intervention. Genetic testing identified a 3.2 Mb deletion on chromosome 2p22, including CYP1B1, GALM, and SOS1, together with a 12 Mb duplication on chromosome 6p containing 16 genes linked to pathogenic phenotypes.

Discussion: The coexistence of biventricular dysfunction, bicuspid aortic valve disease, and ventricular arrhythmias, in the context of dual copy number variations, suggests a syndromic cardiomyopathy arising from cumulative dosage imbalance rather than single-gene disruption. Genes such as SOS1 and CYP1B1 may underlie the cardiac and vascular features, supporting the role of advanced genomic profiling in elucidating complex phenotypes.

Conclusion: This case underscores the value of integrating array-CGH and cardiogenetic assessment in patients with unexplained cardiomyopathy and extracardiac features, enabling earlier risk stratification, tailored device- and surgery-related decisions, and multidisciplinary management within the framework of precision cardiology.

SCOMPENSO CARDIACO 268
BIOMARCATORI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)

THE ROLE OF THE DAY HOSPITAL IN THE CARE NETWORK FOR CHRONIC HEART FAILURE

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(a) UO DAY HOSPITAL OSPEDALE VALLECAMONICA, ESINE (BS); (b) UO MEDICINA INTERNA OSPEDALE VALLECAMONICA, ESINE (BS); (c) UO CURE SUBACUTE OSPEDALE VALLECAMONICA, ESINE (BS); (d) UO DIABETOLOGIA OSPEDALE VALLECAMONICA, ESINE (BS); (e) UO CARDIOLOGIA OSPEDALE VALLECAMONICA, ESINE (BS); (f) UO PRONTO SOCCORSO OSPEDALE VALLECAMONICA, ESINE (BS)

Background and purpose of the study: heart failure is one of the leading causes of mortality and morbidity. With a prevalence of 2% of the population, this figure is expected to grow, largely due to population ageing and improvements in acute myocardial infarction treatment. Despite advances in drug therapy, the prognosis remains poor: 50% of patients with advanced heart failure die within 2 years, and 31.2% are rehospitalised within a year. From an organisational standpoint, the day hospital plays a pivotal role in facilitating interaction between various healthcare areas and services, including the local community, general medicine, cardiology and internal medicine clinics.

Materials and methods: 296 patients diagnosed with heart failure were admitted to the day hospital between 1/1/24 and 31/12/24 for follow-up and implementation of guideline-based therapy. As documented in the literature, a specialist approach to the management of patients with heart failure leads to better outcomes, particularly when shared care pathways are activated. Multidisciplinary management in day hospitals aims to: a) improve diagnostic accuracy and therapeutic adequacy; b) identify the most effective treatment pathways for patients; c) ensure adequate continuity of care; d) prevent early readmissions.

Results: mean age 80 ± 10.5; women 48% BMI 28.0 ± 4.7; medical history: ischaemic 50% DCM 24% other 26% comorbidities: CAD 50%, AF 48%, diabetes 22%, hypertension 36%, COPD 14%, ICD 8%, PM 8%, CKD 48%, CABG 9%, cognitive impairment 16%, stroke 10%; clinical and laboratory: SBP 117 mmHg, DBP 67 mmHg, HR 66; Hb 13.5 creatinine 1.4 K 4.6, baseline NT-proBNP 2802.9 pg/ml, control NTproBNP 1394 pg/ml, baseline NT-proBNP >1000 83% HFrEF 24% HFmrEF 23% HFpEF 53% NYHA class IIa 68% class IIIa 32% EF HFrEF 33%, EF HFmrEF 46%; SGLT2i 92% sacubitril/valsartan 89% MRA 47% BB 88% DOAc 45% diuretics 86% vericiguat 30%

Conclusions: european guidelines recommend multidisciplinary management programmes for heart failure patients (class I recommendation, level of evidence A), which can be challenging to implement in primary care settings. Day hospitals have proven to be effective and efficient in managing decompensated patients through a disease management model involving a multidisciplinary approach to chronic diseases and the provision of integrated therapeutic and educational interventions. This model allows for the optimisation of management, leading to a reduction in inappropriate early hospitalisations and an improvement in the prognosis and quality of life of patients with heart failure. Hospital doctors, general practitioners and community nurses promote integration and coordination to manage cases of varying complexity and intensity in the most appropriate setting. This setting may be the community, hospital or day hospital.

SCOMPENSO CARDIACO 272
BIOMARCATORI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)

COMPREHENSIVE MANAGEMENT OF PATIENTS WITH HEART FAILURE: THE VALCAMONICA PROJECT

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(a) UO DAY HOSPITAL OSPEDALE VALLECAMONICA, ESINE (BS); (b) UO MEDICINA INTERNA OSPEDALE VALLECAMONICA, ESINE (BS); (c) UO CURE SUBACUTE OSPEDALE VALLECAMONICA, ESINE (BS); (d) UO DIABETOLOGIA OSPEDALE VALLECAMONICA, ESINE (BS); (e) UO PRONTO SOCCORSO OSPEDALE VALLECAMONICA, ESINE (BS); (f) UO CADIOLOGIA OSPEDALE VALLECAMONICA, ESINE (BS)

Background: chronic heart failure has become a serious public health problem in Western countries, particularly among the elderly population, and represents a major health issue in terms of incidence, multiple rehospitalisations and costs. However, the management of elderly patients with heart failure in daily outpatient care is very complex, requiring considerable commitment from both the family and the relevant outpatient healthcare facilities. Therefore, it is necessary to transition from a reactive to a proactive and integrated approach to care, in which healthcare professionals identify needs and potential risk factors in advance, planning the most appropriate actions to protect the patient's health.

Methods: the project is developed through several phases; phase 1: analysis of the business context (analysis of decompensation hospitalizations in the Unit Internal Medicine in the year 2024); phase 2: prefigure a possible pathway for territorial care; phase 3: pilot project; phase 4: cost estimation; phase 5: expected results. The strategic goals of the project are: to promote integrated community care models capable of meeting the healt needs of frail people; to developed models of patient-centered medicine.

Results: in 2024, 296 patients with cardiac heart failure were evaluated in our day hospital. From this group, 30 patients (pilot study) were referred to the Territorial Operating Centre, where they were taken into care by the family nurse at the community house. Working in collaboration with the hospital specialist and family doctor, the aim was to reduce re-hospitalisations, mortality, and improve quality of life. The expected outcomes will be verified through process indicators (ejection fraction (EF), use of angiotensin-converting enzyme inhibitors (ACEi), angiotensin receptor neprilysin inhibitors (ARNI) and beta-blockers) and outcome indicators (re-hospitalisations for heart failure). Discussion: heart failure (HF) is a complex syndrome with a high mortality rate. Associated with an ageing population, it is a significant health concern, affecting 9% of individuals over 80 years of age. HF is characterised by a natural history involving multiple acute decompensations. Of those patients who attend the emergency department, 80% are admitted. Hospital admission implies a deterioration in quality of life for patients and a worse prognosis, with a mortality rate of 10% within 30 days of decompensation. A multidisciplinary approach to heart failure is essential to reduce readmission rates and improve survival.

Conclusion: The project's strategic objectives are: a) to develop a proactive medicine model that emphasises patient empowerment and self-care; b) to trial an innovative organisational care model that considers the family nurse's local actions as support for the heart failure clinic's activities; c) to promote integrated local healthcare models. The focus is shifting from a model of care based on “places” to one based on “clinical cases”.

SCOMPENSO CARDIACO 1009
PROGNOSI (SCOMPENSO CARDIACO)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)

RESULTS OF A COMPREHENSIVE ASSESSMENT OF FRAILTY IN AN ADVANCED HEART FAILURE CLINIC

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INTRODUCTION: Frailty is frequently observed in heart failure (HF), and its assessment is recommended for patients referred for heart transplantation (HT). This study aimed to develop a frailty screening protocol for an advanced HF outpatient service.

METHODS: From May 2024 to September 2025, we prospectively assessed frailty, functional capacity, and quality of life (QoL) in all patients referred to our HF center or listed for HT. The patients underwent a 6-minute walking test (6MWT), handgrip strength test (HST), short physical performance battery (SPPB), mini-COG test, instrumental activities of daily living (IADL) evaluation, Patient Health Questionnaire 9 (PHQ-9), and Kansas City Cardiomyopathy Questionnaire (KCCQ). Frailty was defined using the ESC-HFA tool across four domains: clinical (weight loss or more than three non-cardiac comorbidities), psycho-cognitive (pathological PHQ-9 and mini-COG tests), functional (impaired IADL or SPPB < 10), and social (lack of a caregiver or institutionalization). Frailty was correlated with the clinical aspects of functional capacity, quality of life (assessed with KCCQ), and a composite endpoint of hospitalization for HF or ventricular arrhythmias, outpatient intravenous diuretic administration, and death.

RESULTS: A total of 170 patients were included in the study, with a mean age of 55±10 years. The majority presented HFrEF (72%), with a mean LVEF of 35±13%. 60% were NYHA class II, and 20% were class III. More than half of the patients (55%) presented with ≥ 3 non-cardiac comorbidities. The fulfillment of the clinical, psycho-cognitive, functional, and social domains was 65%, 48%, 46%, and 4%, respectively. 58 patients (34%) met the criteria for a single domain, whereas 77 (52%) met the criteria for two or three domains (24%) and were considered frail. They were older (57±9.6 vs. 53.4±9.9 years, p=0.001), more frequently in NYHA class III-IV (30 vs. 10%, p=0.001), and more users of diuretics at baseline (91%vs77%, p=0,012), and necessity of intravenous diuretics (28% vs 2%, p>0.001). There was a trend towards LVAD implantation (5% vs 0, p=0.051). Frail patients had a lower LVEF (33 vs. 37%, p=0.009) and worse functional capacity at 6MWT (386±96 m vs.

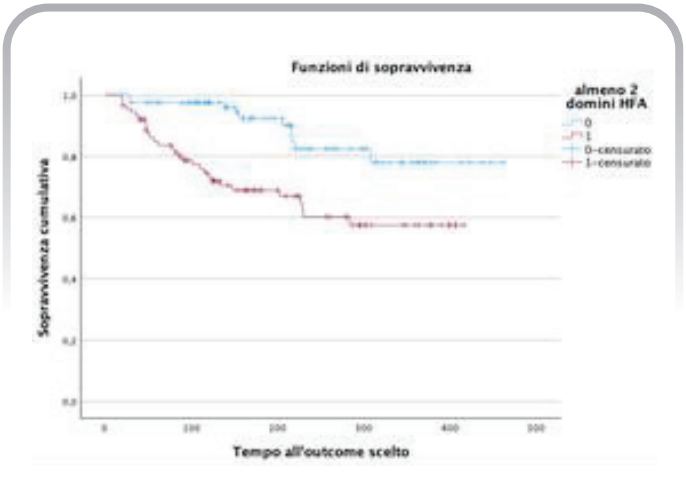


Figure 1

455±82 m, p<0.0001), worse NYHA class (p<0.001), Borg scale after 6MWT (5.4±2 vs 3.75±2.5, p<0.001), handgrip (29.9±9 vs 37.3±11.4, p<0.001). They also reported worse QoL (mean KCCQ score: 49±19 vs 75±12, p<0.001. After a median follow-up period of 215 days (19-462), 40 events were recorded (24%). Frail patients stratified according to two or more ESC domains showed increased risk of adverse events (34% vs 12%, OR 3,242 [1,584 – 6,636], p=0.001).

CONCLUSIONS: Multidimensional assessment according to the HFA criteria revealed that frailty is common in a relatively young population of patients with HF, with frequent multi-domain involvement. Frailty is associated with worse symptoms, functional capacity, and severity of cardiac dysfunction. Moreover, it negatively impacts QoL and is associated with a worse prognosis.

SCOMPENSO CARDIACO 686
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
BIOLOGIA CELLULARE (GENETICA E BIOLOGIA MOLECOLARE)
BIOLOGIA MOLECOLARE CARDIOVASCOLARE
(GENETICA E BIOLOGIA MOLECOLARE)

ROLE OF MITOCHONDRIAL METABOLISM IN HEART FAILURE WITH PRESERVED EJECTION FRACTION

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Background: Heart failure with preserved ejection fraction (HFpEF) is a complex syndrome linked to common conditions such as hypertension, diabetes, obesity, and aging. Despite its prevalence, HFpEF remains one of the challenging syndromes to treat, mainly because its underlying mechanisms are not yet fully understood. Growing evidence suggests that epicardial adipose tissue (EAT) and mitochondrial dysfunction may contribute to metabolic and inflammatory changes typical of HFpEF.

Purpose: In this study, we aimed to develop and validate a preclinical model of HFpEF using Göttingen minipigs. Our goal was not only to replicate the structural and metabolic changes of the disease but also to explore how mitochondrial bioenergetics influence cardiac dysfunction.

Methods: We used a 20-week multihit protocol that combined a high-fat, high-sodium Western diet with slow-release subcutaneous deoxycorticosterone acetate (DOCA). Cardiac function was evaluated by echocardiography (M-mode and Doppler), while metabolic changes were assessed through plasma biochemical analyses and glucose tolerance tests. Additionally, we performed high-resolution respirometry on cardiac tissue to examine mitochondrial respiratory states, including complex II-driven respiration and maximum oxygen consumption after FCCP-induced uncoupling.

Results: Minipigs subjected to the protocol developed an HFpEF phenotype. Echocardiography indicated concentric remodeling, increased wall thickness, and reduced chamber size, although ejection fraction remained preserved, reproducing features of HFpEF. Moreover, an increase in EAT thickness was observed, which was then subsequently confirmed ex vivo. The animals also exhibited elevated cholesterol levels and decreased glucose tolerance, confirming a strong metabolic component. Furthermore, mitochondrial analysis revealed increased succinate-driven respiration but at the same time reduced maximum respiratory capacity, suggesting a loss of bioenergetic flexibility in the HFpEF group compared to the control. Furthermore, treatment with a GRK2 inhibitor (C7), in HFpEF animals, partly reverses the phenotype, restoring the mitochondrial function.

Conclusions: This study demonstrates that our model replicates the complexity of HFpEF, including structural, metabolic, and energy alterations. Furthermore, the inhibition of GRK2 counteracts cardiac remodeling and restores cardiac mitochondrial bioenergetics.

SCOMPENSO CARDIACO 128
DIABETE E MALATTIE CARDIOVASCOLARI (DIABETE E MALATTIE DEL METABOLISMO)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
FARMACI CARDIOVASCOLARI (FARMACI CARDIOVASCOLARI E NUTRACEUTICI)

SGLT2 INHIBITORS AND CARDIAC REMODELING IN HEART FAILURE: A SYSTEMATIC REVIEW AND META-ANALYSIS

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(a) UNIVERSITA DI MESSINA; (b) UNIVERSITA DI GENOVA

Aims: Several studies have demonstrated the safety and efficacy of SGLT2i, but there is little evidence on how these drugs improve cardiac remodeling parameters in patients with heart failure. We performed a meta-analysis of Randomized Controlled Trials to evaluate the effect of SGLT2i on cardiac remodeling in patients with heart failure. The study protocol was registered in the International Prospective Register of Systematic Reviews in June 2025 (PROSPERO: CRD420251055562).

Methods: The Medline, Scopus, and Cochrane Central databases were searched for RCTs that compared SGLT2i with placebo in patients ≥ 18 years of age with a diagnosis of heart failure. Eleven outcomes were analyzed, including LVEDV (Left Ventricular End-Diastolic Volume), LVES (Left Ventricular End-Systolic Volume), LVM (Left Ventricular Mass), LVEF (Left Ventricular Ejection Fraction), LAVi (Left Atrial Volume indexed), LVGLS (Left Ventricular Global Longitudinal Strain), SV (Stroke Volume), and E/e'. Statistical analyses were performed using R version 4.3.2 (R Foundation for Statistical Computing, Vienna, Austria). Heterogeneity was assessed using I^2 statistic.

Results: We included 13 RCTs with 1,181 patients, 592 of whom received SGLT2i as the intervention. LVEDV (MD -8.41 mL; 95% CI: -13.07 to -3.75, p=0.004), LVES (MD -8.11 mL; 95% CI: -13.95 to -2.28, p=0,006), LVESVi (MD −3.71 mL/m², 95% CI: -6.84 to -0.58, p=0.02), LVM (MD -7.65 g; 95% CI: -13.79 to -1.51, p=0.01), LAVi (MD -2.04 ml/m²; 95% CI: -3.21 to -0.86, p=0.0007) were significantly lower in patients treated with SGLT2i compared to placebo. In addition, this treatment led to a significant increase in LVEF (MD +2.59%, 95% CI: 1.76 to 3.43, p<0.00001) compared to placebo.

Conclusion: Our results suggest that in patients with heart failure, SGLT2i have a positive influence on cardiac remodeling since they lead to a significant decrease in LVEDV, LVES, LVESVi, LVM, LVMi, and LAVi compared to placebo and a significant increase in EF.

SCOMPENSO CARDIACO 204
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)

TRACKING TREATMENT PATHWAYS IN ADULT PATIENTS WITH HYPERKALEMIA (TRACK): REAL WORLD EVIDENCE PROSPECTIVE STUDY IN ITALY

Giuseppe Pinto (a), Federico Alberici (b), Filippo Aucella (c), Rocco Baccaro (d), Mario Bonomini (e), Silvio Borrelli (f), Lorenzo Arcangelo Calò (g), Andrea Di Lenarda (h), Enrico Fiaccadori (i), Loreto Gesualdo (j), Gaetano La Manna (k), Vincenzo La Milia (l), Alessandro Maloberti (m), Antonio Pisani (n), Teresa Rampino (o), Andrea Ranghino (p), Alberto Rosati (q), Angela Sciacqua (r), Stefano Taddei (s), Andrea Ungar (t), Francesca Viazzi (u), Anna-karin Sundin (v), Nitin Shivappa (w), Meredith Bishop (x), Francesca Pluchinotta (y), Marco Gnesi (z), Daniela De Serio (y), Pietro Manuel Ferraro (,)

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Background & Aim. Guidelines for hyperkalaemia [HK] management recommend potassium [K] restriction, bicarbonate correction, diuretics, K-binders, and lowering RAASi doses only as a last resort. Real-world adherence to these guidelines remains unclear due to limited data.

The TRACK study aimed to describe HK management strategies in clinical practice.

Methods. TRACK is an observational, prospective study sponsored by AstraZeneca, conducted in the US, UK, Germany, Spain, and Italy. Patients ≥18 years old with serum K+>5.0 mmol/L were eligible for enrolment. Participants were followed for 12 months, with clinical data collected from medical records every 3 months. Treating physicians recorded HK management strategies. Follow-up was completed in December 2024. This abstract focuses on the Italian cohort.

Results. Between July 2022 and December 2023, 314 patients were enrolled in Italy, of whom 89 (28.3%) were recruited from cardiology centres. Mean age was 68.8±13.6 years, 66.9% were men. Isolated heart failure [HF] was observed in 19 (6.1%), chronic kidney disease [CKD] in 176 (56.1%), and both HF and CKD in 97 (30.9%). Cardiac disorders were reported in 113 (36.0%) patients, including atrial fibrillation in 53 (16.9%). Diabetes mellitus and dyslipidaemia were present in 51 (16.2%) and 40 (12.7%) patients respectively. Hypertension was reported in 184 (58.6%) patients.

The index HK episode was a recurrence in 183 (58.3%) of cases. Among recurrent cases, 90 (49.2%) had K+>5.5 mmol/L at baseline. In the overall cohort, at baseline 48 (26.2%) were treated with sodium zirconium cyclosilicate [SZC], 9 (4.9%) with patiromer, 16 (8.7%) with sodium polystyrene sulfonate, 7 (3.8%) with calcium polystyrene sulfonate, 101 (55.2%) were not receiving K-binders.

A low-K diet was suggested to 178 (56.7%) patients at baseline, 142 (46.7%) at month 3, 137 (46.4%) at month 6, 123 (42.4%) at month 9, and 144 (51.2%) at month 12. Looking at post-index treatment patterns, K-binders were initiated or uptitrated in 50 (15.9%) patients at baseline, 18 (5.9%) patients at month 3, 12 (4.0%) at month 6, 7 (2.4%) at month 9, and 10 (2.8%) at month 12, and downtitrated or stopped in <4 patients at baseline, 6 (2.0%) at month 3, 4 (1.3%) at month 6, 6 (2.1%) at month 9, and 4 (1.4%) at month 12. MRAs were initiated or uptitrated in <4 patients at baseline, 4 (1.3%) at month 3, <4 at month 6, 9, and 12, and downtitrated or stopped in 19 (6.1%) patients at baseline, 7 (2.3%) at month 3, 7 (2.4%) at month 6, <4 at month 9 and 12.

Based on physicians' recorded responses, the expectation of HK management at month 12 was normalization of serum K+ in 222 (79.3%) cases, maintenance of RAASi in 94 (33.6%) cases, and achievement of other objectives in 9 (3.2%) cases. At month 12, only 138 (49.1%) patients achieved the therapeutic goal of their individual HK management plan.

Conclusion. This analysis of the Italian TRACK cohort highlights important opportunities to optimise HK management in Italy. While dietary potassium restriction remains the most recommended intervention, there is potential to expand the use of K-binders, particularly SZC, which was the most frequently prescribed agent in this setting. By increasing awareness of current management patterns, these results provide evidence to support healthcare professionals in further improving outcomes for patients with hyperkalaemia.

SCOMPENSO CARDIACO 856
CARDIOPATIE CONGENITE NELL´ADULTO (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)

DUE TRAPIANTI DI CUORE: LA SFIDA DEL RIGETTO UMORALE

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Introduzione: Il trapianto cardiaco rappresenta il trattamento di scelta nei pazienti con scompenso cardiaco avanzato refrattario. Il rigetto, sia cellulare che anticorpo-mediato, costituisce una delle principali complicanze post-trapianto, richiedendo un attento monitoraggio e un approccio terapeutico mirato per preservare la funzione del graft e migliorare la prognosi a lungo termine. Presentiamo il caso di una giovane donna sottoposta ad un secondo trapianto cardiaco a seguito di graft failure indotta da rigetto umorale.

Riassunto del caso: donna di 37 anni con anomalia di Ebstein, sottoposta all'età di 9 anni ad anastomosi cavo-polmonare parziale secondo Glenn, plastica della valvola tricuspide e chiusura di difetto interatriale. Per comparsa di scompenso cardiaco destro, veniva sottoposta a trapianto cardiaco ortotopico (TCO) a marzo 2024 senza alcuna complicanza, e dimessa con terapia immunosoppressiva composta da Ciclosporina, Micofenolato mofetile e Prednisone. Al quarto mese di controllo post-TCO, paziente asintomatica, con biopsia endomiocardica (BEM) positiva per rigetto cellulare 1R (ISHLT 2005) trattato con Prednisone a 100mg o.d. Ad ottobre 2024 compariva sintomatologia compatibile con graft failure, con evidenza agli esami di imaging di insufficienza tricuspidalica (IT) severa, lieve ipertensione polmonare al cateterismo destro e basso indice cardiaco. Per evidenza di quadro di rigetto umorale (capillarite, edema interstiziale e anticorpi donatori specifici), la paziente veniva sottoposta a due cicli di plasmaferesi e somministrazione di immunoglobuline e.v. e Rituximab con discreta risposta clinica. Un mese dopo ripresentava una nuova recidiva di graft failure, trattata con Eculizumab per quadro istologico suggestivo di rigetto anticorpo-mediato 1 con focale deposito di C5b9 intracapillare con miglioramento clinico. A gennaio 2025 nuova recidiva di graft failure con episodi ripetuti di crisi comiziali in presenza di segni di instabilità emodinamica per cui veniva sottoposta ad intubazione orotracheale e posizionamento di ECMO V-A. L'ecocardiogramma transtoracico riportava una frazione di eiezione del ventricolo sinistro del 40% e nota IT severa. Per episodi di blocco AV transitorio veniva impiantato pacemaker sottoclaveare. Si sospendeva la Ciclosporina per sospetta tossicità neurologica e si avviava Tacrolimus. Visto il quadro clinico si immetteva in lista urgente per trapianto cardiaco al quale si sottoponeva per la seconda volta a febbraio 2025. La paziente veniva quindi dimessa a maggio 2025. I successivi controlli ecocardiografici e BEM mostravano buona funzione di pompa e assenza di rigetto.

Discussione: Il rigetto anticorpo-mediato (AMR) rappresenta una sfida clinica significativa nel trapianto cardiaco, associato a elevata morbilità e mortalità nonostante l'uso di terapie immunosoppressive standard. Nel presente caso, una paziente con cardiopatia congenita e trapianto ortotopico ha sviluppato un quadro complesso di rigetto umorale recidivante, resistente ai trattamenti convenzionali con plasmaferesi, immunoglobuline e rituximab. L'uso di eculizumab, inibitore del complemento terminale, ha evidenziato una risposta

clinica parziale, confermando il ruolo cruciale della via del complemento nel danno microvascolare associato all'AMR. Tuttavia, la progressione verso insufficienza cardiaca refrattaria ha reso necessario un secondo trapianto, sottolineando la gravità del AMR e la necessità di strategie terapeutiche multimodali e tempestive per migliorare la prognosi.

SCOMPENSO CARDIACO 953
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)

OBESITY-DRIVEN VASODILATORY HIGH-OUTPUT HEART FAILURE WITH SVC ARTERIALIZATION: A QUANTIFIED MULTIMODAL CASE

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A middle-aged woman with severe obesity (BMI from 38.7 to 33.7 on tirzepatide) and OSA on CPAP, without diabetes or chronic hypertension, presented with exertional dyspnoea and brief chest discomfort. Echocardiography showed preserved systolic function (LVEF 63%) with low filling pressures (E/A 1.17; lateral E' 0.14 m/s; E/E' 6; LAVi 30 mL/m²) and normal RV mechanics. Integrated CT-Doppler quantification yielded LVOT area 3.35 cm² with VTI 31.5 cm and RVOT area 4.53 cm² with VTI 23 cm, for forward stroke volumes 105 and 104 mL (Qp/Qs 1.0). The main pulmonary artery measured 38 mm, interpreted as high-flow remodelling rather than pulmonary hypertension. Two right-heart catheterizations confirmed high-output, low-resistance physiology: CO 10.2 L/min (CI 5.7), SVR 758 dyn/s/cm5, PVR 1.2 WU with SVC 83%, PA 79%, Ao 93% (February); and CO 9.6 L/min (CI 5.6) with SVR 574 dyn/s/cm5, PVR 0.42 WU, oximetry SVC 93%, PA 86%, IVC 82% (August). The SVC-to-PA step-down with Qp/Qs 1.0 is anti-shunt, indicating "SVC arterialization" from extremely low regional extraction in the upper body-not an anatomic left-to-right shunt; IVC saturation never exceeded PA saturation, arguing against an abdominal AV driver. Recomputing Fick with plausible VO_2 180-195 mL/min (sedated, supine obesity) gives CO 8.1–8.9 L/min, aligning catheter values with CT/echo forward stroke volume and preserved contractility under low afterload. Clinically, ivabradine improved symptoms by rate-slowing (reducing excess flow), whereas furosemide worsened them, consistent with preload dependence in a low-resistance circulation. Tirzepatide induced 10 kg weight loss with further SVR reduction and stable normal PVR, fitting a vasodilatory, subcutaneous-obesity milieu. Extensive multimodal imaging (TOE, CMR, thoracic/cervico-cerebral and abdominal angiography, chest/abdominal CT) and laboratory work-up excluded shunts or alternative high-output aetiologies. Altogether, concordant quantitative data support an obesity-related, vasodilatory high-output HF phenotype defined by low systemic afterload, preserved pump function, SVC arterialization from low regional extraction, and pulmonary artery dilatation due to chronic high-flow remodelling.

CardioSic

SCOMPENSO CARDIACO 413
PROGNOSI (SCOMPENSO CARDIACO)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)

IMPACT OF TYPE D PERSONALITY AND DEPRESSIVE SYMPTOMS ON FUNCTIONAL STATUS AND QUALITY OF LIFE IN PATIENTS WITH WORSENING HEART FAILURE

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Background: Type D personality, characterised by high negative affectivity and social inhibition, is linked to cardiovascular diseases, but its role in heart failure (HF) is unclear. Depression is a common comorbidity in HF, often worsening prognosis. The impact of both type D personality and depressive symptoms on worsening heart failure (WHF) remains uncertain.

Purpose: To assess whether type D personality and depression contribute to worse health status, defined as functional status and quality of life (QoL), in outpatients with WHF requiring recurrent intravenous diuretic therapy.

Methods: WHF outpatients admitted to our clinic due to persisting symptoms despite GDMT were enrolled from November 1st to December 31st, 2024. Type D personality was assessed with the Type D Personality Scale (DS14) and depressive symptoms with the Patient Health Questionnaire-9 (PHQ-9). A brief interview using the Beck Depression Inventory II (BDI-II) identified cases of depression. Functional status was measured with the 4-metre gait speed test (GS) and Frailty Index (DAPA-HF), and QoL was assessed with the Kansas City Cardiomyopathy Questionnaire (KCCQ) and EQ-5D. Spearman correlation coefficients were calculated for PHQ-9, BDI-II, and DS14 domains (negative affectivity and social inhibition) with health status variables (Frailty Index, KCCQ, EQ-5D). The Mann-Whitney test was used to compare subgroups based on type D personality.

Results: Forty-three outpatients with WHF were enrolled (median age 73 years, 53.3% male, median LVEF 40%). The most common causes of HF were post-ischemic (53.3%) and valvular disease (40%). Comorbidities included chronic kidney disease (82.2%), arterial hypertension (68.9%), and type 2 diabetes mellitus (37.8%). Depressive symptoms were present in 60% of the cohort (PHQ-9 ≥5), with 12 patients showing moderate depression (PHQ-9 ≥10). Only 3 patients had severe depression (BDI-II >13). Type D personality was identified in 28.9% of the cohort (13 patients). Our analysis revealed a moderate inverse correlation (-0.35) between PHQ-9 and EQ-5D, suggesting that higher depressive symptoms are associated with poorer QoL (Figure 1). Patients with type D personality had significantly worse QoL and functional status, with lower KCCQ, EQ-5D, and GS, and higher Frailty Index scores compared to those without type D personality.

Conclusions: In WHF outpatients requiring recurrent intravenous diuretic therapy, type D personality and depressive symptoms were associated with poorer QoL and functional status. Higher depressive symptoms correlated with lower QoL, and patients with type D personality had worse functional status, including lower GS and higher Frailty Index. These findings emphasise the need to address psychological factors, such as depression and type D personality, to improve health status in this population.

SCOMPENSO CARDIACO 928
BIOLOGIA MOLECOLARE CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
BIOLOGIA CELLULARE (GENETICA E BIOLOGIA MOLECOLARE)
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)

SFINGOSINA-1-FOSFATO E FENILACETILGLICINA: DUE NUOVI POTENZIALI BIOMARCATORI DELL'ASSE INTESTINO-CUORE NELL'INVECCHIAMENTO CARDIOVASCOLARE

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Contesto: La disfunzione mitocondriale, l'infiammazione cronica e le anomalie intestinali sono importanti regolatori dell'invecchiamento cardiovascolare. Per studiare l'interazione tra predisposizione genetica, microbiota intestinale e insufficienza cardiaca correlata all'età, abbiamo utilizzato topi giovani e anziani con delezione genetica eterozigote globale del gene Akap1 (Akap1+/-), che codifica per le proteine di ancoraggio della chinasi A mitocondriale ed i correspondenti wild-type (Akap1+/+) della stessa età.

Metodi: La funzione cardiaca sistolica di topi Akap1+/+ e Akap1+/- giovani (4-6 mesi di età) e anziani (18-24 mesi di età) è stata valutata tramite ecocardiografia transtoracica. L'integrità della barriera intestinale è stata valutata attraverso l'analisi dell'espressione delle proteine giunzionali occludina (Ocln) e zonulina (Tjp1), il test di permeabilità FITC-Destrano e l'istologia mediante colorazione con ematossilina ed eosina. L'infiammazione sistemica è stata misurata mediante i livelli sierici di Tumor Necrosis Factor-alfa (TNF-alfa), lipopolisaccaride (LPS), interleuchina-1 (IL-1) e interleuchina-10 (IL-10). È stato eseguito il trapianto di microbiota fecale (FMT) per esplorare il ruolo del microbiota intestinale nella modulazione dei fenotipi cardiaci e intestinali. L'analisi metatassonomica delle feci e la metabolomica sierica sono state eseguite prima e dopo il trapianto di microbiota fecale (FMT) per identificare microbi e metaboliti chiave coinvolti nel crosstalk intestino-cardio.

Risultati: La delezione eterozigote di Akap1 ha ridotto la funzionalità cardiaca, aumentato la permeabilità intestinale e l'infiammazione. Metacomunità batteriche distinte sono state riscontrate sia nei topi Akap1+/- giovani che in quelli anziani, con un grado di alterazione del microbiota più grave nei topi Akap1+/- anziani, rispetto ai topi Akap1+/+. Il trapianto di microbiota intestinale reciproco tra Akap1+/- e Akap1+/+ ha avuto un impatto sulla permeabilità della barriera intestinale, sull'infiammazione e sulla disfunzione cardiaca. L'analisi metabolomica ha identificato la sfingosina-1-fosfato (S1P) e la fenilacetilglicina (PAG) come potenziali mediatori dell'asse intestino-cuore, e i loro livelli sono stati modulati dal genotipo e dall'età.

Conclusioni: Le proteine codificate da Akap1 sono mediatori cruciali della salute e dell'asse intestino-cuore durante l'invecchiamento, preservando l'integrità della barriera intestinale, la composizione del microbiota e la funzione cardiaca. Questi risultati suggeriscono che il targeting del microbiota intestinale e dei metaboliti associati può offrire una promettente strategia terapeutica per mitigare l'infiammazione e preservare la funzione cardiaca durante l'invecchiamento.

SCOMPENSO CARDIACO 334
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
CARDIOPATIE CONGENITE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

ANTICIPATION-LIKE PROGRESSION OF NKX2-5 DELETION CARDIOMYOPATHY: A FAMILY CASE LINKING GUCH AND NON-COMPACTION

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Introduction. NKX2-5 genetic variants, a rare cause of congenital heart disease, conduction abnormalities, and left ventricular non-compaction, can be difficult to detect, particularly copy number variations (CNVs). Standard NKX2-5-inclusive Next Generation Sequencing NGS panels may not reliably suspect CNVs, depending on their size and the use of CNV-specific computational algorithms. Whenever CNVs are suspected (either clinically or genetically), Multiplex Ligation-dependent Probe Amplification (MLPA) analysis is the gold standard for their confirmation. Notably, the routine usage of MLPA analyses of otherwise genetic-elusive CMP is still a matter of debate and not specifically supported by current guidelines. We hereby report a three-generation family in which congenital heart defects and non-compaction cardiomyopathy coexisted, showing an anticipation-like pattern and underscoring the importance of extended genetic testing in Grow Up Congenital Heart (GUCH) patients.

Case. The proband was diagnosed with non-compaction at 6 years of age and later developed conduction disease with second degree 2:1 block and third-degree atrio-ventricular (AV) block, which caused pathological pauses without syncope; he also developed systolic dysfunction, with ejection fraction (EF) of 40%, and paroxysmal atrial fibrillation in his thirties. His brother had died at 1 year of age from a congenital defect already detected in utero.
In January 2021, at the age of 31, he underwent a first NGS panel (TruSight Cardio) including the NKX2-5 gene, with no pathogenic, likely pathogenic, or variants of uncertain significance detected; no specific suspicious for CNVs was raised. His father is a GUCH patient with ostium secundum atrial septal defect (ASD), conduction disease (second-degree AV block type Mobitz II and seno-atrial block), and systolic dysfunction developed when he was 47 years old, with EF of 35% on optimized medical therapy; he is carrier of a dual chamber ICD and in his fifties he had two episodes of sustained ventricular tachycardia, the first treated with two shocks and the second with anti-tachycardia pacing (ATP). He also tested negative on cardiomyopathy panels. In March 2022, a targeted MLPA analysis for laminopathy-associated genes (including LMNA, MYOT, CAV3e and ZMPSTE24) gene was performed, yielding negative results.
Proband's son presented at birth with ASD, ventricular septal defect (VSD), severe biventricular dysfunction, and refractory heart failure requiring urgent heart transplantation when he was only 6 months old. In the early 2023, a genetic analysis was performed on the son using an expanded NGS panel (cardiac whole exome), that suggested a large deletion encompassing the entire NKX2-5 gene (chr5:171881170–171262096, pathogenic, C5), that was subsequently confirmed by MLPA analysis in both the neonate and the proband.

Conclusion. This family highlights that NKX2-5 variants may display anticipation-like progression across generations, evolving from GUCH to conduction disease, to childhood non- compaction, and finally to neonatal end-stage heart failure. The case emphasizes two critical points rarely addressed in current literature: (i) GUCH patients with cardiomyopathy "red flags" or conduction disease should undergo comprehensive genetic evaluation; (ii) large CNVs can escape detection with routine NGS and require complementary techniques such as MLPA. Systematic genetic testing in these contexts is essential for diagnosis, management, and family counseling.

SCOMPENSO CARDIACO 366
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
PROGNOSI (SCOMPENSO CARDIACO)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO)

SGLT2 INHIBITORS IN PATIENTS WITH ADVANCED HEART FAILURE AWAITING HEART TRANSPLANT: AN INVESTIGATOR-INITIATED COHORT STUDY

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Background. Sodium-glucose co-transporter 2 inhibitors (SGLT2i) reduce mortality in patients with heart failure (HF). However, their efficacy in the setting of advanced HF is unknown.
Objectives. To evaluate the impact of SGLT2i in patients with advanced HF listed for heart transplant (HT).

Methods. SGLT2i-HT was an Italian multicenter observational cohort study. Patients initiating SGLT2i treatment while listed for HT, in an outpatient setting, without recent therapeutic changes were included. Clinical, echocardiographic, and hemodynamic data were collected before treatment and after six months. The primary endpoint was a composite of death, LVAD implantation, and urgent HT at 18 months, compared to a retrospective SGLT2-i-naïve control cohort enrolled prior to SGLT2i availability, matched for clinical and instrumental characteristics.

Results. Overall, 106 patients were included (n=53 SGLT2i-treated, n=53 SGLT2i-naïve; age: 54 ± 10 years). Baseline characteristics were similar between cases and controls. SGLT2i was well-tolerated and safe. The primary endpoint was significantly reduced in SGLT2i-treated vs. SGLT2i-naïve patients (18-month Kaplan Meier estimates: 18.3% vs. 39.1%, log-

rank=0.037; adj-HR 0.29, 95%CI 0.12-0.72, p=0.008), with directional trends for all components. Delisting due to clinical improvement occurred in 4 treated patients and no controls. SGLT2i-treated patients experienced improved functional class, higher rates of diuretic discontinuation and had more favorable trajectories in metrics of right ventricular load and adaptation and left ventricular and pulmonary vascular remodeling.

Conclusions. In patients with advanced HF awaiting heart transplantation, SGLT2i therapy was associated with improved hemodynamics, favorable remodeling, and enhanced clinical stability, potentially supporting more effective heart replacement allocation strategies.

CardioSic

SCOMPENSO CARDIACO 251
BIOMARCATORI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)

CONCORDANCE AND CLINICAL UTILITY OF THE NEW ASE DIASTOLIC DYSFUNCTION GUIDELINES IN HFREF

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BACKGROUND: Novel guidelines for assessing diastolic dysfunction (DD) have recently been published by the American Society of Echocardiography (ASE). Their concordance with prior recommendations and potential clinical advantage remain unclear, particularly in patients with heart failure with reduced ejection fraction (HFrEF). This study aimed to test the concordance between new and previous guidelines and evaluate the clinical utility of the new criteria.

METHODS: DD was assessed in 700 stable HFrEF outpatients at our institution using both the 2016 ASE guidelines and the newly published recommendations. Functional capacity was evaluated with six-minute walk test at the time of echocardiography. Associations between DD and functional capacity were tested by comparing walking distance across DD grades. Concordance between DD classifications was analyzed with kappa statistics. The primary endpoint was a composite of heart failure hospitalization and all-cause mortality. Multivariable Cox regression analyses tested the prognostic impact of DD graded according to the new guidelines.

RESULTS: The median age of the cohort was 66 ± 13 years, and 74% were male. By 2016 criteria, all patients had DD (49% grade 1, 19% grade 2, 32% grade 3). With the new guidelines, 14% had no DD, while 31% had grade 1, 27% grade 2, and 17% grade 3. Concordance between DD classifications was weak (κ = 0.30). Patients with more advanced DD per the new guidelines were older, more often male, more symptomatic, on higher loop diuretic doses, and had higher NT-proBNP. Functional capacity (i.e. 6-min walking distance) did not differ across all grades with the 2016 DD criteria, but showed significant differences with DD classified according to the new guidelines (Figure). In the 33% whose DD classification were discordant, the old criteria failed to discriminate functional capacity, whereas the new classification did. Both systems stratified prognosis, with more advanced DD grades being independently associated with higher risk of the composite endpoint.

CONCLUSIONS: The new ASE DD guidelines showed weak concordance with the 2016 criteria but better discriminated functional capacity and symptom burden. Both predicted prognosis, with the novel guidelines offering potentially greater clinical utility in HFrEF.

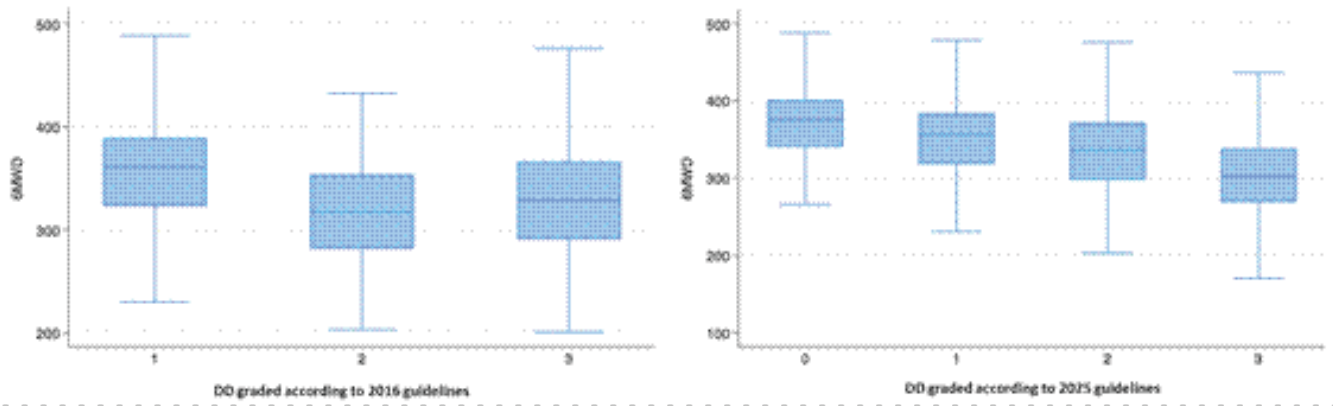

500
400
300
200
LAVVD
1
2
3
DD graded according to 2016 guidelines
500
400
300
200
100
LAVVD
0
1
2
3
DD graded according to 2025 guidelines

Figure 1

SCOMPENSO CARDIACO 1105
TERAPIA DI RESINCRONIZZAZIONE (ARITMIE)
ELETTROSTIMOLAZIONE (ARITMIE)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)

A PRELIMINARY STUDY ON FORCECARDIOGRAPHY CAPABILITY TO PREDICT ECHOCARDIOGRAPHY PARAMETERS IN PATIENTS UNDERGOING CARDIAC RESYNCHRONIZATION

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Background: Forcecardiography (FCG) is a non-invasive technique measuring chest vibrations caused by cardiac mechanical activity, offering insights into cardiac function. FCG can identify mechanical cardiac events (e.g., valves opening and closing) and, combined with ECG, evaluate cardiac parameters like pre-ejection period and left ventricular ejection time. FCG features alone may correlate with ECG and echocardiographic parameters, enabling non-invasive assessment of cardiac performance and hemodynamics.

Objectives: This study aimed to assess the correlation between FCG-derived features and ECG/ECHO parameters, exploring additional tools for diagnosis and treatment planning, across intrinsic rhythm and pacing modalities.

Methods: FCG and ECG signals were collected from 11 HFrEF patients (ischemic and non-ischemic etiologies) with CRT-D devices under intrinsic rhythm, biventricular pacing (BiV), and right ventricular pacing (RV). FCG features, including energy, skewness, and kurtosis, were extracted and compared with ECG-derived metrics (e.g., QRS duration) and ECHO parameters (stroke volume (SV), global longitudinal strain (GLS), LVOT velocity-time integral (VTI), and global work index (GWI)). Regression models evaluated relationships between FCG features and ECG/ECHO parameters, with performance assessed using R2 and root mean squared error (RMSE).

Results: Significant correlations were observed between FCG-derived features and ECG/ECHO parameters (coefficients: -0.53 to 0.85). Regression models showed high predictability for GWI (R =0.93, RMSE=174.44 mmHg%), LVOT VTI (R2 =0.90, RMSE=3.51 cm), and SV (R2 =0.91, RMSE=12.09 mL).

Conclusions: FCG proved to be a promising non-invasive method for estimating ECHO metrics such as GWI, LVOT VTI, and SV. FCG-derived features, particularly kurtosis, showed strong predictive value across intrinsic rhythm and pacing modalities. Larger studies are needed to validate these findings and establish broader clinical use.

SCOMPENSO CARDIACO 245
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
BIOMARCATORI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
MALATTIE DEL METABOLISMO (DIABETE E MALATTIE DEL METABOLISMO)

CORRELAZIONE TRA NT-PROBNP, CAPACITÀ FUNZIONALE E FUNZIONE ATRIALE SINISTRA IN UNA POPOLAZIONE DI PAZIENTI OBESI CON FUNZIONE VENTRICOLARE SINISTRA PRESERVATA O MODERATAMENTE RIDOTTA

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Background: L'obesità è una patologia epidemica che contribuisce allo sviluppo di scompenso cardiaco a frazione di eiezione preservata (HFpEF) e moderatamente ridotta (HFmrEF). Negli obesi, l'interpretazione dei valori di peptide natriuretico atriale di tipo B (NT-proBNP), fondamentali nella diagnosi di scompenso, è complessa dato che risultano falsamente ridotti, anche in presenza di evidenti segni clinici e strutturali di malattia. In questo contesto, è essenziale individuare parametri alternativi per una diagnosi precoce.

Obiettivi: Indagare l'associazione tra NT-proBNP con parametri di speckle tracking, indici di Myocardial Work (MW), filtrato glomerulare stimato secondo Cockroft-Gault (eGFR) e 6-minute walking test (6MWT) in pazienti obesi con HFpEF o HFmrEF.

Metodi: Studio retrospettivo monocentrico su 118 pazienti ambulatoriali con HFpEF o HFmrEF, classe funzionale secondo New York Heart Association (NYHA) ≥II e indice di massa corporea (BMI) ≥30, valutati per dispnea da sforzo o a riposo, dopo esclusione di eziologia polmonare. Sono stati esclusi pazienti con pacemaker, insufficienza renale/epatica severa, o sottoposti a cardiochirurgia. Tutti i pazienti arruolati hanno eseguito ecocardiografia 2D, analisi speckle tracking, esami ematici e 6MWT. Le analisi statistiche sono state condotte con coefficienti di correlazione di Pearson o Spearman.

Risultati: nella coorte di studio (età media 73,9 ± 11,8 anni; BMI 32,6 ± 3,7 kg/m²), l'NT-proBNP mostra forte correlazione inversa con lo strain longitudinale atriale (PALS: $\rho = -0{,}629$, $p < 0{,}001$), suggerendo che la ridotta compliance atriale si associ ad aumentato stress miocardico. Si osservano inoltre correlazioni inverse anche con valori di MW (Global Wasted Work Index, GWI, $\rho = -0{,}389$; Global Constructive Work, GCW: $\rho = -0{,}321$; Globale Work Efficiency, GWE: $\rho = -0{,}350$) ed eGFR ($r = -0{,}460$, $p < 0{,}001$). Inoltre, il PALS correla positivamente con la distanza percorsa al 6MWT ($r = 0{,}278$, $p = 0{,}002$), sottolineando l'importanza della funzione atriale nel mantenimento della capacità funzionale. Il Global Longitudinal Strain (GLS) non mostra invece associazione significativa con il 6MWT. Tutti i dati di correlazione sono riportati in Tabella 1.

Conclusioni: Nei pazienti obesi con HFpEF o HFmrEF, l'NT-proBNP mantiene una buona correlazione con la funzione atriale e il loro utilizzo combinato può supportare la diagnosi di scompenso cardiaco, anche considerando l'associazione con la capacità funzionale (6MWT). Inoltre, la significativa correlazione inversa tra NT-proBNP ed eGFR conferma l'interazione cardio-renale ben documentata, nonostante i valori assoluti di NT-proBNP siano tipicamente più bassi nella popolazione obesa.

Table 1
Correlation analysis

Vs	Correlation coefficient	p-value
global PALS	-0,629	<,001
GLS	0,269	0,001
GWI	-0,389	<,001
GCW	-0,521	<,001
GWW	0,214	0,024
GWE	-0,33	<,001
LAVi	0,498	<,001
eGFR	-0,46	<,001
Age	0,476	<,001
GLS	-0,422	<,001
GWI	0,434	<,001
GCW	0,447	<,001
GWI	0,317	<,001
6MWT	0,278	0,002
LAVi	-0,422	<,001
eGFR	-0,097	<,089
GLS	-0,773	<,001
GCW	0,727	<,001
GWE	-0,44	<,001
GWW	0,193	<,001
6MWT	0,086	0,331
6MWT	-0,339	<,001
6MWT	0,271	0,004
Hb	-0,302	0,001
eGFR	0,719	<,001

BNP = B-type natriuretic peptide; GLS = Global Longitudinal Strain (left ventricular); PALS = Peak Atrial Longitudinal Strain (reservoir phase); PACS = Peak Atrial Contraction Strain (contractile phase); GWI = Global Work Index (left ventricular myocardial work); GCW = Global Constructive Work; GWW = Global Wasted Work; GWE = Global Work Efficiency; LAVi = Left Atrial Volume Index; eGFR = Estimated Glomerular Filtration Rate (Cockcroft-Gault); 6MWT = 6-Minute Walk Test; Hb = Hemoglobin

Tabella 1

SCOMPENSO CARDIACO 438
PROGNOSI (SCOMPENSO CARDIACO)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)

SEX DIFFERENCES IN PATIENTS WITH ATRIAL FIBRILLATION AND HEART FAILURE WITH REDUCED EJECTION FRACTION: A FOCUS ON LEFT VENTRICULAR EJECTION FRACTION AND RENAL CHANGES WITH OUTCOME IMPLICATIONS

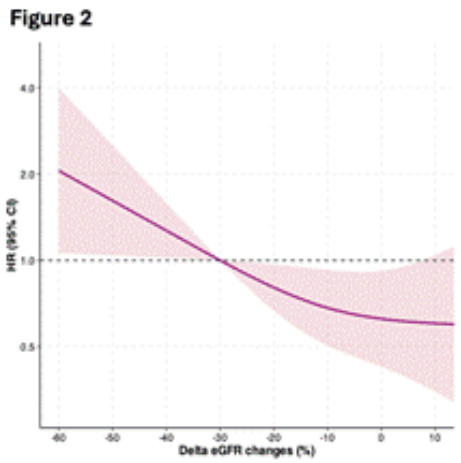
Marta Mantovani (a), Niccolò Bonini (a), Marco Vitolo (a), Benedetta Cherubini (a), Federica Baldisserri (a), Marta Ricchiuto (a), Kevin Serafini (a), Enrico Tartaglia (a), Manuela Orlandi (a), Gennaro Procaccia (a), Andrea Gollè (a), Bernadette Corica (a), Davide Antonio Mei (a), Jacopo Francesco Imberti (a), Giuseppe Boriani (a)
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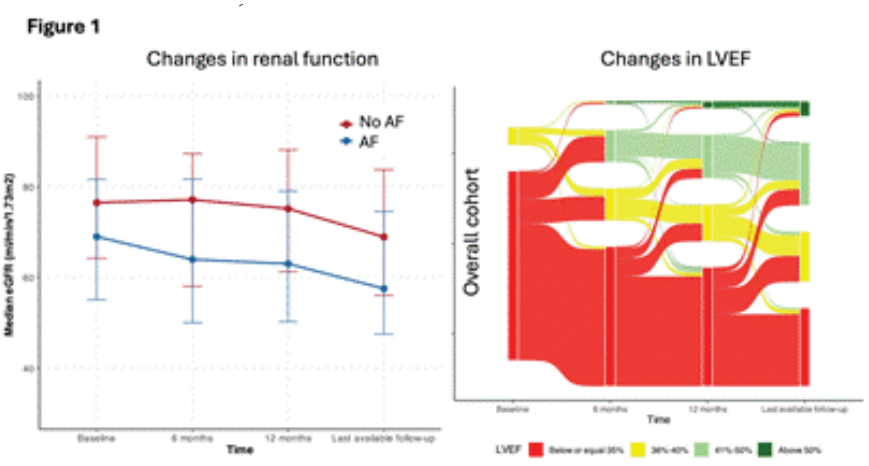
Background: Real-world data on the trajectories of renal function, left ventricular ejection fraction (LVEF) and clinical outcomes in patients with heart failure with reduced ejection fraction (HFrEF) and atrial fibrillation (AF) remain scarce. Aim: To describe changes in estimated glomerular filtration rate (eGFR), LVEF and clinical outcomes in a real-world cohort of patients with heart failure with HFrEF and AF.

Methods: This single-center, retrospective registry included patients prescribed with Angiotensin Receptor-Neprilysin Inhibitor (ARNi) or Sodium-Glucose cotransporter 2 inhibitors (SGLT2i) according to Italian Drug Agency guidelines. The primary endpoint was a composite of all-cause death and hospitalization for heart failure (hHF).

Results: A total of 321 patients (67 [58–74] years, 19.3% females) were included; 134 (41.7%) had AF. Among AF patients, 18.7% (n=25) were females. Between male and female AF patients, no differences were observed concerning LVEF and eGFR values, as well as age and other baseline characteristics. AF patients had lower median baseline eGFR values. At 6- and 12-month follow-ups, renal function declined similarly in both groups, with no difference in the proportion of patients experiencing an eGFR decrease of ≥ 30% from baseline (16.4% of the overall cohort). Regarding cardiac remodeling, patients without AF showed a higher proportion of LVEF improvement of ≥ 10% from baseline, with no differences in LVEF final recovery >35% (59.3% vs. 64.4%, p=0.443) (Figure 1). During a median follow-up of 582 (339–1481) days, AF patients showed a higher risk of composite outcome (aHR, 95% CI: 2.12, 1.16–3.86) and of hHF (2.80, 1.44–5.46), without differences in all-cause death. On interaction analysis, no differences were observed based on sex (Pint=0.529), aetiology (ishcaemic vs. non ischaemic, Pint=0.322), and the presence of diabetes (Pint=0.396). Delta eGFR changes with at least a 30% decline in eGFR were associated with a higher risk of the primary endpoint (Figure 2), with a linear relationship.

Conclusions: Despite impaired baseline renal function, AF patients demonstrated comparable improvements in LVEF and similar trajectories of renal decline, underscoring the pivotal role of guideline-directed medical therapy. Nonetheless, AF was independently associated with an increased risk of adverse clinical outcomes, predominantly driven by hHF, regardless of sex.


Figure 2
HR (95% CI)
Delta eGFR changes (%)
p=0,044, p non linearity=0,329


Figure 1
Changes in renal function
No AF
AF
Median eGFR (ml/min/1.73m2)
Time
Changes in LVEF
Overall cohort
Time
LVEF

nal

Figures

SCOMPENSO CARDIACO 793
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
BIOMARCATORI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)

NT-PROBNP AS A MITTOR OF HEMODYNAMIC RESERVE: INSIGHTS FROM CPET WITH NON-INVASIVE CARDIAC OUTPUT MONITORING IN HFREF

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(a) CENTRO CARDIOLOGICO MONZINO, IRCCS, MILANO

BACKGROUND: N-terminal pro-B-type natriuretic peptide (NT-proBNP) is a well-established biomarker in heart failure (HF), reflecting ventricular filling pressures and neurohormonal activation. Although it is widely used for risk stratification, its relationship with dynamic parameters derived from cardiopulmonary exercise testing (CPET) and with contractile reserve has not been fully clarified.

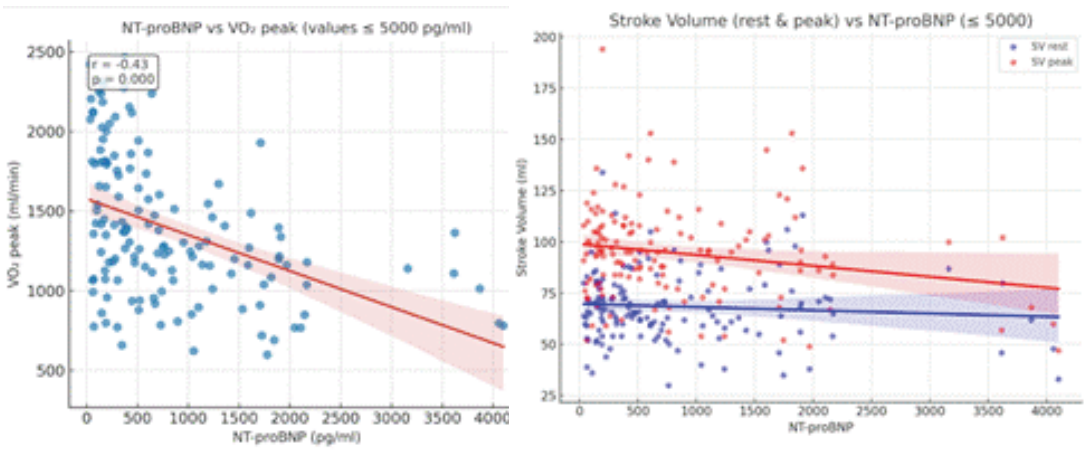
METHODS: 174 HF patients (66.4±11.3 y/o; LVEF 40.5±9.3%) undergoing CPET with non-invasive cardiac output monitoring (Physioflow), baseline echocardiography, and laboratory testing were analyzed. In addition to standard ventilatory parameters, left ventricular ejection fraction (LVEF), heart rate response (ΔHR), and stroke volume increment (ΔSV) were assessed. Correlations between NT-proBNP and functional variables were assessed using Pearson's coefficient.

RESULTS: Higher NT-proBNP levels were significantly associated with impaired hemodynamic reserve. NT-proBNP correlated inversely with ΔSV ($r = –0.21$; $p = 0.01$) and with ΔHR ($r = –0.40$; $p < 0.001$), indicating reduced contractile and chronotropic reserve. Impaired hemodynamic reserve translated into a significantly reduced overall performance: peak oxygen uptake (pVO_2) was inversely related to NT-proBNP ($r = –0.37$, $p < 0.001$). In addition, higher NT-proBNP levels were associated with greater ventilatory inefficiency, expressed by VE/VCO_2 slope ($r = +0.39$; $p < 0.001$). By contrast, LVEF at rest showed only a weak and non-significant correlation with NT-proBNP ($r \approx –0.15$).

CONCLUSIONS: NT-proBNP is strongly associated with impaired chronotropic and contractile reserve, reduced aerobic capacity, and ventilatory inefficiency. Interestingly, our data suggest that rest LVEF is not related to NTproBNP indicating a reduced prognostic power compared to functional variables. These findings suggest that the combined use of CPET and NT-proBNP enables more accurate risk stratification in patients with HF, providing a comprehensive approach that unites biochemical and physiological data.

Variable	Mean value ± SD
Age (years)	66.4 ± 11.3
LVEF (%)	40.5 ± 9.3
Resting HR (bpm)	65.4 ± 10.8
Peak HR (bpm)	111.8 ± 23.6
ΔHR (bpm)	46.2 ± 21.8
Resting SV (ml)	68.2 ± 17.2
Peak SV (ml)	93.5 ± 22.6
ΔSV (ml)	25.1 ± 12.0
VO_2peak (ml/min)	1318 ± 461
VO_2@AT (ml/min)	895 ± 270
VE/VCO_2 slope	36.0 ± 7.7
NT-proBNP (pg/ml)	2450 ± 1980

Table 1


NT-proBNP vs VO₂ peak (values ≤ 5000 pg/ml)
r = -0.43
p = 0.000
VO₂ peak (ml/min)
NT-proBNP (pg/ml)
Stroke Volume (rest & peak) vs NT-proBNP (≤ 5000)
SV rest
SV peak
Stroke Volume (ml)
NT-proBNP

Figures

SCOMPENSO CARDIACO 794
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
BIOMARCATORI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)

BEYOND RESTING LVEF: CPET-DERIVED CHRONOTROPIC AND CONTRACTILE RESERVE, ASSESSED BY NON-INVASIVE CARDIAC OUTPUT MONITORING, PREDICT FUNCIONAL CAPACITY IN HFREF

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BACKGROUND: Cardiopulmonary exercise testing (CPET) is the gold standard for the integrated assessment of cardiovascular, respiratory, and metabolic responses during exercise. In patients with heart failure (HF), peak oxygen uptake (pVO_2) and the VE/VCO_2 slope are well-established prognostic markers. Beyond these, dynamic parameters such as the variation of heart rate (ΔHR) and the increase in stroke volume (ΔSV) that reflect chronotropic and contractile reserve, respectively, may be more sensitive than left ventricular ejection fraction (LVEF) in predicting functional capacity and outcomes.

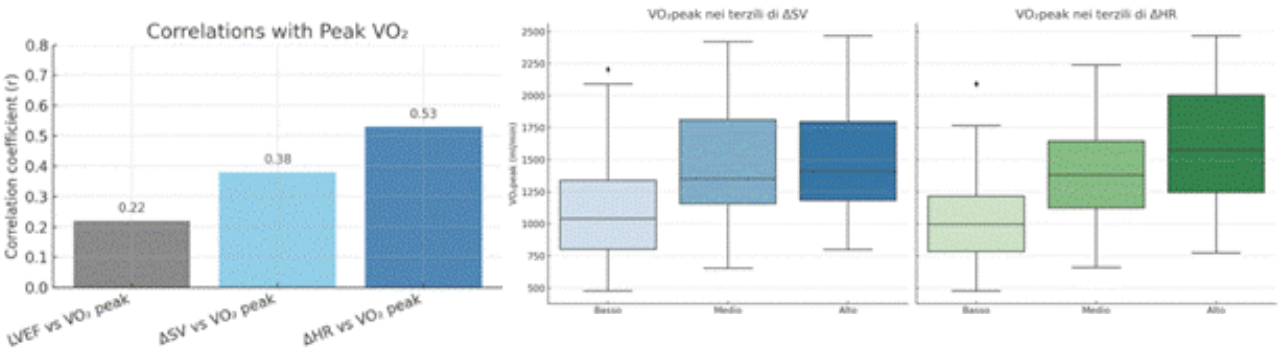
METHODS: We prospectively analyzed 174 HF patients who underwent CPET with non-invasive cardiac output monitoring (Physioflow) and rest echocardiography between Nov 2024 and Feb 2025 at Centro Cardiologico Monzino, Milan. Continuous variables are expressed as mean ± standard deviation. Correlations between parameters were assessed using Pearson's coefficient; ΔSV and ΔHR were stratified into tertiles and compared using one-way ANOVA.

RESULTS: A total of 174 patients were analyzed (mean age 66 years, LVEF 40%). During exercise, both HR and SV increased, with a mean Δ of 46 bpm and 25 ml, respectively. ΔHR showed a strong correlation with pVO_2 (r = 0.53) as well as ΔSV (r = 0.38). Differently, LVEF showed only modest associations with pVO2 (r= 0.22). pVO_2 correlated strongly with oxygen pulse (r = 0.78) and inversely with VE/VCO_2 slope (r = –0.56). Tertile analysis identified functional cut-offs for ΔHR (≤35, 35–56, >56 bpm) and ΔSV (≤20, 20–29, >29 ml), which stratified aerobic capacity (p < 0.001).

CONCLUSIONS: Exercise performance in HF patients depends primarily on the dynamic increase in HR and SV, rather than resting LVEF. ΔHR and ΔSV emerge as key predictors of aerobic capacity and potential prognostic markers. CPET remains an indispensable tool for functional evaluation and risk stratification, providing insights not accessible through echocardiography alone.

Variable	Mean value ± SD
Age (years)	66.4 ± 11.3
LVEF (%)	40.5 ± 9.3
Resting HR (bpm)	65.4 ± 10.8
Peak HR (bpm)	111.8 ± 23.6
ΔHR (bpm)	46.2 ± 21.8
Resting SV (ml)	68.2 ± 17.2
Peak SV (ml)	93.5 ± 22.6
ΔSV (ml)	25.1 ± 12.0
VO_2peak (ml/min)	1318 ± 461
VO_2@AT (ml/min)	895 ± 270
VE/VCO_2 slope	36.0 ± 7.7

Table 1


Correlations with Peak VO₂
Correlation coefficient (r)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.22
0.38
0.53
LVEF vs VO₂ peak
ΔSV vs VO₂ peak
ΔHR vs VO₂ peak
VO₂peak nei terzili di ΔSV
VO₂peak nei terzili di ΔHR
Basso
Medio
Alto

Figures

SCOMPENSO CARDIACO 479
ELETTROSTIMOLAZIONE (ARITMIE)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)

HEMODYNAMIC MONITORING OF CARDIAC CONTRACTILITY MODULATION WITH NICAS: A CASE SERIES

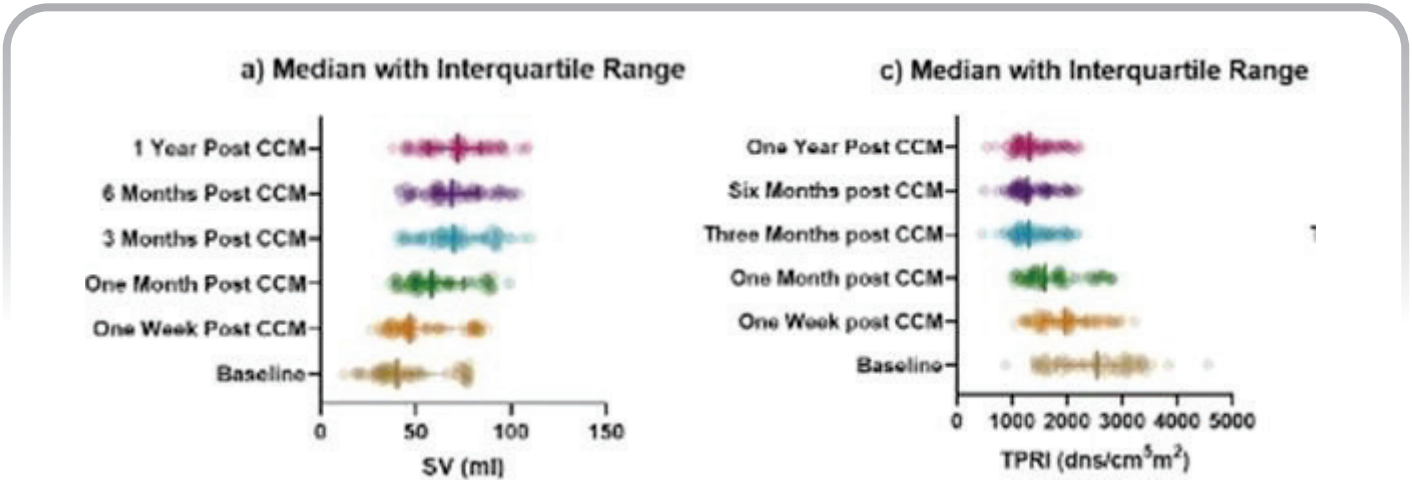
Antonio Mazziotti (a), Giovanni Bisignani (a), Silvana De Bonis (b), Andrea Madeo (a), Anna Lucia Cavaliere (a)
(a) UOC CARDIOLOGIA-UTIC-EMODINAMICA-CARDIOSTIMOLAZIONE PO CASTROVILLARI ASP COSENZA;
(b) UOC CARDIOLOGIA-UTIC-CARDIOSTIMOLAZIONE PO ROSSANO ASP COSENZA

Introduction/Background: heart failure (HF) with reduced ejection fraction remains a significant global health challenge despite advances in medical therapy. Cardiac contractility modulation (CCM) is promising treatment for symptomatic HF patients ineligible for cardiac resynchronization therapy (CRT). Non-invasive methods to assess the acute hemodynamic effects of CCM are critical to optimize care and guide treatment. Objectives: this study aimed to evaluate the acute impact of CCM on stroke volume (SV) and total peripheral resistance index (TPRI) using the non-invasive bioimpedance-based system (NICaS®).

Methods: eight HF patients (median age: 64,6 years, median left ejection fraction LVEF: 34,5%) underwent implantation of the Optimizer Smart Mini CCM device. Hemodynamic parameters, including SV and TPRI, were measured using NICaS® at baseline (pre-implantation) and at 1 week, 1 month, 3 months, 6 months and one year post-implantation. Measurements were repeated eight times per session and analyzed using non-parametric statistical tests, including the Kruskal-Wallis test, Mann-Whitney test, and Kolmogorov- Smirnov test.

Results: median SV increased significantly from 40.02 mL (interquartile range IQR: 32.62-78.16 mL) at baseline to 69.83 mL (IQR: 58.63-86.36 mL) at 3 months ($p < 0.0001$). Median TPRI decreased significantly from 2537 dn·s/cm5·m2 (IQR: 1807-3084 dn·s/cm5·m2) to 1307 dn·s/cm5·m2 (IQR: 1119-1665 dn·s/cm5·m2) over the same period ($p < 0.0001$).

Conclusions: CCM therapy significantly improved SV and reduced TPRI in HF patients within three months of implantation. NICaS® provided a reliable, non-invasive tool for monitoring these acute hemodynamic changes, supporting its use in clinical practice.



Figures

CardioSic

SCOMPENSO CARDIACO 155
TELEMEDICINA IN CARDIOLOGIA (TELECARDIOLOGIA ED E-HEALTH)
APPS IN CARDIOLOGIA (TELECARDIOLOGIA ED E-HEALTH)
PROGNOSI (SCOMPENSO CARDIACO)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)

EFFETTO DEGLI ARNI E SGLT2I SUI VALORI DI IMPEDENZA TORACICA IN PAZIENTI CON DISPOSITIVI IMPIANTABILI - ANALISI RETROSPETTIVA

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Background: I parametri di impedenza toracica rilevati da dispositivi impiantabili (Optivol) rappresentano un utile marker indiretto di congestione. L'obiettivo di questa analisi è valutare l'impatto dell'introduzione di ARNI e SGLT2i su tali parametri e sugli allarmi correlati.

Metodi: Sono stati analizzati i dati di 30 pazienti prima e dopo l'introduzione di ARNI e/o SGLT2i, considerando i valori di Optivol, il numero di allarmi, il burden di AT/FA e il livello medio di attività fisica giornaliera. Le analisi statistiche hanno incluso test t, regressioni lineari e analisi di correlazione.

Risultati: Dopo l'introduzione di ARNI le impedenze toraciche sono aumentate da 103.6 a 124.7, senza raggiungere i criteri di significatività statistica ($p = 0.145$). Similmente, il numero medio di allarmi non si è modificato in modo significativo (0.391 vs 0.504/90 gg; $p = 0.145$).
Dopo l'introduzione di SGLT2i, invece, si osserva un aumento significativo dei valori di impedenza toracica (48.6 vs 73.6; $p < 0.001$) e del numero di allarmi, suggerendo un accumulo di fluidi nella fase immediatamente successiva alla terapia. È emersa una correlazione positiva tra burden di AT/AF e allarmi Optivol ($r = 0.33$; $p = 0.058$), mentre l'attività fisica ha mostrato una tendenza inversa ($p = 0.062$). L'interazione tra burden aritmico e attività fisica non ha raggiunto significatività statistica, ma il modello combinato spiega il 20,6% della variabilità degli allarmi ($R^2 = 0.206$).

Conclusioni: ARNI si associa a valori medi di impedenza toracica più bassi rispetto a SGLT2i, suggerendo un possibile migliore controllo della congestione. L'aumento precoce di impedenza osservato con SGLT2i potrebbe riflettere un effetto transitorio dovuto al peggioramento iniziale della funzione renale. Dato il noto effetto prognostico positivo delle nuove terapie nello scompenso, l'impedenza toracica potrebbe non essere uno strumento sufficientemente sensibile a discriminare le differenze farmacologiche. L'effetto natriuretico degli SGLT2i resta verosimilmente il meccanismo più diretto della riduzione della congestione nel medio-lungo periodo. Ulteriori studi prospettici sono necessari per validare questi risultati.

SCOMPENSO CARDIACO 903
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

BETA-BLOCKER USE AND OUTCOMES IN A LARGE CONTEMPORARY HEART FAILURE COHORT

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Background: Beta blockers (BB) are a pivotal treatment for decreasing neurohormonal activation in patients with heart failure with reduced ejection fraction (HFrEF). The three most widely studied agents in this context are bisoprolol, metoprolol, and carvedilol, with the latter associated with limitations due to its hypotensive effects. Nadolol and propranolol, are non-selective BBs representing the first-line treatments for various arrhythmogenic conditions in patients with a healthy heart but have not been specifically assessed in those with cardiomyopathies (CMP) and HFrEF.

Methods: This is a retrospective and prospective study assessing the epidemiology, management and outcomes of patients referred for and/or diagnosed with HF in a tertiary high-volume center. A subgroup analysis was performed based on the type of BB (selective or non-selective), focusing on baseline characteristics and univariate outcomes after one year, including mortality, hospitalizations, appropriate implantable cardioverter defibrillator (ICD) interventions, and measures of contractility.

Results: The study included 1,022 patients, of whom 75% were male, with a mean age of 61 ± 16 years, and 96% were Caucasian. Twenty-two percent had ischemic heart disease, 67% had non-ischemic CMP, 10% had hypertrophic CMP, and 2% had arrhythmogenic right ventricular CMP. At baseline, 34% had an ICD (11% CRT-D), 22% had a NYHA class >2, and the median left ventricular ejection fraction (LVEF) was 39% (IQR 28-54). Eighty-four percent were on BBs, including 81% on selective and 19% (n=161) on non-selective ones, the last being predominantly propranolol and nadolol. When comparing the two groups (selective and non-selective BB), the former had a lower number of patients with clinical onset of HF in ACC/AHA stage C-D and NYHA functional class >2 (55% vs. 64%, p=0.04; 34% vs. 43%, p=0.02), with a lower incidence of pre-existing lung disease, smoking history, and left bundle branch block (8% vs. 13%, p<0.001; 52% vs. 61%, p=0.03; 9% vs. 18%, p=0.001). The non-selective group showed a lower heart rate (median 65 bpm vs. 67 bpm, p=0.03), higher systolic and diastolic blood pressures (median 125 mmHg vs. 120 mmHg, p<0.001 and 80 mmHg vs. 75 mmHg, p=0.01), and higher TSH levels (median 3.2 vs. 1.9, p=0.02). Additionally, the proportion of patients with atrial fibrillation, flutter, or pacing was lower (13% vs. 20%, p=0.03). Finally, the LVEF and LVOT VTI were higher in the selective BB group (median 40% vs. 35%, p=0.002 and -14 vs. -11 cm, p=0.02), and fewer patients had mitral insufficiency greater than grade 1 (25% vs. 36%, p=0.02). This group also had a higher frequency of therapy with RAAS inhibitors, MRAs, SGLT2 inhibitors, and diuretics. One year after baseline assessment, the non-selective BB therapy was associated with a lower

need for inotropes (7% vs. 15%, p=0.03), but a greater frequency of patients who received ICD shocks or had a history of non-sustained ventricular tachycardia (NSVT) (9% vs. 2%, p=0.03). Paired analysis showed a slight but significant increase in LVEF at 1 year in both groups.

Conclusions: Our data, including the largest reported population of patients with HF on nadolol and propranolol, show that the use of such molecules was approached with the required caution in prescribing such molecules, particularly in patients with significant comorbidities such as pulmonary conditions. As expected, the percentage of patients with a history of arrhythmias was higher among patients prescribed with non-selective beta-blockers. Among the variables assessing cardiac function, the use of a non-selective BB shows non-inferiority in carefully selected patients.

SCOMPENSO CARDIACO 182
PROGNOSI (SCOMPENSO CARDIACO)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)

RECOVERY OF WORSENING RENAL FUNCTION AFTER ACUTE HEART FAILURE

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Background: Worsening renal function (WRF) is frequent during hospitalization for acute heart failure (AHF) but the trajectory of renal function after discharge in these patients is unknown. We sought to assess the rate of recovery of WRF after discharge and its prognostic implications.

Methods: We enrolled patients hospitalized for AHF experiencing WRF during admission. Creatinine was tested at admission, daily during hospitalization and 1-year after discharge. WRF was defined as an increase in creatinine ≥0.3mg/dL. At 1-year follow-up, WRF was defined as recovered if the delta creatinine from admission was <0.3mg/dL. The primary endpoint was 5-years all-cause mortality.

Results: 2020 patients with AHF were included, and 331 (16%) had WRF. Of them, at 1-year, 157 (54%) patients had recovered WRF and 133 (46%) had persistent WRF. Older age, high natriuretic peptides levels and right ventricular dysfunction were predictors of persistent WRF. At 5-years after 1-year follow-up, recovered WRF was strongly associated with a lower risk of mortality compared to persistent WRF (adjusted HR=0.268, p<0.001); this correlation was independent from previous history of chronic kidney disease and from baseline creatinine. Presence vs absence of WRF during AHF was not related with mortality risk; however, when compared to patients without WRF,

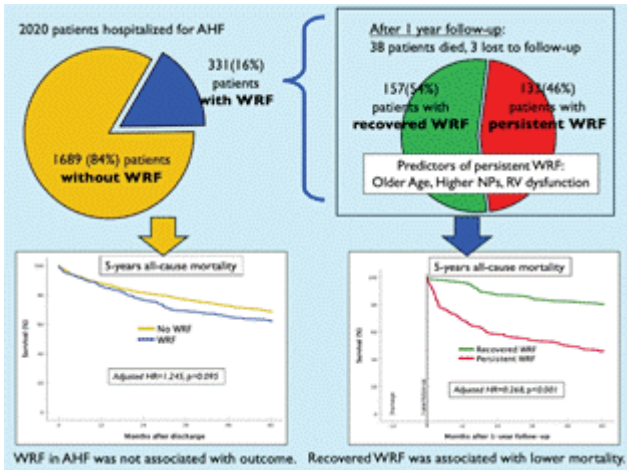


Figure 1

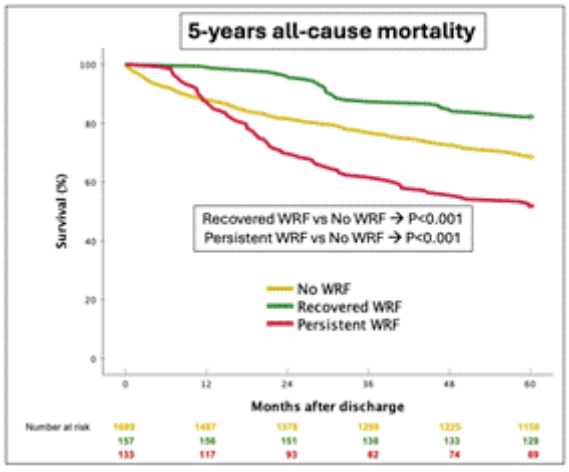


Figure 2

those with recovered WRF had a lower risk of mortality (HR=0.447, p=0.002), while those with persistent WRF had a significantly higher risk (HR=1.573, p=0.011).

Conclusions: In patients with AHF, WRF is not associated with survival. However, the risk of mortality is increased in patients with persistent WRF during follow-up, while patients with recovered WRF may have a similar or even better prognosis compared with patients without WRF.

SCOMPENSO CARDIACO 183
PROGNOSI (SCOMPENSO CARDIACO)
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE (IMAGING CARDIOVASCOLARE)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)

APPLICATION OF WANG RISK SCORE FOR PROGNOSTIC STRATIFICATION OF ACUTE HEART FAILURE

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Background: Tricuspid regurgitation (TR) is associated with poor prognosis in acute heart failure (HF), and accurate risk stratification tools are needed to guide clinical decisions. Wang risk score was originally developed for prognostication in patients with chronic HF and isolated severe TR. This study aimed to evaluate the prognostic performance of this score in acute HF and across all grades of TR severity.

Methods: Patients hospitalized for acute HF between 2010 and 2022 were included in this study whether the 12-variable Wang score could be calculated using admission data. Patients were stratified according to TR severity (trivial-mild vs moderate-severe). The primary endpoint was 1-year mortality.

Results: Among 1217 included patients (mean age 70 years, 65% males), 30% had moderate-severe TR. Wang score was independently associated with 1-year mortality (HR=1.188 per 1 point increase, p<0.001). The score's predictive value was consistent in both patients with trivial-mild TR and moderate-severe TR, as well as across various clinical subgroups. ROC analyses demonstrated acceptable-to-good discriminatory ability, and a cutoff of 6 emerged as the best threshold for identifying high-risk patients, with Wang score >6 (vs <=6) being associated with two-fold increase in 1-year mortality risk (HR=2.532, p<0.001).

Conclusion: The Wang risk score has accurate capability of identifying high-risk patients in acute HF, and in both patients with trivial-mild and moderate-severe TR.

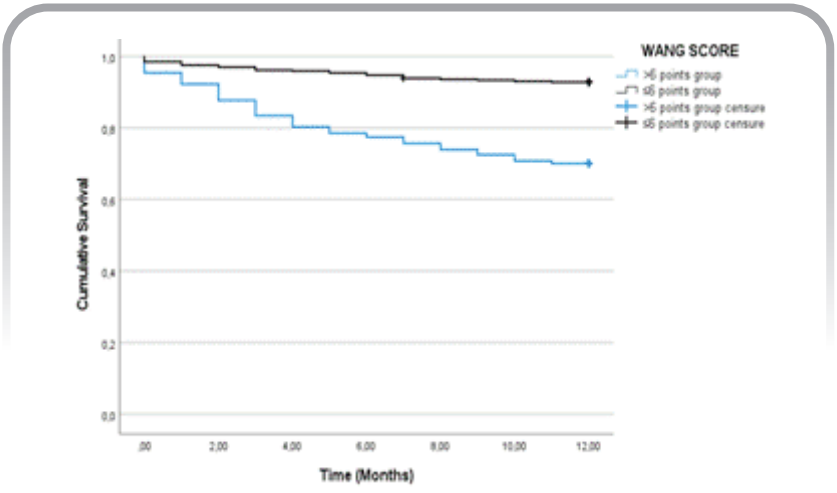


Figure 1

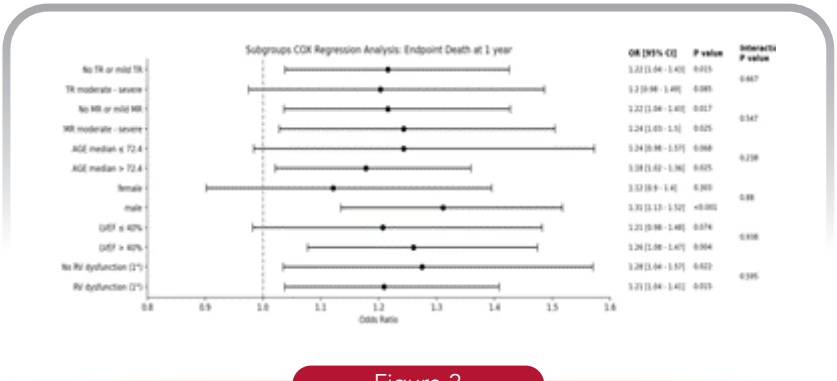


Figure 2

CardioSic

SCOMPENSO CARDIACO 261
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
FUNZIONE VENTRICOLARE, RIMODELLAMENTO E DANNO D'ORGANO (IPERTENSIONE ARTERIOSA)

WHEN THE STANDARD DIAGNOSIS IS NOT ENOUGH: LATE-ONSET NOONAN SYNDROME IN A PATIENT WITH HYPERTENSION AND CARDIOMYOPATHY

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MEMBER OF ERN GUARD-HEART

Background: Left ventricular hypertrophy (LVH) requires careful differential diagnosis between acquired conditions and genetic forms-including sarcomeric cardiomyopathies and phenocopies.

Case summary: An asymptomatic 46-year-old woman presented with hypertensive crisis and marked LVH initially attributed to hypertension. The electrocardiogram showed sinus tachycardia, marked signs of left ventricular hypertrophy with strain pattern (Figure 1). No arrhythmias were detected. The echocardiogram showed a severe concentric LVH with mild left ventricular outflow tract obstruction and severe restrictive filling pattern. Left ventricular ejection fraction was normal, despite reduced GLS (Figure 2).
A more detailed clinical examination, revealing abnormal coarse facial features, advanced imaging and multidisciplinary assessment raised suspicion for a syndromic etiology. Genetic testing identified a variant in LZTR1 gene, confirming a diagnosis of Noonan syndrome. Cascade family screening revealed the same variant in both children.

Discussion: This case illustrates a rare adult-onset presentation of Noonan syndrome, a RASopathy known

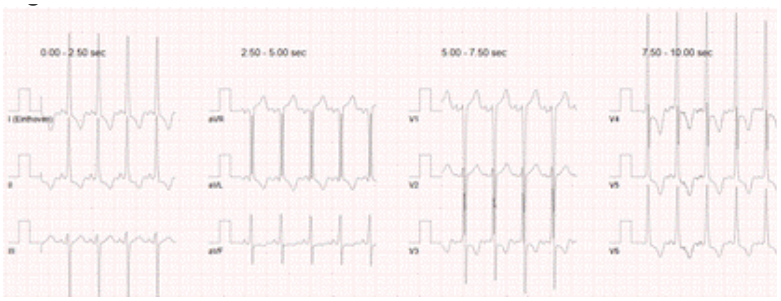


Figure 1

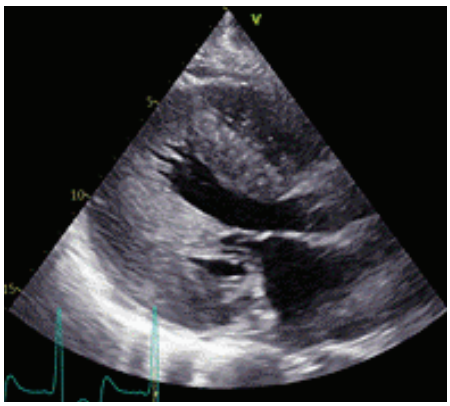


Figure 2

to be a phenocopy of hypertrophic cardiomyopathy. Subtle systemic features, advanced imaging and genetic testing were key in reaching the correct diagnosis. It raises the issue of gene–environment interplay and underscores the importance of cascade genetic testing for family screening.

Take Home Messages: Noonan syndrome is an HCM phenocopy that should always be suspected in the presence of certain red flags, even in adults with significant LVH, despite hypertension or other causes of overload.

CardioSic

SCOMPENSO CARDIACO 471
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)

ADDITIONAL PROGNOSTIC IMPACT OF SACUBITRIL-VALSARTAN AND SGLT2 INHIBITORS ON OPTIMAL MEDICAL TREATMENT IN PATIENTS WITH DILATED CARDIOMYOPATHY

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Background. Idiopathic Dilated Cardiomyopathy (DCM) is typically linked to heart failure with reduced ejection fraction (HFrEF). Optimized Medical Therapy (OMT) can lead to Left Ventricular Reverse Remodelling (LVRR) in idiopathic DCM, an important therapeutic goal for a better prognosis and major adverse events reduction. The prognostic impact of OMT for HF in patients treated with ARNI and/or SGLT2-I in contrast with patients treated with ACE-I/ARB in terms of survival free from All cause death/HTx/VAD and prevalence of LVRR among these patients remain unclear.

Aim. The aims of this project are to define whether and how the addition of ARNI and SGLT2-I to OMT are able to positively influence the long-term survival curves in patient with DCM, and highlight whether the action of these drugs can promote and/or influence LVRR added to "traditional" OMT with ACE-I/ARB in patients with DCM undergoing OMT in the model of chronic HFrEF. Methods. A total of 308 DCM patients with at least two echocardiographic evaluations within 6 months and with duration of disease < 3 months, enrolled in the Trieste Heart Muscle Disease Registry from 01.01.2010 to 31.12.2023, were retrospectively analyzed (age 54±14, male sex 65,6%, LVEF 31±10 at baseline) and divided into two groups according to medical treatment: group 1, OMT for HF with ACE-I/ARB (163 patients) and group 2, OMT for HF with ARNI and/or SGLT2-I (145 patients). In a sub-analysis, group 2 was divided into two other groups: 77 patients receiving OMT for HF with ARNI/ SGLT2-I within 1 year from enrollment (group 2A) and 68 patients receiving OMT for HF with ARNI/SGLT2-I after 1 year from enrollment (group 2B). The composite end-points measured in patients with OMT with ARNI and/or SGLT2-I compared to those treated with ACE-I/ ARB were: overall outcomes (a composite of all-cause mortality, HTx or VAD implantation) and LVRR.

Results. Cohort patients were followed for a mean of 92 [58;130] months. Globally, even if patients of group 2 showed a more advanced disease compared to group 1 (prevalence of NYHA III-IV, 22.1% vs 33,4% in group 1 and in group 2 respectively, p<0,001; lower LVEF, 34±10 vs 28±9 in group 1 and in group 2 respectively, p<0,001), a substantial difference on the extended 1-Kaplan–Meier survival curves between the two groups of patients was observed, demonstrating an association of OMT with ARNI/ SGLT2-I, with a fewer rates of all-cause Death/HTx/LVAD (p<0,05). Survival-free from HTx and LVAD was 84% in group 1 and 92% in group 2, even higher in group 2A where survival rates further increased to 96%, underlying the importance of early ARNI/SGLT2-I OMT initiation on survival. Despite worse clinical condition of group 2 compared to group 1, LVRR was experienced in 68% and 69% at the end of the study in group 1 and 2A respectively; notably very few LVRR were found in group 2B (9%; global p<0,001). At univariable and subsequent multivariable analyses, LVRR emerged as a protective factor for both all-cause Death/HTx/LVAD, LVRR (HR: 0.277; 0.131-0.584 95%CI; p<0,001 at multivariable).

Conclusions. Survival trend in DCM patients is continuously improving, especially when patients are treated with early ARNI/SGLT2-I OMT (96% survival if prescribed within one year from diagnosis), as it can also positively influence the likelihood of LVRR when administrated early during follow-up.

SCOMPENSO CARDIACO 386
PROGNOSI (SCOMPENSO CARDIACO)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)

MULTIMODAL PROGNOSTIC STRATIFICATION OF PATIENTS WITH ADVANCED HEART FAILURE

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Background: Advanced heart failure (AdHF) is a syndrome characterized by high pathophysiological complexity, which makes prognostic stratification challenging.

Purpose: The aim of this study is to evaluate whether a multimodal approach integrating clinical, laboratory, echocardiographic, cardiopulmonary exercise testing (CPET), and right heart catheterization (RHC) data can enhance prognostic stratification in outpatient AdHF patients and to identify the parameters, individually or in combination, most strongly associated with clinical events.

Methods: We conducted a multicenter, observational, retrospective study involving AdHF patients who underwent CPET, RHC, echocardiogram, and blood tests within the same clinical setting for the work-up of AdHF between January 2021 and June 2024. The primary endpoint was a composite of death, heart transplant or durable left ventricular assist device implant . Secondary endpoints assessed heart failure-related hospitalizations and mortality.

Results: A total of 227 patients were enrolled (mean age: 56 years, 19% female). At one-year follow-up, 22 primary endpoint events and 13 hospitalizations occurred. ROC analysis showed significant discriminatory power across a broad range of clinical, laboratory, echocardiographic, CPET and hemodynamic variables, with the highest univariate accuracies for: cardiac power output index (CPOi, AUC 0.742), VO_2/heart rate (AUC 0.711), NYHA III-IV/elevated NTproBNP (AUC 0.684), stroke volume index (SVi, AUC 0.677), and peripheral edema/need for increased diuretic dose (AUC 0.670). Multivariate analysis identified three independent predictors of the primary endpoint: VO2 pulse (VO_2/heart rate) <8 ml/beat (HR 5.98, p=0.004), left ventricular ejection fration (LVEF) <20% (HR 5.15, p=0.01), and CPOi <0.36 W/m² (HR 4.88, p=0.017).

Conclusions: A multimodal approach can refine prognostic stratification in outpatient AdHF patients. Clinical variables provide an important screening modality to direct further management and risk stratification. Three independent predictors of adverse events were identified, each belonging to different assessment methods: VO_2/heart rate, CPOi, and LVEF, reinforcing the value of multiparametric assessment in AdHF.

SCOMPENSO CARDIACO 400
PROGNOSI (SCOMPENSO CARDIACO)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)

GENETIC INSIGHTS INTO END-STAGE HEART FAILURE: A SINGLE-ARM META-ANALYSIS ON THE PREVALENCE AND CLINICAL UTILITY OF GENETIC TESTING

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Background: End-stage heart failure (ESHF) represents the final common pathway of chronic cardiovascular diseases, and is frequently influenced by underlying genetic factors. Advanced therapeutic interventions, such as heart transplantation (HTx) or ventricular assist devices (VAD), remain the cornerstone of treatment. However, the prevalence and clinical significance of pathogenic or likely pathogenetic (P/LP) variants in patients progressing to ESHF are not fully elucidated.

Methods: Following PRISMA guidelines, we conducted a systematic search in PubMed, Embase, and the Cochrane Library to identify studies reporting the diagnostic yield of genetic testing in patients with ESHF referred for HTx, VAD implantation, or palliative care. The primary outcome was the prevalence of P/LP variants. Effect estimates were reported as pooled proportions with 95% confidence intervals (CIs), and heterogeneity was assessed using the I^2 statistic.

Results: fourteen observational studies (retrospective and prospective) comprising 1.455 patients were included: 1.375 (94.5%) adults and 80 (5.5%) children. Thirteen studies (n = 1.404) reported the gender of the population, and 1.022 patients (72.8%) were male. At the time of advanced HF therapy or palliative referral, the mean age in adults was 46.8 (± 17.9) years, while in pediatrics, reported in only two studies (n = 22 patients) was 5.7 years. Twelve studies (n = 1.092) reported the number of patients undergoing heart transplantation, while four studies (n = 348) reported the number of patients receiving VAD implantation. Overall, 1,068 patients (97.8%) underwent HTx, and 41 patients (11.8%) received VAD implantation. No patients referred for palliative care were reported in the analyzed studies. Dilated cardiomyopathy resulted as the predominant phenotype associated with progression to ESHF, being identified in 1.118 (76.8%) patients. When stratified by age, this phenotype included 1,053 adults and 65 children. The second most frequent presentation was ischemic dilated cardiopathy, accounting for 99 cases (7.2% of the adults). Interestingly, 8.1% of adults with ischemic heart disease harbored a P/LP variant associated with cardiomyopathies, suggesting potential overlap between ischemic and inherited cardiomyopathies. The diagnostic yield was substantial, with P/LP variants identified in 38.3% of adults and 65.1% of children. Due to significant heterogeneity in the results, a leave-one-out analysis of the adults was performed, confirming consistent prevalence estimates (36-41%) and the robustness of the findings.

Conclusion: This single arm meta-analysis demonstrates a high prevalence of P/LP variants in patients with ESHF requiring advanced therapies (HTx or VAD). These findings support implementation of systematic genetic testing in this population to guide clinical management and facilitate family screening.

CardioSic

SCOMPENSO CARDIACO 936
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
PROGNOSI (SCOMPENSO CARDIACO)

VERICIGUAT ADMINISTRATION IS ASSOCIATED TO A RRI IMPROVEMENT AND OPTIMIZATION OF GDMT IN HF PATIENT UP TO 1-YEARS FOLLOW-UP

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(a) CARDIOLOGIA VANVITELLI, OSPEDALE MONALDI, AOU DEI COLLI

Background: Hospitalization for heart failure (HF), whether for a first episode ("de novo") or for an exacerbation, has a significant impact on prognosis. To reduce the burden of HF, early initiation and continuous drugs titration of guideline directed medical therapy (GDMT) is mandatory to improve outcome. However, this implementation remains suboptimal. The renal resistive index (RRI) is a Doppler ultrasound marker that can be used to assess kidney health and predict outcomes in chronic kidney disease as well as in HF. Vericiguat is the latest approved drug for HF associated to cardiovascular clinical benefits as add-on therapy. It reduces RRI with the potential to improve prognosis in light of the correlation between RRI and survival in HF, both with reduced and preserved ejection faction.
This is a retrospective analysis evaluating the role of vericiguat to drive GDMT optimization in HF patients via RRI.

Methods and results: a total of 58 HF-patients were retrospectively analyzed. Functional class, NT-proBNP, RRI and medical therapy were recorded up to 1-years after vericiguat administration.
A significant decrease of RRI was documented, with improved functional class, NT-proBNP reduction and achievement of higher percentage of GDMT optimization. Improvement of RRI was associated to a better titration of the fantastic four.

Conclusions: Vericiguat administration is associated to a RRI improvement and optimization of GDMT in HF patients up to 1-years follow-up. Considering its cost-effectiveness, assessment of RRI could be used to define the HF-patients profile where to pursue GDMT implementation.

SCOMPENSO CARDIACO 574
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
INFARTO STEMI (CARDIOPATIA ISCHEMICA)
INFARTO NSTEMI (CARDIOPATIA ISCHEMICA)

VALUTAZIONE INTEGRATA DEL LUS, VEXUS E KILLIP NELLA DIAGNOSI PRECOCE DELLO SCOMPENSO CARDIACO NELLE SINDROMI CORONARICHE ACUTE

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Introduzione. Lo scompenso cardiaco (SC) rappresenta una delle principali complicanze nel paziente con sindrome coronarica acuta (SCA). La diagnosi precoce è fondamentale per ridurre la mortalità e migliorare la gestione terapeutica, ma gli strumenti disponibili presentano dei limiti.
Classificazione di Killip: semplice e immediata, è però basata su parametri clinici soggettivi e spesso poco sensibili nelle fasi precoci. Inoltre, poco riproducibile a causa di una variabilità intra e inter-operatore. Lung Ultrasound (LUS): ha mostrato buona sensibilità nella rilevazione precoce di congestione polmonare tramite la valutazione delle linee B che sono la mera espressione di edema interstiziale polmonare; presenta una discreta specificità. Venous Excess Ultrasound Score (VExUS): metodica relativamente nuova, valuta la congestione venosa sistemica mediante ecografia delle vene addominali e della vena cava inferiore (VCI), potenzialmente utile per identificare precocemente il sovraccarico di volume ma talvolta difficilmente eseguibile e se non esperti time-consuming. Ad oggi non esistono ancora studi prospettici che confrontino sistematicamente questi tre strumenti nella diagnosi precoce di SC nel paziente con SCA.

Obiettivi. L' obiettivo del nostro lavoro è stato quello di confrontare l'accuratezza diagnostica di Killip, LUS e VexUS, singolarmente e in combinazione, nella diagnosi precoce di SC nel paziente con STEMI e NSTEMI ad alto rischio.

Metodi. È stato condotto uno studio prospettico osservazionale multicentrico su 60 pazienti con STEMI e NSTEMI ad alto rischio. Le valutazioni LUS, VExUS e Killip sono state eseguite all'ingresso in pronto soccorso e prima dell'angioplastica coronarica. Sono stati esclusi pazienti con diagnosi di polmonite, trauma toracico, infezione da SARS-CoV2, pazienti con fibrosi polmonare e dializzati. Sono state eseguite analisi di sensibilità, specificità, valore predittivo positivo (VPP) e negativo (VPN), likelihood ratio positivo (LR+) e negativo (LR-); sono state calcolate le curve ROC e successivamente curve di Precision Recall con Average Performance (AP) per una migliore accuratezza diagnostica globale delle tre variabili prima singolarmente e poi in combinazione tra loro.

Risultati. I risultati di performance delle variabili singole e in combinazione tra loro sono riassunti nella "tabella comparativa". LUS ha mostrato una buona sensibilità (0.98) nella diagnosi dello scompenso cardiaco, ma una specificità moderata (0.76). VExUS ha fornito una buona specificità (0.94) ma con una moderata sensibilità (0.56). Killip ha dimostrato performance intermedie, con un equilibrio tra sensibilità (0.5) e specificità (0.9) ma con valori predittivi inferiori rispetto alle metodiche

ecografiche. I modelli combinati (LUS+VExUS, LUS+VExUS+KILLIP) hanno raggiunto le migliori performance globali con AUC e AP significativamente superiori rispetto ai singoli parametri (0.93 e 0.95), indicando una maggiore accuratezza diagnostica, maggiori valori predittivi negativi e valori di LR+ elevati (6.6). Il LUS si è dimostrato altamente sensibile nell'escludere lo scompenso, KILLIP e VExUS come indicatori di gravità e conferma diagnostica alle soglie più alte.

Conclusioni. Questo studio ha dimostrato che l'approccio multimodale integrato con parametri ecografici (LUS, VexUS) e clinici (Killip) è superiore rispetto all'utilizzo isolato di ciascun parametro, fornendo un supporto complementare diagnostico più robusto nella diagnosi precoce dello scompenso cardiaco acuto nel paziente con SCA.

SCOMPENSO CARDIACO 253
SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)

THE QUANTITATIVE HAEMODYNAMIC EFFECT OF LEVOSIMENDAN, DOBUTAMINE AND MILRINONE IN PATIENTS WITH HEART FAILURE: A META-ANALYSIS

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Background. Inotropic therapy is a cornerstone of medical treatment for patients with low-output heart failure (HF). The quantitative effect of specific inotropic drugs on invasive haemodynamic is still largely unknown.

Methods. This meta-analysis assessed the acute haemodynamic effects of dobutamine, levosimendan, and milrinone low-output HF patients. Only studies using invasive haemodynamic assessment were included. The primary outcome was the quantitative change in variables such as cardiac index (CI), pulmonary artery wedge pressure (PAWP), mean pulmonary artery pressure (mPAP), mean arterial pressure (MAP), pulmonary and systemic vascular resistance (PVR and SVR) before and after administration of each drug. Quality was assessed using the National Institutes of Health Quality Assessment Tool (NIH-QAT). A sensitivity analysis compared the effect on acute versus chronic HF populations.

Results. Twenty-six studies (n=1,888 patients) were included in the final analyses. Based on the NIH-QAT checklist, 11 studies were at low risk of bias, 14 at moderate risk, and 1 at high risk. Meta-analysis showed that all the study drugs improved the haemodynamic variables assessed, without significant differences amongst them, except for MAP ($p = 0.0486$). The heterogeneity across studies was high. In the sensitivity analysis, dobutamine improved CI more than levosimendan in patients with chronic HF.

Conclusions. The use of inotropes improves haemodynamic status in patients with low-output HF, with no consistent superiority of one agent over the others. These findings support the current clinical practice of agent selection based on individual patient characteristics. Head-to-head trials in well-phenotyped HF populations are warranted to guide personalised inotrope use.

CardioSic

SCOMPENSO CARDIACO 296
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)

TEST DA SFORZO CARDIOPOLMONARE: UN PREZIOSO STRUMENTO DIAGNOSTICO, PROGNOSTICO E DI GUIDA ALLA TERAPIA FARMACOLOGICA E RIABILITATIVA

Pietro Palermo (a), Jeness Campodonico (a), Mauro Contini (a), Massimo Mapelli (a), Carlo Vignati (a), Antonio Parlati (a)
(a) CENTRO CARDIOLOGICO MONZINO - IRCCS - MILANO

Il test da sforzo cardiopolmonare (CPET) è una metodica ormai conosciuta ma ancora relativamente poco usata dai cardiologi e questo sia da un punto di vista quantitativo che qualitativo. Infatti, erroneamente, questa applicazione è stata limitata alla valutazione dello scompenso cardiaco, e, di solito osservando il solo parametro numerico del "consumo di ossigeno di picco (PeakVO2)". Quest' ultimo è utilizzato per quantificare la limitazione funzionale nei pazienti con scompenso cardiaco cronico. Numerosi parametri derivati dal test da sforzo cardiopolmonare se ben raccolti e ben interpretati si rivelano estremamente utili nelle mani del clinico. In particolare il CPET utile per svelare l'origine (cardiaca-polmonare-muscolare) di eventuale limitazione funzionale o svelare l'origine di sintomatologia quale la dispnea e nei disturbi respiratori e nell'ipertensione polmonare (ruolo DIAGNOSTICO). A questo si associa un prezioso aiuto nella stratificazione prognostica del paziente (ruolo PROGNOSTICO) in particolare: 1) un basso valore di peakVO2 si associa a prognosi peggiore. 2) L'evidenza di un valore di peakVO2 inferiore a 12 ml/kg/min identifica il paziente con possibile indicazione a trapianto. 3) l'evidenza di inefficienza ventilatoria valutata mediante il calcolo dello slope del rapporto Ventilazione/Produzione di CO2 (Ve/VCO2 slope il valore normale è generalmente inferiore a 34) stratifica la prognosi (maggiore è il valore di Ve/VCO2 slope peggiore è la prognosi). 4) la presenza di respiro oscillatorio (o periodico) durante la fase attiva dell'esercizio risulta un indice indipendente prognostico negativo. 5) l'identificazione della soglia anaerobica, della fase di tamponamento isocapnico, del punto di compenso respiratorio (diverse fasi dell'esercizio) sono indispensabili nella valutazione e corretta prescrizione dell'esercizio fisico.(GUIDA ALLA PRESCRIZIONE DELL'ESERCIZIO) 6) i parametri peakVO2 e Ve/VCO2 slope derivati dal CPET (insieme ad altri dati quali l'emoglobina, il sodio, la funzione renale e frazione di eiezione del ventricolo sinistro) rientrano nel calcolo di rischio di morte o necessità di trapianto cardiaco a due anni nel riconosciuto ed apprezzato MECKI score.

CONCLUSIONI

L'utilizzo del CPET non è particolarmente diffuso nella pratica clinica e la corretta e apparentemente complessa interpretazione dei dati e dei parametri raccolti spesso suscita incertezza e difficoltà. Nonostante ciò il CPET rimane un test che produce una "fotografia" precisa di tutte le componenti che determinano la buona funzionalità dell'organismo e l'identificazione di eventuali anomalie che causano una ridotta capacità funzionale è di grande aiuto al clinico sia per l'aspetto diagnostico e prognostico ma soprattutto sotto l'aspetto terapeutico. Un CPET di controllo a distanza dopo ottimizzazione terapeutica o trattamenti strumentali può essere un prezioso strumento di verifica.

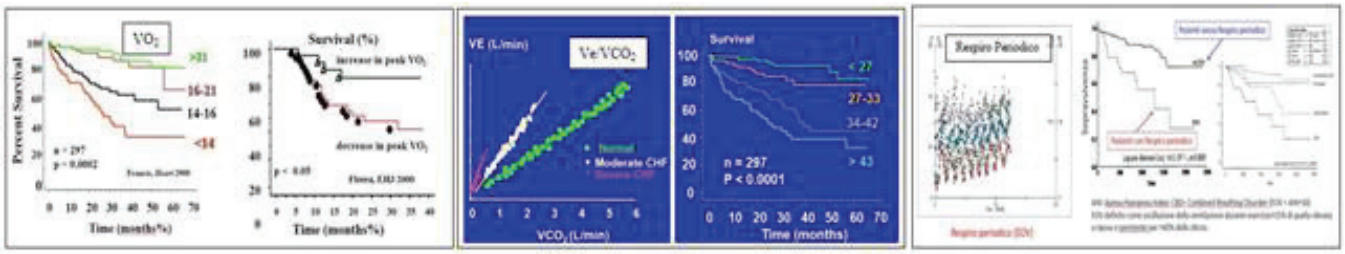

VO2
Survival (%)
Percent Survival
Time (months%)
VE (L/min)
Ve/VCO2
Survival
n = 297
P < 0.0001
Time (months)
Respiro Periodico

Figura 1

CardioSic

SCOMPENSO CARDIACO 836
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
BIOLOGIA MOLECOLARE CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)

RAZIONALE E RISULTATI PRELIMINARI DEL REGISTRO MULTICENTRICO ITALIANO DELLA CARDIOMIOPATIA PERIPARTUM

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INTRODUZIONE: La cardiomiopatia peripartum (CMPP) è una condizione rara ma potenzialmente fatale che tipicamente si manifesta come scompenso cardiaco a ridotta frazione d'eiezione del ventricolo sinistro con esordio dall'ultimo mese di gravidanza ai primi cinque mesi dopo il parto in donne senza altre cause note di scompenso cardiaco.

OBIETTIVI: Scopo dello studio è stato la creazione di un registro nazionale multicentrico della CMPP con raccolta di informazioni cliniche, biochimiche e di imaging associate a campioni biologici da sottoporre ad analisi genomica, trascrittomica, metabolomica e proteomica per acquisire nuove informazioni a molteplici livelli biologici e clinici.

METODI: Lo studio è stato registrato su ClinicalTrials.gov (NCT05878041). Trentacinque pazienti di maggiore età con diagnosi di CMPP confermata e diciannove donne gravide senza evidenza di malattie cardiovascolari e scompenso cardiaco sono state arruolate. Tutte le pazienti sono state sottoposte a valutazione clinica, ECG, valutazione della qualità di vita, ecocolorDoppler cardiaco transtoracico e prelievi ematici per test di laboratorio standard, isolamento delle cellule mononucleate da sangue periferico, sequenziamento dell'intero esoma e dell'RNA circolante, analisi metabolomica e proteomica. I dataset sulle "omiche" sono stati analizzati separatamente per identificare varianti rare, geni e proteine espressi in maniera differente e caratteristiche

metaboliche alterate associate con la CMPP. I dati saranno successivamente integrati usando tecniche di riduzione della dimensionalità, apprendimento non supervisionato e algoritmi network-based, incluse analisi fattoriale delle multi-omiche e pipelines di machine learning.

RISULTATI: Tutte le procedure pre-analitiche sono state standardizzate in maniera uniforme tra i centri partecipanti della rete. L'età media delle partecipanti era 33.9±5.1. Tra le caratteristiche delle pazienti arruolate figuravano l'etnia Africana (10.7%), riproduzione assistita (14.3%), pre-eclampsia (14.3%), malattie autoimmuni (10.7%), ipertensione (21.4%), diabete mellito (3.5%) e abitudine tabagica (32.1%). L'esordio della CMPP nella maggior parte dei casi è avvenuto con sintomi di classe New York Heart Association (NYHA) III/IV, mentre nel 25% dei casi è stato riscontrato un profilo aritmico. La metà delle pazienti ha recuperato la frazione d'eiezione in 11±19 mesi, mentre nel 14% dei casi è stata osservata una disfunzione severa persistente che ha richiesto impianto di defibrillatore. Diverse caratteristiche ecocardiografiche differenziavano le pazienti in base allo stato clinico, e quelle con disfunzione persistente si presentavano con maggiori diametro telediastolico (61.2±8.1 mm) e volume atriale sinistro (47.0±24.7 ml/m^2), minori global longitudinal strain (GLS, 9.0±1.4%) e Tricuspid Annulus Plane Systolic Excursion (TAPSE, 17.5±4.2 mm, $p<0.005$ per tutti).

CONCLUSIONI: Ci aspettiamo che l'integrazione di caratteristiche cliniche, imaging e "omiche" possa fornire nuove informazioni sulla fisiopatologia della CMPP e consentire in futuro una diagnosi precoce, la corretta valutazione del rischio e, soprattutto, interventi terapeutici efficaci e personalizzati, offrendo in tal modo nuove prospettive nella medicina di precisione.

SCOMPENSO CARDIACO 860
BIOMARCATORI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
INTELLIGENZA ARTIFICIALE (TELECARDIOLOGIA ED E-HEALTH)
PROGNOSI (SCOMPENSO CARDIACO)

GRK2 INCREASES AFTER EXERCISE AND CORRELATES WITH FUNCTIONAL CAPACITY IN PATIENTS WITH HFREF: ANALYSIS THROUGH AI AND DATA AUGMENTATION

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Background: G-protein coupled receptor kinase 2 (GRK2) is a serine/threonine kinase that regulates multiple intracellular signaling pathways. It plays a key role in the modulation of the catecholaminergic response mediated by β–adrenergic receptors, triggering processes of desensitization and downregulation of these receptors, which are hallmark features of chronic HF. A direct correlation has been identified between GRK2 in lymphocytes and cardiac tissue.

Purpose: We aimed to assess the correlation between GRK2 levels, cardiac structural remodeling, and exercise capacity in patients with Heart Failure (HF).

Methods: We enrolled 14 patients with chronic HF who underwent echocardiography and cardiopulmonary exercise testing (C-PET) to assess left ventricular volume (LVEDVi) and exercise capacity (%VO2max), respectively. GRK2 levels were evaluated in peripheral blood mononuclear cells (PBMC) by Western Blot (WB), on blood samples collected before and after C-PET. Western blot quantification of GRK2 was normalized to β-actin as a loading control, and results were reported as fold increase (GRK2-FI) compared to baseline/control values. To understand the relationship between these parameters, we performed a complete linear regression study, taking into consideration all the potential combinations of the variables of interest. In addition, to expand our limited sample size, we employed a Gaussian Copula-based data augmentation technique that generates new, synthesized data samples from an existing dataset with the same features as the original data, thereby improving the performance and robustness of the regression model. In this way, we obtained a sample of 1000 elements, comprising 750 for training and 250 for testing the regression models.

Results: We investigated 10 different linear regression models to detect the best-fitting one. The Bayesian Ridge model provided the best results. It highlights that %VO2max negatively correlates with LVEDVi with a clear linear trend (Fig.1 left). This indicates that, as expected, HF patients with increased ventricular volumes demonstrate reduced exercise capacity. This negative correlation is also evident between peripheral GRK2 levels and LVEDVi (Fig.1, center). Thus, GRK2 levels can predict the degree of ventricular remodeling. Conversely, the relationship between GRK2 and %VO2max is not entirely clear (Fig.1, right), although they seem to share a common trend.

Conclusions: These data suggest that GRK2 levels reflect exercise capacity in patients with HF. The assessment of peripheral GRK2 levels is a promising biomarker to predict both the degree of left ventricle remodeling and functional capacity. Additional research is required to define better the association between peripheral GRK2 levels and clinical outcomes.

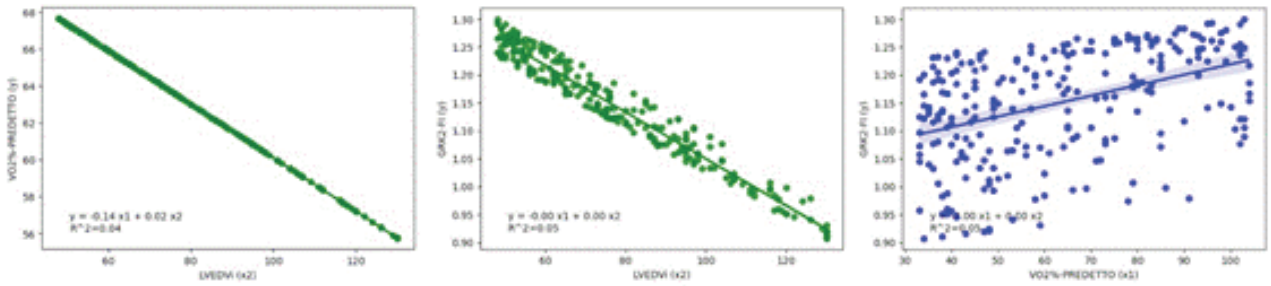


Fig. 1: Regression results involving the parameters of interest

Figure 1

CardioSic

SCOMPENSO CARDIACO 160
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
IMAGING MIOCARDICO-PERICARDICO (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)

ADDITIONAL VALUE OF SPECKLE TRACKING ECHOCARDIOGRAPHY TO HFA-PEFF AND H2FPEF SCORES FOR THE DIAGNOSIS OF HEART FAILURE WITH PRESERVED EJECTION FRACTION

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Background: Heart failure with preserved ejection fraction (HFpEF) represents a worsening global health issue which diagnosis remains challenging. Two scores have been proposed by the American heart association (AHA) and the European society of Cardiology (ESC), both including clinical and echocardiographic parameters. However, these scores do not consider speckle tracking echocardiography (STE) indices, particularly left atrial strain, which has been recommended by international societies for the diagnosis of HFpEF.

Objectives: the aim of this study was to assess the additional value of global peak atrial longitudinal strain (PALS) by STE for the diagnosis of HFpEF over the HFA-PEFF score and H2FPEF score.

Methods: patients with dyspnoea with efforts referred to our ambulatories for cardiologic visits were enrolled. Patients with reduced left ventricular ejection fraction (LVEF < 50%), previous cardiac surgery, cardiomyopathies and prosthetic valves were excluded. Patients underwent clinical and echocardiographic evaluation completed by STE. Then, it was divided into two groups based on the presence of HFpEF according to current ESC guidelines or presence of lung disease. Primary endpoint was the additional value of strain values to the existing scores to improve the accuracy for the diagnosis of HFpEF.

Results: out of 403 patients (mean age 75±11 years, 50% female), 318 had HFpEF and 85 had lung disease. Patients with HFpEF were older (77±10 vs. 71±16 years, p=0.001), more commonly female (53% vs.41% p=0.001), had higher maximum left atrial volume (LAV = 84±30 vs. 68±31 ml, p<0.0001), E/E' ratio (13±5 vs. 9±4, p<0.0001), while LA and LV strain values were lower (global PALS= 18±10% vs. 23±11% and global longitudinal strain, GLS = -15±4% vs. -17±6%, all p<0.001) . Medium HFA-PEFF score in patients with HFpEF was 4±1.6 vs. 2±1.3 (p<0.0001), H2FpEF was 4.3±1.9 vs.2.2±1.6 (p<0.0001). Applying ROC curves, GLS ≥-21 % and global PALS≤23 % alone had a good accuracy for the diagnosis of HFpEF (AUC 0.65 and AUC 0.66), the two scores combined (HFA-PEFF>5 and H2FPEF>6) showed a optimum diagnostic accuracy as well (AUC=0.81), the addition of both global PALS ≤23 % and LV GLS to the 2-scores model improved the diagnostic accuracy (AUC 0.85 and 0.84 respectively), while the addition of both strain parameters showed the highest accuracy for the diagnosis of HFpEF (AUC = 0.86, sensitivity=99%, specificity 65%, p-value= 0.011). However, the model including the two scores (HFA-PEFF and H2FPEF) and global PALS showed

the highest specificity for the diagnosis of HFpEF with similar AUC (sensitivity= 76%, specificity 77%, p-value= 0.001).

Conclusions: LV and LA strain may have an additive value to categorize patients with HFpEF compared to the HFA and AHA proposed diagnostic scores, particularly in doubtful cases. Particularly, the addition of global PALS significantly increased the sensitivity of the currently existing diagnostic models for HFpEF.

CardioSic

SCOMPENSO CARDIACO 695
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
PROGNOSI (SCOMPENSO CARDIACO)

EFFECTS OF SGLT2 INHIBITORS ON ECHOCARDIOGRAPHIC PARAMETERS AND CLINICAL OUTCOME IN HEART FAILURE WITH IMPROVED EJECTION FRACTION

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Introduction: Heart failure with improved ejection fraction (HFimpEF) is a new phenotype of heart failure (HF) defined by ejection fraction (EF) recovery from HF with reduced EF (HFrEF) to values >40%. Patients with HFimpEF remain at high risk for adverse events and may present a reduced quality of life. Sodium-glucose cotransporter 2 inhibitors (SGLT2i) have emerged as a promising treatment option for HF, with increasing evidence about cardiac remodeling. However, few studies specifically target the HFimpEF population.

Objectives: This study aims to assess the changes in systo-diastolic function, acquired by basic and advanced echocardiographic parameters (i.e. speckle tracking echocardiography, STE), after therapy with SGLT2 inhibitors in patients with HFimpEF, compared to patients with HFrEF, and exploring differences according to background HF therapy.

Methods: This multicenter (Siena University Hospital and Pisa Monasterio Foundation), prospective study, enrolled patients diagnosed with heart failure with either reduced or improved ejection fraction (LVEF ≥40%) eligible for treatment with SGLT2 inhibitors (either dapagliflozin or empagliflozin), with stable optimal medical therapy (OMT) for at least 3 months before baseline evaluation. Patients with missing data, atrial fibrillation, diabetes mellitus, or creatinine clearance <20 mL/min were excluded. Participants underwent clinical, biohumoral and echocardiography evaluation including STE at baseline and 6 and 12 months after SGLT2i initiation. Additionally, HF hospitalization, all-cause or cardiovascular mortality and urgent visits for HF therapeutic adjustments have been recorded.

Results: Overall, 137 patients (61 HFimpEF, 76 HFrEF) were enrolled in this study (age 70±12, 80% male). Patients with HFimpEF had higher LV volumes and mitral regurgitation (MR) rate, and only 30% (vs.66%) of them were treated with the three "pillars" of HF OMT. After 6 months, patients with HFrEF showed early significant improvement of left atrial (LA) and LV volumes and EF, diastolic function (E/E'), right ventricular dimensions and function and pulmonary pressures as well as STE parameters, which was persistent at 12 months. HFimpEF patients showed only LA and LV strain improvement at 6 months (mean global peak atrial longitudinal strain, PALS = 18±8 vs. 14±9%, p=0.03; LV global longitudinal strain, GLS = -13±5 vs. -11±3%, p=0.021), persistent at 12 months, with late improvement of LA, LV volumes and EF, which was significant only at 12 months follow up. Accordingly, only deltaEF and deltaLA volume at 12 months showed significant differences among HFimpEF and HFrEF. Analyzing patients treated with ARNI (25 of HFimpEF, 52 with HFrEF) and with all the 3 HF pillars, the benefit analyzed as improvement of echocardiographic variables at 12 months was consistent in patients with HFrEF, while only LV GLS

showed a significant improvement after 12 months of SGLT2i in patients with HFimpEF (-15±3 vs. -12±2% and -14±1 vs. -13±2%). Over 12 months follow up, HFrEF patients reached 28 events, while 23 were registered in HFimpEF.

Conclusions: SGLT2i provide similar benefits in HFimpEF and HFrEF in terms of cardiac remodelling and functional improvement after 12 months of treatment. STE parameters may serve as early markers of improvement in HFimpEF patients treated with SGLT2i.

SCOMPENSO CARDIACO 818
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)

VERICIGUAT NELLA PRATICA CLINICA ITALIANA: ANALISI DAL REGISTRO OPTIMA-HF E CONFRONTO CON IL TRIAL VICTORIA

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Introduzione: Vericiguat è raccomandato nel trattamento dello scompenso cardiaco a ridotta frazione di eiezione e tale raccomandazione deriva dai risultati del trial VICTORIA, che ha arruolato 5050 pazienti sintomatici con scompenso cardiaco cronico e frazione di eiezione <45%, randomizzati al trattamento con vericiguat o placebo, in aggiunta alla terapia standard. Vericiguat ha determinato una riduzione significativa del 10% dell'endpoint composito di morte cardiovascolare o prima ospedalizzazione per scompenso, principalmente grazie alla diminuzione dei ricoveri per scompenso cardiaco. Nonostante le evidenze favorevoli, i dati sull'utilizzo di vericiguat nella pratica clinica reale sono limitati.

Obiettivi: Obiettivo della presente analisi è valutare le caratteristiche di base dei pazienti con scompenso cardiaco cronico trattati con vericiguat nella pratica clinica italiana e confrontarle con quelle della popolazione arruolata nello studio VICTORIA.

Metodi: Abbiamo raccolto retrospettivamente i dati dei pazienti con nuova prescrizione di vericiguat in 21 centri partecipanti al registro OpTIMa-HF e confrontato le loro caratteristiche al momento della prescrizione con quelle dei pazienti arruolati nello studio VICTORIA. Risultati: Un totale di 554 pazienti è stato arruolato nello studio (età media 70,1 ± 11,7 anni, 27,4% donne). Le comorbidità erano molto frequenti: 68,2% ipertensione, 65% malattia renale cronica, 41,2% diabete e 24,6% broncopneumopatia cronica ostruttiva. La maggior parte dei pazienti era in classe funzionale NYHA II (44,2%) o III (44,4%), mentre l'eziologia dello scompenso era prevalentemente ischemica (60,1%). Per quanto riguarda la terapia per lo scompenso, il 92,6% assumeva beta-bloccanti, l'84,5% inibitori di SGLT2 (SGLT2i), il 65,6% ARNI, il 14,5% ACE inibitori (ACEi) o sartani (ARBs), il 79,7% antagonisti dell'aldosterone (MRA) e l'84% diuretici dell'ansa. Rispetto ai pazienti dello studio VICTORIA, quelli del registro OpTIMa-HF erano più anziani (70,1 ± 11,7 vs 67,5 ± 12,2 anni; p<0,001), con valori inferiori di pressione arteriosa sistolica (115,2 ± 17,2 vs 121,2 ± 15,7 mmHg; p<0,001) e frequenza cardiaca (72,9 ± 12,9 vs 71,2 ± 14,5 bpm; p=0,011), mentre i livelli di NT-proBNP erano simili nei due gruppi (2592 vs 2803 pg/mL; p=0,198).

Riguardo la terapia farmacologica, i pazienti dello studio VICTORIA risultavano maggiormente trattati con ACEi/ARBs (73,3% vs 14,5%; p<0,001), mentre nel registro OpTIMa-HF predominava l'uso di ARNI (65,6% vs 14,3%; p<0,001), con maggiore impiego di MRA (79,7% vs 69,3%; p<0,001) e SGLT2i; l'uso di beta-bloccanti era elevato in entrambi i gruppi.

Conclusioni: Nella pratica clinica italiana, i pazienti trattati con vericiguat sono di base più anziani e presentano valori inferiori di pressione arteriosa sistolica, rispetto ai pazienti del trial VICTORIA, indicando una buona maneggevolezza del farmaco e una crescente confidenza dei clinici nella prescrizione. Inoltre, presentano una migliore aderenza alle terapie raccomandate dalle linee guida, con un maggiore utilizzo di ARNI, MRA e SGLT2i, rispetto alla popolazione arruolata nel trial VICTORIA.

CardioSic

SCOMPENSO CARDIACO 151
PROGNOSI (SCOMPENSO CARDIACO)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)
TELEMEDICINA IN CARDIOLOGIA (TELECARDIOLOGIA ED E-HEALTH)

THE RELATIONSHIP BETWEEN SPIRITUAL WELL-BEING, QUALITY OF LIFE AND MEDICATION ADHERENCE IN PATIENTS WITH HEART FAILURE: A PROSPECTIVE OBSERVATIONAL STUDY

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(a) UOC CARDIOLOGIA, AZIENDA OSPEDALE-UNIVERSITÀ PADOVA; (b) DIPARTIMENTO DI SCIENZE CARDIO-TORACO-VASCOLARI E SANITÀ PUBBLICA, UNIVERSITÀ DEGLI STUDI DI PADOVA

Introduction: Spiritual well-being (SWB) has been increasingly recognized as a key factor in the management of chronic and terminal illnesses. It may affect psychological and physical symptoms and influence both quality of life (QoL) and medication adherence. However, in the context of heart failure (HF) the associations between these variables remain unexplored.
This study aims to investigate the relationship between SWB, QoL and medication adherence in patients hospitalized for symptomatic HF. The primary objective is to evaluate whether SWB assessed during hospitalization is associated with QoL and, secondary, with medication adherence one month after discharge.

Methods and results: This is a prospective observational study involving adult patients with a diagnosis of symptomatic HF. SWB was measured during hospitalization using the "Functional Assessment of Chronic Illness Therapy – Spiritual Well-Being 12-item Scale" (FACIT-Sp-12). One month after discharge, participants completed the "EuroQol 5 Dimensions 5 Levels" (EQ-5D-5L) to assess QoL and the "Morisky Medication Adherence 8-item Scale" (MMAS-8) to evaluate adherence. Among 43 participants (mean age 62.3 years; 76.7% male), the mean FACIT-Sp-12 score was 29.9 (SD = 7.5). At follow-up (n = 20), FACIT-Sp-12 showed a moderate, non-significant correlation with EQ-VAS (rho = 0.383; p = 0.096) and a weak positive correlation with EQ-5D-5L (rho = 0.259; p = 0.270). Regression analyses found a significant association between the Peace subscale and EQ-VAS (β = 5.97; p = 0.009), while the FACIT-Sp-12 total score showed a positive trend (β = 1.06; p = 0.064). No significant associations were observed with MMAS-8 adherence.

Conclusion: Identifying the potential role of SWB in enhancing QoL may support a more person-centred approach to HF care and highlight the value of integrating spiritual assessments into routine clinical practice.

SCOMPENSO CARDIACO 452
BIOMARCATORI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)
INTELLIGENZA ARTIFICIALE (TELECARDIOLOGIA ED E-HEALTH)

IDENTIFICATION OF DISTINCT SEX-SPECIFIC SURVIVAL CLUSTERS IN ACUTE HEART FAILURE

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Aims: Patients hospitalized for acute decompensated heart failure (ADHF) are heterogeneous, and prognosis is influenced by multiple clinical, instrumental, and demographic factors, including sex. This study aimed to identify machine learning (ML)-derived phenotypic survival clusters in ADHF, with a focus on sex-specific prognostic differences, and to compare their predictive ability with established risk scores.

Methods and results: We retrospectively analyzed 2,104 consecutive ADHF patients from the TRI-AHF Registry (2010–2022). Clinical, echocardiographic, and biomarker data at admission were used to train a Neural Survival Clustering (NSC) algorithm, which identified survival-based phenotypic clusters in the overall population and stratified by sex. Model performance was compared with the AHEAD and Get With The Guidelines–HF (GWTG-HF) scores using time-dependent C-index, ROC curves, and Brier score.
Among 1,562 patients with complete data, NSC identified five clusters with distinct survival trajectories. In both sexes, the worst-prognosis cluster comprised elderly, comorbid patients with chronic HFrEF; the best-prognosis cluster included younger, de novo non-ischemic HF patients with severe LV dysfunction but low comorbidity burden. Women showed a higher prevalence of HFpEF, which impacted survival more than in men. Across all analyses, NSC outperformed both traditional scores, maintaining stable predictive accuracy over time, whereas AHEAD and GWTG-HF performance declined.

Conclusion: NSC is feasible in ADHF and provides robust, sex-specific stratification with prognostic accuracy superior to traditional scores. These results encourage a phenotypic approach to better address the complexity of hospitalized patients and tailor patient-specific risks. Age and comorbidities remain key determinants of prognosis, beyond ejection fraction, despite differences in sex-specific survival clusters.

SCOMPENSO CARDIACO 887
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)

SINDROME DI TAKOTSUBO IN CORSO DI CRISI TIREOTOSSICA IN MORBO DI BASEDOW-GRAVES: UN CASE REPORT

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(a) DIPARTIMENTO DI SCIENZE CARDIO-TORACO-VASCOLARI E SANITA' PUBBLICA - MALATTIE DELL'APPARATO CARDIOVASCOLARE - UNIVERSITA' DEGLI STUDI DI PADOVA;
(b) AZIENDA OSPEDALE UNIVERSITA' DI PADOVA - CARDIOLOGIA

Introduzione: La sindrome Takotsubo è una condizione acquisita caratterizzata da una disfunzione sistolica reversibile del ventricolo sinistro che può mimare una sindrome coronarica acuta nella clinica, nel rialzo degli indici di miocardiocitolisi e nelle alterazioni ECG. Generalmente è scatenata da triggers psico-fisici. La tireotossicosi è riportata come rara causa di sindrome di Takotsubo. Presentiamo un caso di sindrome di Takotsubo con scompenso cardiaco ed edema polmonare acuto in corso di crisi tireotossica in Morbo di Basedow-Graves.

Riassunto del caso: Una donna di 81 anni, remota fumatrice e senza precedenti cardiologici, con anamnesi positiva per ipertiroidismo subclinico in Morbo di Basedow-Graves in terapia, giungeva in Pronto Soccorso in severo distress respiratorio. Nei giorni precedenti lamentava comparsa di dispnea da sforzo ed edemi declivi. Negava dolore toracico, sincope o cardiopalmo. Riferita autosospensione dei tireostatici nei giorni precedenti. Obiettivamente la paziente si presentava congesta. Alla radiografia del torace e all'ecografia polmonare emergeva un quadro di edema polmonare acuto. All'ECG eividenza di tachicardia sinusale con onde T piatte nelle derivazioni laterali. All'ecocardiogramma il ventricolo sinistro si presentava severamente disfunzionante, con cinetica mal valutabile per impedenza toracica. Agli esami ematochimici rialzo degli indici di miocardiocitolisi (TnI 66 ng/L, primo punto) e dell'NTproBNP (1951 ng/L). La paziente veniva trattata con ossigenoterapia ad alti flussi, nitrati e terapia diuretica endovenosa e, nel sospetto di sindrome coronarica acuta, si somministrava acetilsalicilato di lisina. Ricoverata in terapia intensiva cardiologica (UCIC), si assisteva a progressivo rialzo della troponina (picco 950 ng/L) e dell'NTproBNP (fino a 5053 ng/L) in presenza di TSH soppresso, aumento di fT3 e fT4 e positività dei TRAb. Alla luce del quadro di NSTEMI complicato da scompenso cardiaco, si proseguiva terapia diuretica e si introduceva terapia neuro-ormonale, con graduale decongestione e svezzamento da ossigenoterapia. Si impostava adeguata terapia tireostatica con propranololo e metimazolo con rapido miglioramento della clinica e controllo della frequenza cardiaca. TnI e NTproBNP in persistente calo. Dopo ottenimento del compenso, la paziente veniva sottoposta ad esame ventricolo-coronarografico, con riscontro di circolo coronarico privo di alterazioni angiograficamente critiche; ventricolo sinistro con normale funzione sistolica in assenza di alterazioni della cinetica regionale. Dopo tre giorni, ad ecocardiogramma di controllo, si evidenziava completo recupero della funzione sistolica del ventricolo sinistro in assenza di anomalie della cinetica regionale. Il giorno seguente si assisteva a modifica del tracciato ECG, con comparsa di onde T negative diffuse e allungamento del QT. Si poneva quindi diagnosi di sindrome di TakoTsubo complicata da

edema polmonare acuto secondaria a crisi tireotossica. La paziente veniva dimessa dopo adeguamento della terapia neuro-ormonale e antitiroidea.

Conclusioni: I pazienti con crisi tireotossica possono sviluppare complicanze cardiovascolari, come tachicardia, scompenso cardiaco e sindrome di Takotsubo. Il trattamento deve essere sia eziologico della tireotossicosi sia volto alla gestione dello scompenso cardiaco. Questo caso dimostra inoltre come tale sindrome possa mimare altre cause, più comuni, di scompenso cardiaco (e.g. ischemia miocardica), rendendo la diagnosi non immediata. Risulta quindi cruciale un approccio multiparametrico per la diagnostica differenziale (esami laboratoristici, imaging, test invasivi).

SCOMPENSO CARDIACO 274
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)
ARITMIE VENTRICOLARI (ARITMIE)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)

ELECTRICAL EFFECTS OF CONTEMPORARY PHARMACOTHERAPY FOR HEART FAILURE WITH REDUCED EJECTION FRACTION

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Background: The Electrical Risk Score (ERS) is a well-established predictor of adverse outcomes in heart failure with reduced ejection fraction (HFrEF). However, its temporal evolution in newly diagnosed HFrEF and the prognostic significance of ERS modifications is less studied.

Methods: We conducted a retrospective cohort study including patients with new-onset HFrEF evaluated between January 1, 2018, and December 31, 2023, at our tertiary care center. Patients with the following findings during ECG execution were excluded: atrial fibrillation (AF) or flutter, left or right bundle branch block, second- or third-degree atrioventricular block, pre-excitation, Brugada pattern, or paced rhythm. ECGs were reviewed at baseline and at 9 ± 3 months of follow-up, with ERS and its individual components systematically assessed. Variables associated with ERS reduction were identified using logistic regression with LASSO penalization. The association between overall mortality and ERS changes was investigated using Cox proportional hazards models, applying restricted cubic splines, with adjustment for baseline ERS score.

Results: A total of 171 patients (64 [54-71] years, 77% male) with available ECGs and without exclusion criteria were analysed. Ischemic aetiology was observed in 45% of the cohort and history of AF was present in 27 (16%) patients. Median left ventricular ejection fraction increase from 32% to 40% at follow-up. At baseline, 97% were prescribed with beta-blockers, 94% with any renin-angiotensin-aldosterone system inhibitors, 62% mineralcorticoid receptor antagonists and 13% on SGLT2 inhibitors. At follow-up, 15% were on all four pillars and 55% had at least three of them.
ERS score trajectory is shown in Figure (panel A). Median ERS decreased from 3 to 1 at follow-up, with 99 (58%) patients experiencing ERS reduction. The components showing the greatest numerical reduction were heart rate, Tpeak–Tend and QTc interval. After LASSO penalization, multivariable analysis identified only treatment with all four pillars (OR 2.94, 95% CI 1.1–9.31, p=0.04) as independent predictor of ERS reduction, while history of atrial fibrillation was inversely associated (OR 0.40, 95% CI 0.16–0.94, p=0.04).
Over a follow-up of seven years, 22 patients (13%) died. The spline analysis (Figure, panel B) demonstrated a J-shaped association between ERS change and probability of death, with progressively higher mortality with ERS score increase.

Conclusions: Guideline-directed medical therapy exerts a significant impact on both structural and electrical cardiac remodelling, translating into favourable prognostic effects.

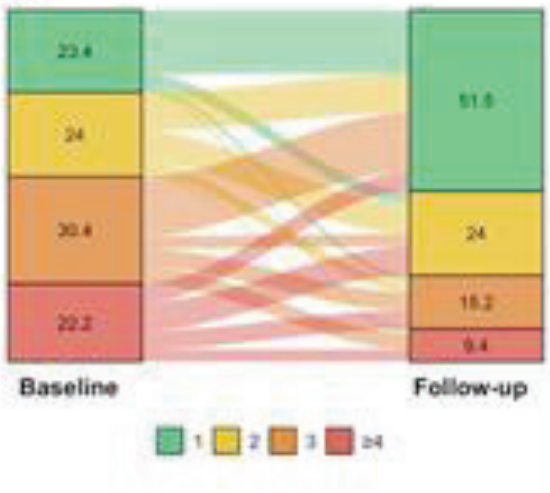


Figure A

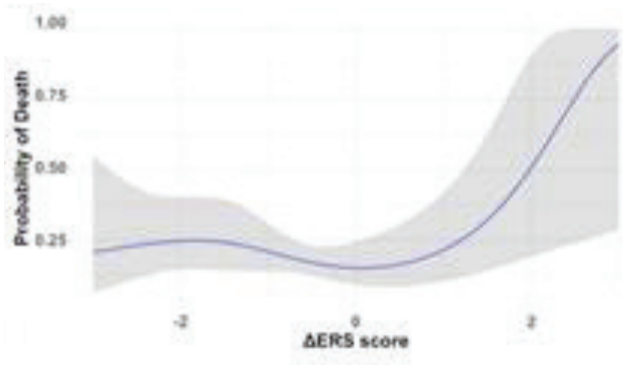


Figure B

SCOMPENSO CARDIACO 947
CARDIOPATIE CONGENITE NELL´ADULTO (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE) (IMAGING CARDIOVASCOLARE)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
INTERVENTISTICA STRUTTURALE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)

UNPLUGGED: A COMPLEX CASE OF RECURRENT PARAVALVULAR LEAK AND DECOMPENSATED HEART FAILURE

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(b) UNIVERSITA' CATTOLICA DEL SACRO CUORE, ROMA

A 49-year-old male, active smoker, with permanent atrial fibrillation (AF) and chronic heart failure (HF) on optimized therapy was admitted to the CICU for progressive dyspnea, abdominal swelling, and recent hemolysis. History included congenital mitral valve disease and atrial septal defect repaired with a patch; the patient underwent mitral valvuloplasty at 6 months; bioprosthetic valve replacement at 1 year; two replacements in adolescence; mechanical valve at 13 (1988); re-replacement with 23 mm Björk–Shiley valve at 24 (1999) after embolic retinal artery occlusion due to pannus. In 2021, a severe anterolateral paravalvular leak was treated percutaneously with the implantation of two vascular plugs with a trans-apical approach with a trivial residual paravalvular leak.

One month before the hospitalization, routine transthoracic echocardiography (TTE) showed a well-functioning mitral prosthesis with suspected leak and biventricular dilation with worsening systolic function. Cardiac computed tomography (CT) confirmed suspected paraprosthetic leak.

Laboratory results revealed acute hemolytic anemia and elevated NT-proBNP, suggestive of acute HF. Repeated TTE confirmed previous findings: LV ejection fraction (LVEF) 30%, right ventricular [RV] overload, atrialized mitral prosthesis with normal disc motion, mildly increased transprosthetic gradient (9 mmHg), anterior paravalvular leak and marked right ventricular dilation accompanied by severe RV systolic dysfunction, severe tricuspid regurgitation and severe pulmonary hypertension with estimated PASP ~100 mmHg. Given severe LV dysfunction on TTE, a Levosimendan cycle was initiated with clinical and echocardiographic improvement (LVEF 42%).

TOE showed partial plug detachment and eversion into the LA, with severe eccentric regurgitation and increased prosthetic gradient. Fluoroscopy confirmed near-total plug dislodgement.

Work-up for heart transplantation (HTx) was started. After 4 days of intravenous nitroprusside, right heart catheterization (RHC) showed mixed PH with precapillary (pulmonary vascular resistance [PVR] 5.61 Wood units) and postcapillary (pulmonary capillary wedge pressure [PCWP] 22 mmHg) components, with no significant mPAP response to vasodilator challenge. The case was reviewed by the Heart Team. Given prohibitive surgical risk and failure of percutaneous options, the patient was referred for Heart Transplantation (HTx) evaluation. The patient was subsequently referred to an advanced heart failure and heart transplantation (HF/HTx) center for further evaluation and management.

This case illustrates the value of multimodal imaging in complex HF. This case emphasizes the need for personalized outpatient follow-up, especially in complex clinical scenarios with limited therapeutic options available. Early identification of prosthetic devices complications (e.g., dysfunction, thrombosis, displacement, endocarditis) is mandatory, chiefly in young patients with advanced HF, to allow timely intervention and improve outcomes.

SCOMPENSO CARDIACO 434
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
BIOMARCATORI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)

USING ELECTROCARDIOGRAPHY AND BIOMARKERS FOR MEASURING DISEASE PROGRESSION IN ATTR-CM: LESSONS LEARNED FROM A CLINICAL CASE

Martina Virili (a, b), Marco Bressan (a, b), Luca Bordignon (a, b), Franca Dore (c), Rossana Bussani (d, e), Gianfranco Sinagra (a, b), Aldostefano Porcari (a, b, f)
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Transthyretin amyloid cardiomyopathy (ATTR-CM) is a multisystem, progressive infiltrative disease caused by the deposition of wild type or variant transthyretin protein in the form of amyloid fibrils within the myocardial extracellular space. At present, effective therapy is available. Tafamidis stabilises the transthyretin tetramer reducing formation of TTR amyloid. Ongoing assessment of disease progression is critical to determine the appropriate time to initiate therapy. A 77-year-old man was referred to our institution following a first hospitalization for congestive heart failure. At discharge, infiltrative cardiomyopathy was suspected. His medical history included permanent atrial flutter, severe carotid atherosclerosis, hypertension, and hypercholesterolemia. At initial evaluation, the patient was classified as NYHA class II. The 12-lead ECG demonstrated atrial flutter with left anterior fascicular block and poor R-wave progression in the precordial leads. Transthoracic echocardiography showed increased biventricular wall thickness (max 17 mm), a granular sparkling pattern, preserved LVEF, and reduced GLS with an apical sparing pattern. Under suspicion of cardiac amyloidosis, a bone scintigraphy with SPECT/CT was performed. Cardiac amyloid deposition was confirmed (Perugini grade 2) with no evidence of monoclonal proteins in serum or urine. Genetic testing excluded TTR mutations, supporting a diagnosis of wild-type ATTR-CM. Concomitantly, electromyography confirmed left carpal tunnel syndrome. Conventional heart failure therapy, including mineralocorticoid-receptor antagonists, was started. Over the following 6–12 months, the patient improved to NYHA class I and showed good exercise tolerance at 6MWT, requiring only a low dose of diuretics. NT-proBNP levels decreased significantly (171 → 101 ng/L) and transthoracic echocardiography revealed no signs of progression. However, the 12-lead ECG documented a tendency toward low QRS voltages and anterolateral negative T waves appeared. Persistent elevation of troponin levels further suggested ongoing myocardial injury, not adequately captured by clinical or natriuretic peptide assessment. Tafamidis therapy was not initiated at this stage; however, close monitoring was established to avoid missing the first clinical signs of progression of the disease. This case report illustrates an unusual progression of wild-type ATTR-CM, where NT-proBNP levels are normal, and echocardiographic findings and clinical status fail

to reflect the underlying myocardial damage. The potential to miss early signs of disease progression and to delay the start of disease-modifying therapy is high. Ongoing myocardial injury, reflected by persistent troponin elevation and electrocardiographic changes, should prompt clinicians to stay alert and establish close clinical surveillance.

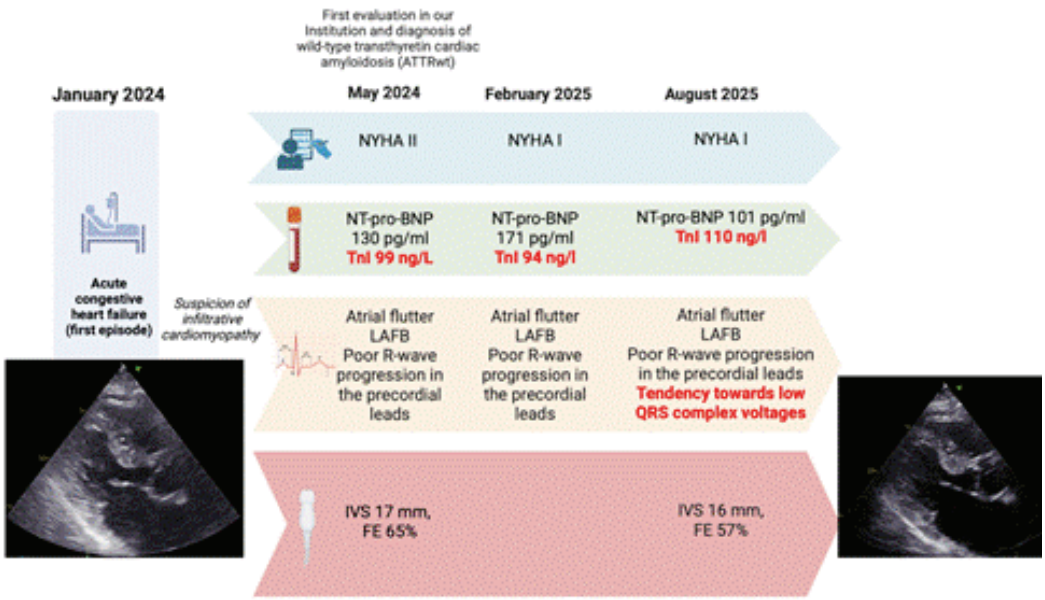


Figure 1

CardioSic

SCOMPENSO CARDIACO 1093
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)
CARDIOPATIA ISCHEMICA CRONICA (CARDIOPATIA ISCHEMICA)

ROLE OF THALIDOMIDE IN PATIENT WHITH HEMORRHAGE DUE TO ANGIODYSPLASIA SECONDARY TO LVAD SUPPORT IN ADVANCED HEART FAILURE

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INTRODUCTION. As well known, patients with LVADs may develop gastrointestinal bleeding consequent to the formation of angiodysplasias in approximately 15–30% of cases, with about 40% of these experiencing recurrence, often requiring hospitalization and, on average, transfusion of 2–4 units of packed red blood cells. The etiopathogenesis is mainly linked to TNF-alpha overexpression, itself secondary to increased wall stress caused by continuous flow, as well as to degradation of vWf, both mechanical and related to the cleavage protein ADAMTS-13. Contemplated first-line treatments, once an accurate diagnosis has been made, include endoscopic investigations with direct hemostasis of bleeding sites, reduction of antiplatelet dosage and INR target, administration of vWf, and anti-hemorrhagic drugs such as octreotide (somatostatin analogue), desmopressin (vasoconstrictor), thalidomide (anti-TNF-alpha), and bevacizumab (anti-VEGF). The cases of angiodysplasias treated with thalidomide reported in the literature amount to about 270, but only 24 of these involved LVAD Carriers, and only 17 of which had a follow-up longer than 12 months. Here, we report the case of a patient who did not respond to first-line treatments and was subsequently treated with thalidomide.

CASE REPORT. A 67-year-old man with permanent atrial fibrillation, idiopathic thrombocytopenia (100,000/μL), and hypothyroidism under replacement therapy. Due to dilated hypokinetic cardiomyopathy with preserved coronary arteries, associated with pulmonary hypertension, he underwent implantation of a Jarvik 2000 LVAD in 2016 as destination therapy. After a period of clinical stability, in 2024 he began to experience recurrent hospitalizations every three to four months, all due to severe anemia. During these admissions, multiple endoscopic examinations were performed with removal of gastro-colic polyps, though often without identification of the bleeding source. During his most recent admission, repeat upper endoscopy and colonoscopy were negative, while capsule endoscopy revealed telangiectasias and blood within the small intestine. Despite repeated endoscopic examinations with serial polypectomies, reduction of the INR target, and administration of octreotide, the patient continued to suffer from recurrent severe anemia, along with all the complications of frequent hospitalizations, including one episode of septic shock. In the absence of further therapeutic alternatives, and after thoroughly explaining the behavioral precautions to be followed, therapy with thalidomide was initiated at 50 mg/day and subsequently titrated to 100 mg/day, with no adverse effects observed. Given the stability of hemoglobin levels (approximately 10 g/dL), the patient was discharged. Weekly, then biweekly, clinical and hematologic follow-up showed a rising Hb trend (11.6 g/dL on 09/11/2025), with no adverse events requiring dose reduction or discontinuation of the drug.

CONCLUSIONS. Thalidomide treatment for bleeding secondary to intestinal angiodysplasias in LVAD patients, although requiring adequate patient education and counseling regarding behavioral precautions, can be considered an effective and safe therapeutic option. However, given that no controlled studies are currently available to justify the ad-hoc use of this drug, its prescription remains off-label.

SCOMPENSO CARDIACO 885
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)
SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO)
ECMO (ASSISTENZA CARDIACA IN ACUTO)
PROGNOSI (SCOMPENSO CARDIACO)

HEART FAILURE BEYOND REPAIR: TRANSPLANTATION AFTER TYPE A AORTIC DISSECTION WITH RESIDUAL VENTRICULAR SEPTAL DEFECT

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Background: End-stage heart failure (HF) is the final common pathway of diverse cardiovascular diseases and remains the leading indication for heart transplantation (HTx). Although ischemic and dilated cardiomyopathies account for most advanced HF cases, structural complications following complex aortic surgery are an uncommon cause of refractory HF. Reports linking acute type A aortic dissection (TAAD) repair to subsequent HTx are exceedingly rare. We present a case of HTx following staged management of TAAD complicated by residual septal defects, coronary compression, and recurrent cardiogenic shock.

Case presentation: A 52-year-old man presented with acute Stanford type A aortic dissection and underwent emergency ascending aortic replacement with reimplantation of the brachiocephalic trunk under circulatory arrest with selective cerebral perfusion (Kazui technique). At the same operation, a direct atrial septal defect closure was performed. His initial recovery was uneventful. Months later, follow-up imaging revealed a distal anastomotic pseudoaneurysm, prompting implantation of a custom-made thoracic endoprosthesis. The postoperative course was complicated by severe hypotension, with echocardiography and ventriculography confirming a new ventricular septal defect (VSD) and coronary angiography showing extrinsic compression of the left anterior descending artery. Despite intra-aortic balloon pump (IABP) insertion, persistent cardiogenic shock necessitated urgent reoperation with attempted Amplatzer device closure. The patient required veno-arterial extracorporeal membrane oxygenation (VA-ECMO), which could not be discontinued, and he was therefore listed for urgent HTx. Echocardiography demonstrated residual apical VSD and severe left ventricular dysfunction, and in the ensuing months he experienced recurrent hospitalizations for decompensated HF despite guideline-directed medical therapy (GDMT). Right heart catheterization documented elevated filling pressures, depressed cardiac index, and reduced pulmonary artery pulsatility index (PAPi), confirming advanced HF physiology. He subsequently underwent successful orthotopic transplantation. At six months, he remained in NYHA class I with preserved graft function and no rejection.

Discussion: This case illustrates the rare progression from TAAD repair to end-stage HF requiring HTx. Unlike reports of TAAD developing after HTx or in systemic vasculitis (e.g., Behçet's disease), our patient's decline was driven by residual septal defects, coronary compression, and recurrent shock-induced remodeling. Technical challenges of HTx after aortic surgery include mediastinal adhesions, graft integrity, and cannulation strategy.

Conclusion: Cardiac transplantation remains feasible and lifesaving even in patients with complex aortic surgical histories. Early hemodynamic assessment and timely referral to a transplant center are essential to optimize outcomes.

CardioSic

SCOMPENSO CARDIACO 330
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
BIOMARCATORI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)

TREND OF ECHOCARDIOGRAPHIC PARAMETERS, VENTRICULAR-ARTERIAL COUPLING, AND BIOMARKERS IN ADVANCED HEART FAILURE PATIENTS UNDERGOING INTERMITTENT HOME-BASED LEVOSIMENDAN INFUSION

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Background: Despite effective therapies, many heart failure (HF) patients progress to advanced stages with poor prognosis, requiring specialized care. Levosimendan, a Ca^{2+}-sensitizing inotrope with vasodilatory and cardioprotective effects, is occasionally used to improve functional status and prevent decompensation. However, its long-term efficacy remains unclear.

Purpose: To assess the trends in left ventricular ejection fraction (LVEF), global longitudinal strain (GLS), ventricular-arterial coupling (VAC), and cardiac biomarkers in advanced heart failure (AdvHF) patients undergoing intermittent home-based levosimendan infusion, focusing on changes from baseline to one month.

Methods: This observational, single-center pilot study included AdvHF patients regularly monitored at the HF outpatient clinic of Papa Giovanni XXIII Hospital, Bergamo, Italy. Participants received optimized guideline-directed medical therapy and periodic intravenous levosimendan infusions over 48 hours (12.5 mg total). LVEF, GLS, and natriuretic peptides (BNP, NT-proBNP) and ST2 levels were measured at the time points: baseline, 48 hours, and 21 days. VAC was assessed using the Ea/Ees ratio.

Results: The study included 21 patients (median age 69, IQR 64-74, 67% male). The median LVEF was 30% (IQR 23-37) and GLS was -8.3% (IQR -9.3 to -4.95). Most patients were on ARNI (81%), beta-blockers (90.8%), MRAs (95%), SGLT2 inhibitors (67%), and vericiguat (18.8%). Eleven patients began levosimendan treatment before 2024, 10 started after hospitalization for worsening HF, and five were receiving it as a bridge to heart transplantation.
LVEF significantly improved from baseline to 48 hours [median 30% (IQR 27-41), p=0.003] and worsened slightly between 48 hours and 21 days [median 30% (IQR 25-37), p=0.004], with no significant change from baseline to 21 days [median 30% (IQR 25-37), p=0.567]. GLS showed a trend towards more negative values at 48 hours and 21 days, though not statistically significant. VAC parameters (Ees, Ea, and Ea/Ees ratio) and biomarkers (BNP, NT-proBNP, and ST2) showed minimal changes, although some inter-individual variability was observed.

Conclusion: Intermittent levosimendan infusion may offer clinical benefits in AdvHF. A significant inotropic effect was observed, leading to rapid improvement

in LVEF within 48 hours, which persisted at 21 days, supported by a trend towards more negative GLS values. Although the study's small sample size, the high individual variability, and the potential drug tolerance in nearly half of the cohort (receiving levosimendan for over a year) may affect the results, these findings may suggest that levosimendan could be a valuable long-term therapeutic option for AdvHF patients, potentially improving clinical management and quality of life. However, further research is needed to confirm and expand on these findings.

SCOMPENSO CARDIACO 781
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)

IMPATTO DI UN INTERVENTO EDUCATIVO SULLA GESTIONE FARMACOLOGICA DELL'HFREF IN ITALIA: RISULTATI DEL REGISTRO MULTICENTRICO OPTIMA-HF

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Introduzione: Le più recenti linee guida europee per la gestione dell'insufficienza cardiaca cronica raccomandano, nei pazienti con insufficienza cardiaca cronica a frazione di eiezione ridotta (HFrEF), un approccio farmacologico basato su quattro farmaci fondamentali, da avviare rapidamente e successivamente titolare per modificare la progressione della malattia. In questo contesto, il registro OpTIMa-HF è stato ideato per valutare la gestione dei pazienti con insufficienza cardiaca in un contesto di mondo reale.

Obiettivi: L'obiettivo del registro OpTIMa-HF è raccogliere dati su pazienti con HF in diversi setting assistenziali. La presente analisi si focalizza sui pazienti con HFrEF arruolati nella fase prospettica (T1), confrontati con quelli della fase retrospettiva (T0), con l'obiettivo di valutare l'impatto dell'intervento educativo sulle scelte terapeutiche nella pratica clinica reale.

Metodi: OpTIMa-HF è un registro osservazionale e multicentrico condotto in 29 centri italiani, presso ambulatori ospedalieri e territoriali specializzati nel trattamento dell'insufficienza cardiaca. Il protocollo ha previsto tre fasi: una raccolta dati retrospettiva (T0, gennaio–ottobre 2022), un programma formativo rivolto ai cardiologi e una successiva raccolta prospettica su pazienti consecutivi (T1, settembre–novembre 2023). Sono stati analizzati i pazienti con HFrEF arruolati nella fase T1 e confrontati con quelli della fase T0. L'analisi si è focalizzata sui tassi di prescrizione di ARNI, ACEi/ARB, beta-bloccanti, antagonisti del recettore dei mineralcorticoidi (MRA) e SGLT2i e sulle combinazioni terapeutiche (in particolare la quadrupla terapia), in base alle linee guida europee.

Risultati: Sono stati analizzati 1390 pazienti HFrEF a T0 e 1292 a T1. I pazienti di T1 erano lievemente più anziani (70,5 vs 69,5 anni; p=0,032) e presentavano una minore prevalenza di eziologia ischemica (58,4% vs 65,3%; p<0,001) e di fibrillazione atriale (19,2% vs 28,7%; p<0,001). Rispetto a T0, a T1 si è osservato un incremento significativo delle prescrizioni di ARNI (72,2% vs 75,8%; p=0,035), MRA (75,8% vs 81,4%; p=0,01) e SGLT2i (63,2% vs 80,3%; p<0,001). La proporzione di

pazienti trattati con quadrupla terapia ha raggiunto il 53,4% (vs 40,6% a T0; p<0,001). La percentuale di pazienti non in trattamento con ARNI o SGLT2i pur senza controindicazioni si è ridotta, in particolare per gli SGLT2i (31,8% vs 17,1%; p<0,001). Non sono emerse variazioni significative nell'ottimizzazione dei dosaggi di ARNI, ACEi/ARB, beta-bloccanti e MRA tra le due fasi.

Conclusioni: L'intervento educativo implementato nell'ambito del registro OpTIMa-HF ha contribuito a un miglior allineamento della pratica clinica alle raccomandazioni delle linee guida europee, con incremento delle prescrizioni di ARNI, MRA e soprattutto SGLT2i, nonché dell'uso della quadrupla terapia. Persistono tuttavia margini di miglioramento nell'ottimizzazione dei dosaggi dei farmaci cardine per HFrEF.

SCOMPENSO CARDIACO 946
ARITMIE SOPRAVENTRICOLARI (ESCLUSA FA) (ARITMIE)
IMAGING MIOCARDICO-PERICARDICO
(MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
MIOCARDITI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO

INTERESSAMENTO CARDIACO NELLA SCLEROSI SISTEMICA

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La sclerosi sistemica è una malattia autoimmune caratterizzata da fibrosi, alterazioni vascolari e disfunzione immunitaria, con frequente interessamento viscerale. Il coinvolgimento cardiaco, spesso subclinico, rappresenta una delle principali cause di morbilità e mortalità.

Un ragazzo di 16 anni di origine africana, senza fattori di rischio cardiovascolari, si presenta in pronto soccorso per angina e dispnea ingravescente. L'ecocardiogramma documenta una frazione di eiezione severamente ridotta (25-30%) con ipocinesia diffusa, minimo versamento pericardico e dilatazione delle sezioni destre. L'ECG (Fig.1) mostra ritmo sinusale alternato a tachicardia atriale multifocale ed extrasistolia sopraventricolare e ventricolare. Gli enzimi di necrosi risultano elevati, con troponina ad alti livelli persistenti. La TC torace evidenzia versamento pleurico e addensamenti a vetro smerigliato bilaterali.

Nel sospetto iniziale di perimiocardite infettiva si avvia terapia antibiotica e anti-infiammatoria, ma il pannello infettivologico risulta negativo. Successivamente emergono ANA ad alto titolo e positività anti-Scl-70. All'esame obiettivo si osservano segni cutanei compatibili con sclerosi sistemica diffusa, sebbene in assenza di fenomeno di Raynaud. La risonanza magnetica cardiaca (Fig.2) documenta edema miocardico e un esteso pattern di late gadolinium enhancement, suggestivo di miocardite autoimmune. La PET esclude la sarcoidosi. Si conferma quindi diagnosi di sclerosi sistemica con severo coinvolgimento cardiaco.

Considerato l'alto rischio, si opta per Rituximab come terapia immunosoppressiva, preferito alla ciclofosfamide per il miglior profilo di sicurezza cardiaca, con micofenolato come terapia ponte. Dopo due infusioni si osserva una riduzione significativa dei livelli di troponina, pur senza recupero immediato della funzione ventricolare.

Il caso è peculiare per l'età giovanissima di esordio, l'assenza del fenomeno di Raynaud e il coinvolgimento cardiaco come manifestazione iniziale. La diagnosi è stata resa possibile grazie all'impiego di tecniche avanzate come RM e PET, che hanno permesso di caratterizzare il danno miocardico autoimmune ed escludere diagnosi alternative. La scelta di Rituximab, supportata da dati limitati ma promettenti, suggerisce un ruolo rilevante delle cellule B nella patogenesi della

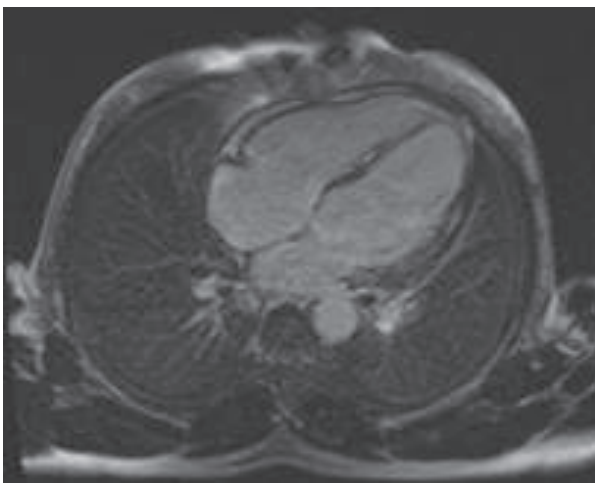


Figura 1

miocardite associata a sclerosi sistemica. Questo caso evidenzia l'importanza di mantenere un alto indice di sospetto anche nei giovani, e di un approccio multidisciplinare e precoce per migliorare la prognosi di una malattia complessa e spesso sottodiagnosticata.

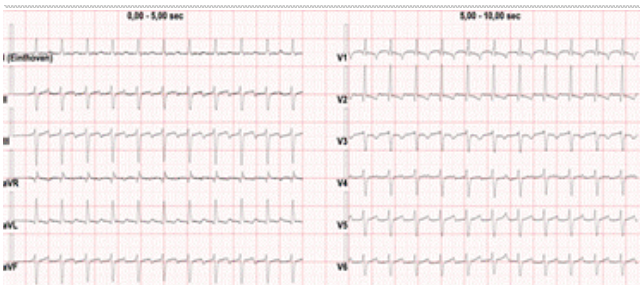


Figura 2

CardioSic

SCOMPENSO CARDIACO 88
ELETTROSTIMOLAZIONE (ARITMIE)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)
IPERTENSIONE POLMONARE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)

THE CARDIAC CONTRACTILITY MODULATION (CCM) IN LEFT HEART FAILURE & PULMONARY HYPERTENSION: AND ADOPTIVE FAMILY FOR AN ORPHAN DISEASE?

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Heart failure (HF) represents a pandemic, burdened by high morbi-mortality and an alarming trend despite the substantial efforts of the scientific community. Regardless of left ventricular systolic function (HFpEF vs. HFrEF), the onset of pulmonary hypertension (PH) often represents the "Sword of Damocles" for heart failure patients, leading to remodeling of the pulmonary arteries ("barrage"), until the increased afterload exceeds the RV's adaptive capacity, ventricular-arterial uncoupling occurs and, finally, right heart failure and death. This condition, called left heart disease pulmonary hypertension (PH-LHD), especially in its combined pre- and post-capillary (cpcPH) phenotype, often results in patient's death. Interestingly, it has been recently shown how heart failure is associated with up-regulation of myocardial fetal and stretch-response genes and down-regulation of Ca2+ cycling genes. In such landscape, many trials have shown how a Cardiac Contractility Modulation (CCM) may exerts beneficial effects on myocardial calcium handling, reverses maladaptive gene expression and improving systolic function. These unique mechanisms makes CCM a promising option for patients with left ventricular ejection fraction between 25% and 45% , still symptomatic (NYHA class II-IV) despite optimal medica therapy (OMT), without indication for resynchronization therapies. Concerning PH, CCM has already been shown, although in small human cohorts, to reduce pulmonary systolic pressure, improve echocardiographic parameters of systolic function (TAPSE, S' at TDI and RVFWLS) and ventricular-arterial coupling, finally leading to reverse right heart remodeling (RHRR), associated with a significant (>50%) reduction in pulmonary vascular resistance. Based on such rationale, our study protocol, "The CCM-PH-LHD Protocol- Coupling Right Ventricle & Pulmonary Circulation with CCM in Patients with Pulmonary Hypertension due to Left Heart Disease", was developed. Our aim is to enroll heart failure patients with preserved (HFpEF) and mildly reduced ejection fraction (HFmrEF) and high likelihood of PH-LHD. After identifying and treating any potential secondary causes of HF, patients symptomatic despite an adequate period of optimal medical therapy, up-titrated to the maximum tolerated dose, will undergo CCM implantation, right heart catheterization and, if necessary, endomyocardial biopsy, cardiopulmonary exercising test, cardiac magnetic resonance and echocardiogram in baseline conditions; they will be subsequently re-evaluated at 12 +/- 6 months with the same investigations. The primary endpoint will be to prove the efficacy of CCM in improving the hemodynamics of the patient with PH-LHD, with consequent RHRR; secondary endpoints will be to confirm the already known benefits on quality of life, functional capacity and reduction in hospitalizations. Our first in its kind protocol aspires to bridge a

critical gap in current clinical evidence by rigorously assessing the effects of CCM on pulmonary circulation and right heart function through a comprehensive and multimodal investigative framework. Should our hypotheses be confirmed, this research will not only reaffirm the established benefits of CCM on quality of life and functional capacity, but also potentially herald a new era in the management of this orphan disease.

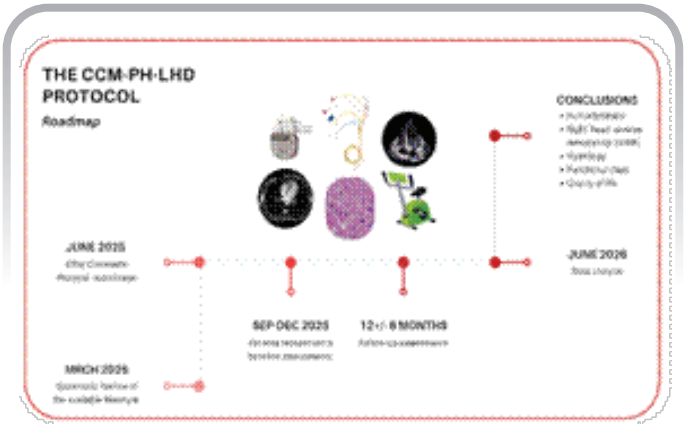


Figure 1

SCOMPENSO CARDIACO 412
INFIAMMAZIONE E IMMUNITÀ (ATEROTROMBOSI)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
BIOLOGIA MOLECOLARE CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)
BIOLOGIA CELLULARE (GENETICA E BIOLOGIA MOLECOLARE)
GENETICA CARDIOVASCOLARE (GENETICA E BIOLOGIA MOLECOLARE)

IL-1BETA AND LPS INDUCE SIMILAR REVERSIBLE CARDIAC DYSFUNCTION IN MICE: POINTING TO A CONVERGENT INFLAMMATORY CASCADE

Eugenio Refrigeri (a, b), Martina Toldo (b), Jazmin Kelly (b), Golnar Eftekhari (b), Antonio Abbate (b), Stefano Toldo (b)
(a) UNIVERSITA' CAMPUS BIO-MEDICO DI ROMA; (b) UNIVERSITY OF VIRGINIA

Introduction. Interleukin-1 (IL-1) activity is increased in several cardiovascular diseases, including heart failure (HF). IL-1 promotes cardiac dysfunction through the type 1 IL-1 receptor (IL-1RI), part of the IL-1R/toll-like receptor (TLR) family. Lipopolysaccharide (LPS), a gram-negative bacterial product, promotes sepsis and induces cardiac dysfunction by activating TLR4. The IL-1R and TLR4 have different structures, but share some of the intracellular signaling through Myeloid Differentiation Factor 88 (MyD88) and nuclear factor kappa B (NF-kB) activation (Figure).

Hypothesis. We hypothesize that by sharing intracellular signaling components, IL-1 and LPS induce a similar temporal profile of dysfunction in mice.

Methods. Male CD1 mice (N=6-7/group), age 8-10 weeks, received a single intraperitoneal injection of LPS (5 mg/kg) or IL-1b (3 mg/kg). Left ventricular (LV) function was assessed in anesthetized mice (isoflurane 1.5-3.0 %) by echocardiography using the VEVO F2 system, using M-mode imaging in the short-axis view at the mid-ventricular level. We measured LV fractional shortening (LVFS) at baseline (before injections) and at 2-, 4-, and 24-hours post-injection.

Results. LPS administration induced a reproducible and reversible reduction in cardiac contractility, with no effect at two hours, maximal impairment at 4 hours, recovery by 24 hours. This pattern closely mirrored the contractile dysfunction induced by IL-1b administration (Figure).

Interpretation. The similar, reversible left ventricular dysfunction induced by both LPS and IL-1 suggests a shared mechanism of action. Although these molecules bind distinct extracellular receptors—IL-1R for IL-1 and the TLR4/CD14 complex for LPS—their intracellular signaling converges, likely at the adaptor protein MyD88. Subsequent NF-κB activation and transcription of proinflammatory genes may mediate myocardial depression. These findings implicate a common intracellular cascade as a key driver of inflammation-induced cardiac dysfunction, particularly in HF, a dysfunction that is fully reversible, with a similar pattern.

Implications. The convergence of IL-1R and TLR4 signaling on a shared intracellular pathway involving MyD88 and NF-κB highlights this intracellular cascade as a central mechanism in inflammation-driven cardiac dysfunction. Targeting this converging pathway may offer promising avenues for future research and therapeutic strategies in HF and septic cardiomyopathy.

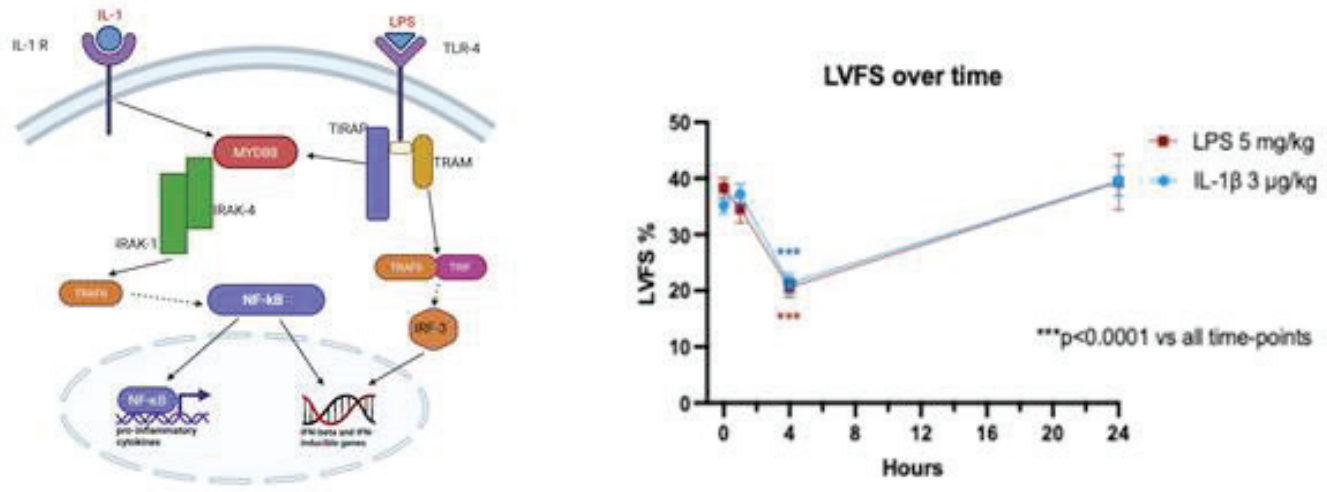

IL-1
IL-1 R
LPS
TLR-4
TIRAP
TRAM
MYD88
IRAK-4
IRAK-1
NF-kB
IRF-3
LVFS over time
LPS 5 mg/kg
IL-1β 3 µg/kg
LVFS %
Hours
***p<0.0001 vs all time-points

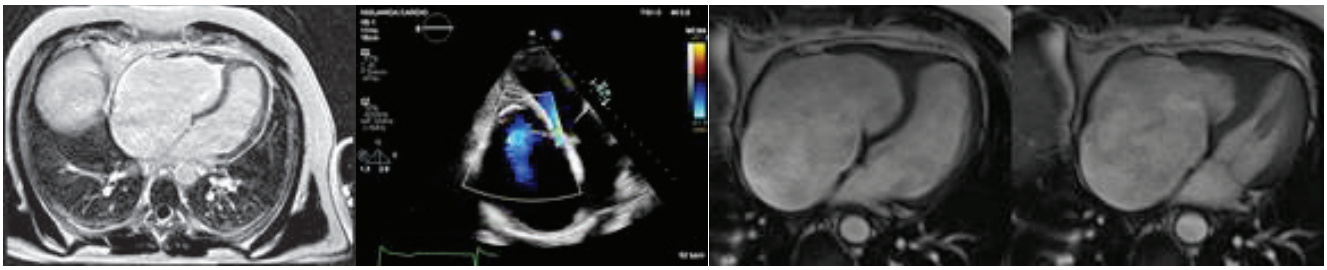
Figure 1

SCOMPENSO CARDIACO 192
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)

PROGRESSIVE RIGHT HEART FAILURE IN LOEFFLER ENDOCARDITIS: A CASE REPORT

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(a) OSPEDALE NIGUARDA; (b) UNIVERSITÀ DEGLI STUDI DI MILANO-BICOCCA;
(c) UNIVERSITÀ DEGLI STUDI DELLA CAMPANIA LUIGI VANVITELLI

We report the case of a 48-year-old male with chronic eosinophilic leukaemia (CEL) diagnosed in 2000. He developed multiorgan damage, including chronic kidney disease (CKD) and liver disease with recurrent ascites. Cardiac f/u began at CEL diagnosis. He remained stable until 2015, when he underwent two atrial tachycardia ablations, successful for several years. Cardiac magnetic resonance imaging suggested Loeffler endocarditis, showing extensively fibrotic right ventricle (RV) endocardium on LGE, mildly impaired RV function and severe tricuspid regurgitation (TR). Left ventricle (LV) was preserved. Cardiac CT excluded coronary disease. In April 2025 the patient developed dyspnea (NYHA IIb). Transthoracic (TTE) and transoesophageal echocardiography showed torrential TR not amenable to percutaneous repair. Therapy included ARNI, beta blocker, MRA, furosemide 212 mg, apixaban, amiodarone and imatinib. Two months later, he presented to the emergency dept with severe dyspnea, massive ascites and acute kidney injury on CKD. Labs: normal blood count, serum creatinine 5.5 mg/dL (baseline 3), bilirubin 2 mg/dL, electrolytes normal, NT-proBNP 7950 pg/mL. ECG: junctional rhythm. He was stabilized and referred to our centre for advanced heart failure therapy (AHFT). On admission, the patient remained congested, and IV furosemide was continued. A 5-L paracentesis yielded negative cytology and microbiology. TTE confirmed severely dilated RV (54 × 61 mm) and atrium (48 cm^2), paradoxical septal motion, hypokinetic RV (TAPSE 10, S' 8.5, FAC 29%) and torrential TR (vena cava 22 mm). LV function was normal. Right heart cath revealed reduced cardiac index (Fick 2.04 L/min/m^2) with slightly elevated filling pressure (wedge 14 mmHg), normal pulmonary pressures (24/15/19 mmHg), normal pulmonary resistance (1.3 WU) and elevated right atrial pressure (19 mmHg). Dopamine (2 mcg/kg/min) improved perfusion and diuresis. Clinical stability was reached with weight loss (−19 kg), waist reduction (−11 cm), and improved labs (NT-proBNP 1600, creatinine 1, bilirubin 1.1, venous Oβ saturation 60%). Multisystem AHFT workup was undertaken. Portal hypertension and decompensated liver disease were excluded. Liver biopsy revealed extensive fibrosis (F2–F3) without cirrhosis or malignancy. MELD-XI was 48. Haematology confirmed longstanding CEL remission. Imatinib was discontinued, with negative monthly molecular monitoring in June–July 2025. Renal function normalized under inotropes. Extracardiac and serologic workup was negative. Blood type: B Rh+. Discussed by the transplant team, no absolute contraindications to heart transplantation were found. Combined heart–liver transplantation was deemed unnecessary given the absence of cirrhosis. LVAD was excluded. The patient was listed for urgent heart transplantation, as INTERMACS profile III, after >7 days of inotropic support.



Figures

SCOMPENSO CARDIACO 347
ASSISTENZA CARDIACA IN ACUTO NEL DIPARTIMENTO DI EMERGENZA (ASSISTENZA CARDIACA IN ACUTO)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
PROGNOSI (SCOMPENSO CARDIACO)
ASSISTENZA INTENSIVA CARDIOVASCOLARE IN ACUTO (ASSISTENZA CARDIACA IN ACUTO)

CONGESTION, ATRIAL FIBRILLATION AND PROGNOSIS IN ACUTE HEART FAILURE

Letizia Rosa Romano (a, b), Antonio Curcio (b, c), John Cleland (a), Andrew Clark (d), Pierapolo Pellicori (a)
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Introduction: Congestion is a key driver of symptoms, signs and prognosis in heart failure (HF) and an important therapeutic target. Few studies have compared congestion profiles in patients with HF with and without atrial fibrillation (AF).

Hypothesis: We hypothesised that AF is associated with greater congestion in patients with HF.

Methods: Congestion was systematically assessed, clinically and by ultrasound in patients already assuming guideline-directed medical therapy. Patients were classified as clinically congested if they had at least one of the following: elevated jugular venous pressure, pulmonary congestion, or peripheral oedema, regardless of severity. Ultrasound congestion was defined by the presence of a dilated inferior vena cava (IVC; >20 mm), lung B-lines >14, or a jugular venous diameter Valsalva/rest ratio (JVDr) <4. Primary outcome was the composite of death or hospitalisation for worsening HF.

Results: of the 342 patients assessed (median age 73 years (IQR 68–82), 67% menale), 48% had AF. Patients with AF were older and had a higher median left ventricular ejection fraction (50 (38-57)% vs 44 (33-55)%, p=0.003). However, they had more evidence of congestion, including more severeworse symptoms, larger median left atrial volumes (102 (82-128) vs 72 (51-92) ml), higher NT-proBNP (1916 (1170-3504) vs 568 (256-1615) ng/L), more B-lines (10 (3-25) vs 4 (1-11)), a larger IVC diameter (23 (20-26) mm vs 17 (15-20) mm), and a lower JVDr (4.0 (2.4-6.0) vs 6.2 (4.6-7.9) (all p<0.001).

AF was associated with a higher risk of the primary endpoint (HR 1.51, 95% CI 1.06–2.15, p=0.022; log-rank p=0.040). However, after adjusting for clinical covariates and NT-proBNP this association was no longer significant (HR 1.03, 95% CI 0.70–1.50, p=0.90). However, independent of AF, clinical (HR 1.76, 95% CI 1.20–2.56, p=0.003) and ultrasound-assessed congestion (HR 2.10, 95% CI 1.42–3.12, p<0.001) predicted adverse outcomes.

Conclusions: In patients with HF, AF is associated with greater congestion, and this may account for their worse prognosis. Further studies are needed to determine whether ultrasound assessment of congestion can improve the management and outcomes of patients with HF and AF.

SCOMPENSO CARDIACO 673
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
INTELLIGENZA ARTIFICIALE (TELECARDIOLOGIA ED E-HEALTH)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
PROGNOSI (SCOMPENSO CARDIACO)

AI-DRIVEN ECHOCARDIOGRAPHIC ASSESSMENT OF ARRHYTHMIC RISK IN ACUTE HEART FAILURE

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Background: Arrhythmias frequently complicate the course of acute heart failure (AHF), particularly in the context of elevated atrial pressures and congestion, leading to hemodynamic instability, increased thromboembolic risk, and prolonged hospitalization. Timely assessment of left atrial (LA) function may provide valuable insights into congestion-related atrial dysfunction and arrhythmic risk. However, standard echocardiography in emergency settings is often limited by time constraints. Artificial intelligence (AI)-integrated echocardiographic tools may facilitate rapid image acquisition and reproducible assessment, supporting risk stratification in congested AHF patients.

Aims: This study investigated the role of AI-assisted echocardiography for early evaluation of LA function in patients admitted with AHF and explored the relationship between dynamic changes in LA strain, congestion, and arrhythmic complications during hospitalization.

Methods: We prospectively enrolled 43 patients admitted to our academic hospital with AHF (mean age 66±13 years, 50% male, median LVEF 46% [IQR 21]). All underwent standard and AI-assisted echocardiography within 24 hours of admission. Acquisition time and reproducibility were recorded. LA strain indices—reservoir (LASr), conduit (LAScd), and contractile (LASct) function—were measured at admission and before discharge. Variations (ΔLASr, ΔLAScd, ΔLASct) were analyzed in relation to in-hospital outcomes, including new-onset atrial fibrillation (AF) and systemic thromboembolism.

Results: The mean hospital stay was 6±3 days. AI-assisted echocardiography reduced acquisition time compared with standard echocardiography (3.5±1.2 vs. 12.4±2.4 minutes, $p<0.001$), ensuring feasibility in AHF patients. LA strain parameters improved significantly (LASr: 23.6%→26%; LAScd: –12%→–13%; LASct: –10.8%→–13%; all $p<0.001$), reflecting LA unloading and congestion relief with AHF therapy. During hospitalization, 9 patients (20.9%) developed new-onset AF and 2 (4.6%) experienced systemic thromboembolism. Patients without AF showed greater improvements in ΔLASr (7.2±1.9 vs. 2.9±1.1), ΔLASct (4.6±1.3 vs. 2.3±0.9), and ΔLAScd (4.1±1.3 vs. 2.6±0.9) compared to those who developed AF (all $p<0.001$). Logistic regression confirmed that increases in ΔLASr (OR 0.121; 95% CI 0.016–0.903; $p=0.039$), ΔLASct (OR 0.022; 95% CI 0.001–0.49; $p=0.016$), and ΔLAScd (OR 0.163; 95% CI 0.034–0.794; $p=0.022$) were

independently associated with a lower risk of AF onset.

Conclusions: In patients with AHF, AI-assisted echocardiography allowed rapid and reproducible assessment of LA function. Improvement in LA strain during therapy was strongly associated with lower arrhythmic risk. These findings support the role of AI-driven echocardiographic monitoring as a practical and clinically relevant tool for integrating congestion status and arrhythmia risk stratification in the acute management of heart failure.

SCOMPENSO CARDIACO 758
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
BIOMARCATORI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
PROGNOSI (SCOMPENSO CARDIACO)

REAL-WORLD ELIGIBILITY AND TOLERANCE OF VERICIGUAT IN HFREF PATIENTS: INSIGHTS FROM A MULTICENTRIC REGISTRY

Riccardo Rovelli (a), Martina Mazzini (a), Elisa Brangi (a), Antonio Maria Sammartino (a), Maria Grazia De Angelis (a), Mattia Amarante (a), Luca Assoni (a), Daniela Biondi (b), Roberto Furloni (b), Julieta Isabel De Maio (c), Arianna Bortolani (d), Maria Grazia Poci (e), Mauro Pagani (f), Alberto Madureri (g), Marco Russo (h), Nadir Sitta (i), Savina Nodari (a)

(a) UNIVERSITY OF BRESCIA, DEPARTMENT OF MEDICAL AND SURGICAL SPECIALTIES, CARDIOLOGY SECTION, BRESCIA, ITALY; (b) ESINE HOSPITAL, INTERNAL MEDICINE SECTION, ESINE (BS), ITALY ; (c) NEW CIVIL HOSPITAL OF SASSUOLO, CARDIOLOGY SECTION, SASSUOLO, ITALY; (d) UNIVERSITY OF VERONA, VERONA, ITALY; (e) BELLARIA HOSPITAL, CARDIOLOGY SECTION, BOLOGNA, ITALY; (f) ASST MANTOVA, CARLO POMA HOSPITAL, INTERNAL MEDICINE SECTION, MANTOVA, ITALY; (g) ASST VALLE CAMONICA, ESINE HOSPITAL, CARDIOLOGY SECTION, ESINE (BS), ITALY; (h) MONTEBELLUNA HOSPITAL, CARDIOLOGY SECTION, MONTEBELLUNA (TV), ITALY; (i) CIVIL HOSPITAL OF CONEGLIANO, CARDIOLOGY SECTION, CONEGLIANO (TV), ITALY

Vericiguat is a soluble guanylate cyclase stimulator, recently introduced in the treatment of heart failure with reduced ejection fraction (HFrEF), particularly in the setting of worsening heart failure (WHF). Its approval followed the VICTORIA trial, which demonstrated a significant reduction in the risk of cardiovascular death or HF-related hospitalization compared with placebo, regardless of renal function.

We present preliminary data from a retrospective and prospective, multicenter, observational cohort study including all patients who, according to AIFA indications, were started on vericiguat from June 2023 onward, when the drug became reimbursable. The study evaluates real-world effects of vericiguat on clinical, functional, and echocardiographic parameters, quality of life, WHF episodes, and tolerability. During the srudy, each patient undergoes three follow-up visits, 6 months apart, with systematic collection of clinical history, risk factors, HF etiology, laboratory tests, physical examination and NYHA class, echocardiographic findings, and clinical outcomes. Inclusion and exclusion criteria were those specified by AIFA in the dedicated Therapeutic Plan, consistent with ESC guidelines. The primary endpoint was clinical improvement assessed by clinical parameters; the secondary endpoint was the number of cardiovascular events (mainly WHF episodes).

A total of 126 patients were enrolled (74% male, 51% overweight/obese) from 9 Italian centers. At present, 73 (58%) have completed the 6-month visit and 26 the 12-month visit. Median age was 76.5 years, notably higher than in VICTORIA (67 years). At baseline, 45% were in NYHA class II and 49% in class III–IV. Median LVEF was 33.5%, with ischemic etiology in 57%. Median NT-proBNP was 4291 pg/mL (considering 74/126 patients), and median eGFR 44.9 ml/min/1.73 m^2. Comorbidities included atrial fibrillation (56%), diabetes (34%), dyslipidemia (78%), and device therapy (64%). Only 54% of patients were on all four foundational drugs for HFrEF at the time of vericiguat initiation, mainly due

to renal dysfunction or hyperkalemia. It is worth noting that in 29% of cases vericiguat was started directly at 5 mg, with good tolerance (in line with the VELOCITY trial), while most began at 2.5 mg. After 6 months, 31% of patients remained at 2.5 mg without up-titration, while only 27% reached the target dose of 10 mg. Our primary results are descriptive only; at 6 months, the available sample showed a median reduction of NT-proBNP to 2241 pg/mL (considering only 29/73 patients); median LVEF was similar to baseline (34.5%); 53% of patients were in NYHA class II and 31% in NYHA class III, which suggests a slight possible improvement in functional class. Thirteen patients (10%) experienced adverse events: 6 discontinued therapy (3 due to acute kidney injury, 1 behavioral disorder, 1 nausea/vomiting, 1 dizziness), 7 developed WHF, and 1 died. Data regarding the second follow-up visit at one year have not yet been included due to the small sample size available.

Preliminary data from our real-world registry suggest that vericiguat appears feasible and well tolerated even in fragile patients (CKD, hyperkalemia, hypotension) who cannot tolerate all four pillars of therapy. Further data at 6 and 12 months will be crucial to confirm its real-world efficacy, tolerability, and impact on long-term outcomes.

SCOMPENSO CARDIACO 195
BIOMARCATORI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)

EXTRACELLULAR VESICLES CHARACTERIZATION IN PATIENTS WITH HEART FAILURE WITH PRESERVED AND REDUCED EJECTION FRACTION

Chiara Macchi (a), Isabella Fichtner (a), Francesco Tafuri (a), Alessandra Rizzuto (a), Alberto Corsini (a), Ilaria Giusti (d), Vincenza Dolo (d), Giovanni Esposito (c), Cinzia Perrino (c), Stefano Carugo (a, b), Marco Vicenzi (a, b), Massimiliano Ruscica (a, b)
(a) UNIVERSITA' DEGLI STUDI DI MILANO; (b) FONDAZIONE IRCCS CA' GRANDA OSPEDALE MAGGIORE POLICLINICO; (c) UNIVERSITA' DEGLI STUDI DI NAPOLI - FEDERICO II;
(d) UNIVERSITA' DEGLI STUDI DELL'AQUILA

Background-aim: Heart failure (HF) is a clinical syndrome involving structural and/or functional cardiac abnormalities, classified as reduced (HFrEF) or preserved (HFpEF) based on the ejection fraction percentage of the left ventricle. As extracellular vesicles (EVs) reflect onset and severity of cardiac diseases, they attract interest as potential liquid biopsies. Aim of the present project was to characterize EVs in HFrEF and HFpEF, investigating their potential as biomarkers and discriminating factors in HFrEF and HFpEF with a particular focus on the underlying molecular mechanisms.

Methods: The study included 41 HF patients (13 HFpEF and 26 HFrEF) and 31 volunteers (CTR). EVs were isolated from plasma by size-exclusion chromatography and ultracentrifugation, then characterized using nanoparticles tracking analysis, transmission electron microscopy (TEM), Western blot (WB) and flow cytometry (FACS). ELISA assays were used to measure circulating proteins. Functional assays were performed to assess the impact of patient-derived EVs on a cellular model of monocyte.

Results: Diagnosis of HF relied on echocardiographic (e.g. E/e' ratio) and biochemical parameters (e.g. NT-proBNP). Patients with HF were characterized by raised circulating markers of fibrosis (Gal-3, VEGF-C, Chitinase-3-like-1 protein). When HFrEF and HFpEF groups were considered, Gal-3 and Chitinase-3-like-1 protein were significantly raised only in HFrEF compared to CTR. Isolation of EV was confirmed by FACS and WB analyses (CD63, CD9, CD81, Alix and β1 integrin), while integrity by TEM. EV size was increased in HF (nm: 202 vs 181). Among different subpopulations of EVs, those from monocytes (CD14+), neutrophils (C66b+), endothelial cells (Cd202b+) and activated endothelial cells (CD62E+) were significantly reduced in HF. Proteomic analysis of EVs from HF showed increased levels of surfactant proteins (SFTPD) and markers of fibrosis (Gal-3 and Chitinase-3-like-1 protein). Treatment of monocytes (THP-1) with EVs derived from HF patients led to an increased expression of proinflammatory cytokines (i.e. IL-1α, IL-1β, IL-6 and IL-8), when compared to cells treated with EVs isolated from CTR subjects. This change was mostly driven by EVs derived from HFpEF patients.

Conclusions: EVs isolated from patients with HF displayed a unique fingerprint aligned with the hemodynamic characteristics of the condition. Additionally, the characterization of EVs allows to distinguish HFpEF from HFrEF showing different activity of systemic mechanisms (e.g. inflammation).

CardioSic

SCOMPENSO CARDIACO 723
PROGNOSI (SCOMPENSO CARDIACO)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
ATTIVITÀ FISICA E PREVENZIONE CARDIOVASCOLARE
(ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)

REVISITING THE 12 ML/KG/MIN THRESHOLD: CONTEMPORARY DATA CHALLENGE HEART TRANSPLANT CRITERIA

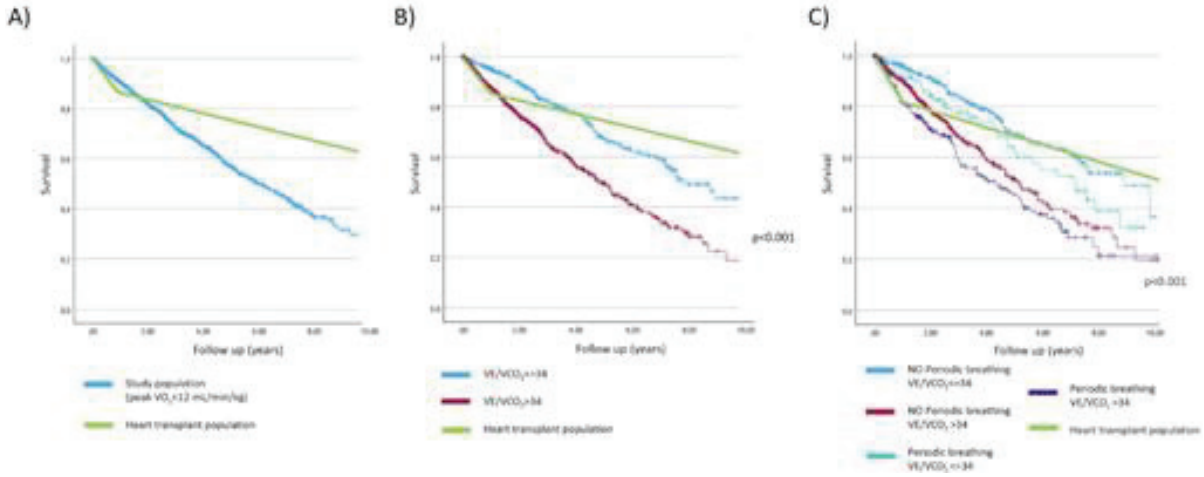
Elisabetta Salvioni (a), Mayam Azar (b), Massimo Mapelli (a), Arianna Galotta (a), Irene Mattavelli (a), Michele Emdin (c), Massimo Piepoli (d), Damiano Magrì (e), Stefania Paolillo (f), Gianfranco Sinagra (g), Gaia Cattadori (h), Luigi Adamo (b), Piergiuseppe Agostoni (a)
(a) CENTRO CARDIOLOGICO MONZINO, IRCCS, MILANO ITALY; (b) JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE, BALTIMORE; (c) FONDAZIONE TOSCANA GABRIELE MONASTERIO, PISA, ITALY; (d) POLICLINICO SAN DONATO, MILANO, ITALY; (e) OSPEDALE SANT'ANDREA, ROMA, ITALY; (f) OSPEDALE FEDERICO II, NAPOLI, ITALY; (g) UNIVERSITÀ DI TRISTE, TRIESTE, ITALY; (h) MULTIMEDICA, MILANO, ITALY

Background: Current guidelines recommend referring ambulatory heart failure (HF) patients for heart transplantation (HTX) when peak oxygen uptake (peak VO_2) is <12 mL/kg/min. This threshold, however, is based on decades-old data. As HF management has significantly improved, the relevance of this criterion in today's clinical practice is uncertain.

Methods: We retrospectively selected 1,218 ambulatory patients with HF and reduced or improved ejection fraction (HFrEF or HFimpEF) from the MECKI score registry, with peak VO_2 <12 mL/kg/min. Patients were enrolled between 2010 and 2022. Clinical and cardiopulmonary exercise testing (CPET) variables were recorded, with a primary composite outcome of death, LVAD implantation, or HTX. Kaplan-Meier survival curves were compared to contemporary data from heart transplant recipients in the ISHLT registry. We stratified patients by VE/VCO_2 slope (>34 vs. ≤34) and presence/absence of periodic breathing (PB). Sensitivity analyses included adjustment for % predicted peak VO_2 and subgroup evaluation in non-maximal CPET (RER <1.05).

Results: Over a median follow-up of 2.3 years, 400 events occurred. Fig. 1A compares the survival of the study population with the survival of HTX recipients. Patients with VE/VCO_2 ≤34 (n=446) had significantly lower 10-year event rates than those with VE/VCO_2 >34 (26.2% vs. 37.2%, p<0.001). Survival in the VE/VCO_2 ≤34 group exceeded that of HTX recipients until year 4 (Fig. 1B). Similarly, absence of PB (n=884) was associated with improved outcomes (29.4% vs. 42.7%, p<0.001), with survival crossing HTX at year 3. Combining VE/VCO_2 and PB defined four distinct prognostic groups. Patients with both VE/VCO_2 ≤34 and no PB had the most favorable outcomes (10-year event rate 23.3%), surpassing HTX recipients at year 5 (Fig. 1C). Prognostic differences persisted after adjustment for % predicted peak VO_2 and were evident even in patients with RER <1.05.

Conclusions: In a contemporary cohort, a peak VO_2<12 mL/kg/min alone no longer identifies ambulatory HF patients with a high enough short-term mortality to justify transplant listing. Incorporating VE/VCO_2 slope and PB into CPET interpretation provides significantly improved risk stratification. These findings suggest that current HTX referral criteria might need revision to avoid premature listing of low-risk patients and target optimize organ allocation to patients with very poor prognosis.


A)
B)
C)
Survival
Follow up (years)
p<0.001
Study population
Heart transplant population
NO Periodic breathing
Periodic breathing

Figures

CardioSic

SCOMPENSO CARDIACO 724
PROGNOSI (SCOMPENSO CARDIACO)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
ATTIVITÀ FISICA E PREVENZIONE CARDIOVASCOLARE
(ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)

MECKI SCORE THRESHOLDS FOR HEART TRANSPLANTATION REFERRAL OF AMBULATORY HEART FAILURE PATIENTS

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Background. In patients with chronic heart failure (HF), current guidelines recommend the use of prognostic scores to estimate survival and to support referral for heart transplantation (HTX). However, the clinical use of these tools remains limited, and no universally accepted cut-off values are currently available to guide transplant listing. Among the available scores, the MECKI score – based on easily obtainable parameters (peak VO_2, VE/VCO_2 slope, hemoglobin, sodium, left ventricular ejection fraction, and glomerular filtration rate) – has shown one of the highest prognostic accuracies.

Aim. The aim of this study was to compare the survival of patients enrolled in the MECKI score registry with that of heart transplant recipients reported in the ISHLT registry, and to identify a MECKI score threshold beyond which 5-year prognosis is worse than that of HTX recipients.

Methods. Consecutive ambulatory HF patients included in the MECKI score program between January 2010 and January 2022 were analyzed. The primary endpoint was a composite of cardiovascular death, HTX, or left ventricular assist device implantation. Post-HTX survival data were obtained from the International Society of Heart and Lung Transplantation (ISHLT) registry updated through 2023. To identify the prognostic threshold, patients were stratified by MECKI score deciles.

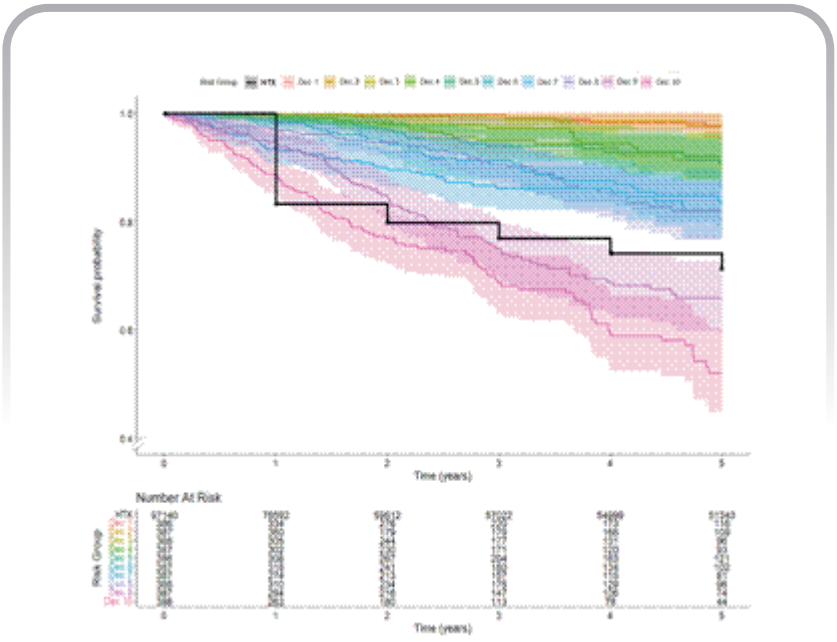


Figure 1

Results. A total of 3,865 patients were evaluated (mean age 62.4±12.6 years). Mean peak VO_2 was 58.2±18.3% predicted; mean VE/VCO_2 slope 33.2±8.2; hemoglobin 13.5±1.7 g/dL; sodium 139±3 mmol/L; LVEF 33.7±10.4%; eGFR 73±26 mL/min/1.73 m². Periodic breathing was observed in 15.8% of cases. At 5 years, overall survival was 83.7%. The mean 5-year survival of HTX recipients (71.2%) fell between the 8th and 9th MECKI score deciles, identifying a threshold value of 0.1368 as the point beyond which prognosis becomes worse than that of transplant recipients.
Conclusion. A MECKI score ≥0.1368 may represent a reliable threshold for referral to HTX evaluation, whereas lower values are associated with survival comparable to or better than transplantation, thus supporting deferral of listing. Incorporating the MECKI score into routine clinical practice could enable a more rational and timely selection of transplant candidates, addressing a current gap in guideline recommendations.

SCOMPENSO CARDIACO 929
PROGNOSI (SCOMPENSO CARDIACO)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
BIOMARCATORI DELLO SCOMPENSO (SCOMPENSO CARDIACO)

SHORT-TERM VARIABILITY OF THE MECKI SCORE IN PATIENTS WITH HEART FAILURE

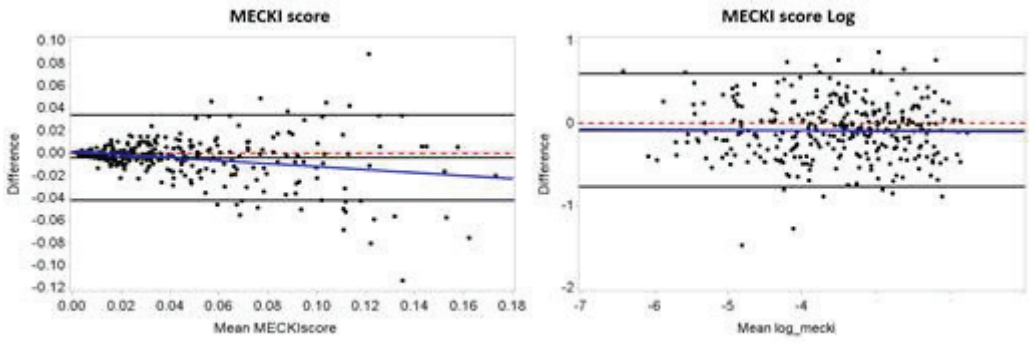
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(d) OSPEDALE FEDERICO II

Background. Cardiopulmonary exercise testing (CPET) provides several prognostic parameters in patients with heart failure (HF), including peak VO_2, VE/VCO_2 slope, and anaerobic threshold (AT). However, the reproducibility of these variables may be affected by effort-dependence, operator variability, and methodological issues. Since the MECKI score integrates CPET with laboratory and echocardiographic parameters, understanding its short-term variability is crucial to distinguish random fluctuations from clinically meaningful changes.

Aim. This study aimed to assess the short-term variability of the MECKI score and its individual components in patients with heart failure with reduced ejection fraction (HFrEF), to define thresholds that separate biological variability from true clinical change.

Methods. We prospectively enrolled 404 HFrEF patients (LVEF <40%) across four Italian HF centers. All patients underwent two CPETs approximately one week apart, with laboratory and echocardiographic data collected at both time points. The MECKI score and its components (peak VO_2, VE/VCO_2 slope, hemoglobin, serum sodium, LVEF, and eGFR) were calculated for each test. Patients with conditions introducing excessive variability (e.g., dialysis) were excluded. Variability was assessed by comparing repeated measures and calculating intra-patient differences.

Results. The study population had a mean age of 65±12 years, 83.4% were male, and HF etiology was ischemic in 46% and non-ischemic in 47%. Medical therapy was in line with contemporary guidelines (ACEi/ARB/ARNI 96%, beta-blockers 95%, SGLT2i 83%, MRA 82%).
At baseline, AT was not identifiable in 45 patients, and in 53 patients at the second test; 331 patients had AT consistently identified in both tests and were included



Figures

in the main analysis. Periodic breathing was observed in 48 cases at the first and 45 at the second test. Across the study population, short-term variability of MECKI score values was low (Figure 1): mean difference (bias) was -0.004, with limits of agreement ranging from -0.042 to 0.034, indicating good agreement within the expected variability of the variable

Conclusion. The MECKI score shows high short-term reproducibility in ambulatory HFrEF patients. These findings reinforce the reliability of the MECKI score in clinical practice and research, supporting its use as a stable prognostic tool for heart failure patients.

SCOMPENSO CARDIACO 1023
TERAPIA DI RESINCRONIZZAZIONE (ARITMIE)
ELETTROSTIMOLAZIONE (ARITMIE)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)

RESINCRONIZZAZIONE CON STIMOLAZIONE DI BRANCA SINISTRA ED OTTIMIZZAZIONE ECOGUIDATA DELLA PROGRAMMAZIONE: NUOVE TECNICHE E VECCHIE CONOSCENZE

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Una donna di 45 anni, senza fattori di rischio cardiovascolare, si sottopone ad accertamenti per dolore toracico atipico e astenia. L'ECG evidenzia un blocco di branca sinistra (QRS 148 ms, PR 148 ms e asse QRS -20°), mentre l'ecocardiogramma mostra un quadro di cardiomiopatia dilatativa con grave disfunzione ventricolare sinistra e marcata dissincronia. La coronarografia mostra coronarie sane. La risonanza magnetica conferma la dilatazione ventricolare sinistra e la severa riduzione della frazione di eiezione (FE), con un potenziamento tardivo non ischemico a livello intramiocardico, localizzato sulla parete infero-laterale apicale e nella zona giunzionale inferiore. Dopo tre mesi di terapia antiscompenso ottimizzata, viene ripetuto l'ecocardiogramma, che mostra persistenza della dilatazione ventricolare sinistra ed FE 21% con evidenza di rocking apicale. Si decide quindi di impiantare un defibrillatore con funzione di resincronizzazione con stimolazione della branca sinistra, ottenendo LVAT 76 ms. Il controllo post-operatorio evidenziava parametri ottimali di pacing e sensing, con stimolazione del ventricolo sinistro in circa il 99% dei battiti, l'ECG mostrava ritmo sinusale con ventricologramma elettroindotto con QRS di 116 ms, PR 161 ms e asse del QRS -39°. Al fine di verificare ulteriormente il successo della resincronizzazione è stato eseguito un ecocardiogramma che ha mostrato la persistenza del rocking apicale durante la stimolazione e la sua scomparsa alla riduzione dell'intervallo di stimolazione atrioventricolare di 20 ms. In ritmo spontaneo, il tempo di apertura della valvola polmonare è di 74 ms, mentre quello della valvola aortica è di 182 ms. In ritmo stimolato, i tempi si riducono rispettivamente a 111 ms e 153 ms, con una diminuzione del ritardo sinistro-destro da 108 a 42 ms. L'ECG post ottimizzazione mostrava ritmo sinusale, durata del QRS 97 ms, PR 148 ms e asse QRS -45°. L'utilizzo della stimolazione di branca sinistra ha fornito risultati migliori rispetto alla metodica classica in alcune casistiche1, è inoltre una metodica sicura.2 L'ottimizzazione dell'intervallo AV è stata studiata sulla base di parametri ECG3, ma dovrebbe



Figura 1

essere verificata e personalizzata anche sulla base dei dati ecocardiografici. Questo caso è un esempio di come la stimolazione di branca dia ottimi risultati in termini di resincronizzazione cardiaca, ulteriormente ottimizzati con programmazione ecoguidata.

1)Jin C, Dai Q, Li P, Lam P, Cha YM. Left bundle branch area pacing for heart failure patients requiring cardiac resynchronization therapy: A meta-analysis. J Cardiovasc Electrophysiol. 2023 Sep;34(9):1933-1943. doi: 10.1111/jce.16013. Epub 2023 Aug 7. PMID: 37548113.
2)Mei Y, Han R, Cheng L, Li R, He Y, Xie J, Wang Z, Wu Y. Assessment of Cardiac Function and Ventricular Mechanical Synchronization in Left Bundle Branch Area Pacing by Speckle Tracking and Three-Dimensional Echocardiography. Am J Cardiol. 2023 Jan 15;187:1-9. doi: 10.1016/j.amjcard.2022.10.012. Epub 2022 Nov 29. PMID: 36459730.
3)Zhang W, He L, Zhang J, Fu G, Sheng X, Pan Y, Zeng G, Li Z, Huang J, Lu H, Shi T, Zhou X, Stadler R, Demmer W, Li R. Electrical Synchrony Optimization for Left Bundle Branch Area Pacing in Patients With Bradycardia and Heart Failure. Am J Cardiol. 2023 Sep 15;203:436-443. doi: 10.1016/j.amjcard.2023.07.017. Epub 2023 Aug 2. PMID: 37540902.



Figura 2

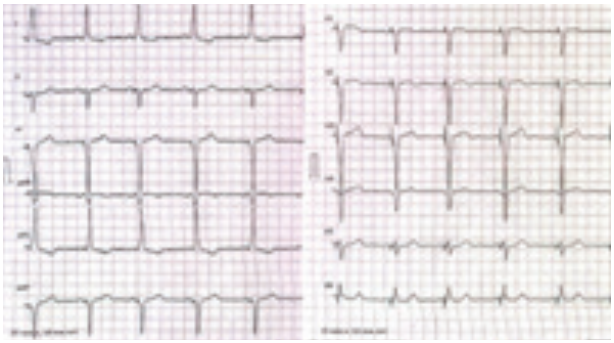


Figura 3

SCOMPENSO CARDIACO 564
BIOMARCATORI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)

HEMOGLOBIN/CREATININE RATIO PREDICTS MORTALITY IN HOSPITALIZED PATIENTS FOR ACUTE HEART FAILURE WITH REDUCED EJECTION FRACTION

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Introduction: Heart failure (HF) remains one of the major global healthcare challenges, accounting for 10% of hospital admissions among patients over 65 years old and exhibiting an approximately 50% five-year mortality rate (1). It is crucial to identify new predictive parameters for patient outcomes in order to precisely determine follow-up intervals and guide therapeutic decisions. Recently, the hemoglobin/creatinine (Hb/Cr) ratio has been shown to predict adverse outcomes in patients with cardiovascular disease, particularly in the setting of acute coronary syndromes (ACS) (2). However, limited evidence exists regarding its ability to predict long-term mortality in patients hospitalized for acute heart failure (AHF).

Purpose: To evaluate the long-term prognostic impact of the Hb/Cr ratio in hospitalized patients for AHF.

Methods: A retrospective observational study was conducted on patients admitted to the intensive care unit of our hospital for AHF with reduced ejection fraction (EF < 40%) from January 2017 to December 2024. Patients were followed until February 2025, and mortality events were recorded.

Results: The study included 303 patients with a mean age of 69.8 ± 11.8 years, 79.2% of whom were male, and a mean EF of 29.3 ± 8.9%. 69 patients (22.7%) died after discharge. A bivariate Pearson correlation analysis revealed a significant inverse relationship between the Hb/Cr ratio and post-discharge mortality ($r = -0.199$, $p < 0.001$). Cox regression analysis confirmed that the Hb/Cr ratio independently predicted post-discharge mortality even after adjusting for age, sex, BNP at admission, EF, hypertension, smoking, dyslipidemia, and diabetes mellitus (HR: 0.903, 95% CI: 0.839–0.972, p=0.006). Additionally, ROC curve analysis demonstrated that the Hb/Cr ratio had acceptable discriminative ability (AUC: 0.744, 95% CI: 0.670–0.870, $p < 0.001$). Next, the population was divided into quartiles based on the Hb/Cr ratio. The first quartile comprised patients with a ratio below 8.54, and the third quartile included those with a ratio above 15.65. Kaplan–Meier curves were generated comparing patients in the first and third quartiles. Log-rank analysis revealed that patients in the first quartile had significantly lower survival ($\chi^2 = 32.9$, $p < 0.001$), whereas those in the third quartile had significantly higher survival ($\chi^2 = 9.65$, $p < 0.002$). In addition to this the creatinine value at admission did not independently predict mortality in the same Cox regression model used for the Hb/Cr ratio (HR: 1.101, 95% CI: 0.947–1.281, p=0.201). In contrast, the hemoglobin value at admission was significantly associated with out-of-hospital mortality in the same model (HR: 0.815, 95% CI: 0.696–0.955, p=0.012). However, the AUC was less significant compared to the Hb/Cr ratio (AUC: 0.725, 95% CI: 0.651–0.799, p=0.038).

Conclusion: The Hb/Cr ratio may serve as a valuable prognostic marker for long-term mortality in patients hospitalized for AHF with reduced EF.

SCOMPENSO CARDIACO 1065
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
BIOMARCATORI DELLO SCOMPENSO (SCOMPENSO CARDIACO)

IMPATTO DELLA PRESCRIZIONE DEI 4 PILASTRI DOPO OSPEDALIZZAZIONE PER INSUFFICIENZA CARDIACA ACUTA SULLA SOPRAVVIVENZA A LUNGO TERMINE: UN'ANALISI REAL-LIFE

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INTRODUZIONE: Lo scompenso cardiaco (HF) rappresenta lo stadio terminale di molte patologie cardiovascolari ed è tuttora gravato da elevata mortalità e morbidità. Nella provincia di Latina si stima una prevalenza di circa 9800 persone affette da HF, con un tasso di ospedalizzazione superiore rispetto alla media regionale del Lazio. Le terapie guidate dalle più recenti evidenze scientifiche e dalle linee guida hanno dimostrato di ridurre riospedalizzazioni e mortalità, ma resta da chiarire quanto esse vengano effettivamente implementate nella pratica clinica real-life, in particolare nei pazienti con frazione di eiezione ridotta (HFrEF).

METODI: È stato condotto uno studio osservazionale retrospettivo su 317 pazienti ricoverati per scompenso cardiaco acuto a ridotta frazione di eiezione tra il 2017 e il 2024 presso le UOC di Cardiologia dei due principali nosocomi della provincia di Latina. Durante la degenza sono stati raccolti parametri antropometrici, clinici, laboratoristici ed ecocardiografici ed è stata analizzata la terapia all'ingresso e alla dimissione. Ad aprile 2025 è stata registrata la mortalità mediante contatto telefonico o visite ambulatoriali, con un follow-up massimo di 3 anni. Lo studio è stato approvato dal Comitato Etico locale (n. 0152309/2022).

RISULTATI: Sono stati arruolati 317 pazienti con HFrEF (FE 29,5±9%; età 69,9±11,7 anni; sesso maschile 78%). Tra questi, 108 (34,1%) avevano una storia pregressa di HF. Analizzando i singoli farmaci, si è osservata una bassa prevalenza di utilizzo dei pilastri all'ingresso, con un incremento significativo alla dimissione: beta-bloccanti 17,3% vs 66,2%; ACE-inibitori (ACEi) 6,3% vs 17,7%; sacubitril/valsartan (ARNI) 14,5% vs 45,4%; antagonisti del recettore dei mineralcorticoidi (MRA) 7,9% vs 60,3%; inibitori del cotrasportatore sodio-glucosio di tipo 2 (SGLT2i) 13,6% vs 46,4%. La mortalità post-dimissione risultava associata a età più avanzata ($p<0,001$), peggiore funzione renale ($p=0,026$) e livelli più elevati di NT-proBNP all'ingresso ($p=0,021$). L'analisi di sopravvivenza mediante curve di Kaplan–Meier, confrontate con log-rank test, ha mostrato un beneficio significativo nei pazienti dimessi con SGLT2i (HR 0,464; $p=0,008$), ARNI (HR 0,507; $p=0,013$) e ACEi (HR 0,399; $p=0,027$). Inoltre, la politerapia con ≥3 pilastri si associava a una sopravvivenza significativamente migliore (HR 0,433; $p<0,001$) al follow-up. Nell'analisi di regressione di Cox multivariata, la prescrizione di SGLT2i alla dimissione (HR 0,564; IC 95% 0,333–0,952; $p=0,032$), di ARNI (HR 0,563; IC 95% 0,337–0,942; $p=0,029$) e la terapia con ≥3 pilastri (HR 0,449; IC 95% 0,267–0,755; $p=0,003$) si associavano a una migliore sopravvivenza, anche dopo correzione per età, sesso, funzione renale, NT-proBNP e frazione di eiezione all'ingresso.

CONCLUSIONI: La prescrizione dei pilastri farmacologici in dimissione dopo ospedalizzazione per HF acuto si associa a un beneficio in termini di riduzione della mortalità a lungo termine in una coorte di pazienti real-life in un territorio con elevato tasso di ospedalizzazione per insufficienza cardiaca.

SCOMPENSO CARDIACO 376
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
PROGNOSI (SCOMPENSO CARDIACO)

LA VALUTAZIONE NON INVASIVA DELL'ACCOPPIAMENTO VENTRICOLO-ARTERIOSO DESTRO NELLO SPETTRO DELLO SHOCK CARDIOGENO: UNO STUDIO PROSPETTICO MULTICENTRICO

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BACKGROUND Lo shock cardiogeno (CS) è una patologia altamente mortale e complessa in cui è sempre più chiaro il ruolo del ventricolo destro (VD) come determinante prognostico avverso. In questo setting la valutazione ecocardiografica dell'accoppiamento ventricolo-arterioso (VA coupling) destro resta poco caratterizzata. Per essa, sebbene la sPAP (systolic pulmonary artery pressure) sia una metrica di postcarico inaccurata, il parametro più usato è il rapporto tra TAPSE (tricuspidal annulus plane systolic excursion) e sPAP. Questo studio introduce ed indaga una nuova metrica per la stima non invasiva dell'accoppiamento destro: il rapporto tra TAPSE e PaE (elastanza polmonare, definita come rapporto tra sPAP e stroke volume).

METODI In questo studio osservazionale prospettico multicentrico sono stati arruolati 323 pazienti con o a rischio di CS, ricoverati nelle Unità di Terapia Intensiva Cardiologica di tre ospedali universitari europei nel periodo 2020-2024. Di essi sono stati raccolti i dati anamnestici, clinici, ecocardiografici e terapeutici alla presentazione e dopo 48h di trattamenti. L'outcome primario era la mortalità intraospedaliera. È stata studiata l'associazione del TAPSE/PaE e delle metriche di VD (funzione: TAPSE; carico: sPAP e PaE; adattamento: right atrial pressure o RAP; VA coupling: TAPSE/sPAP) alla presentazione e a 48h con l'outcome. Le variabili sono state studiate in maniera continua e dicotomica (ai migliori cutoff calcolati) valutandone l'accuratezza prognostica in termini di area sotto la curva ROC (AUC). I risultati sono stati aggiustati, con dei modelli di regressione univariata e multivariata, per variabili cliniche ed ecocardiografiche quali età, sesso, stadio SCAI (Society for Cardiovascular Angiography & Interventions), eziologia del CS, E/e' medio, CPO (cardiac power output), sPAP.

RISULTATI Dei 323 pazienti arruolati (sesso femminile 30.3%, età mediana 66 anni) il 33.7% presentava un quadro di CS conclamato (SCAI ≥C). Nel 39.9% della coorte la causa era l'infarto miocardico acuto, nel 33.4% lo scompenso cardiaco cronico/de novo. L'outcome si è verificato nel 13.3% dei casi. Tutte le metriche del VD sono risultate associate all'outcome ($p<0.05$) sia alla presentazione sia dopo 48h. Per

ogni metrica, la traiettoria – definita dal valore a 48h – è risultata prognosticamente più accurata rispetto al valore di presentazione. Il TAPSE/PaE dicotomico è risultato aver la maggior accuratezza prognostica alla presentazione (TAPSE/PaE ≤20mm*mL/mmHg: AUC 0.674 p<0.001; mortalità: 23.1% vs 5.8%, p<0.001), a 48 ore (TAPSE/PaE ≤27: AUC 0.737, p<0.001; mortalità: 26.3% vs 3.8%, p<0.001) e nei modelli multivariati ecografici e clinici (TAPSE/PaE ≤20 alla presentazione: adjOR 4.73, 95%CI 1.89-11.86, p=0.001; TAPSE/PaE ≤27 a 48h: adjOR 5.57, 95%CI 2.12-14.62, p<0.001). La miglior accuratezza del TAPSE/PaE, rispetto al TAPSE/sPAP, come parametro di VA coupling era guidata dal sottogruppo dei pazienti senza ipertensione polmonare, dove il TAPSE/sPAP perdeva il valore prognostico (AUC 0.608, p=0.321) al contrario di TAPSE/PaE (AUC 0.709, p=0.003).

CONCLUSIONI Nello spettro del CS la valutazione non invasiva, tramite TAPSE/PaE, del VA coupling destro e della sua traiettoria nelle prime 48h fornisce informazioni prognostiche a breve termine indipendenti ed additive rispetto ai predittori clinico-strumentali tradizionali ed al TAPSE/sPAP. Il disaccoppiamento VA persistente (TAPSE/PaE ≤27) dopo 48h è il più forte predittore ecodinamico di mortalità intraospedaliera. Il TAPSE/PaE rappresenta una potenziale guida per la stratificazione prognostica e l'ottimizzazione delle decisioni terapeutiche nel CS.

CardioSic

SCOMPENSO CARDIACO 189
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)
TRATTAMENTO POST-INFARTO (CARDIOPATIA ISCHEMICA)
PROGNOSI (SCOMPENSO CARDIACO)

INCIDENT HEART FAILURE AFTER CORONARY ARTERY BYPASS GRAFT IN PATIENTS WITH REDUCED EJECTION FRACTION

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Background: Ischemic heart disease (IHD) is one of the leading causes of mortality worldwide and a major cause of heart failure (HF). Coronary artery bypass grafting (CABG) is a key revascularisation strategy in patients with ischaemic cardiomyopathy and reduced left ventricular ejection fraction (LVEF). However, data on long-term HF hospitalisation (HHF) rates and the prognostic impact of the latest pharmacological therapies in this setting remain limited.
This study aims to evaluate the incidence of HHF following CABG, to identify predictive variables for this outcome and to assess the impact of novel HF therapies on the study population.

Methods: In this retrospective single-centre observational study, all consecutive patients with IHD and LVEF ≤40% undergoing surgical revascularization in the period 2013–2023 were included. Clinical, biochemical, echocardiographic, and therapeutic variables were assessed preoperatively, at discharge, and during follow-up. HHF was the primary outcome. Cox regression model was employed to identify independent predictors of HHF.

Results: The study included 309 patients, mainly male (86%) and with a median age of 69 years. One quarter of the population had a history of chronic HF. During a median follow-up of 54 months, HHF occurred in 20% and 46% of the study population at two and six years, respectively. Independent predictors of HHF were pre-operative use of inotropes (HR 2,15; p = 0,030), loop diuretic therapy (HR 2,31; p = 0,001), chronic kidney disease (HR 2,36; p = 0,001) and right ventricular dysfunction (HR 2,02; p = 0,030). Patients operated after 2017, the year of the introduction of sacubitril/valsartan, demonstrated significantly better event-free survival (p = 0,002), although no overall survival benefit was observed. CABG was associated with improvement in LVEF and reduction in left ventricle volume and mitral insufficiency (p = 0,001), in both men and women.

Conclusions: In patients with IHD and reduced LVEF, rates of HHF remained high after CABG procedure, even though long-term improvement in LVEF was demonstrated. The optimization of medical therapy during follow-up may play a crucial role in improving clinical outcomes in this high-risk population.

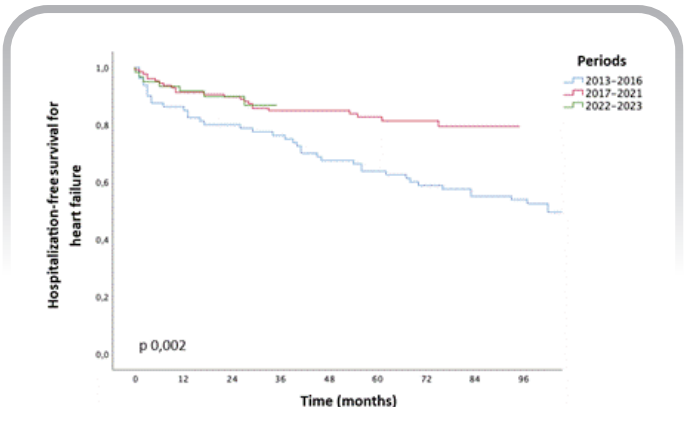


Figura 1

SCOMPENSO CARDIACO 84
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)

WORSENING HEART FAILURE IN PAZIENTE CON AMILOIDOSI AL

Filippo Serio (a), Giuseppe Alfio Leonardi (b)
(a) UNIVERSITÀ DEGLI STUDI DI CATANIA; (b) POLICLINICO GASPARE RODOLICO CATANIA

L'amiloidosi AL è un'emergenza ematologica caratterizzata da una rapida progressione e una prognosi infausta, in particolare in presenza di un grave coinvolgimento cardiaco. I dati epidemiologici mostrano che, senza un trattamento tempestivo e adeguato, la sopravvivenza è inferiore a sei mesi. Questo caso clinico evidenzia l'importanza della diagnosi precoce e della gestione terapeutica in pazienti con un coinvolgimento cardiaco aggressivo e progressivo che sfocia in uno scompenso cardiaco avanzato. La gestione di questo paziente si è rivelata complessa, sia a livello ambulatoriale sia nella fase successiva, che ha richiesto terapie avanzate come inotropi endovenosi, supporti meccanici temporanei e, infine, il trapianto di cuore. La terapia convenzionale per lo scompenso cardiaco si è dimostrata spesso inefficace e mal tollerata. La stretta collaborazione con l'ematologo e una risposta efficace alla chemioterapia sono stati cruciali per la prognosi.
A causa dei numerosi episodi di scompenso cardiaco e della necessità di infusioni progressive di inotropi, è stata valutata l'opzione di terapie avanzate, come il trapianto combinato di cuore e cellule staminali ematopoietiche autologhe. Tuttavia, l'evidenza sull'efficacia di tali procedure è limitata. Si tratta di una procedura non priva di rischi e complicanze, e l'esito non è sempre favorevole a causa della natura sistemica e recidivante della patologia. Questo caso clinico vuole essere un punto di riflessione sulla gestione di una cardiomiopatia grave, illustrando sia le complessità della gestione ambulatoriale sia le più recenti evidenze sulle terapie avanzate, in particolare il trapianto combinato.

SCOMPENSO CARDIACO 776
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
FARMACI CARDIOVASCOLARI (FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
BIOMARCATORI DELLO SCOMPENSO (SCOMPENSO CARDIACO)

REVERSE CARDIAC REMODELING FOLLOWING SACUBITRIL/VALSARTAN IN HEART FAILURE: COMPARISON BETWEEN ISCHEMIC AND NON-ISCHEMIC ETIOLOGY

Stefano Sforna (a), Federico Fortuni (a), Frank Lloyd Dini (b), Michele Correale (c), Giuseppe Dattilo (d), Michele Ciccarelli (e), Antonella Rispoli (e), Daniele Masarone (f), Laura Scelsi (g), Stefano Ghio (g), Valentina Mercurio (h), Stefania Paolillo (h), Savina Nodari (i), Alberto Palazzuoli (j), Giuseppe Ambrosio (a), Erberto Carluccio (a)
(a) UNIVERSITÀ DI PERUGIA; (b) UNIVERSITÀ DI PISA; (c) UNIVERSITÀ DI FOGGIA; (d) UNIVERSITÀ DI MESSINA; (e) UNIVERSITÀ DI SALERNO; (f) AORN OSPEDALI DEI COLLI NAPOLI; (g) UNIVERSITÀ DI PAVIA; (h) UNIVERSITÀ DI NAPOLI FEDERICO II; (i) UNIVERSITÀ DI BRESCIA; (j) UNIVERSITÀ DI SIENA

BACKGROUND: Sacubitril/valsartan induces reverse ventricular remodeling (RR) and improves outcomes in patients with heart failure and reduced ejection fraction (HFrEF). This study sought to determine whether patients with HFrEF of ischemic etiology have similar RR with sacubitril/valsartan as patients with non-ischemic etiology.

METHODS: In this multicentre, open-label study, we examined changes in measures of cardiac remodeling and natriuretic peptides from baseline to 12 months following initiation of sacubitril/valsartan between HFrEF patients with and without ischemic etiology. The difference-in-difference (DiD) analysis was used to evaluate the impact of sacubitril/valsartan on RR indices between the two groups. Long term all-cause mortality was also analysed by Cox regression.

RESULTS: Among 608 patients enrolled, 302 (49.7%) had ischemic etiology. At baseline, NT-proBNP concentrations did not differ between patients with versus without ischemic etiology and they were similarly reduced after initiation of sacubitril/valsartan (-604.7 pg/mL vs -401.6 pg/mL, P=NS). Improvement was observed in LV ejection fraction (ischemic: +2.44% vs non-ischemic: +4.5%, P<0.01), end-diastolic volume index (ischemic: -3.85 mL/m2 vs. non-ischemic: -4.98 mL/m2, P<0.001), and end-systolic volume index (ischemic: -4.88 mL/m2 vs. non-ischemic: -7.42 mL/m2, P<0.001) at 12 months. Compared to ischemic etiology, DiD analysis showed a relative greater increase in LV ejection fraction in non-ischemic patients (DiD estimator = + 2.07%, P = 0.017). The difference in other indices of RR and NT-proBNP was not statistically significant. After a median follow-up time of 70 months (IQR 45-79), 167 patients died. Although at univariable analysis mortality was greater in ischemic compared to non-ischemic patients (HR 1.42, 95%CI: 1.04-1.93, P=0.025), ischemic etiology was no longer significant in multivariable analysis.

CONCLUSION: Although fewer benefits from guideline-directed medical therapy may be often seen in HFrEF patients of ischemic etiology, our data provide reassuring evidence for the beneficial impact of sacubitril/valsartan on important mechanistic outcomes regardless of HFrEF etiology.

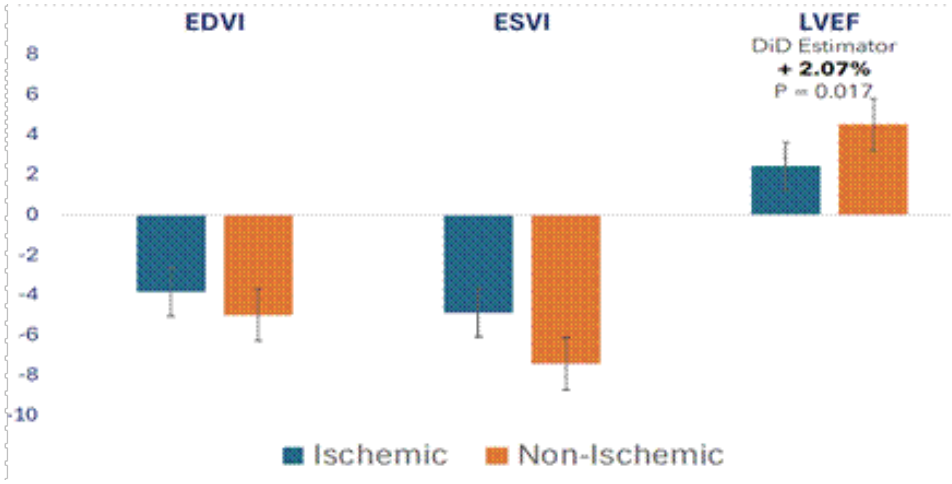

EDVI
ESVI
LVEF
DiD Estimator
+ 2.07%
P = 0.017
8
6
4
2
0
-2
-4
-6
-8
-10
Ischemic
Non-Ischemic

Figure 1

CardioSic

SCOMPENSO CARDIACO 778
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)

SNAPSHOT OF VERICIGUAT THERAPY IN ELDERLY PATIENTS WITH HEART FAILURE

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(a) CARDIOLOGY UNIT, DEPARTMENT OF INTERNAL MEDICINE, UNIVERSITY OF GENOA, GENOA, ITALY; (b) DEPARTMENT OF ADVANCED BIOMEDICAL SCIENCES, FEDERICO II UNIVERSITY, NAPLES, ITALY; (c) CARDIOVASCULAR SECTION, DEPARTMENT OF CLINICAL SCIENCES AND COMMUNITY HEALTH, UNIVERSITY OF MILAN, MILAN, ITALY; (d) DEPARTMENT OF CLINICAL INTERNAL, ANESTHESIOLOGY AND CARDIOVASCULAR SCIENCES, SAPIENZA, UNIVERSITY OF ROME, ROME, ITALY; (e) DEPARTMENT OF CARDIOLOGY, UNIVERSITY OF FOGGIA, FOGGIA, ITALY; (f) DEPARTMENT OF TRANSLATIONAL MEDICAL SCIENCES, UNIVERSITY OF CAMPANIA LUIGI VANVITELLI, NAPLES, ITALY; (g) DEPARTMENT OF MEDICAL BIOTECHNOLOGIES, UNIVERSITY OF SIENA, SIENA, ITALY; (h) CENTRE FOR DIAGNOSIS AND TREATMENT OF CARDIOMYOPATHIES, UNIVERSITY OF TRIESTE, TRIESTE, ITALY; (i) DEPARTMENT OF TRANSLATIONAL MEDICINE, UNIVERSITY OF EASTERN PIEDMONT, NOVARA, ITALY; (j) DEPARTMENT OF MEDICAL AND SURGICAL SPECIALTIES, RADIOLOGICAL SCIENCES AND PUBLIC HEALTH, UNIVERSITY OF BRESCIA, BRESCIA, ITALY; (k) DEPARTMENT OF BIOMEDICAL SCIENCES AND PUBLIC HEALTH, MARCHE POLYTECHNIC UNIVERSITY, ANCONA, ITALY; (l) CARDIOLOGY AND CARDIOVASCULAR PATHOPHYSIOLOGY, UNIVERSITY OF PERUGIA, PERUGIA, ITALY; (m) DEPARTMENT OF PHARMACY, HEALTH AND NUTRITIONAL SCIENCES, UNIVERSITY OF CALABRIA, RENDE, ITALY; (n) CARDIOLOGY UNIT, ASST PAPA GIOVANNI XXIII, UNIVERSITY OF MILANO-BICOCCA, BERGAMO, ITALY

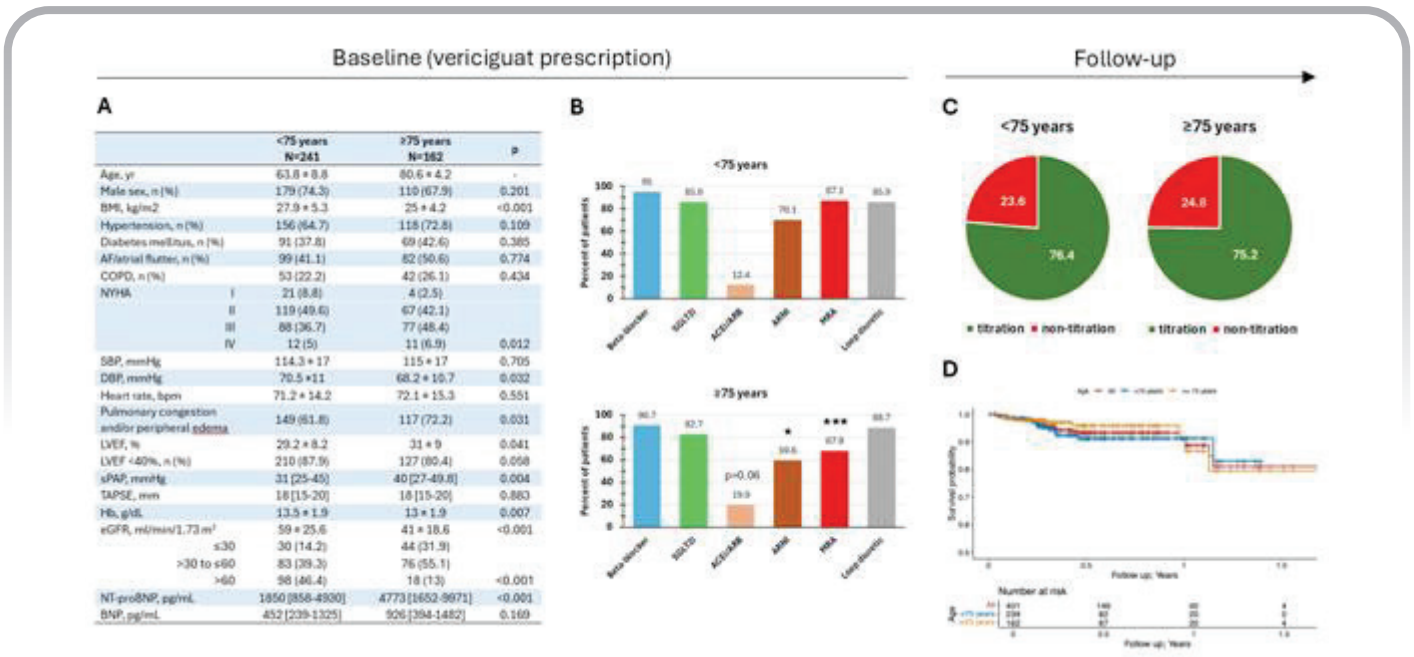
Background: Real-world evidence about the use of vericiguat in old patients with heart failure (HF) is limited.

Methods: We retrospectively collected the data of patients newly prescribed with vericiguat at the centers participating in the OPTIMA-HF registry, and compared the characteristics at the time of prescription and key follow-up events between those with < or ≥75 years (yr).

Results: Of 403 patients included in the snapshot, 162 (40.2%) were ≥75 yr old. Compared with younger subjects, they had lower BMI and more severe HF, with more frequent NYHA class III-IV and signs of congestion, higher estimated systolic pulmonary artery pressure, and higher natriuretic peptide levels (Fig. A). Left ventricular ejection fraction (LVEF) was higher in older than younger patients, and there was a trend for greater representation of HF with improved LVEF in the former than the latter. The ≥75 yr patient subgroup was also characterized by lower hemoglobin levels and eGFR. Moreover, they were less often treated with drugs acting on the renin-angiotensin-aldosterone system (Fig. B). Median follow-up was 4.2 [2.6-7.2] and 5 [2.9-8.9] months for patients of < and ≥75 yr old, respectively. Based on available information from 319 subjects, discontinuation of vericiguat was non-significantly more common in older patients (24.0% vs 15.1%, p=0.066), but titration to >2.5 mg QD was similar in the two age strata (Fig. C, p=0.887). During follow-up, iv diuretic therapy (7.4% vs 7.4%, HR for ≥75

yr vs <75 yr 0.95, 95%CI 0.42-2.12, p=0.892) or HF hospitalization (21.2% vs 24.1%, HR 1.09, 95%CI 0.69-1.73, p=0.718) were comparable in patients <75 yr or ≥75 yr old. All-cause mortality also occurred at similar rates (<75 yr: 13.9 [7.8-23] /100 person-year; ≥75 yr: 9.6 [4.1-18.9] /100 person-year) (Fig. D).

Conclusions: This study suggests that treatment with vericiguat is feasible in elderly patients with HF, despite their challenging phenotype.



		<75 years N=261	≥75 years N=162	p
Age, yr		63.8 ± 8.8	80.6 ± 4.2	-
Male sex, n (%)		179 (74.3)	110 (67.9)	0.201
BMI, kg/m2		27.9 ± 5.3	25 ± 4.2	<0.001
Hypertension, n (%)		156 (64.7)	118 (72.8)	0.109
Diabetes mellitus, n (%)		91 (37.8)	69 (42.6)	0.385
Afatrial flutter, n (%)		99 (41.1)	82 (50.6)	0.774
COPD, n (%)		53 (22.2)	42 (26.1)	0.434
NYHA	I	21 (8.8)	4 (2.5)	
	II	119 (49.6)	67 (42.1)	
	III	88 (36.7)	77 (48.4)	
	IV	12 (5)	11 (6.9)	0.012
SBP, mmHg		114.3 ± 17	115 ± 17	0.705
DBP, mmHg		70.5 ±11	68.2 ± 10.7	0.032
Heart rate, bpm		71.2 ± 14.2	72.1 ± 15.3	0.551
Pulmonary congestion and/or peripheral edema		149 (61.8)	117 (72.2)	0.031
LVEF, %		29.2 ± 8.2	31 ± 9	0.041
LVEF <40%, n (%)		210 (87.9)	127 (80.4)	0.058
sPAP, mmHg		31 [25-45]	40 [27-49.8]	0.004
TAPSE, mm		18 [15-20]	18 [15-20]	0.883
Hb, g/dl		13.5 ± 1.9	13 ± 1.9	0.007
eGFR, ml/min/1.73 m²		59 ± 25.6	41 ± 18.6	<0.001
	≤30	30 (14.2)	44 (31.9)	
	>30 to ≤60	83 (39.3)	76 (55.1)	
	>60	98 (46.4)	18 (13)	<0.001
NT-proBNP, pg/mL		1850 [858-4930]	4773 [1652-9971]	<0.001
BNP, pg/mL		452 [239-1325]	926 [394-1482]	0.169

Figure 1

CardioSic

SCOMPENSO CARDIACO 901
ELETTROSTIMOLAZIONE (ARITMIE)
TERAPIA DI RESINCRONIZZAZIONE (ARITMIE)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)

CARDIAC RESYNCHRONISATION AS AN ENABLER OF SACUBUTRIL/VALSARTAN (ARNI) EFFICACY: INSIGHTS FROM A REAL-WORLD COHORT

Amato Santoro (a), Laura Spaccaterra (b), Maurizio Collantoni (b), Claudia Baiocchi (b), Benedetta Maria Natali (c)
(a) DIVISION OF INTERVENTIONAL CARDIOLOGY, AZIENDA OSPEDALIERA UNIVERSITARIA SENESE; (b) DEPARTMENT OF BIOTECHNOLOGIES, UNIVERSITY OF SIENA; (c) DIVISION OF CARDIOLOGY, AZIENDA OSPEDALIERA UNIVERSITARIA SENESE; (d) DIPARTIMENTO SCIENZE MEDICHE, CHIRURGICHE E NEUROSCIENZE, AZIENDA OSPEDALIERA UNIVERSITARIA SENESE

Background: Sacubitril/valsartan (ARNI) improves outcomes in heart failure with reduced ejection fraction (HFrEF). In patients undergoing cardiac resynchronization therapy (CRT), the potential synergy between device-based and pharmacological strategies remains underexplored.

Methods: the aim of this study was to assess the effect of ARNI therapy on reverse remodeling, clinical response, and cardiovascular events at one year in CRT recipients, in order to clarify the potential synergistic role of pharmacological and device-based strategies. A retrospective cohort of 194 consecutive CRT patients was analyzed, of whom 65 (33.5%) received ARNI. Echocardiographic response was defined as an increase in LVEF >5% or ≥15% reduction in LV end-systolic volume at 12 months; clinical response as an improvement of at least one NYHA class. The primary endpoint was echocardiographic response. Device-detected remote monitoring heart failure (RM-HF) events were pre-specified as the key time-to-event endpoint, while mortality and HF hospitalization were exploratory.

Results: baseline characteristics were broadly comparable between groups. At 12 months, ARNI therapy was associated with greater reverse remodeling (ΔLVEF 14.4 ± 10.2% vs.10.8 ± 11.0%, p=0.04). Rates of echocardiographic (68% vs. 65%) and clinical response (68% vs. 74%) were similar. Mortality and HF hospitalization did not differ significantly. In contrast, ARNI recipients showed fewer RM-HF events, with higher event-free survival among echocardiographic responders (95.7% vs 82.6%; log-rank p=0.021, q=0.042) and clinical responders (93.4% vs 85.3%; p=0.040, q=0.040) (Figure 1).

Conclusions: in this real-world CRT cohort, ARNI therapy enhanced reverse remodeling and reduced subclinical congestion events detected by remote monitoring. These findings support a synergistic interaction between CRT and ARNI, where resynchronization provides the substrate for pharmacological efficacy.

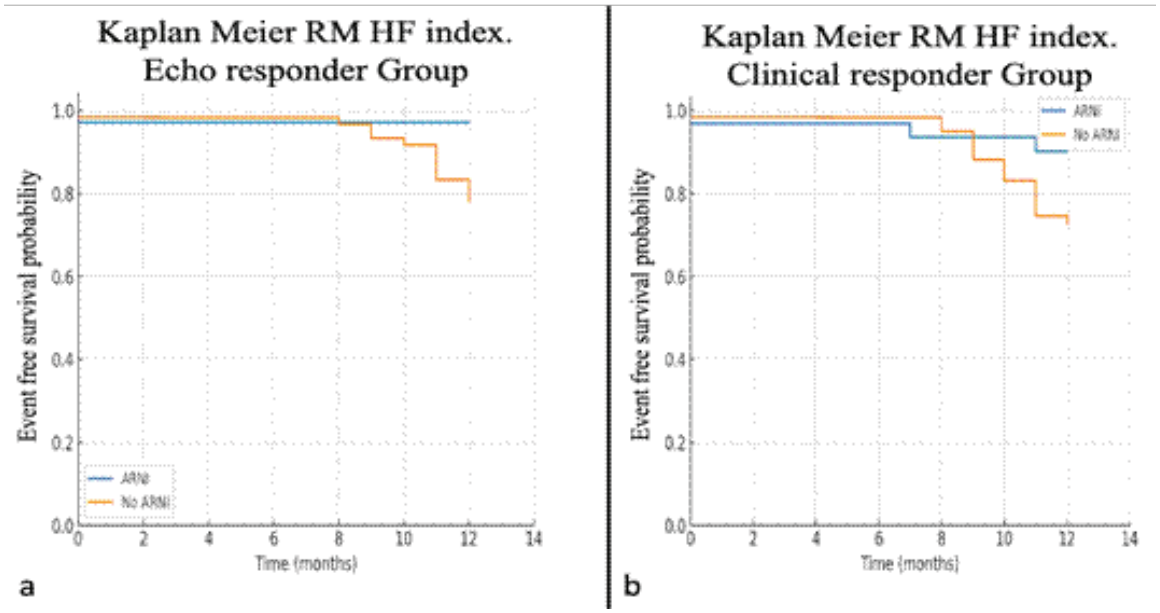

Kaplan Meier RM HF index.
Echo responder Group
Event free survival probability
1.0
0.8
0.6
0.4
0.2
0.0
0
2
4
6
8
10
12
14
Time (months)
ARNI
No ARNI
a
Kaplan Meier RM HF index.
Clinical responder Group
Event free survival probability
Time (months)
ARNI
No ARNI
b

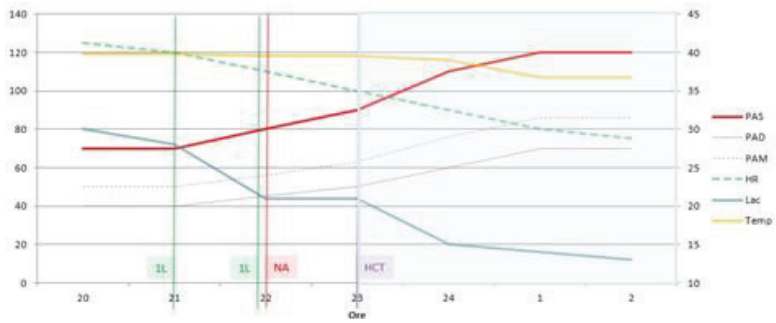
Figure 1

SCOMPENSO CARDIACO 358
SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
ASSISTENZA INTENSIVA CARDIOVASCOLARE IN ACUTO (ASSISTENZA CARDIACA IN ACUTO)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)

SHOCK POST TAVI: UNA DIAGNOSI INSIDIOSA

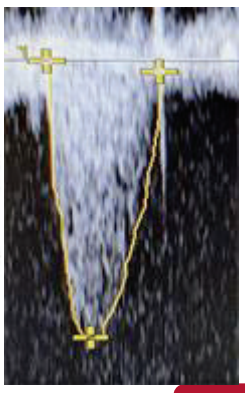
Giulio Pio Federico Mallardi (a), Francesco Tafuri (a), Ferdinando Loiacono (a), Stefano Carugo (a)
(a) IRCCS CA' GRANDA POLICLINICO DI MILANO

T.G. un paziente di 85 anni veniva ricoverato elettivamente per intervento di TAVI in stenosi aortica severa, NHYA II. Anamnesi nota per pemfigoide bolloso clinicamente stabile in terapia steroidea cronica con 12.5mg di prednisone (22% del peso corporeo per 55kg), condizionante diabete metasteroideo. Eseguito intervento di TAVI senza complicanze, con impianto di protesi balloon expandable (Evolut 26). La notte dell'intervento sviluppava febbre ed ipotensione marcata. Clinicamente risulta evidente un quadro emodinamico di shock con pressione media (MAP) < 60mmHg, aumento dei lattati, alterazione del sensorio, contrazione della diuresi, ipoglicemia. Alla valutazione dei parametri emodinamici: vena cava di piccole dimensioni, FE preservata (assenza di suicide del ventricolo sinsitro), LVOT-VTI aumentato, protesi normofunzionante e senza leak paravalvolari. Non versamento pericardico. ECG stabile. Si effettuava diagnosi di shock distributivo, in prima ipotesi shock settico, per cui si richiedevano emocolture e si effettuava carico volemico ed infusione di noradrenalina (Figura 1, 2), senza ottenere un risultato emodinamicamente significativo. In ultima istanza si ipotizzava quadro di crisi surrenalica acuta in paziente con asse ipofisi-surrene inibito dalla terapia steroidea cronica; pertanto, si decideva di infondere Idrocortisone endovena. Dopo



PAS, pressione sistolica; PAD, pressione diastolica; PAM, pressione media; HF, frequenza cardiaca; Lac, lattati; Temp, temperatura corporea; 1L, infusione di 1 litro di cristalloidi; NA, inizio noradrenalina titolata fino a 0,12 y/kg/min; HCT, infusione di idrocortisone 500mg endovena.

Figure 1



Doppler aortico in corso di shock: V max aortica 2.5 m/s, VTI ratio 0.44, LVOT-VTI 31cm

Figure 2

l'infusione si assisteva a rapido miglioramento clinico ed emodinamico con stabilizzazione dei valori di PA, clearance dei lattati, euglicemia e ripresa del sensorio. Esami colturali e flogosi sarebbero successivamente risultati negativi e la valutazione endocrinologica avrebbe confermato il quadro clinico.

Conclusioni: la terapia steroidea cronica deve rappresentare un red flag, per le complicanze, tra cui il diabete metasteroideo, rischio infezioni, ipocorticosurrenalismo in particolare in caso di stress. In caso di stress fisico è utile supportare il paziente mediante idrocortisone 100mg BID il giorno dell'intervento (anche mininvasivi o percutanei) e per le 24h successive o in base all'andamento clinico.

SCOMPENSO CARDIACO 360
IPERTENSIONE POLMONARE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)

IPERTENSIONE POLMONARE PRECAPILLARE NELLA BETA-TALASSEMIA: TERAPIA MIRATA ED EFFICACIA

Francesco Tafuri (a), Paolo Fabio D´andria (a), Laura Garau (a), Stefano Carugo (a), Marco Vicenzi (a)
(a) IRCCS CA' GRANDA POLICLINICO DI MILANO

G.N. un uomo di 50 anni, affetto da beta-talassemia trasfusione-dipendente e anemia cronica (Hb 10 g/dL) con trasfusione di 2 unità di emazie ogni 21 giorni e pregressa splenectomia, si presentava per dispnea ingravescente da circa un anno (classe NYHA III-IV). Follow-up RMN negativo per sovraccarico marziale cardiaco ed epatico in terapia ferrochelante. La valutazione ecocardiografica (TTE) evidenziava sovraccarico del ventricolo destro ed un'elevata probabilità di ipertensione polmonare (PH): D-shape, PAPS 60 mmHg, tempo di accelerazione RVOT 70 ms con notch, TAPSE 12 mm. ECG con segni di sovraccarico destro e NT-proBNP di 2893 ng/L. La angio-TC polmonare escludeva segni embolia polmonare acuta/cronica e significative patologie del parenchima polmonare. Il cateterismo cardiaco destro (RHC) confermava la presenza di PH precapillare (Tabella 1). Veniva posta diagnosi di PH secondaria ad emoglobinopatia, gruppo 5 secondo l'OMS e veniva avviata la terapia con Riociguat e diuretico. Dopo 2 mesi di trattamento al dosaggio massimo tollerato, per parziale miglioramento clinico alla terapia veniva aggiunto un antagonista del recettore dell'endotelina (Ambrisentan). Al follow-up a 6 mesi, il paziente riferiva un netto miglioramento dei sintomi (NYHA I), così come dei parametri morfo funzionali degli esami strumentali: TTE, RHC e test cardiopolmonare (Tabella 1, Immagini A e B).

Conclusione: nelle emoglobinopatie la PH è sottodiagnosticata per maggiore attenzione al sovraccarico marziale. Dal punto di vista eziologico, la PH in questi pazienti è dovuta ad emolisi cronica intravascolare con deplezione di ossido nitrico (NO) da parte dei gruppi eme liberi; ed è aggravata dalla splenectomia. Agire sul pathway del NO può mitigare il processo fisiopatologico di base. Il beneficio clinico può essere limitato in presenza di rimodellamento negli stadi avanzati della patologia, per cui l'implementazione della terapia con l'aggiunta di vasodilatatori polmonari (Ambrisentan) è necessaria per portare ad un miglioramento clinico sostanziale.

Emodinamica	Presentazione	Follow Up	Ecocardio	Presentazione	Follow Up
PAPs, mmHg	63	32	TrJet, m/s	3.5	2.5
PAPm, mmHg	38	20	AccT, ms	70	100
PVR, WU	6.7	1.3	TAPSE, mm	12	18
GC, l/min	5.2	8.7	RV, mm	53	36

Tabella 1

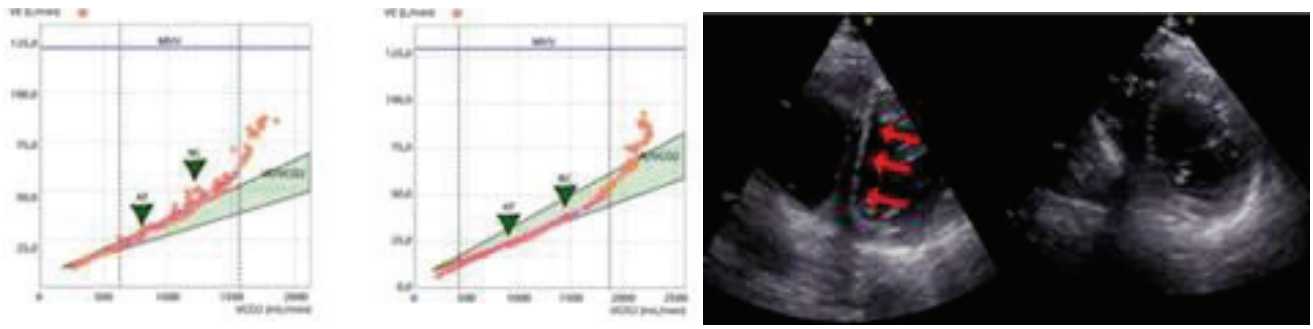


Immagine A. Evoluzione della slope VE/VCO2 al follow-up 30 vs 41.
Immagine B. Evoluzione del D-shape del setto interventricolare al follow-up.

Figure

CardioSic

SCOMPENSO CARDIACO 702
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)
SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

STORYTELLING OF THE ANATOMICAL THEATRE AT THE UNIVERSITY OF PADUA, TEMPLE OF SCIENCE

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The Anatomical Theater at the University of Padua, built in 1594 by Hieronymus Fabricius ab Aquapendente (1537-1619), Professor of Anatomy and Surgery, is unanimously considered the first research laboratory in the history of medicine.

The University Artistarum Medicinae Physicae et Naturae (Faculty of Medicine) had been founded in 1399. In 1404 the city of Padua fell under the rule of Venice Republic. According to Vesalius (1514-1564), the University of Padua was the most famous gymnasium in the world.

Strategic northern geographic position, civil and religious freedom, tolerance, teachers of great fame, latin as international language and, last but not least, the interest on Natural Philosophy, more than on Metaphysics, all were an appeal.

In 1517 the Venice Senate designated three "Reformers" to take over the University government. The profession of catholic faith was not compulsory to achieve the diploma.

One of the Reformers, Leonardo Donà, who had strongly wanted Galileo for the chair of Mathematics at the University of Padua in 1594, later became Doge.

With the Anatomical Theater the dawn of Cardiovascular Medicine started:

Fabricius with normal anatomy, his fellow William Harvey with animated anatomy and Giovanni Battista Morgagni with morbid anatomy in search of fatal diseases cause and explanation of symptoms. Morgagni stated: "It is impossible to pursue the nature and cause of any disease without dissection of cadavers".

A bust of Morgagni was erected in the Anatomical Theater by students of the Natio Germanica in 1768. It is still there as Temple of Medicine.

SCOMPENSO CARDIACO 152
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)

STRATIFICAZIONE CONTEMPORANEA DEL RISCHIO CON TEST DA SFORZO CARDIOPOLMONARE NELLO SCOMPENSO CARDIACO AVANZATO: UNO STUDIO RETROSPETTIVO MULTICENTRICO

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Introduzione: il test da sforzo cardiopolmonare (CPET) è cruciale nella stratificazione prognostica dei pazienti con insufficienza cardiaca avanzata (ADHF) per guidare l'indicazione terapeutica. Le linee guida ISHLT 2024 identificano una VO2 di picco (pVO2) ≤ 14 ml/kg/min per individuare pazienti da candidare a trattamenti avanzati, proponendo la VE/VCO2 slope (cut-off 35) come criterio ancillare. Tuttavia, questo modello di stratificazione potrebbe risultare inadeguato nella pratica clinica attuale: è quindi importante analizzare l'impatto prognostico del CPET nel contesto attuale, esaminando la capacità prognostica di pVO2, VE/VCO2 slope e della loro combinazione in una coorte contemporanea.

Metodi: lo studio, osservazionale, retrospettivo e multicentrico, ha arruolato pazienti adulti ambulatoriali consecutivi con ADHF riferiti a tre centri cardiologici di terzo livello tra Gennaio 2021 e Giugno 2024. Criteri di inclusione: classe funzionale NYHA II-IV con almeno un criterio "I NEED HELP" o un criterio ESC per la definizione di ADHF, terapia ottimizzata (farmacologica e non), esecuzione del CPET, e valutazione cardiologica con cateterismo cardiaco destro ed ecocardiogramma entro 60 giorni dal CPET. Sono inclusi solo pazienti con frazione d'eiezione ventricolare sinistra ≤ 35%. Endpoint primario: composito di mortalità per tutte le cause o equivalenti (trapianto cardiaco urgente o impianto di sistema di assistenza ventricolare sinistra) a 1 anno di follow-up.

Risultati: sono stati arruolati 176 pazienti (età media 57 ± 9 anni, 86% maschi, LVEF media 26 ± 6%, pVO2 media 14,7 ± 4,4 ml/kg/min, VE/VCO2 slope media 33,8 ± 10,5). Al follow-up di 1 anno, l'endpoint primario si è verificato in 22 (12,5%) pazienti, che avevano peggior pVO2 basale (13,3 ± 3,2 vs 15,0 ± 4,5; p-value=0,038) e maggiore VE/VCO2 slope basale (40,7 ± 8,5 vs 32,7±10,4; p-value=0,001) rispetto agli altri. Una pVO2 ≤ 14,0 ml/kg/min si associava a incidenza significativamente aumentata dell'endpoint primario (HR 2,900 [IC95%:1,141–7,369], p-value=0,025); tuttavia, una pVO2 con il cut-off più accurato emerso all'analisi ROC (≤ 15,2 ml/kg/min) si

è dimostrata un significativo predittore dell'endpoint primario con divergenza più marcata tra le curve di sopravvivenza (HR 5,696; p-value=0,019), così come VE/VCO2 slope > 35,5 (cut-off derivato dalle curve ROC) (HR 6,487, p-value<0,001). L'elaborazione di un modello multiparametrico comprendente pVO2 e VE/VCO2 slope ha migliorato ulteriormente la capacità predittiva delle singole variabili, individuando un gruppo ad alto rischio (pVO2 ≤ 15,2 ml/kg/min e VE/VCO2 slope > 35,5) con incidenza di eventi a 1 anno significativamente maggiore (HR 8,070 [IC95%:3,129–20,811]; p-value<0,001) rispetto al gruppo a basso rischio (pVO2 > 15,2 ml/kg/min o pVO2 ≤ 15,2 ml/kg/min e VE/VCO2 slope ≤ 35,5). La categoria "alto rischio" del modello si è mantenuta correlata all'endpoint primario (HR 4,269 [IC95%:1,637-11,129]; p-value=0,003) anche all'analisi multivariabile comprendente NT-proBNP elevato, IRC e classe NYHA.

Conclusioni: esaminando una coorte real-life di pazienti ambulatoriali con ADHF lo studio mostra come l'associazione di pVO2 ≤ 15,2 ml/kg/min e VE/VCO2 slope > 35,5 individui pazienti ad alto rischio di eventi con maggior accuratezza rispetto all'utilizzo delle singole variabili individualmente, enfatizzando il ruolo prognostico additivo di VE/VCO2 slope rispetto a pVO2. Saranno necessari ulteriori studi per validare questi risultati.

SCOMPENSO CARDIACO 222
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
BIOMARCATORI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)

DISPROPORTIONAL VERSUS PROPORTIONAL LEFT ATRIAL FUNCTION: PREDICTORS AND PROGNOSTIC SIGNIFICANCE IN CHRONIC HEART FAILURE

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Background: Despite left atrial (LA) and left ventricular (LV) function are strictly correlated, some patients might have disproportionate LA or LV dysfunction.

Aim: To characterize patients with prevalent LA versus LV myopathy in chronic heart failure (HF) across the spectrum of LV ejection fraction (LVEF).

Methods: We retrospectively studied chronic HF patients who underwent conventional and speckle-tracking transthoracic echocardiography (STE) to measure peak atrial longitudinal strain (PALS) at the reservoir phase, and LV global longitudinal strain (GLS). All-cause death was recorded during follow-up.

Results: A total of 764 HF patients (mean age 66.4±12.3 years, 24.7% female, mean LVEF 33±12%) were enrolled. By calculating the residuals from the linear regression between LA reservoir and LV GLS, we identified 92 patients with prevalent LA myopathy, 556 patients with balanced LA/LV function and 116 patients with prevalent LV myopathy. Patients with prevalent LA myopathy were older, had a higher prevalence of hypertension, previous HF re-hospitalization, chronic kidney disease and anemia, higher plasma levels of N-terminal pro-B-type natriuretic peptide, and greater daily dose of furosemide. Prevalent LA myopathy also showed greater LA maximum and minimum volumes, smaller left ventricles, more impaired diastolic function and worse right ventricular (RV) function compared to other groups (all p-values < 0.05). Using multinomial logistic regression adjusted for LVEF and LA size, independent predictors of prevalent LA myopathy were history of previous HF-hospitalization, absence of RAS-inhibitors, smaller LV, and more impaired RV-to-pulmonary artery coupling. Whereas previous HF-hospitalization, history of hypertension, larger LV, and less impaired diastolic function independently predicted prevalent LV myopathy. Prevalent LA myopathy also showed a lower probability of survival than prevalent LV myopathy (Log-rank P<0.001).

Conclusion: While most HF patients have balanced LA/LV myopathy, those with predominant LA myopathy are characterized by older age, higher natriuretic peptide levels, more impaired diastolic function and RV function and worse outcomes.

SCOMPENSO CARDIACO 1010
PROGNOSI (SCOMPENSO CARDIACO)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)

EFFICACIA COMPARATIVA DI DERISOMALTOSIO FERRICO E CARBOSSIMALTOSIO FERRICO IN PAZIENTI CON SCOMPENSO CARDIACO

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La carenza marziale è una comorbidità frequente nei pazienti con scompenso cardiaco (SC) ed è associata a ridotta tolleranza allo sforzo, peggioramento dei sintomi e aumento della morbidità. In questi pazienti, la terapia marziale endovenosa (e.v.) migliora la capacità funzionale e la qualità di vita. Il confronto tra diverse formulazioni di ferro ev è ancora poco studiato.

OBIETTIVO: Confrontare l'efficacia clinica ed umorale della somministrazione di Derisomaltosio Ferrico e Carbossimaltosio Ferrico in pazienti con SC e carenza marziale.

METODI: Lo studio ha arruolato in modo prospettico tutti pazienti afferenti all'ambulatorio dello Scompenso Cardiaco dell'UOC di Cardiologia dell'AORN e Dipartimento di Scienze della Salute dell'Università della Basilicata, dal 01/01/2025 al 30/06/2025. Criteri di inclusione dello studio dovevano essere: Scompenso Cardiaco, Classe NYHA ≥ II, e "carenza marziale", (Ferritina < 100 ng/mL o > 100 e < 300 ng/mL e saturazione della transferrina (TSAT) <20%). I pazienti sono stati seguiti nei sei mesi successivi all'arruolamento monitorando la sintomatologia clinica, i parametri umorali e la capacità funzionale (6 MWT).
RISULTATI: Sono stati arruolati un totale di 50 pazienti consecutivi. Di questi 21 hanno ricevuto la somministrazione di Derisomaltosio Ferrico (Pharmacosmos A/S, Holbaeck, Danimarca) e 29 la somministrazione di Carbossimaltosio Ferrico (Vifor Pharma, Roma, Italia). Le variazioni dei parametri umorali sono riportati in tabella:

Una simile riduzione della sintomatologia clinica con miglioramento della qualità di vita e della capacità funzionale è stata osservata in entrambi i gruppi. L'impiego del Derisomaltosio ferrico ha garantito una migliore compliance dei pazienti e una migliore organizzazione dell'ambulatorio, per il minor numero di accessi necessari.

CONCLUSIONI: L'infusione di ferro endovenoso è efficace nel migliorare lo stato marziale nel paziente con SC in entrambi i gruppi. L'impiego del Derisomaltosio Ferrico mostra simili risultati clinici umorali rispetto all'impiego del Carbossimaltosio Ferrico. Sono necessari studi randomizzati per confermare questi dati preliminari.

Gruppo	Hb	Ferritina	TSAT
Derisomaltosio Ferrico (N=21)	+ 1.3 ± 0.2 g/dL	+ 110 ± 0.22 ng/mL	+ 5 ± 0.6 %
Carbossimaltosio Ferrico (N=29)	+ 1.6 ± 0.3 g/dL	+ 220 ± 0.34 ng/mL	+ 6 ± 0.7%

Tabella 1

SCOMPENSO CARDIACO 255
PROGNOSI (SCOMPENSO CARDIACO)
BIOMARCATORI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)

LEFT ATRIAL STIFFNESS, EXERCISE INTOLERANCE, NATRIURETIC PEPTIDES AND OUTCOMES IN PATIENTS WITH HEART FAILURE WITH PRESERVED EJECTION FRACTION

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Background: Heart failure with preserved ejection fraction (HFpEF) is a complex condition associated with high morbidity and mortality. Key pathophysiological contributors include exercise intolerance, left atrial stiffness (LAS) reflecting atrial remodeling and diastolic dysfunction, and natriuretic peptides, established markers of cardiac stress. Exercise intolerance is a hallmark of HFpEF but remains poorly linked to structural and biochemical markers.

Objective: To investigate the interrelationship and prognostic significance of LAS, exercise intolerance, and natriuretic peptide levels in HFpEF patients.

Methods: We retrospectively studied 80 patients (mean age 72.8 years) with HFpEF. Left atrial (LAS was estimated by the ratio of E/e'/peak LA longitudinal strain (PALS) (% -1) measured by 2D speckle tracking echocardiography. N-terminal pro-brain-type natriuretic peptide (NTproBNP) was measured. Patients also completed a six-minute walking test (6MWT). Associations between these parameters and clinical outcomes were analyzed, with the primary outcome being death from any cause. The H2FPEF score was also calculated.

Results: Higher LAS was positively correlated with elevated NTproBNP ($r = 0.25$, $p < 0.05$) and inversely correlated with 6MWT ($r = -0.39$, $p < 0.001$). Over a mean follow-up of 48.5 months, 45 patients died. At univariable analysis, LAS (HR 1.92, 95%CI 1.28 – 2.87) and 6MWT (HR 0.99, 95%CI 0.98 – 0.99) were significantly associated with the outcome ($P<0.01$ for both). Patients with combined high LAS, low exercise tolerance, and elevated natriuretic peptides had the highest incidence of adverse outcomes (20.3 per 100 patients/year). LAS added incremental prognostic value beyond a model containing age, gender and H2FPEF score (Likelihood-ratio test = 9.18, $p = 0.0024$).

Conclusion: LAS, exercise intolerance, and natriuretic peptides are interconnected markers of disease severity in HFpEF. Their combined evaluation may enhance risk stratification and guide targeted therapeutic interventions.

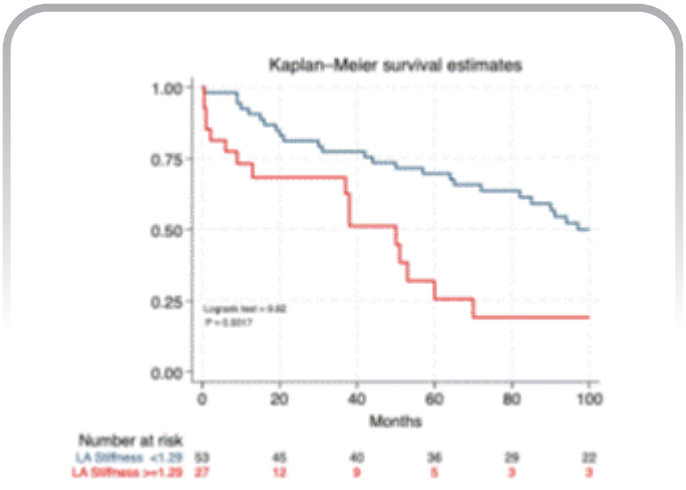


Figure 2

SCOMPENSO CARDIACO 439
DIABETE E MALATTIE CARDIOVASCOLARI (DIABETE E MALATTIE DEL METABOLISMO)
FARMACI CARDIOVASCOLARI (FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
PROGNOSI (SCOMPENSO CARDIACO)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)

REAL WORLD EFFICACY AND SAFETY OF GLP-1 RECEPTOR AGONISTS IN DIABETIC PATIENTS WITH HEART FAILURE: INSIGHTS FROM THE MOLINETTE-HF REGISTRY

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Introduction: GLP-1 receptor agonists (GLP-1RAs) have shown cardiovascular benefits in patients with type 2 diabetes mellitus (T2DM), especially in those with atherosclerotic disease or HF with preserved ejection fraction (HFpEF). However, their impact in heart failure with reduced ejection fraction (HFrEF) remains controversial, with prior trials suggesting neutral or adverse effects and others showing a potential role in reducing HF events. Our study assessed the real-world effectiveness and safety of GLP-1RAs in a cohort of patients with T2DM and heart failure (HF), including HFrEF, from the MOLINETTE-HF registry.

Methods: We retrospectively analyzed data from the MOLINETTE-HF registry, a prospective single-center cohort from Turin, Italy. We included patients with T2DM and HF, excluding those with type 1 diabetes. Patients were grouped by GLP-1RA use during follow-up. The primary endpoint was a composite of all-cause mortality or HF hospitalization. Multivariable Cox regression and logistic models were adjusted for confounders including CKD, atrial fibrillation (AF), BMI, and LVEF.

Results: Of 1,011 HF patients, 170 had T2DM; 55 (32.4%) received GLP-1RA therapy. Compared to non-users, GLP-1RA patients had lower baseline LVEF (30% vs 38%), higher BMI, and more frequent use of MRAs and SGLT2i. After a median follow-up of 25 months (IQR 15–39), the primary endpoint occurred in 15.1% of GLP-1RA users versus 40.2% of non-users (p = 0.02). In multivariable Cox regression, GLP-1RA therapy was independently associated with lower risk (HR 0.44, 95% CI 0.22–0.89; p = 0.02). Similar findings were observed in logistic models (OR 0.20, p = 0.001). CKD, AF, and lower LVEF were independently associated with worse outcomes.
HF hospitalizations were significantly lower in the GLP-1RA group (14.5% vs 29.4%, p = 0.04), while all-cause mortality occurred in 7.3% vs 14.7% (p = 0.18) in treated vs untreated patients. GLP-1RA therapy was well tolerated, with only 4 patients (7.5%) discontinuing due to gastrointestinal side effects.

Conclusion: GLP-1RA therapy was associated with a substantial reduction in the composite endopoint of heart failure hospitalization and all-cause mortality

mortality or HFH, in treated patients, despite lower LVEF at baseline. These findings align with recent real-world data and suggest benefits that extend beyond glycemic control—possibly through anti-inflammatory, endothelial, and metabolic pathways. Importantly, this population was treated according to contemporary HF guidelines, with high GDMT adherence, including SGLT2i. No safety concerns emerged in patients with HFrEF.

These results support further clinical evaluation and randomized trials to confirm their role in HFrEF and identify optimal therapeutic candidates.

CardioSic

SCOMPENSO CARDIACO 687
PROGNOSI (SCOMPENSO CARDIACO)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
ATTIVITÀ FISICA E PREVENZIONE CARDIOVASCOLARE
(ATTIVITA´ FISICA E CARDIOLOGIA DELLO SPORT)

BEYOND THE SLOPE: PROGNOSTIC UTILITY OF THE VE/VCO2 INTERCEPT IN CHRONIC HEART FAILURE

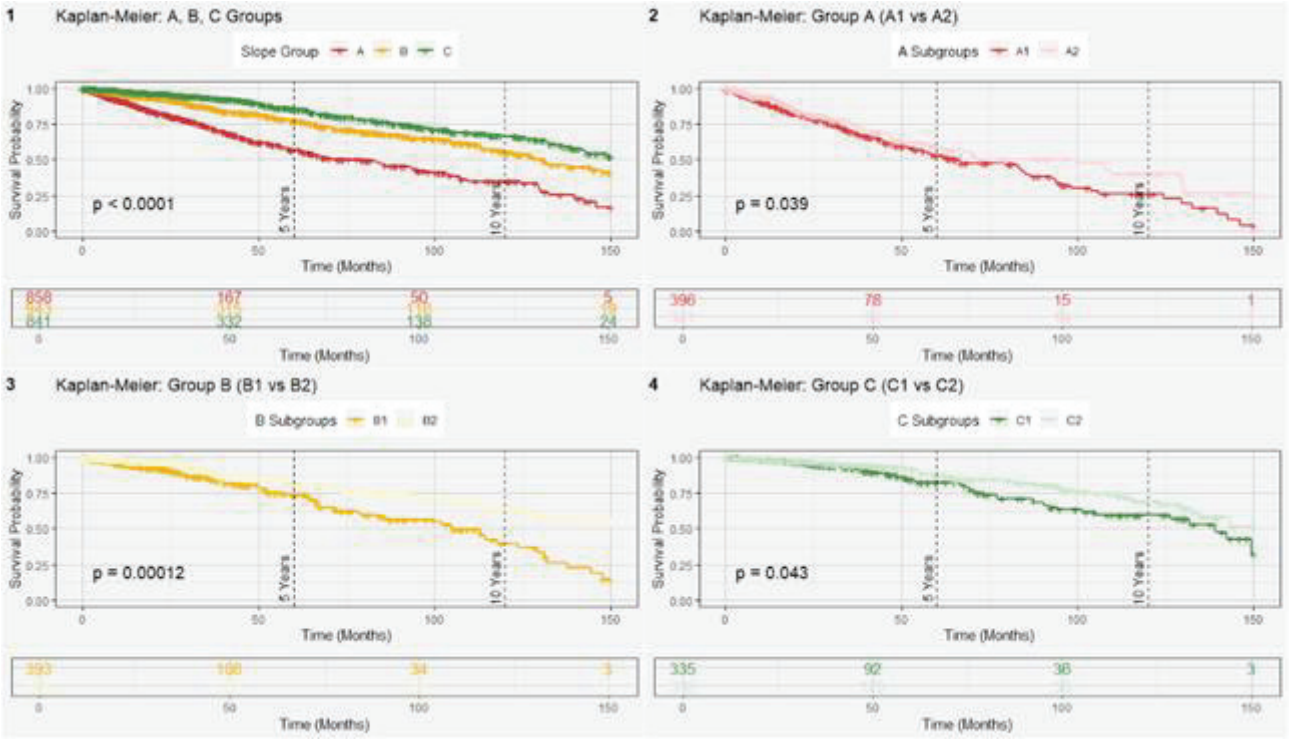
Robin Willixhofer (a), Filippo Maria Rubbo (a, c), Stefano Grosdani (a), Luca Felli (a), Elisabetta Salvioni (a), Massimo Mapelli (a), Carlo Vignati (a), Beatrice Pezzuto (a), Irene Mattavelli (a), Cosimo Carriere (c), Nikita Baracchini (c), Teresa Capovilla (c), Anna Apostolo (a), Pietro Palermo (a), Jeness Campodonico (a), Mauro Contini (a), Lucia Tricarico (d), Michele Senni (g), Michele Emdin (i), Damiano Magri (b), Gianfranco Sinagra (c), Michele Correale (d), Gaia Cattadori (e), Piergiuseppe Agostoni (a, h)

(a) CENTRO CARDIOLOGICO MONZINO; (b) AZIENDA OSPEDALIERA SANT´ANDREA SAPIENZA; (c) GIULIANO ISONTINA UNIVERSITY, HEALTH AUTHORITY AND UNIVERSITY OF TRIESTE; (d) UNIVERSITY OF FOGGIA; (e) IRCCS MULTIMEDICA MILANO; (f) ISTITUTI CLINICI SCIENTIFICI MAUGERI IRCCS; (g) ASST PAPA GIOVANNI XXIII BERGAMO; (h) DEPARTMENT OF CLINICAL SCIENCES AND COMMUNITY HEALTH, UNIVERSITY OF MILAN; (i) SCUOLA UNIVERSITARIA SUPERIORE PISA SANT ANNA

Background: Cardiopulmonary exercise testing (CPET) is used for risk stratification in heart failure (HF). While the ventilation to carbon dioxide production (VE/VCO2) slope ≥34 identifies high risk, patients with intermediate values remain heterogeneous. The VE/VCO2 Y-intercept, reflecting dead space ventilation, may refine prognostication.

Methods: We analyzed 2,642 HF. Follow-up was 26 [9–63] months. The endpoint was the composite of all-cause death, urgent transplant, or LVAD implantation.
Results: Median age was 62 [53-70] years, LVEF 33 [27-39] %, and 27% were NYHA III–IV. During follow-up, 534 events occurred. Both VE/VCO_2 slope and peak VO_2 predicted outcome in uni- and multivariate models (HR 1.04, 95% CI 1.03–1.06; HR 0.90, 95% CI 0.88–0.93, p<0.001, respectively). The Y-intercept was not prognostic univariately but added independent value in multivariate models (HR 1.08, 95% CI 1.04–1.13, p<0.001). Across slope groups, prognosis and clinical profiles improved stepwise from group A (≥34, n=858) to B (28–34, n=943) to C (<28, n=841). Group A compared to C patients had more severe HF (lower LVEF (30 [25-36] % vs. 35 [30-40] %, trend-p <0.001), lower peak VO_2 (12.7 [10.06-15.3] vs. 17.7 [14.6-21.6] mL/kg/min, trend-p <0.001), and higher NT-proBNP (1400 [572-3122] vs. 454 [174-1081] pg/mL, trend-p <0.001). Within group B, but not within A and C groups, high median Y-intercept (B1 ≥3.9) clearly identified patients with higher HF severity and worse survival than B2 (log-rank p<0.001).

Conclusion: VE/VCO2 slope increase is associated with a progressive lower survival. The Y-intercept enhances risk assessment in HF with intermediate VE/VCO_2 slope values.


1
Kaplan-Meier: A, B, C Groups
Slope Group A B C
Survival Probability
p < 0.0001
5 Years
10 Years
Time (Months)
858 167 50 5
841 332 138 24
2
Kaplan-Meier: Group A (A1 vs A2)
A Subgroups A1 A2
p = 0.039
396 78 15 1
3
Kaplan-Meier: Group B (B1 vs B2)
B Subgroups B1 B2
p = 0.00012
393 100 34 3
4
Kaplan-Meier: Group C (C1 vs C2)
C Subgroups C1 C2
p = 0.043
335 92 36 3

Figure

CardioSic

86° CONGRESSO NAZIONALE SIC
Roma, 4-7 dicembre 2025

TELECARDIOLOGIA ED E-HEALTH

TELECARDIOLOGIA ED E-HEALTH 927
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
TELEMEDICINA IN CARDIOLOGIA (TELECARDIOLOGIA ED E-HEALTH)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)

POTENTIAL ROLE OF A PHARAMCY-BASED TELEMEDICINE NETWORK FOR ATRIAL FIBRILLATION DETECTION AND MANGEMENT: INSUGHTS FROM A NATIONWIDE ITALIAN NETWORK

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Background: Atrial fibrillation (AF) is the most common sustained arrhythmia worldwide and is associated with an increased risk of stroke, heart failure, and hospitalization.
Early diagnosis and adequate follow-up are essential but often limited by accessibility to the hospital and the cardiology services. Pharmacy-based telemedicine networks may represent an innovative model of community-based cardiovascular care.

Purpose: To assess the feasibility and clinical impact of a pharmacy-based telemedicine network for AF screening and follow-up.

Methods: Our Department of Cardiology, in collaboration with the National Association of Pharmacists and the Italian National Institute of Health, has implemented a telemedicine network involving 7,056 pharmacies across Italy, all connected to a centralized telemedicine platform (Health Telematic Network, HTN). Pharmacies are equipped to perform 12-lead ECGs and Holter ECGs and exams are conducted either as routine check-ups or in response to cardiac symptoms. For each procedure, demographic and clinical data are collected and transmitted to the platform for real-time cardiological evaluation. When abnormalities are found pts are referred either for further diagnostic evaluation, outpatient clinical assessment or, in case of life-threatening conditions, to the Emergency Department (ED). We retrospectively analyzed all ECGs performed between February 2022 and February 2023, totaling 260,825 procedures.

Results: A total of 260,825 patients were included (median age 32.1 years); 117,949 (41.6%) were male and 142,876 (58.4%) were female. AF was diagnosed in 3,988 patients, of whom 3,590 (90%) had a first diagnosis and 398 (10%) had a known prior history of AF. The main indication for the exam was routine assessment (2,681; 67.3%), while 1,216 patients (30.5%) presented with specific cardiac symptoms: palpitations (367; 9.2%), chest pain (172; 4.3%), dyspnea (129; 3.2%).
Patient access occurred either through self-presentation (1,610; 40.4%) or referral from GPs, cardiologists, or other specialists (2,288; 57.4%).
Overall, 1,784 cases (44.7%) required further management: 470 patients (11.8%) were referred back to their GP, 330 (8.3%) underwent additional diagnostic investigations, and 984 (24.7%) were referred directly to the emergency department—mainly for AF with slow or rapid ventricular response, or for newly diagnosed AF requiring initiation of oral anticoagulation. Notably, none of our AF patients had a CHA_2DS_2-VA score of 0 and 3,265 of them (81.9%) had a CHA_2DS_2-VA score ≥2.

Conclusions: Our pharmacy-based telemedicine network allowed timely detection and management of AF in the community. Such a system could enhance territorial cardiovascular services and potentially reduce the burden of AF-related complications.

TELECARDIOLOGIA ED E-HEALTH 1087
APPS IN CARDIOLOGIA (TELECARDIOLOGIA ED E-HEALTH)
INTELLIGENZA ARTIFICIALE (TELECARDIOLOGIA ED E-HEALTH)
TELEMEDICINA IN CARDIOLOGIA (TELECARDIOLOGIA ED E-HEALTH)

INTEGRATING WEARABLE TECHNOLOGY INTO CARDIOVASCULAR CARE: SCREENING FOR OBSTRUCTIVE SLEEP APNEA

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Background: Obstructive sleep apnea syndrome (OSAS) is highly prevalent in cardiovascular patients and is associated with hypertension, atrial fibrillation, stroke, and increased cardiovascular mortality. Gold standard diagnostic tools such as polysomnography (PSG) and cardio-respiratory monitoring are costly, invasive, and poorly suited for large-scale screening. Wearable devices and artificial intelligence may offer an accessible and reliable alternative.

Materials and Methods: We prospectively enrolled 38 patients (71% males, mean age 62±11 years) referred for cardiovascular evaluation. Each underwent screening with the wearable device Rooti Rx and, in most cases, simultaneous or sequential cardio-respiratory monitoring (Embletta). Clinical risk factors, laboratory data, and Berlin Questionnaire were collected. Rooti parameters included mean daytime and nighttime HR, atrial and ventricular ectopy burden, conduction intervals, cyclic variation of heart rate index (CVHRI), cardio-electrical instability index (CEI), and sleep-related metrics (WASO, sleep latency, total sleep time). Diagnostic accuracy for moderate-to-severe OSAS (AHI ≥15) was assessed against cardio-respiratory monitoring.

Results: Among enrolled patients, hypertension (73%), dyslipidemia (81%), and diabetes (19%) were the most prevalent comorbidities. Rooti-derived CEI and CVHRI significantly correlated with AHI values. Using CEI, moderate-to-severe OSAS was identified with a sensitivity of 67%, specificity of 100%, PPV of 100%, and NPV of 89%. Negative predictive value was particularly robust, supporting its role in ruling out clinically relevant OSAS. Wearable-based screening proved feasible, well tolerated, and non-invasive, with high compliance compared to standard PSG.

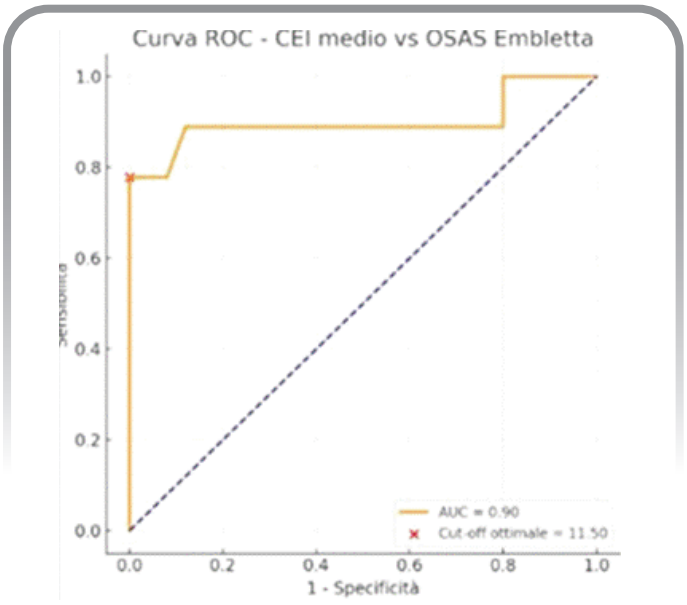


Figure 1

Discussion: This study supports the use of wearable ECG-based devices in OSAS screening among cardiovascular patients. Rooti Rx demonstrated reliable correlation with standard diagnostic tools, particularly in predicting moderate-to-severe disease. Importantly, unrecognized or delayed OSAS diagnosis may underlie the poor effectiveness of several cardiovascular treatments, as the underlying trigger remains unaddressed, leading to residual cardiovascular risk and treatment resistance. Early recognition and targeted management of OSAS could therefore enhance therapeutic efficacy, improve adherence, and ultimately reduce the cardiovascular burden. Integration of wearable technology with AI-driven algorithms may optimize detection, risk stratification, and healthcare resource allocation.

TELECARDIOLOGIA ED E-HEALTH 875
TELEMEDICINA IN CARDIOLOGIA (TELECARDIOLOGIA ED E-HEALTH)
DEFIBRILLATORE IMPIANTABILE (ARITMIE)
TERAPIA DI RESINCRONIZZAZIONE (ARITMIE)
ELETTROSTIMOLAZIONE (ARITMIE)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)

DIGITAL TRANSFORMATION OF THE EP LAB THROUGH REMOTE TELEMEDICINE-GUIDED IMPLANTATION

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Introduction: Advances in cardiac electrophysiology (EP) have expanded the role of implantable devices, yet implant procedures still rely on the physical presence of field clinical specialists (FCS) in the EP lab. This dependency may limit accessibility of care, especially in settings with reduced resources availability.

Hypothesis: implantable cardioverter-defibrillator (ICD) and cardiac resynchronization therapy defibrillator (CRT-D) implantation could be safely and effectively performed with remote FCS guidance, without their physical presence in the EP lab.

Methods: A telemedicine system was established with a dedicated video/audio platform and multipoint cameras to connect FCS remotely with the EP lab of our academic hospital. The study was organized into three phases: (1) technical assessment in 20 patients with previously implanted devices; (2) 20 phantom-based implantations under remote FCS guidance; (3) 30 consecutive patients (mean age 63 ± 12 years; 67% male; mean ejection fraction 35 ± 10%) randomized 1:2 to remote-guided vs. standard on-site FCS ICD/CRT-D implantation.
Devices implanted included single- and dual-chamber ICDs, subcutaneous ICDs (S-ICDs), and CRT-Ds. Main endpoints were procedural success (optimal electronic parameters), stability at follow-up, fluoroscopic time (FT), and EP lab occupancy.

Results: All 30 procedures were successfully completed without acute complications. Baseline characteristics were well balanced between groups. Procedural success was achieved in every case, with implanted leads meeting accepted thresholds for sensing, impedance, and pacing capture. A significant reduction in EP lab occupancy time was observed in the remote-guided group (1h 24min ± 6.5) compared with the standard on-site group (1h 43min ± 28, P = 0.031). Fluoroscopy time tended to be lower in telemedicine-guided procedures (6 ± 4 min) versus standard procedures (8 ± 8 min), although the difference was not statistically significant (P = 0.5). Regarding long-term performance, analysis of LV lead parameters in the telemedicine group showed no significant differences across discharge, 1-month, and 6-month follow-up for sensing ($F(2,6) = 0.032$; P = 0.97), capture threshold ($F(2,6) = 2.135$; P = 0.19), and impedance ($F(2,6) = 0.693$; P = 0.54). All values remained within normal ranges, and no device-related complications, lead failures, or major adverse cardiovascular events were observed during one-year follow-up. Defibrillation testing was performed in 3 of 30 patients (10%), all in the S-ICD subgroup with on-site FCS.

Conclusions: This study demonstrates safety and feasibility of ICD, S-ICD, and CRT-D implantation under remote FCS guidance, without compromising procedural outcomes or long-term device stability.

Remote support significantly reduced EP lab occupancy and showed a trend toward lower fluoroscopy exposure. These findings suggest that remote-guided implantation may optimize workflow and broaden access to device therapy, particularly in rural centers or during healthcare system restrictions.

TELECARDIOLOGIA ED E-HEALTH 837
INTELLIGENZA ARTIFICIALE (TELECARDIOLOGIA ED E-HEALTH)
APPS IN CARDIOLOGIA (TELECARDIOLOGIA ED E-HEALTH)
BIG DATA (TELECARDIOLOGIA ED E-HEALTH)

CLINICAL PRACTICE GUIDELINES: AN AI-BASED VIRTUAL ASSISTANT FOR RAPID ACCESS IN CARDIOLOGY

Marco Penso (a), Michele Tomaselli (a), Denisa Muraru (a, b), Cinzia Pece (a), Paolo Springhetti (a), Noela Radu (a), Francesca Heilbron (a), Luigi Badano (a, b)
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Background and aims: Clinical practice guidelines represent a cornerstone in evidence-based cardiology, yet their increasing length and complexity often hinder timely consultation during daily clinical practice. Artificial intelligence (AI) offers new opportunities to optimize access to relevant recommendations. We developed and evaluated a web-based platform powered by large language models (LLMs) to provide cardiologists with an interactive assistant for rapid navigation and interpretation of European Society of Cardiology guidelines.

Methods: A web-based platform was created to host major cardiology guidelines in an interactive format. The system integrates a conversational assistant based on the GPT-4 LLM, optimized for retrieval-augmented interactions. Uploaded guideline documents are indexed, allowing the assistant to extract relevant content and respond to clinician queries in natural language. The platform ensures that each session starts with a new conversation, maintaining user-specific privacy and avoiding persistence of prior chats.

Results: The tool currently includes the latest guidelines on cardiomyopathies (2023), atrial fibrillation (2024), peripheral arterial and aortic diseases (2024), myocarditis and pericarditis (2025), and valvular heart disease (2025). Preliminary testing with clinicians demonstrated that the assistant enables rapid retrieval of diagnostic and therapeutic recommendations, while preserving the original document context. The system has been positively evaluated for usability and potential to improve decision support in daily clinical practice.

Conclusions: This AI-powered assistant, provides cardiologists with immediate access to structured guideline knowledge, supporting faster and more informed decision-making. Future development will include integration of additional guidelines and prospective evaluation in clinical workflows.

CardioSic

TELECARDIOLOGIA ED E-HEALTH 708
INTELLIGENZA ARTIFICIALE (TELECARDIOLOGIA ED E-HEALTH)
TELEMEDICINA IN CARDIOLOGIA (TELECARDIOLOGIA ED E-HEALTH)
INFARTO STEMI (CARDIOPATIA ISCHEMICA)

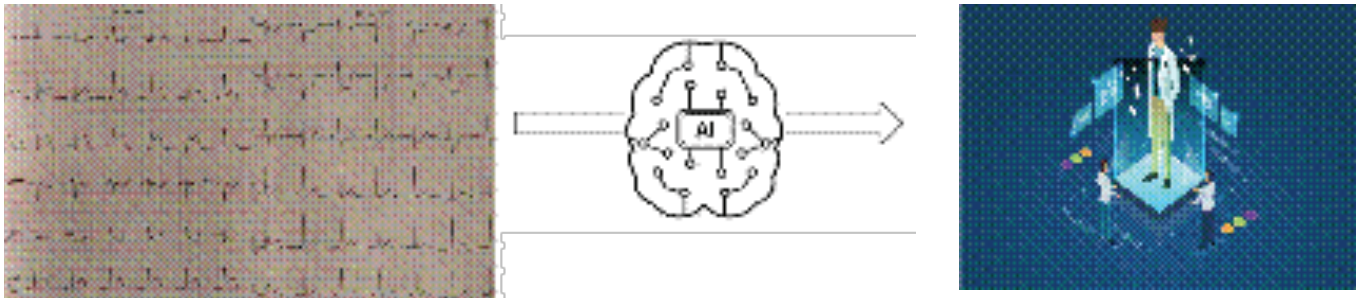
ARTIFICIAL INTELLIGENCE-BASED RISK PREDICTION USING PREDISCHARGE ECGS IN STEMI PATIENTS

Rossella Quarta (b, e), Alberto Polimeni (b, f), Giovanni Martino (g), Domenico Simone Castiello (d), Letizia Rosa Romano (e), Federica Meringolo (h), Paola Plutino (e), Laura Pagnotta (e), Giovanni Lopes (d), Antonio Curcio (b, e)
(a) UNIVERSITY OF CALABRIA; (b) DEPARTMENT OF PHARMACY, HEALTH AND NUTRITIONAL SCIENCE, UNIVERSITY OF CALABRIA-RENDE; (c) DEPARTMENT OF ENGINEERING, BIOLOGY AND CHEMISTRY, UNIVERSITY OF CALABRIA- RENDE; (d) DEPARTMENT OF ADVANCED BIOMEDICAL SCIENCES, FEDERICO II, UNIVERSITY OF NAPLES-NAPLES; (e) DIVISION OF CARDIOLOGY, ANNUNZIATA HOSPITAL-COSENZA; (f) DIVISION OF INTERVENTIONAL CARDIOLOGY, ANNUNZIATA HOSPITAL- COSENZA; (g) DIVISION OF CARDIOLOGY, DEPARTMENT OF MEDICAL AND SURGICAL SCIENCES, MAGNA GRAECIA UNIVERSITY- CATANZARO; (h) DEPARTMENT OF BIOLOGY, ECOLOGY AND HEART SCIENCES, UNIVERSITY OF CALABRIA - RENDE

Background: ST-segment elevation myocardial infarction (STEMI) remains a leading cause of cardiovascular mortality despite significant advances in reperfusion strategies and secondary prevention. Accurate post-discharge risk stratification is essential to improve prognosis and optimize patient follow-up. In this context, the 12-lead electrocardiogram (ECG), beyond its well-established diagnostic role, has also been recognized as a source of prognostic information, reflecting both the extent of myocardial injury and the quality of revascularization.

Methods: We conducted a multicenter observational study including 822 consecutive STEMI patients admitted to two academic centers in the South of Italy and treated with primary percutaneous coronary intervention (PCI). For each patient, predischarge post-PCI ECGs were collected together with a comprehensive dataset including demographic, clinical, laboratory, echocardiographic, angiographic, and pharmacological information. Standardized 12-month follow-up was performed to assess major adverse cardiovascular events (MACE), defined as cardiovascular death, non-fatal myocardial infarction, non-fatal stroke, hospitalization for heart failure, and urgent coronary revascularization. ECGs underwent quality control and harmonization, with preprocessing and digitalization applied where necessary, to ensure uniformity across centers. This process resulted in a multimodal, harmonized dataset with high data completeness and robust clinical annotation.

Aims and conclusions: The primary aim of this project is to develop and validate an artificial intelligence (AI)-based prognostic score capable of integrating ECG-derived features with multimodal clinical data, with the goal of improving predictive accuracy beyond conventional risk assessment tools. Such an approach may provide clinicians with a valuable decision-support system for tailoring follow-up intensity and ultimately reducing the incidence of MACE within the first year after STEMI. Preliminary results confirm the feasibility and high quality of this dataset, which stands out among currently available resources due to the unique combination of predischarge ECGs, multimodal clinical information, and standardized longitudinal follow-up. This innovative framework may lay the groundwork for clinically reliable AI-based tools dedicated to long-term risk stratification in STEMI patients.



Figures

CardioSic

86° CONGRESSO NAZIONALE SIC
Roma, 4-7 dicembre 2025

VALVULOPATIE

VALVULOPATIE 562
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)
TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT) (IMAGING CARDIOVASCOLARE)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE) (IMAGING CARDIOVASCOLARE)
CARDIOPATIE CONGENITE NELL´ADULTO (CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)

RHEUMATOID ARTHRITIS AND MULTISITE CARDIAC ANEURYSMS: A CASE REPORT AND MULTIMODALITY IMAGING REVIEW

Mattia Alberti (a), Paola Capozza (a), Vitantonio Cito (a), Maria Grazia Delle Donne (a), Valentina Barletta (a), Giulia Martinelli (c), Michele Celiento (d), Doralisa Morrone (a), Angela Pucci (c), Andrea Colli (d), Giovanni Donato Aquaro (b), Raffaele De Caterina (a)
(a) CARDIOLOGY DIVISION, UNIVERSITY OF PISA; (b) RADIOLOGY DIVISION, UNIVERSITY OF PISA; (c) PATHOLOGY DIVISION, UNIVERSITY OF PISA; (d) CARDIAC SURGERY DIVISION, UNIVERSITY OF PISA

Background: Rheumatoid arthritis (RA) is a systemic autoimmune disorder primarily affecting joints but also associated with extra-articular manifestations, including cardiovascular involvement. While pericarditis is the most common cardiac complication, valvular disease, conduction abnormalities, and aneurysmal changes of cardiac fibrous structures are rare and poorly characterized. Purpose: We present a unique case of RA-related multisite cardiac involvement and integrate it with a systematic review of the literature to provide insight into the spectrum of structural and conduction abnormalities associated with RA.

Case presentation: A 61-year-old man with seropositive RA, on low-dose steroids and hydroxychloroquine, presented with recurrent syncope. Electrocardiography revealed complete atrioventricular block. Multimodality imaging including transthoracic and transesophageal echocardiography, cardiac CT, and intraoperative assessment, demonstrated severe mitral regurgitation due to posterior leaflet prolapse, moderate-to-severe aortic regurgitation with leaflet thickening, a pseudoaneurysm of the mitral-aortic intervalvular fibrosa (MAIVF), and an aneurysm of the membranous ventricular septum (MVSA). During hospitalization, the patient experienced recurrent complete heart block requiring pacing. Surgical management with mitral and aortic valve replacement was performed, followed by permanent pacemaker implantation. Histopathology of the excised valves revealed granulomatous inflammation with multinucleated giant cells and fibrinoid necrosis consistent with rheumatoid nodules. Infective and congenital etiologies were excluded. The postoperative course was uneventful.

Systematic review: Our literature search identified few reported cases of RA complicated by pseudoaneurysms or aneurysms involving the LV outflow tract, MAIVF, or interventricular septum. Clinical presentations varied from asymptomatic findings to conduction disturbances or acute decompensation. Imaging findings often mimicked infective endocarditis, leading to diagnostic uncertainty. In several reports, histological examination was pivotal to confirm the diagnosis of RA-related valvulitis and nodules. Valvular thickening, regurgitation, and structural weakening of periannular fibrous tissue appear to be the main mechanisms underlying aneurysm formation.

Conclusions: Cardiac involvement in RA, though uncommon, may extend beyond valvular disease to include aneurysms of the MAIVF and interventricular septum, predisposing to conduction abnormalities and life-threatening complications. Multimodal imaging and histological examination are critical in distinguishing RA-related lesions from infective endocarditis, and underscore the importance of multidisciplinary evaluation.

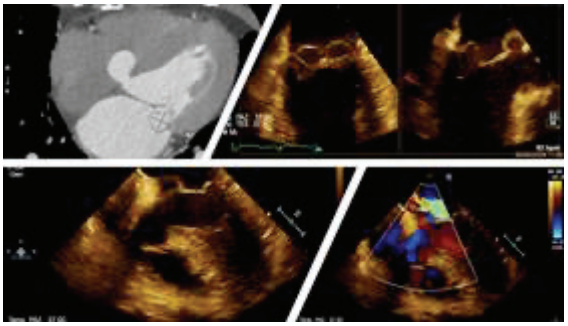


Figure 1

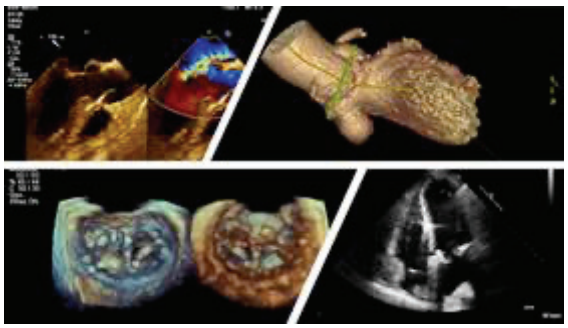


Figure 2

VALVULOPATIE 743
ELETTROSTIMOLAZIONE (ARITMIE)
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE)
(IMAGING CARDIOVASCOLARE)
ECOCARDIOGRAFIA 3-D (IMAGING CARDIOVASCOLARE)

PERCUTANEOUS TRICUSPID VALVE REPLACEMENT WITH PACEMAKER LEAD REPOSITIONING

Giulia Antonelli (a, b), Martina Ruffo (a, b), Francesco Tartaglia (a, b), Renato Bragato (a), Stefano Figliozzi (a, b), Antonio Mangieri (a, b)
(a) HUMANITAS RESEARCH HOSPITAL; (b) HUMANITAS UNIVERSITY

A 71-year-old woman was admitted to our hospital with clinical signs of right-sided heart failure. Her medical history was notable for arterial hypertension, permanent atrial fibrillation, and pacemaker implantation one year earlier for brady-tachy syndrome.

Transthoracic and transesophageal echocardiography revealed severe atrial functional tricuspid regurgitation (TR). The pacemaker lead was positioned centrally and did not contribute to the regurgitant mechanism, consistent with cardiac implantable electronic device (CIED)-associated TR. Surgical risk, estimated using the TRI-SCORE, was high; thus, following a multidisciplinary heart team discussion, the patient was deemed unsuitable for surgical intervention.

Tricuspid transcatheter edge-to-edge repair (T-TEER) was excluded due to the large coaptation gap (8 mm), star-shaped regurgitant jet morphology, and the presence of a pacemaker. Transcatheter tricuspid valve replacement (TTVR) was considered; however, the central lead position precluded this option because of the risk of lead dislodgement, malfunction, and paravalvular leak. Consequently, the pacemaker lead was extracted and repositioned into the postero-septal commissure. Prior to TTVR, coronary angiography and right heart catheterization were performed.

Coronary angiography demonstrated normal epicardial coronary arteries, while hemodynamic assessment revealed pre-capillary pulmonary hypertension (mean PAP 26 mmHg; PVR 2.4 WU; PAWP 10 mmHg). Cardiac computed tomography was subsequently performed to assess procedural feasibility and guide prosthesis sizing.

TTVR with Cardiovalve system (prosthesis size L) was carried out under general anesthesia with transesophageal echocardiographic guidance. The device was advanced centrally into the right ventricle to capture the native leaflets, with accurate positioning confirmed by real-time three-dimensional multiplanar reconstruction imaging. The procedure was successful, resulting in a final mean transvalvular gradient of 2 mmHg and only mild paravalvular leak (PVL).

After three months of follow-up, both the PVL and

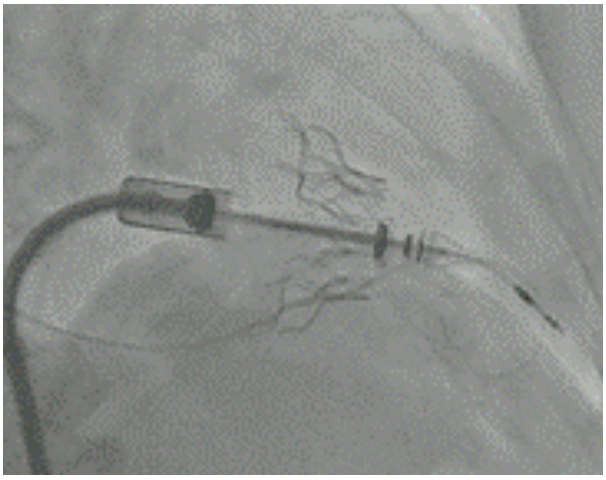


Figure 1

the transvalvular mean gradient remains unchanged. Moreover, impedence and pacing treshold remain stable after TTVR revealing correct PM lead function.

Orthotopic TTVR provides a definitive therapeutic option for consistent TR reduction. In patients with recent CIED implantation who are deemed unsuitable for TTVR due to unfavorable lead position, lead repositioning may represent a feasible strategy to enable valve implantation.

VALVULOPATIE 240
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
FARMACI CARDIOVASCOLARI
(FARMACI CARDIOVASCOLARI E NUTRACEUTICI)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
TERAPIA FARMACOLOGICA (SCOMPENSO CARDIACO)
FUNZIONE VENTRICOLARE, RIMODELLAMENTO E DANNO D'ORGANO
(IPERTENSIONE ARTERIOSA)

SGLT2-INHIBITORS IN DIABETIC PATIENTS WITH SEVERE AORTIC STENOSIS AND CARDIAC DAMAGE UNDERGOING TAVI

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(a) AZIENDA OSPEDALIERO-UNIVERSITARIA SANT'ANDREA, ROMA; (b) AZIENDA OSPEDALIERO-UNIVERSITARIA INTEGRATA DI VERONA; (c) IRCCS SANT'ORSOLA MALPIGHI, BOLOGNA; (d) AZIENDA OSPEDALIERA MORGAGNI PIERANTONI, FORLI'

Background: A substantial number of patients with severe aortic stenosis (AS) undergoing transcatheter aortic valve implantation (TAVI) experience adverse events after TAVI, with health care expenditure.

Purpose: We aimed to investigate cardiac remodeling and long-term outcomes in diabetic patients with severe AS, left ventricular ejection fraction (LVEF)<50%, and extra-valvular cardiac damage (EVCD) undergoing TAVI treated with sodium-glucose cotransporter-2 inhibitors (SGLT2i) versus other glucose-lowering strategies (no-SGLT2i users).

Methods: Multicenter international registry of consecutive diabetic patients with severe AS, LVEF<50%, and EVCD undergoing TAVI. Based on glucose-lowering therapy at hospital discharge, patients were stratified in SGLT2i versus no-SGLT2i users. The primary endpoint was a composite of all-cause death and heart failure (HF)-hospitalization (major adverse cardiovascular events, MACE) at 2-year follow-up. Secondary outcomes included all-cause death, cardiovascular death, and HF hospitalization.
Results. The study population included 311 patients, among which 24% were SGLT2i users. Within 1-year after TAVI, SGLT2i users experienced a higher rate of LV recovery (p=0.032), especially those with baseline LVEF≤30% (p=0.026), despite the lower baseline LVEF. Patients not treated with SGLT2i were more likely to progress to a worse EVCD stage over time (p=0.018). At 2-year follow-up, SGLT2i use was associated with a lower rate of MACE, all-cause death, and HF hospitalization (p<0.01 for all). After adjusting for confounding factors, the use of SGLT2i emerged as an independent predictor of reduced MACE (HR=0.45; 95%CI 0.17-0.75; p=0.007), all-cause death (HR=0.51; 95%CI 0.25-0.98; p=0.042) and HF-hospitalization (HR=0.40; 95%CI 0.27-0.62; p=0.004) (Figure1).

Conclusions: In diabetic patients with severe AS, LVEF<50%, and EVCD undergoing TAVI, the use of SGLT2i was associated with a more favorable cardiac remodeling and a reduced risk of MACE at 2-year follow-up.

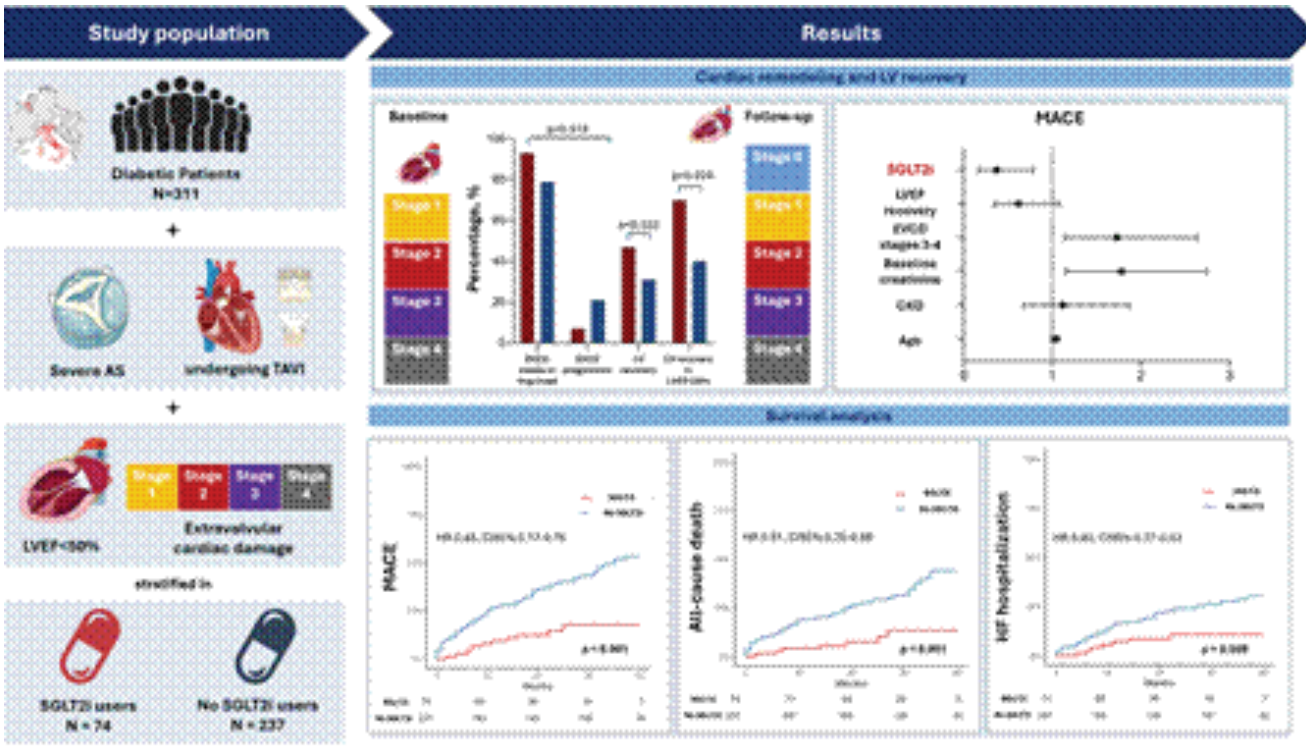

Study population
Results
Diabetic Patients
N=311
Severe AS
undergoing TAVI
LVEF<50%
Extravalvular
cardiac damage
stratified in
SGLT2i users
N = 74
No SGLT2i users
N = 237
Cardiac remodeling and LV recovery
Baseline
Follow-up
Stage 1
Stage 2
Stage 3
Stage 4
Percentage, %
MACE
SGLT2i
LVEF
recovery
eGFR
stages 3-4
Baseline
creatinine
CAD
Age
Survival analysis
MACE
All-cause death
HF hospitalization

Figure 1

VALVULOPATIE 527
PATOLOGIA DELLA VALVOLA TRICUSPIDE (VALVULOPATIE)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
ECOCARDIOGRAFIA 3-D (IMAGING CARDIOVASCOLARE)

FROM CT TO 3D ECHOCARDIOGRAPHY: CAN AUTOMATED TRICUSPID ANNULUS MEASUREMENT BY DEDICATED SOFTWARE REPLACE CT IN TTVR SCREENING? A PROSPECTIVE STUDY OF 96 PATIENTS USING 3D-TTE AND 3D-TOE

Fabio Fazzari (b), Francesco Balata (a, b), Andrea Baggiano (b), Alberico Del Torto (b), Laura Fusini (b), Riccardio Maragna (b), Manuela Muratori (b), Saima Mushtaq (b), Kamil Stankowski (b), Luigi Tassetti (b), Gianluca Pontone (b)
(a) UNIVERSITÀ STATALE DEGLI STUDI DI MILANO; (b) CENTRO CARDIOLOGICO MONZINO IRCCS, MILANO, ITALY

Background: Transcatheter tricuspid valve replacement (TTVR) is a promising therapy for patients with severe tricuspid regurgitation at high surgical risk. Precise anatomical assessment is essential for procedural planning. Although cardiac computed tomography (CCT) is the current reference standard, the diagnostic performance of three-dimensional transthoracic (3D-TTE) and transoesophageal echocardiography (3D-TOE), particularly when combined with automated annular analysis, remains not fully established.

Purpose: To prospectively evaluate the feasibility and diagnostic concordance of 3D-TTE and 3D-TOE compared with CCT in determining anatomical suitability for TTVR, using a novel artificial intelligence (AI)-based automated tool (3D Auto TV) for tricuspid valve annulus (TVA) and subvalvular apparatus assessment.

Methods: A total of 96 consecutive patients with severe tricuspid regurgitation referred for TTVR evaluation underwent 3D-TTE, 3D-TOE, and contrast-enhanced CCT. TVA perimeter, diameters, right ventricular dimensions, and the relationship with the subvalvular apparatus were analyzed using dedicated software. Procedural feasibility was adjudicated by the device manufacturer according to CT-based criteria. Pearson's correlation coefficients and Cohen's kappa were used to evaluate correlation and agreement between modalities.

Results: Image quality was adequate in all patients. 3D-TOE showed strong correlation with CCT for TVA perimeter ($r = 0.84$), maximum diameter ($r = 0.81$), and RV diameter ($r = 0.81$). 3D-TTE demonstrated moderate correlation for TVA perimeter ($r = 0.78$), maximum diameter ($r = 0.74$), and RV diameter ($r = 0.51$), figure 1. Based on CCT, TTVR was deemed unfeasible in 34% of cases. Agreement with CT-based eligibility was higher for 3D-TOE ($\kappa = 0.78$, $P < 0.001$) compared with 3D-TTE ($\kappa = 0.64$, $P < 0.001$). Automated 3D-TOE analysis provided excellent discriminative accuracy (AUC = 0.92); a threshold of 160 mm yielded 90% sensitivity and 82% specificity (AUC at cut-point = 0.86). Echocardiographic assessment of the TV apparatus compared with CCT analysis is shown in figure 2.

Conclusions: 3D transoesophageal echocardiography, integrated with AI-based automated TVA analysis software, enables accurate anatomical assessment and demonstrates strong agreement with CT in preprocedural screening for TTVR, outperforming 3D-TTE. It may serve as a valuable alternative when CT is unavailable or contraindicated.

CardioSic

VALVULOPATIE 216
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)
PATOLOGIA DELLA VALVOLA TRICUSPIDE (VALVULOPATIE)

PROGNOSTIC SIGNIFICANCE OF CONCOMITANT VALVULAR DISEASE IN MODERATE AORTIC REGURGITATION

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Background: Multivalvular heart disease (MVD), defined as coexisting lesions in two or more heart valves, poses significant clinical and diagnostic challenges. While isolated valvular heart disease (VHD) is well characterized, the impact of moderate aortic regurgitation (AR) in the presence of another concomitant moderate VHD is poorly understood. Current guidelines focus primarily on isolated severe lesions, potentially underestimating the significance of moderate MVD.

Aims: This study aimed to assess the prevalence of concomitant moderate VHD in patients with moderate AR and evaluate their prognostic impact.

Methods: We retrospectively analyzed 794 patients with ≥ moderate AR (consecutively enrolled from 2017 to 2023) from a dedicated echocardiographic database. Patients were grouped as isolated moderate AR (n=178), isolated moderate -to-severe/severe AR (n=214) and moderate AR plus ≥ one concomitant moderate VHD (n=402). Exclusion criteria included cardiomyopathy, prior cardiac surgery, reduced LVEF (<55%), or severe VHD other than AR. Patients were followed for 24 months until the occurence of a composite endpoint (all-cause mortality and heart failure hospitalization)(HHF). VHD severity was assessed per current guidelines.

Results: Patients with moderate AR + another VHD were older (79.9 vs. 66.4 years, p<0.001), had more comorbidities, and larger left atrial volumes. At follow-up, 150 patients (18.8%) met the composite endpoint (63 HHF, 108 deaths). Moderate AR + moderate VHD was independently associated with higher event risk (HR 2.86, 95% CI 1.51–5.42; p=0.001), comparable to isolated significant AR (HR 2.17, 95% CI 1.08–4.34; p=0.028). (table 1).

Adjusted Cox's regression analysis confirmed poorer

	Hazard Ratio (CI 95%)	p-value
Isolated moderate aortic regurgitation (reference)	1	
Moderate aortic regurgitation + Moderate heart valve disease	2.86 (1.51-5.42)	**0.001**
Isolated significant aortic regurgitation	2.17 (1.08-4.34)	**0.028**
Age (per year)	1.04 (1.06-1.09)	**0.003**
Sex (female)	0.58 (0.41-0.83)	0.003
Diabetes	1.46 (0.98-2.17)	0.057
Hypertension	1.57 (0.93-2.64)	0.090
Chronic kidney disease	1.08 (0.75-1.60)	0.709
Chronic coronary disease	1.43 (0.95-2.13)	0.083
Atrial fibrillation	1.08 (0.76-1.53)	0.658

Table 1

survival in the moderate AR+ another moderate VHD group without any significant difference across different combinations of concomitant VHD.(figure 1 and 2).

Conclusions: Moderate AR with another concomitant VHD should not be considered benign; its prognosis mirrors severe AR, suggesting current guidelines may underestimate this high-risk group.

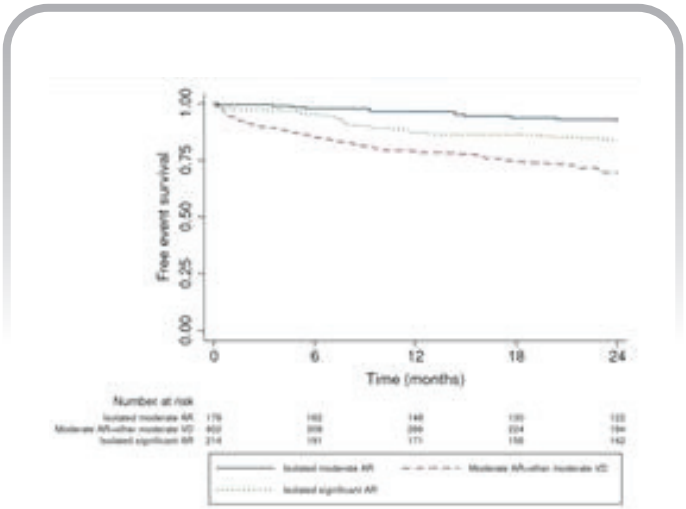


Figure 1

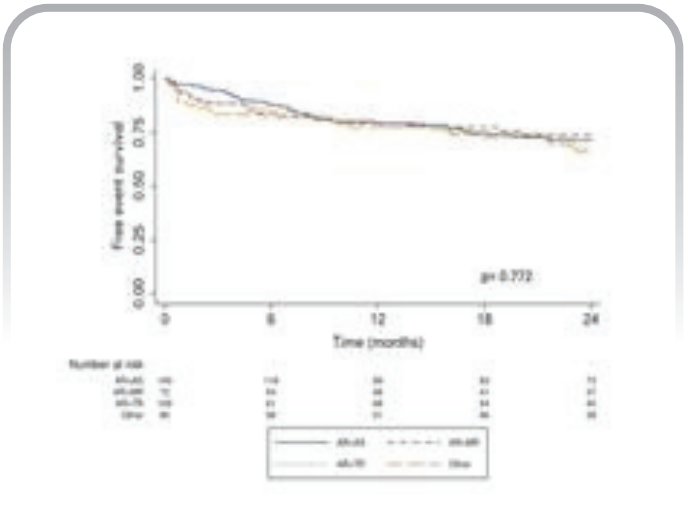


Figure 2

VALVULOPATIE 364
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE
(IMAGING CARDIOVASCOLARE)

STENOSI AORTICA SEVERA IN PAZIENTE UNDER 75 CON TALASSO-DREPANOCITOSI: UN APPROCCIO MULTIDISCIPLINARE

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Introduzione: La stenosi aortica (SA) rappresenta la valvulopatia più comune nei paesi occidentali, con una prevalenza crescente con l'età. Si stima che circa il 3-5% degli individui sopra i 75 anni sia affetto da stenosi aortica severa. Tale patologia ha un'evoluzione progressiva e, nei pazienti con stenosi severa sintomatica, la prognosi è di circa 2-3 anni senza intervento.
Il trattamento di tale valvulopatia, secondo le Line guida ESC/EACTS 2021 può avvenire attraverso:

1. Sostituzione valvolare aortica (SAVR) nei pazienti giovani a basso rischio chirurgico (<75 annie e con STS-PROM/EuroSCORE II <4%) (Classe I; Livello B)
2. Impianto transcatetere della valvola aortica (TAVI): accomandata nei pazienti anziani (≥75 anni) o in quelli ad alto rischio (STS-PROM/EuroSCORE II >8%) o ritenuti inoperabili (Classe 1, Livello A)

Caso clinico: Paziente di 52 anni, iperteso, ex-fumatore, affetto da talasso-drepanocitosi, ritardo mentale e bicuspidia aortica, giunge alla nostra attenzione per episodio sincopale, in seguito al quale, sottoposto a ecocardiogramma transtoracico, veniva riscontrata un peggioramento della nota stenosi aortica pre-esistente, ormai divenuta severa.
Secondo le indicazioni delle linee guida ESC/EATCS 2021, essendo il paziente molto giovane e avendo un basso rischio chirurgico, calcolato tramite STS-PROM/Euroscore II, dovrebbe , idealmente, essere sottoposto a intervento cardiochirurgico di impianto di valvola aortica meccanica, ma a una valutazione multidisciplinare, condotta grazie alla cooperazione tra la nostra UO di Cardiologia e i colleghi ematologi, neurologi, neuropsichiatri e cardiochirurghi, la situazione appariva molto più complessa.

- il paziente risulta essere affetto da una compromissione dell'attività cognitive, che non gli permetterebbe di gestire autonomamente la terapia anticoagulante con VKA
- l'impianto di valvola meccanica rappresenta un trigger per la falcizzazione dei globuli rossi
- La gestione anestesiologica in corso di intervento cardiochirurgico di un paziente con talasso-drepanocitosi appare estremamente complessa

Il nostro Heart Team, alla luce dell'impossibilità di impiantare una valvola meccanica, dell'aspettativa di vita del paziente (10-15 anni), della complessa gestione anestesiologica in caso di intervento cardiochirurgico e dell'anatomia ottimale della valvola aortica del paziente in oggetto, che permetterebbe un secondo intervento di valve-in-valve, ha optato per sottoporre il paziente in oggetto a TAVI.
L'intervento è stato eseguito senza complicanze di alcuna natura.

Conclusioni: questo caso clinico dimostra l'importanza, all'interno di un heart valve center, della collaborazione tra diverse figure specialistiche, anche non inerenti l'ambito cardio-toraco-vascolare.

VALVULOPATIE 1096
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

MYOCARDIAL INJURY AFTER TRANSCATHETER AORTIC VALVE IMPLANTATION: QUANTIFICATION AND DETERMINANTS

Federica Bruno (a), Emanuele Sammartini (a), Vincenzo D´ambrosio (a), Concetta Filardo (a), Filippo Fabio Valenti (a), Valentina Scorza (a), Silvia Cuscunà (a), Mario Giovanni Genovese (a), Alessandro Caracciolo (a), Jolanda Sabatino (a), Nadia Salerno (a), Salvatore De Rosa (a), Daniele Torella (a), Sabato Sorrentino (a)
(a) UNIVERSITÀ MAGNA GRECIA DI CATANZARO

Background: Periprocedural myocardial injury is common after transcatheter aortic valve implantation (TAVI), but its definition and clinical impact remain uncertain. Standardized quantification of troponin release may help clarify its role. This study aimed to assess post-TAVI troponin increase as fold change over baseline and to identify clinical and procedural predictors of significant elevation.

Methods: We prospectively included consecutive patients undergoing TAVI at our institution from 2022 to 2024. Troponin levels were collected at baseline and at serial timepoints (6h, 24h, 48h, 72h). Fold increase at 48 h after procedure was defined as the ratio of post-procedural to baseline troponin. Patients were categorized into 5-fold incremental classes (≤5x, 5–9x, 10–14x, 15–19x, 20–24x, ≥25x) and additionally dichotomized as ≤10x vs. >10x. Multivariable logistic regression was performed to identify independent predictors of >10-fold troponin increase after TAVI

Results: The final cohort included 294 patients (median age 79 years, 50% female, median STS score 3.5%). Distribution of fold-increase classes was: <5x in 45.3%, 5–9x in 26.6%, 10–14x in 13.1%, 15–19x in 4.5%, 20–24x in 2.4%, and ≥25x in 7.9%. Overall, 28% of patients showed >10-fold elevation. In multivariable logistic regression, female sex was independently associated with >10-fold increase (OR 2.11, 95% CI 1.19–3.74, p=0.010). Baseline left ventricular ejection fraction (OR 1.04 per %; p=0.063) and fluoroscopy time (OR 1.02 per minute; p=0.052) showed borderline associations, while age, diabetes, prior stroke, and prior PCI were not significant.

Conclusions: Troponin release after TAVI is frequent, with nearly one third of patients experiencing >10-fold elevations. Female sex independently predicts higher biomarker rise, whereas longer procedure duration and preserved ejection fraction may also play a role. Further studies are needed to clarify the prognostic significance of these findings.

CardioSic

VALVULOPATIE 89
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
DIAGNOSI DELLO SCOMPENSO (SCOMPENSO CARDIACO)

WHEN THE BLEEDING WON'T STOP: A CASE REPORT OF DIEULAFOY'S LESION AND HEYDE'S SYNDROME

Gabriella Bufano (a), Pietro Mazzeo (a), Maria Delia Corbo (a), Angela Bochicchio (a), Eugenio Stabile (a)
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A 75 year old female with a medical history of hypertension was admitted to the Emergency Department due to a syncopal episode. Physical examination revealed pale skin and a systolic ejection murmur, III/VI in intensity on the Levine scale, in the aortopulmonary area. Transthoracic echocardiography showed hypertrophic remodeling of the left ventricle with preserved ejection fraction (left ventricular ejection fraction 55 % by biplane Simpson's method) and severe aortic stenosis with an average transvalvular gradient of 53 mmHg. The patient reported no vomiting or abdominal pain.

On admission, the patient's laboratory results were significant for hemoglobin of 10.8 g/dL and a platelet count of 237.000/uL. Iron deficiency was detected by a low transferrin saturation of 14%. Liver and renal function tests were within normal limits.

CT angiography in pre-procedural Transcatheter Aortic Valve Implantation (TAVI) planning was performed, showing diffuse atherosclerosis and the patient started acetylsalicylic acid 100 milligrams/ daily. After two days she presented rectal bleeding and black tarry stool. There was a drop in her hemoglobin so she received 4 units of packed red blood cell.

Gastroscopy and colonscopy yielded no detectable abnormalities. Subsequently, an endoscopic capsule procedure was performed, showing an active jejunal Dieulafoy's lesion (DL).

Gastrointestinal (GI) bleeding ended about seven days after the discontinuation of acetylsalicylic acid and, due to the impossibility of starting single antiplatelet therapy, balloon aortic valvuloplasty was performed.

Thanks to the procedure, the aortic valve average gradient was reduced to 35 mmHg, leading to an hemodynamic improvement; the patient now waits elective TAVI.

The association between aortic stenosis and GI bleeding is also called "Heyde's syndrome" and refers to a triad of aortic stenosis, von Willebrand factor (VWF) deficiency, and GI bleeding from angiodysplasia.

A Dieulafoy's lesion (DL), a rare type of angiodysplasia, is an unusual cause of GI bleeding, which can be severe and fatal. DL is a vascular anomaly which is 10 times bigger than the size of a submucosal artery. Antiplatelet drugs could be risk factors for DL formation.

This case highlights the need among clinicians for an increased awareness about DL, which could be a rare but potentially fatal complication of Heyde's syndrome.

VALVULOPATIE 761
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE)
(IMAGING CARDIOVASCOLARE)
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

TAMING THE STORM:
PERCUTANEOUS MITRAL VALVE ANNULOPLASTY AS A LIFELINE FOR PERSISTENT PULMONARY EDEMA

Annalisa Caputo (a), Lucia Ilaria Birtolo (a), Massimo Mancone (a), Viviana Maestrini (a), Roberto Badagliacca (a), Carmine Dario Vizza (a)
(a) DIPARTIMENTO DI SCIENZE CLINICHE, INTERNISTICHE, ANESTESIOLOGICHE E CARDIOVASCOLARI, SAPIENZA UNIVERSITÀ DI ROMA

Patient presentation: A 68-year-old woman with permanent atrial fibrillation, chronic kidney disease, COPD and recent pneumonia complicated by respiratory failure was admitted with progressive dyspnoea and oliguria. On arrival she had severe pulmonary congestion, atrial fibrillation with rapid ventricular response (150 bpm), hypoxaemia, and peripheral oedema. Despite non-invasive ventilation, intravenous beta-blockers, vasodilators and diuretics, she developed recurrent episodes of acute pulmonary oedema requiring intensive care support.

Diagnosis and management: Transthoracic echocardiography showed preserved LV systolic function (EF 52%) with marked biatrial enlargement, annular dilatation and severe atrial functional mitral regurgitation (EROA 0.4 cm²; regurgitant volume 62 mL) plus moderate–severe tricuspid regurgitation and elevated pulmonary pressures. Transoesophageal echocardiography confirmed the presence of a severe atrial functional mitral regurgitation. Given persistent clinical instability despite optimal guideline-directed medical therapy, the heart team decided to perform urgent transcatheter mitral annuloplasty using the Carillon Mitral Contour System. Coronary angiography excluded obstructive disease. The device was successfully implanted via the coronary sinus under fluoroscopic guidance.

Outcome and follow-up: Immediately post-procedure, echocardiography demonstrated reduction of mitral regurgitation from severe to moderate. The patient's respiratory status stabilised, diuretics were tapered and she was discharged to rehabilitation. At six months, she was asymptomatic (NYHA I) with NT-proBNP 350 pg/mL. Echocardiography revealed mild–moderate residual MR, reduced annular dimensions (LAVi 39 mL/m²), mild tricuspid regurgitation and lower pulmonary pressures (35 mmHg), indicating reverse remodelling of the left atrium and mitral annulus.

Conclusions: This case illustrates how transcatheter mitral annuloplasty was lifesaving in patients with severe atrial functional MR, preserved EF and recurrent pulmonary oedema refractory to medical therapy. By targeting annular dilatation, the Carillon system effectively reduced MR severity, improved symptoms and promoted structural reverse remodelling during follow-up. These observations are consistent with current registry and trial data showing that indirect annuloplasty improves NYHA class, exercise tolerance and quality of life in functional MR (1–3). The case highlights the importance of a tailored, multidisciplinary approach and suggests that percutaneous annuloplasty may provide a durable therapeutic option for carefully selected patients with atrial functional MR who remain symptomatic despite guideline-directed therapy.

VALVULOPATIE 608
ENDOCARDITI (VALVULOPATIE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE)
(IMAGING CARDIOVASCOLARE)

ENDOCARDITE INFETTIVA: UNA COMPLESSA SFIDA DIAGNOSTICA

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Un uomo di 68 anni, fumatore ed iperteso, si presentava in Pronto Soccorso per ipotensione ed astenia ingravescente insorta nei mesi precedenti. Due anni prima, era stato sottoposto ad intervento di sostituzione valvolare aortica con impianto di bioprotesi (Avalus 23) e duplice bypass coronarico (LIMA-IVA, RIMA ad Y su CDx). All'ingresso il paziente si presentava emodinamicamente stabile, asintomatico per angor e apiretico. L'ECG mostrava un sottoslivellamento diffuso del tratto ST e l'ecoscopia confermava una lieve riduzione della frazione d'eiezione ventricolare sinistra già nota (FE 45%) in assenza di franchi deficit di cinetica segmentaria o disfunzione di bioprotesi valvolare. Gli esami ematici mostravano una leucocitosi neutrofila con incremento della proteina C-reattiva (122 mg/dL) ed un importante aumento della troponina ad elevata sensibilità con curva a plateau (2911-2808 ng/L). Alla luce della sintomatologia atipica, ma del marcato movimento enzimatico in paziente con nota cardiopatia ischemica, si procedeva a coronarografia con evidenza di occlusione cronica di ramo interventricolare anteriore, LIMA su IVA pervio, graft a Y in RIMA per CDx con stenosi e trombosi all'anastomosi distale, sulla quale si eseguiva angioplastica ed impianto di stent medicato. Nonostante l'assenza di febbre, ma dato l'incremento degli indici di flogosi, erano state eseguite in Pronto Soccorso emocolture a freddo su tre set risultate in un secondo momento positive per S. Parasanguinis.
Sulla base dei reperti ottenuti era stato quindi approfondito il sospetto di endocardite infettiva mediante ETE con riscontro di multiple vegetazioni endocarditiche sulla bioprotesi valvolare aortica (fino a 1,2 cm) e stenosi severa low-flow low-gradient (AVAi 0,45 cm^2/m^2, EF 35%, SV 28ml/m2 DVI 0.23). Seguiva quindi uno studio TC total-body che documentava la presenza di embolizzazione a livello splenico. Tali reperti rendevano ragione di una diagnosi di endocardite infettiva definita e complicata. Per questo, oltre all'antibioticoterapia, dati i criteri d'urgenza, era stato programmato un intervento di RE-sostituzione di bioprotesi con protesi meccanica (Top-Hat 25). In sede operatoria, si confermava inoltre la degenerazione dei lembi protesici in presenza di voluminose vegetazioni sia sul lato aortico che ventricolare.
Il caso mostra come alcuni elementi clinico-laboratoristici siano essenziali per giungere alle corrette conclusioni diagnostiche, soprattutto per quel che riguarda l'endocardite infettiva, una patologia con elevato tasso di mortalità, clinica spesso aspecifica e che raramente può esordire con una stenosi valvolare acuta. La presentazione di un paziente con cardiopatia ischemica, multipli fattori di rischio cardiovascolari ed incremento della troponina, hanno fatto propendere erroneamente verso l'ipotesi di una sindrome coronarica acuta. Tuttavia, il pregresso intervento di sostituzione valvolare ed il rialzo degli indici di flogosi sono stati elementi fondamentali per determinare il sospetto di endocardite ed eseguire le emocolture. A rendere più complesso il caso è stato anche il mancato riconoscimento ad una prima

valutazione della disfunzione di bioprotesi, data dalla riduzione dello stroke volume, comportando una più difficile quantificazione del grado di stenosi in setting di Pronto Soccorso. Infine, la revisione delle pregresse coronarografie, ha posto il sospetto, anche se non dimostrabile, di possibile embolizzazione settica all'interno delle coronarie.



Figure 1

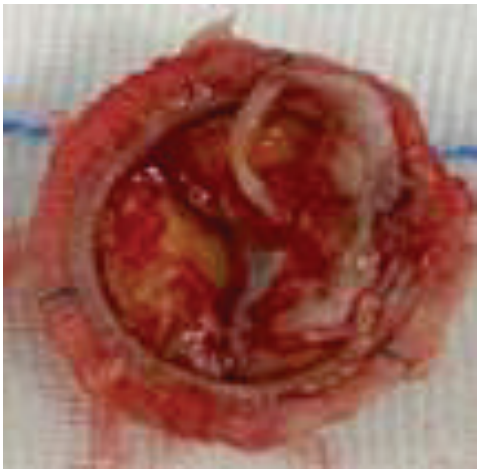


Figure 2

VALVULOPATIE 257
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE)
(IMAGING CARDIOVASCOLARE)
ASSISTENZA CARDIACA IN ACUTO NEL DIPARTIMENTO DI EMERGENZA
(ASSISTENZA CARDIACA IN ACUTO)

TAKOTSUBO SYNDROME COMPLICATED BY TRANSIENT MITRAL REGURGITATION IN PATIENT UNDERWENT BIOPROSTHETIC MITRAL VALVE IMPLANTATION: A CASE REPORT

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Background: Takotsubo syndrome (TTS) is an acute cardiac disease predominantly affecting postmenopausal women, frequently triggered by intense emotional or physical stress. In its typical form TTS is characterized by transient left ventricular (LV) apical dysfunction in the absence of obstructive coronary artery disease (CAD).

Case Presentation: We describe the case of a 76-year-old woman admitted for effort dyspnea. Transthoracic echocardiography (TTE) on admission revealed severe primary mitral regurgitation (MR) (Carpentier type II) due to posterior leaflet prolapse. The patient underwent cardiac surgery and mitral valve repair was performed with quadrangular resection of the P2 segment, closure of the P2–P3 indentation and implantation of an incomplete GC Future 32 mm ring. Intraoperative transesophageal echocardiography (TEE) showed no residual regurgitation. Weaning from cardiopulmonary bypass was uneventful and the patient was transferred to the intensive care unit under low-dose norepinephrine support (0.05 g/Kg/min).
On postoperative day 1, the patient developed hemodynamic deterioration requiring increasing dose of inotropic agents. Electrocardiogram (EKG) showed diffuse repolarization abnormalities, highly sensitive troponin arose. TTE demonstrated severe LV dysfunction with extensive apical and mid-ventricular akinesia, along with compensatory hypercontractility of the basal segments consistent with TTS. Moderate MR was now detected, likely due to increased tethering forces secondary to LV dilation and papillary muscles displacement. Left ventricular outflow tract obstruction (LVOTO) was excluded. Coronary angiography was also performed to rule out iatrogenic circumflex coronary artery injury. Left ventriculography was performed confirming typical apical ballooning and moderate MR. In the following days, inotropic support was provided with intravenous infusion of Levosimendan, avoiding the use of catecholaminergic agents. The patient underwent progressive clinical improvement. Serial TTEs were performed until near-complete recovery of global and segmental systolic function. No more MR was observed over the following days along with LV recovery.

Discussion: Although uncommon, TTS may occur after cardiac surgery and should be considered in cases of acute postoperative LV dysfunction with normal coronary angiography. Specific risk factors include

atrioventricular valve surgery—particularly mitral valve repair—perioperative catecholamine administration, and the physical and emotional stress related to cardiac surgery. Transient and reversible moderate to severe MR has been well described in patient with TTS, generally related to the systolic anterior movement (SAM) associated with LVOTO or due to extensive myocardial dysfunction. The peculiarity of this case is the occurrence of transient functional MR despite successful mitral valve repair, highlighting the importance of myocardial stunning, distorted LV geometry and papillary muscles displacement in occurrence of transient MR as complication of acute TTS. Early diagnosis is fundamental to guide the therapy in this critical clinical scenario.

VALVULOPATIE 287
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE (IMAGING CARDIOVASCOLARE)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE) (IMAGING CARDIOVASCOLARE)
PATOLOGIA DELLA VALVOLA TRICUSPIDE (VALVULOPATIE)
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)

WHEN REPAIR IS NOT FEASIBLE: A NOVEL BIOPROSTHETIC VALVE FOR TRICUSIPID VALVE REPLACEMENT

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Background. Tricuspid regurgitation (TR) is increasingly recognized as a clinically relevant entity rather than a benign bystander of left-sided heart disease. Moderate-to-severe TR affects 0.5–0.8% of the general population, with prevalence rising to 10–15% among patients with left-sided valvular disease, atrial fibrillation (AF), or pulmonary hypertension. Although repair is the treatment of choice, valve replacement may represent the optimal strategy in selected complex cases.

Case report. We describe a 76-year-old man with permanent AF and a previous dual-chamber pacemaker implantation (indication not available), who presented with progressive exertional dyspnea and fatigue. Transthoracic echocardiography revealed preserved left ventricular systolic function, left atrial dilatation and moderate mitral regurgitation. Moreover, enlarged right heart chambers, preserved right ventricular systolic function (TAPSE = 22 mm), severe TR, pulmonary systolic hypertension (PASP = 53 mmHg), and right ventricle–pulmonary artery uncoupling (TAPSE/PASP 4 mm/mmHg) were also detected. Coronary angiography excluded significant coronary artery disease.
Intraoperative transesophageal echocardiography revealed pseudocleft indentation of left posterior mitral leaflet (P1-P2) and mitral annulus dilatation as a cause of moderate mixed mitral regurgitation. Furthermore, marked tricuspid annular dilatation (49 mm) and incarceration of the pacing lead in the posterior tricuspid leaflet were appreciated as well.
The patient underwent surgical correction via median sternotomy. Mitral valve repair was performed by closure of the pseudocleft indentation using a running 5-0 polypropylene suture, combined with implantation of a 32 mm Cosgrove-Edwards incomplete annuloplasty ring. As tricuspid valve repair was not feasable, a 33 mm Mitris Resilia (Edwards Lifescience) bioprosthesis, originally designed for the mitral position, was implanted in the tricuspid position. The ventricular pacemaker lead was transected, leaving the distal segment within the right ventricle cavity. Echocardiography at one month follow-up confirmed normal function of the tricuspid prosthesis (mean gradient 3 mmHg, no paravalvular leak) and stable results of mitral repair.

Discussion. In our case, tricuspid valve surgery was particularly challenging due to the long-standing pacing lead and the markedly dilated annulus. The choice of a Mitris Resilia valve provided an effective solution, owing to the availability of a large size (33 mm) and a hemodynamic design optimized for atrioventricular flow. A review of the literature revealed only anecdotal

reports of mitral substitutes used in the tricuspid position. To the best of our knowledge, this is the first reported case of surgical implantation of a Mitris Resilia bioprosthetic valve in the tricuspid position.

Conclusion. This case highlights the importance of tailored surgical strategies in complex valvular disease and suggests that modern bioprostheses may offer greater versatility than their original design indications.

CardioSic

VALVULOPATIE 641
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
PATOLOGIA DELL´AORTA (MALATTIE DEI VASI)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE (IMAGING CARDIOVASCOLARE)

TYPE A AORTIC DISSECTION IN PATIENT WITH DIGEORGE SYNDROME

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Background. DiGeorge syndrome, or 22q11.2 deletion syndrome, is one of the most frequent chromosomal microdeletions, with an estimated incidence of 1 in 4,000 live births. Typical features include congenital heart and palatal defects, learning and speech disabilities, hypocalcemia (often secondary to hypoparathyroidism), immunodeficiency, and craniofacial dysmorphism. Congenital cardiac defects mostly involving cono-truncal malformations, such as tetralogy of Fallot, type B aortic arch interruption, and truncus arteriosus are also reported.

Case report. A 35-year-old man with a previous diagnosis of DiGeorge syndrome presented to the emergency department with acute chest pain and altered mental status. In his medical history no significant cardiovascular events were reported. On admission he showed craniofacial dysmorphism, tachycardia (136 bpm), hypotension, tachypnea, and altered consciousness. Urgent CT angiography revealed an ascending aortic aneurysm of ~6 cm with intimal flap consisting with Stanford type A dissection involving the aortic root and pericardial effusion. Transesophageal echocardiography confirmed these findings and revealed severe aortic regurgitation. The patient underwent emergency cardiac surgery. Aortic valve replacement with implantation of a 25 mm Inspiris Resilia bioprosthesis, resection and reconstruction of the aortic root with double-layer Teflon felt and Bioglue, and replacement of the ascending aorta with a 32 mm vascular graft were performed. Postoperatively, temporary pharmacological inotropic and vasopressor support as well as blood transfusions due to severe anemia were needed. Follow-up CT at 15 days showed no peri-prosthetic complications, and echocardiography demonstrated preserved left ventricular systolic function (LVEF 50%), with low transprosthetic gradients, no evidence of leaks and mild residual pericardial effusion. The patient remained clinically stable at 1-month follow-up. Genetic testing excluded coexistent collagenopathies (FBN1, TGFBR1/2 mutations).

Discussion. This report describes acute type A aortic dissection in an adult with DiGeorge syndrome in the absence of previously recognized congenital heart disease. While congenital anomalies are usually identified in childhood, aortic pathology, in these patients, can remain hidden for many years and occur in later life. Aortic root dilatation is reported in up to 75% of patients with 22q11.2 deletion and associated congenital heart disease. The chromosomal deletion involves genes encoding transcription factors essential for fourth pharyngeal arch and aortic arch

development. It is reasonable to assume that in our case, late presentation was related to secondary transcription factor deficiency affecting posterior aortic wall development.

Conclusion. This case emphasizes the importance of systematic and periodic cardiological surveillance in patients with DiGeorge syndrome, including advanced imaging, even in the absence of congenital cardiovascular anomalies detected during childhood. In this peculiar population, early identification of aortopathy and cardiovascular complications in adulthood may significantly influence outcome.

CardioSic

VALVULOPATIE 671
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE (IMAGING CARDIOVASCOLARE)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)

SAFETY AND HEMODYNAMICS PERFORMANCES OF A NEW BIOPROSTHETIC MITRAL VALVE: SINGLE CENTER EXPERIENCE

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Background: The MITRIS RESILIA mitral bioprosthesis was developed to enhance valve durability and optimize hemodynamic outcomes. Despite encouraging reports, early real-world evidence remains limited. This single-center retrospective study aimed to describe the early clinical and echocardiographic results of patients undergoing mitral valve replacement with this prosthesis.

Methods: We retrospectively analyzed 45 consecutive patients who received a MITRIS RESILIA bioprosthesis between January 2024 and July 2025. Demographic and clinical characteristics were recorded at baseline, and valve performance was assessed at baseline, hospital discharge, and at 6-months follow-up by transthoracic echocardiography (TTE). Primary endpoints included early mean trans-mitral gradient and left ventricular ejection fraction (LVEF). Secondary outcomes were in-hospital adverse events.

Results: The mean age was 63 ± 8.2 years, with 57.8% male patients. The mean prosthesis size was 27.5 ± 2.1 mm. Mean gradient remained consistently low with a slight decrease at discharge and maintained at follow-up (4.69 ± 1.23 mmHg at baseline, 4.22 ± 1.04 mmHg at discharge, and 4.10 ± 1.66 mmHg at follow-up). No structural valve deterioration was observed. LVEF was preserved at baseline (59.1 ± 7.0%) and discharge (58.3 ± 9.1%), with a mild decline at follow-up (54.3 ± 6.7%). Pre-discharge events included atrial fibrillation in 37.8% and permanent pacemaker implantation in 11.1%.

Conclusions: In this cohort, the MITRIS RESILIA valve demonstrated stable hemodynamic performance with sustained low gradients and acceptable early safety. A mild reduction in LVEF was noted at follow-up, but overall outcomes support the feasibility of this bioprosthesis for mitral valve replacement. Larger studies with longer follow-up are warranted to confirm durability and clinical benefit.

VALVULOPATIE 644
ARITMIE VENTRICOLARI (ARITMIE)
DEFIBRILLATORE IMPIANTABILE (ARITMIE)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)

BARLOW SYNDROME CAUSING CARDIAC ARREST: A CASE REPORT

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(a) AZIENDA OSPEDALE-UNIVERSITA' DI PADOVA

Background: arrhythmic mitral valve prolapse (MVP) is a cardiological phenotype associated with mild to severe mitral regurgitation (MR), mitral annular disjunction (MAD) and left ventricle (LV) fibrosis, elements often coexisting in Barlow syndrome. Arrhythmic MVP increases the risk for ventricular arrhythmias (VA) and sudden cardiac death (SCD), mainly because of the mechanical stress on the LV wall. Hence, recognition of the aforementioned imaging signs is of utmost importance enabling multimodal treatment whenever clinical alarming signs are present.

Clinical case: this clinical case deals with a 31 years old male patient with positive family history for myocardial infarction, experiencing witnessed cardiac arrest (CA), with ventricular fibrillation (VF) as first detected rhythm, and return of spontaneous circulation (ROSC) achieved after cardiopulmonary resuscitation, administration of adrenaline, amiodarone and 3 direct-current defibrillation shocks; ECG after ROSC was negative for STEMI showing sinus tachycardia and right interventricular delay; transthoracic echocardiography (TTE) showed a severe LV ejection fraction (EF) reduction (25%). On the same day the patient was transferred to our cardiology intensive care unit mechanically ventilated and supported with dobutamine, both suspended after the first day of hospital stay. Brain computed tomography (CT) and coronarography were negative, while thorax CT showed extensive bilateral posterior consolidation areas plus air bronchogram. Laboratory analysis demonstrated augmented CRP (22 mg/L), mild neutrophil lymphocytosis, hsTn-I peak of 822 ng/L and positivity for urinary streptococcal antigen. Antibiotic therapy was necessary due to febrile episodes and septic state; telemetry monitoring showed no VA episodes. A repeated TEE showed LVEF on the lower limit (52%) with diffuse hypokinesia, mild to moderate MR and a normal right ventricular function. Hypothesizing acute myocarditis with arrhythmic presentation, endomyocardial biopsy was performed, yielding negative results and serology resulted negative for anti-heart antibodies. Cardiac magnetic resonance



Figure 1

(CMR) demonstrated mildly reduced LVEF (47%), with associated basal hypertrophy, and RVEF (46%), mild mitral valve prolapses of both not particularly thickened leaflets, MAD with a maximum tele-systolic extension of 11 mm, curling (F1) of the inferior-lateral basal region with concomitant non-ischemic late gadolinium enhancement. Such findings were compatible with Barlow syndrome. Considering the CA, the young age of the patient and the CMR result, subcutaneous ICD therapy for secondary prevention was chosen, beta-blocker therapy and temporary anticoagulation drug were established, the latter due to upper limb deep vein thrombosis occurrence. During post-discharge follow-up visit, neither arrhythmias nor interventions were detected on sICD, TEE showed normal bi-ventricular EF and drug therapy was not changed. A 1-year follow-up visit was scheduled while waiting for the cardiomyopathy genetic panel.

Discussion: Barlow syndrome including arrhythmic MVP and MAD requires prompt diagnosis and careful monitoring given the increase in mortality risk once VA occur. In this regard, even though more data are necessary to understand their survival impact, ICD implantation, mitral valve repair/replacement and targeted catheter ablation remain the mainstay of current treatment.

VALVULOPATIE 411
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE (IMAGING CARDIOVASCOLARE)
ENDOCARDITI (VALVULOPATIE)
INFARTO STEMI (CARDIOPATIA ISCHEMICA)

INFECTIVE ENDOCARDITIS PRESENTING WITH ST-ELEVATION MYOCARDIAL INFARCTION: A CASE REPORT

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(a) AZIENDA OSPEDALIERO-UNIVERSITARIA "R. DULBECCO" DI CATANZARO

A 41-year-old male with a known history of anemia, presented to the emergency department with acute chest pain and a 2-week history of fever, asthenia, swelling ankles and weight loss.
On physical examination, he appeared febrile and in mild respiratory distress. His vital signs revealed a body temperature of 39°C, heart rate of 120 bpm, blood pressure of 100/65 mmHg, respiratory rate of 25 breaths per minute, and oxygen saturation of 96% on room air. A loud systolic murmur was auscultated at the apex, radiating to the axilla, suggestive of mitral valve involvement.
Laboratory tests detected the following: an elevation in high-sensitivity cardiac troponin, anemia with Hgb 7,7 mg/dl and mild renal insufficiency Cr 2 mg/dL (normal 0.7–1.2 mg/dL). The patient refused blood transfusions due to religious beliefs.
The ECG showed ST-segment elevation in the V4-V5–V6 and aVL leads. Urgent transthoracic echocardiography bedside demonstrated no pericardial effusion or significant left ventricular dysfunction but revealed vegetation on the anterior mitral leaflet associated with mitral valve prolapse that caused severe mitral regurgitation.
The patient was admitted to the coronary care unit (CCU) and coronary angiography revealed embolic occlusion of the left anterior descending artery , and balloon angioplasty without stent placement was performed, considering the embolic and infectious nature of the occlusion.
Subsequent transoesophageal echocardiography (TOE) confirmed severe mitral regurgitation with



Figure 1



Figure 2

mitral valve prolapse and showed an independently oscillating mobile vegetation,measuring 12 mm (FIGURE 1,2,3,4). The blood cultures grew Abiotrophia Defectiva; thus, the patient was treated with tazocin 4 g/12 h and vancomicina 40mg/24 h for 6 weeks.

After 6 weeks of antibiotic therapy and negative blood cultures, the heart team decide decides to send the patient to the cardiac surgery department for mitral valve replacement.

In conclusion, this case suggesting that acute coronary syndrome is a rare but serious complication of infective endocarditis, and the combination of prompt diagnosis with timely but appropriate management is required for the best outcome. This case emphasizes highlights the importance of considering IE in STEMI differential diagnosis and adjusting intervention strategies accordingly.

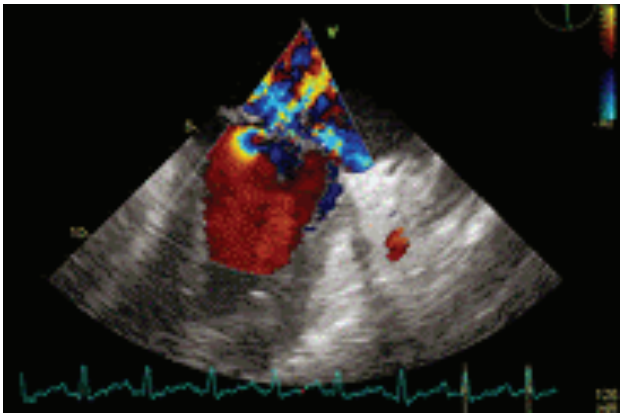


Figure 3

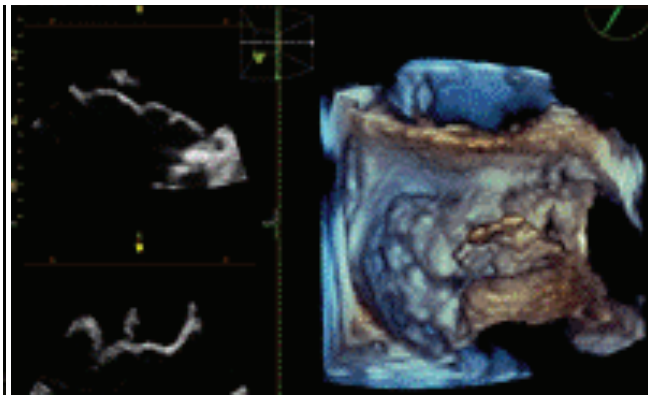


Figure 4

VALVULOPATIE 859
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE (IMAGING CARDIOVASCOLARE)
INTERVENTISTICA STRUTTURALE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

THE ROLE OF BASELINE VALVULAR ECHOCARDIOGRAPHIC PARAMETERS ON LONG-TERM POST-TAVI PROGNOSIS AND SEX-RELATED EFFECTS

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Background: While several comorbidities and hemodynamic factors (as low-flow state and reduced ejection fraction) are well-established predictors of post-TAVI prognosis, the role of baseline aortic valve echocardiographic parameters remains underexplored, particularly in relation to sex differences. Identifying high-risk valvular features may enhance patient selection, optimize procedural timing, and improve long-term risk stratification.

Methods: This retrospective study included 236 patients with severe aortic stenosis who underwent TAVI between 2016 and 2019, excluding those with periprocedural mortality or relevant aortic regurgitation. Baseline clinical and echocardiographic parameters were recorded. Patients were followed for a mean duration of 55.6 months. Univariable and multivariable Cox regression analyses assessed the association between baseline echocardiographic parameters and long-term outcomes, including all-cause mortality and a composite endpoint of cardiovascular death and hospitalization. Logistic and linear regression, as well as spline analysis were used to examine variable relationships.

Results: At two years, all-cause mortality was 13.1%, rising to 29.7% at four years. The composite endpoint occurred in 16.1% at two years and 23.7% at four years. Univariable Cox analysis identified both clinical (sex, smoking, diabetes, ischemic cardiomyopathy, peripheral artery disease) and echocardiographic parameters (indexed and absolute AVA, Doppler Velocity Index, low-flow status) as significant predictors of mortality. These associations remained significant in multivariable analysis. Thresholds associated with increased mortality included AVAi < 0.4 cm^2/m^2, AVA < 0.7 cm^2, and DVI < 0.18—cut-offs that were lower in the female subgroup. Although echocardiographic parameters were not directly associated with the composite endpoint, more severe baseline valvular disease correlated with atrial fibrillation, reduced LVEF, and low-flow status, indicating an indirect prognostic impact.

Conclusion: Baseline aortic valve echocardiographic parameters independently predict long-term survival after TAVI, with notable sex-specific thresholds. These findings underscore significant sex-related pathophysiological differences in the natural history of aortic stenosis. Moreover, they highlight the potential value of incorporating valve morphology into the pre-procedural assessment to improve risk stratification and optimize the timing of intervention. Future research should explore the integration of imaging-derived fibrosis markers and machine learning-based models.

CardioSic

VALVULOPATIE 421
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
PATOLOGIA DELL´AORTA (MALATTIE DEI VASI)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE)
(IMAGING CARDIOVASCOLARE)

MAKING 19 MM WORK: TRANSFEMORAL TAVI- VIV WITH PSEUDO COARTATION

Marco Fabio Costantino (a), Giuseppe Nasso (b), Luisiana Stolfi (a), Antonio Pignatelli (b), Gianpaolo D´addeo (a), Francesca Cortese (c), Gaetano Contegiacomo (b)
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Background: Small surgical aortic bioprostheses (≤19 mm) challenge valve-in-valve (ViV) outcomes, especially when ring fracture is not feasible and vascular anatomy limits access. Case: A 73-year-old woman (BSA 1.48 m²) with hypertension and mixed dyslipidaemia, prior hysterectomy and right radical mastectomy (with adjuvant chemo-/radiotherapy and ongoing endocrine therapy), underwent SAVR with a 19-mm Trifecta (2014). In 2025 she reported exertional dyspnoea. TOE (26 June 2025) showed structural valve degeneration with severe stenosis (mean gradient 46 mmHg, DVI 0.29, AVA 0.73 cm²) and central AR 2–3+/4; severe MR 4+/4 (annulus 34 mm) with mildly compromised subvalvular apparatus; LVEF 0.67; no pericardial effusion.

Pre-procedural planning: Imaging (16 July 2025) revealed pseudo-coarctation; a non-fracturable Trifecta ring; right subclavian stenosis (~5 mm) and a small contralateral subclavian/axillary (~4 mm). Coronaries were free of stenoses; the circumflex arose anomalously from the right coronary artery.

Procedure: Transfemoral ViV TAVI with an Evolut Pro+ 23 mm implanted in the Trifecta 19 mm, followed by targeted post-dilation (True Balloon 18×40 mm, 16 atm). Immediate peak-to-peak gradient was 12 mmHg, without complications. Results at 45 days: Echocardiography showed a well-functioning aortic bioprosthesis (mean gradient 13 mmHg), no significant intra-/paravalvular leak, LVEF 0.59, LVEDV 88 ml, MR improved to 2–3+/4 (mitral mean gradient 2 mmHg); TR 2+/4; estimated PASP 38 mmHg. Both atria were normal; no pericardial effusion. Symptoms improved. Conclusions: In a non-fracturable 19-mm Trifecta with pseudo-coarctation and limited upper-extremity access, an auto-expandable ViV TAVI with focused post-dilation yielded favourable haemodynamics (mean gradient 13 mmHg) and early clinical improvement. Meticulous multimodality planning can overcome small-annulus and access constraints.

a) TEE (color Doppler): severe mitral regurgitation

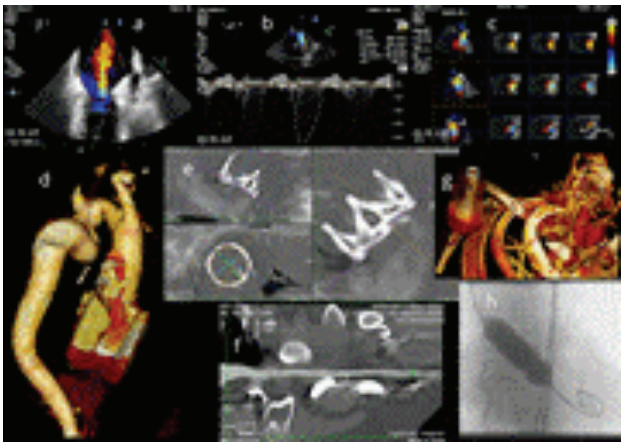


Figure 1

(4+/4) with central jet; fibrosclerotic leaflets; annulus 34 mm. b) TEE (CW Doppler): elevated transaortic mean gradient (~46 mmHg), DVI 0.29, AVA 0.73 cm². c) TEE (2D/3D): mitral morphological/functional assessment with subtly compromised subvalvular apparatus; no clefts/fissures. d) CT angiography, 3D reconstruction: aortic arch pseudoaneurysm. e) CT angiography: surgical aortic bioprosthesis (Trifecta 19 mm) in situ; non-fracturable sewing ring; perimeter ~50 mm; very small effective internal diameter. f) CT angiography, 3D: small-calibre left subclavian artery (~4 mm). g) CT angiography, 3D: severely stenotic right subclavian artery (~5 mm). h) Fluoroscopy: intraprosthetic post-dilatation with a True Balloon 18×40 mm (16 atm) inside the valve-in-valve (Evolut Pro+ 23 mm in Trifecta 19 mm) after implantation.

VALVULOPATIE 11
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE (IMAGING CARDIOVASCOLARE)
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)

DIALOGUE BETWEEN THE HEART AND THE LIVER. MITRAL VALVE CALCIFICATION: A NOVEL MARKER OF CARDIAC INVOLVEMENT IN LIVER CIRRHOSIS?

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Background/Aims. The heart is known to be involved in patients with liver cirrhosis and vice versa; but, a correlation between the degree of liver dysfunction and the severity of cardio-circulatory and/or of cardiac valvular abnormalities in cirrhotic patients is little known. This study aimed to evaluate haemodynamics and structure and function of left cardiac chambers, and to assess an eventual parallelism between liver dysfunction and cardiocirculatory disorders among patients with chronic liver disease.

Subjects/Methods. Between January 1, 2006 and December 31, 2019, 995 patients with chronic liver disease were consecutively admitted to our Department of Internal Medicine; of these, 346 (154 M/192 F) patients were enrolled in the study whereas the remaining 649 were excluded because of one or more of the exclusion criteria established by our study protocol. None of the enrolled patients suffered from major cardiovascular, lung, hematologic or systemic diseases, nor used routinarely inotropic and/or antiarrhythmic drugs during the last 30 days preceding the study; 168 patients with minor diseases served as control (C: n 168; 84 M/84 F) subjects. On the basis of laboratory, instrumental, and bioptic (where necessary) data, all subjects were classified as patients with chronic hepatitis (CH: n 142; 30 M/112 F), and patients with cirrhosis; on the basis of Child-Pugh scoring, cirrhotic patients were divided in three subgroups: Child A (n 70; 46 M/24 F), Child B (n 65; 43 M/22 F), and Child C (n 69, 35 M/34 F). By means of ultrasonography, much care was taken to evaluate and quantify any eventual calcium deposition on the mitral valve (MV) leaflets: the grading of MV leaflet calcification was assessed according to the semiquantitative/qualitative Wilkins scoring system.

Results. Among CH patients, resting heart rate, and left ventricular (LV) mass were significantly ($p<0.05$) greater than in C, whereas systemic vascular resistance (SVR) was significantly lower. Among cirrhotic patients, resting heart rate, left atrium dimensions and volumes, LV walls thickness, LV mass, cardiac output, IVRT, DT, prevalence of aortic stenosis were significantly greater than in non cirrhotic individuals, whereas the e/a ratio and SVR were significantly lower. Among Child B and Child C patients, cardiac output, IVRT, DT, prevalence of MV regurgitation, and MV calcification score were significantly higher than in the remaining patients, whereas SVR was significantly lower. Child-Pugh score and MV calcification score strongly correlated ($r=0.68$, 95% CI 0.60-0.75, $p<0.0001$) in cirrhotic patients.

Conclusions. The heart and hemodynamics are little involved in patients with chronic hepatitis. The degree of some morpho/functional abnormalities of the heart correlated with the severity of liver dysfunction in cirrhotic patients. MV structure and function secondary to leaflet calcium deposition are abnormal among cirrhotic patients, and this feature could represent a novel sign of cardiac involvement in patients with liver cirrhosis.

VALVULOPATIE 1024
INTERVENTISTICA STRUTTURALE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
PROGNOSI (SCOMPENSO CARDIACO)

BALLOON AORTIC VALVULOPLASTY VS. CONSERVATIVE MANAGEMENT IN PATIENTS UNDERGOING HIP FRACTURE SURGERY WITH UNDERLYING SEVERE AORTIC STENOSIS

Antonio De Vita (a), Marcello Covino (a, b), Francesco Mollo (b), Matteo Vumbaca (b), Chiara Napolitano (b), Saverio Tremamunno (a), Nello Cambise (a), Giovanna Liuzzo (a, b), Francesco Franceschi (a, b), Francesco Burzotta (a, b), Gaetano Antonio Lanza (a, b)
(a) FONDAZIONE POLICLINICO UNIVERSITARIO "A. GEMELLI" IRCCS - ROMA;
(b) UNIVERSITA' CATTOLICA DEL SACRO CUORE - SEDE DI ROMA

Background: Severe aortic stenosis (AS) confers high perioperative risk in patients undergoing hip fracture (HFx) surgery with a 3-4-fold higher 30-day mortality rate and 1-year mortality rate reaching about 50%. Conversely, delaying HFx surgery to address cardiovascular risk may extend the time-to-surgery (TTS), potentially worsening functional recovery and increasing mortality. The optimal management of patients with concomitant severe AS and HFx remains uncertain, with limited evidence of the role of preoperative balloon aortic valvuloplasty (BAV).

Methods: This retrospective study analyzed 193 HFx patients with echocardiographic evidence of AS admitted to our University Hospital between January 2015 and December 2024. Data were recovered from electronic medical records of the institutional database. Forty-six patients (23.8%) had severe AS and underwent either preoperative BAV (n=12, 26.1%) or conservative management (n=34, 73.9%). The primary endpoint was 30-day all-cause mortality; secondary endpoints included survival up to 120 days, perioperative course and resource utilization.

Results: Patients undergoing BAV were younger than those treated conservatively (83.7±7.4 vs. 88.6±5.4 years, p=0.020). BAV was associated with prolonged TTS, hospital stay and ICU admission. The rate of 30-day all-cause mortality was 8.3% in the BAV group and 23.5% in the conservative group (OR 0.32, 95% CI 0.04-2.60, p=0.29). Univariate analysis showed a that a history of ischemic stroke or transient ischemic attack (TIA) was significantly associated with 30-day mortality (p=0.018), whereas female sex (p=0.090) and atrial fibrillation (p=0.055) demonstrated non-significant trends. At multivariate analysis, prior cerebrovascular disease remained the only independent predictor of 30-day all-cause mortality (OR 4.84, 95% CI 1.12-20.8, p=0.034). Similar results were observed in the analysis of 60-day and 90-day mortality. At 4 months, the all-cause mortality rate was 10.5% in the BAV group compared with 50.0% in the conservatively managed group (OR 0.12, 95% CI 0.01–0.94, p = 0.043 after adjustment for clinical variables). Additional independent predictors of 120-day mortality included sex (p=0.029) and history of cerebrovascular disease (p=0.026).

Conclusions: In patients with HFx and severe AS, preoperative BAV did not improve short-term mortality but was independently associated with enhanced survival at 120 days. Prior cerebrovascular disease emerged as a strong negative prognostic factor. These findings support the role of BAV as a potential bridging strategy in carefully selected high-risk patients and underscore the importance of individualized management that accounts for both valvular and cerebrovascular risk profiles.

CardioSic

VALVULOPATIE 1039
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
ELETTROCARDIOGRAFIA/ CARDIOVERSIONE/ DEFIBRILLAZIONE (ARITMIE)
PROGNOSI (SCOMPENSO CARDIACO)

LEFT BUNDLE BRANCH BLOCK AFTER TAVI: FREQUENCY, INTERMITTENT PHENOTYPES AND SHORT-TERM CLINICAL IMPLICATIONS

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Background: Conduction disturbances are frequent after transcatheter aortic valve implantation (TAVI), with new-onset left bundle branch block (LBBB) occurring in about 20–40% of cases. LBBB may consistently affect prognosis by worsening ventricular systolic synchrony and increasing the risk of further progression to pacemaker (PM) implantation. Prosthetic type and structure, landing depth, valvular and annular calcification burden, as well as basal interventricular septum hypertrophy may influence its occurrence and persistence. Among the intermittent LBBB, which is often under-described, the bradycardia-dependent form of conduction delay seems to be more common after TAVI. Furthermore, spontaneous short-term recovery rates and subsequent need for pre-discharge PM implantation remain uncertain. The study aimed to assess intermittent LBBB rates early after TAVI, their rate-dependence phenotypes and the association with short-term PM implantation.

Methods: We conducted a single-center observational study of consecutive patients undergoing TAVI for severe aortic stenosis (aortic valve area <1 cm²) between January 2024 and May 2025. Patients with pre-existing LBBB and PM or with major post-procedural complications requiring intensive care were excluded from the study. All patients underwent pre/post-procedural standard 12-lead ECG and transthoracic Doppler echocardiography (TTDE). A 24-hour Holter monitoring was performed early after the procedure (median 2 days). Post-TAVI LBBB was classified as persistent or intermittent; intermittent LBBB was subclassified as bradycardia-dependent, tachycardia-dependent or rate-independent. Clinical follow-up was performed after 6 months.

Results: Among the 84 patients enrolled (mean age 79.8±6.5 years; 64.3% women), new-onset LBBB was observed in 40 individuals (47.6%). Of these, 23 patients (57.5%) developed a persistent form, whereas 17 (42.5%) exhibited an intermittent pattern. Intermittent LBBB phenotypes were bradycardia-dependent in 9 patients (52.9%), tachycardia-dependent in 1 patient (5.9%) and rate-independent in 7 cases (41.2%).
At follow-up, 18 patients (21.4%) needed PM implantation. PM implantation rates were higher in patients with intermittent LBBB (47.1%), compared to those showing persistent LBBB (21.7%) or no LBBB (11.4%) (p=0.032). In a reference cohort of 5,363 Holter monitoring records from non-TAVI subjects (2022–2023), LBBB was present in 3.3% of cases, with intermittent forms in 9% of LBBB. Bradycardia-dependent patterns accounted for 6.3% of intermittent cases, a markedly lower proportion compared with the TAVI cohort (53%; p< 0.001).

Conclusions: Early after TAVI, intermittent LBBB is common and shows a high rate of bradycardia-dependent phenotype. Intermittent LBBB is associated with higher short-term indication for PM implantation.

VALVULOPATIE 72
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE (IMAGING CARDIOVASCOLARE)
ASSISTENZA CARDIACA PRE-OSPEDALIERA (ASSISTENZA CARDIACA IN ACUTO)

ABSENCE OF SECOND HEART SOUND IN ASSESSING AORTIC STENOSIS SEVERITY

Vincenzo Di Palma (a), Carlo Gaspardone (a)
(a) IRCCS VITA E SALUTE SAN RAFFAELE MILANO

Background: Physical examination remains the essential initial tool for the diagnosis of aortic stenosis (AS).

Objectives: This study aimed to evaluate the accuracy of various physical examination parameters in assessing the severity of AS.

Methods: We prospectively enrolled consecutive patients with AS referred for echocardiographic evaluation at our centre over one-year period. Patients were classified as having severe (aortic valve area [AVA] ≤1 cmq) or non-severe (AVA >1 cmq) AS based on echocardiographic findings. A cardiologist, blinded to these findings, performed a comprehensive cardiac physical examination. Subsequently, a second cardiologist, also blinded to prior data, examined the patients to assess inter-observer reliability.

Results: A total of 176 patients (mean age 77 ± 12 years, 41% women) were included, with 111 (63%) diagnosed with severe AS and 65 (37%) with non-severe AS (50 moderate and 15 mild AS). Among the physical examination parameters, the absence of the second heart sound (S2) demonstrated the highest diagnostic accuracy, with an AUC of 0.75 (95% CI: 0.68-0.83; p<0.001), 63% sensitivity, and 94% specificity. Excluding the 17 patients with low-flow low-gradient AS increased the accuracy of this sign to an AUC of 0.76 (95% CI: 0.69-0.85; p<0.001), with 66% sensitivity and 94% specificity. The inter-observer reliability for the absence of S2 was nearly perfect (McNemar p = 0.96).

Conclusions: The absence of S2 offers acceptable diagnostic accuracy for identifying severe AS, highlighting its utility in clinical practice.

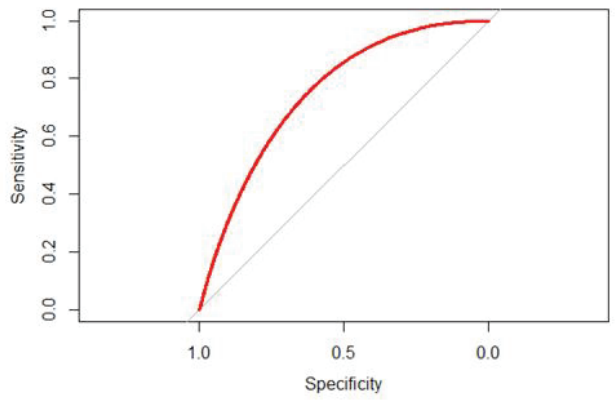


Figure 1

CardioSic

VALVULOPATIE 603
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE)
(IMAGING CARDIOVASCOLARE)
PATOLOGIA DELLA VALVOLA TRICUSPIDE (VALVULOPATIE)

SCREENING FOR SEVERE TRICUSPID REGURGITATION: AN UNEXPECTED FINDING AND MANAGEMENT STRATEGIES

Grazia Maria Pia Floresta (a)
(a) SCUOLA DI SPECIALIZZAZIONE IN MALATTIE DELL'APPARATO CARDIOVASCOLARE, UNIVERSITÀ DEGLI STUDI DI CATANIA

About 3 million individuals in Europe are affected by clinically relevant tricuspid regurgitation. The etiopathogenesis enables the distinction of three main types of tricuspid regurgitation: primary or organic (due to anatomical abnormalities of tricuspid leaflets), secondary or functional (due to right atrial enlargement, right ventricular dilatation or disfunction) and CIED-related. Treatment of isolated tricuspid regurgitation (TR) is indicated (Class I) in patients with primary severe symptomatic regurgitation without right ventricle (RV) disfunction or severe pulmonary hypertension (PH) and should be considered (Class IIa) in patients with asymptomatic primary severe regurgitation and secondary symptomatic/asymptomatic severe regurgitation with RV dilatation or mild/moderate disfunction, without left ventricle disfunction and PH. Transesophageal echocardiography (TEE) plays a pivotal role in assessing tricuspid valve anatomy, quantifying regurgitation severity, establishing indication to treatment and evaluating the feasibility of the chosen therapeutic approach. During TEE, incidental findings that require a most urgent evaluation and could impair the proper execution of the selected approach may occasionally be detected.
Mitral-Aortic intervalvular fibrosa pseudoaneurysm (PMAIVF) is a rare complication associated with IE or aortic valve surgery. The leading cause is infection from Streptococcus spp and Staphylococcus spp. Diagnosis is made with imaging techniques such as TEE and cardiac computed tomography (CT). Surgical treatment with Hemi-Commando or Commando procedure are advised for pseudoaneurysm of the mitral-aortic intervalvular fibrosa (PMAIVF) treatment. Although the standard management of PMAIVF requires surgical intervention, in some instances it might not be possible. This clinical case showcases the story of a 73 years old female patient with 2 previous surgical replacements of mitral valve who came to our attention for TEE evaluation of severe ventricular tricuspid regurgitation, and follows the pathway through the diagnosis of PMAIVF with CCT, exploring various options for the management of her medical conditions.

VALVULOPATIE 200
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
PATOLOGIA DELLA VALVOLA TRICUSPIDE (VALVULOPATIE)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE)
(IMAGING CARDIOVASCOLARE)
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

STEPWISE APPROACH TO THE MANAGEMENT OF MULTIVALVULAR RHEUMATIC HEART DISEASE WITH SEVERE PULMONARY HYPERTENSION

Dario Fabiani (a), Francesca Frecentese (a), Pietro Oro (a), Alessandro Santoro (b), Marco Ferrone (c), Giuseppe Di Gioia (c), Tullio Maria Tesorio (c), Luigi Salemme (c), Francesco Melillo (a, d)
(a) ECHOLAB CLINICA MONTEVERGINE GVM CARE AND REASEARCH MERCOGLIANO AV, ITALY; (b) INTENSIVE CARE UNIT CLINICA MONTEVERGINE GVM CARE AND RESEARCH MERCOGLIANO AV, ITALY; (c) INTERVENTIONAL CARDIOLOGY UNIT CLINICA MONTEVERGINE GVM CARE AND RESEARCH MERCOGLIANO AV, ITALY; (d) HEART AND VASCULAR CENTRE, CARDIOVASCULAR RESEARCH INSTITUTE, UNIVERSITY OF MAASTRICHT, MAASTRICHT, THE NETHERLANDS

The management of rheumatic multivalvular disease is challenging.
We present the case of a patient who developed severe rheumatic aortic stenosis (AS) and functional tricuspid regurgitation, complicated by right ventricular (RV) failure and combined pre- and post-capillary pulmonary hypertension (PH, sPAP 95 mmHg, wedge pressure 40 mmHg). After recurrent heart failure episodes, transcatheter tricuspid edge-to-edge valve repair was initially considered.
Due to severe PH and unsuitable anatomy the patient was considered ineligible to T-TEER. Given the evidence of post capillary PH, first TAVI was performed to address low flow-low gradient severe AS and reduce RV afterload; then, after clinical improvement and reduction of sPAP and coaptation gap, percutaneous tricuspid valve repair (TriclipT-TEER) was successfully performed, significantly reducing TR severity and symptoms.
This case highlights the importance of a tailored, multidisciplinary approach combing invasive and echocardiographic data in management of mixed valvular disease.

VALVULOPATIE 889
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

PROGNOSTIC SIGNIFICANCE OF MITRAL REGURGITATION IN PATIENTS WITH SEVERE LOW-FLOW, LOW-GRADIENT AORTIC STENOSIS UNDERGOING TAVR

Germano Junior Ferruzzi (a, c), Angelo Silverio (a, c), Michele Bellino (a, c), Arturo Giordano (b), Tiziana Attisano (c), Rossella Maria Benvenga (a, c), Antonella Rispoli (a, c), Alberto Morello (b), Nicola Corcione (b), Rodolfo Citro (d), Carmine Vecchione (a, c), Gennaro Galasso (a, c)

(a) UNIVERSITÀ DEGLI STUDI DI SALERNO; (b) PINETA GRANDE HOSPITAL, CASTEL VOLTURNO; (c) A.O.U. SAN GIOVANNI DI DIO E RUGGI D'ARAGONA, SALERNO; (d) UNIVERSITÀ DEGLI STUDI DEL MOLISE

BACKGROUND: There is little evidence about the prognostic role of mitral regurgitation (MR) in patients with low-flow, low-gradient aortic stenosis undergoing transcatheter aortic valve replacement (TAVR). The aim of this study was to assess the prevalence and outcome implications of MR severity in patients with low-flow, low-gradient aortic stenosis undergoing TAVR, and to evaluate whether MR improvement after TAVR could influence clinical outcome.

METHODS AND RESULTS: This study included consecutive patients with low-flow, low-gradient aortic stenosis undergoing TAVR at 2 Italian high-volume centers. The study population was categorized according to the baseline MR severity and to the presence of MR improvement at discharge. The primary outcome was the composite of all-cause death and hospitalization for worsening heart failure up to 1 year. The study included 268 patients; 57 (21%) patients showed MR >2+. Patients with MR >2+ showed a lower 1-year survival free from the primary outcome (P<0.001), all-cause death (P<0.001), and heart failure hospitalization (P<0.001) compared with patients with MR ≤2+. At multivariable analysis, baseline MR >2+ was an independent predictor of the primary outcome (P<0.001). Among patients with baseline MR >2+, MR improvement was reported in 24 (44%) cases after TAVR. The persistence of MR was associated with a significantly reduced survival free from the primary outcome, all-cause death, and heart failure hospitalization up to 1 year.

CONCLUSIONS: In this study, the presence of moderately severe to severe MR in patients with low-flow, low-gradient aortic stenosis undergoing TAVR portends a worse clinical outcome at 1 year. TAVR may improve MR severity in nearly half of the patients, resulting in a potential outcome benefit after discharge.

VALVULOPATIE 894
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)

PREVALENCE AND OUTCOME SIGNIFICANCE OF RIGHT VENTRICULAR DYSFUNCTION IN PATIENTS WITH SEVERE LOW-FLOW, LOW-GRADIENT AORTIC STENOSIS NDERGOING TAVR

Michele Bellino (a, b), Angelo Silverio (a, b), Germano Junior Ferruzzi (a, b), Giovanna Carpentiero (a, b), Arturo Giordano (c), Tiziana Attisano (a), Francesco Maiellare (d), Rodolfo Citro (e), Nicola Corcione (c), Alberto Morello (c), Giovanni Granata (b), Nicola Virtuoso (a, b), Martino Fortunato (a), Carmine Vecchione (a, b)
(a) A.O.U. SAN GIOVANNI DI DIO E RUGGI D'ARAGONA, SALERNO; (b) UNIVERSITÀ DEGLI STUDI DI SALERNO; (c) PINETA GRANDE HOSPITAL, CASTEL VOLTURNO; (d) OSPEDALE S. CROCE E CARLE, CUNEO; (e) UNIVERSITÀ DEGLI STUDI DEL MOLISE

BACKGROUND: Whether the presence of right ventricular (RV) dysfunction may influence the clinical outcome of patients with low-flow, low-gradient aortic stenosis (LFLG-AS) undergoing transcatheter aortic valve replacement (TAVR) has not yet been established.

METHODS AND RESULTS: This study included consecutive patients with LFLG-AS undergoing TAVR at 2 high-volume Italian centers. RV dysfunction before TAVR procedure was defined as tricuspid annular plane systolic excursion assessed by transthoracic echocardiography lower than <17 mm. The primary outcome was all-cause death at 1 year. The propensity score weighting technique was implemented to account for potential selection bias between patients with and without RV dysfunction. A prespecified subgroup analysis was conducted to evaluate the consistency of the results in patients with classical and paradoxical LFLG-¬ AS forms. This study included 392 patients; of them, 97 (24.7%) patients showed RV dysfunction before TAVR. At propensity score–weighted adjusted Cox regression analysis, RV dysfunction, according to dichotomous definition, was associated with an increased risk for the primary outcome (adjusted hazard ratio [HR], 3.11 [95% CI, 1.58–6.13]), cardiovascular death (adjusted HR, 3.26 [95% CI, 1.58–6.72]), and major adverse cardiovascular and cerebrovascular events (adjusted HR, 3.39 [95% CI, 1.76–6.53]). Conversely, no difference was detected for the risk of stroke and of permanent pacemaker implantation. No significant interaction of the classical and paradoxical LFLG-¬ AS subgroups was detected for all the outcomes of interest.

CONCLUSIONS: This study suggests that RV dysfunction echocardiographically assessed by tricuspid annular plane systolic excursion may improve the prognostic stratification of patients with LFLG-¬ AS undergoing TAVR.

VALVULOPATIE 897
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT)
(IMAGING CARDIOVASCOLARE)

BALLOON AORTIC VALVULOPLASTY PREDILATATION REDUCES THE RISK OF PARAVALVULAR REGURGITATION IN PATIENTS WITH SEVERELY CALCIFIED AORTIC VALVES UNDERGOING TAVR

Angelo Silverio (a, b), Michele Bellino (a, b), Germano Junior Ferruzzi (a, b), Tiziana Attisano (a), Alessandra Nocilla (a, b), Mario Ferraioli (a, b), Carmine Izzo (a, b), Serena Migliarino (a, b), Carmine Vecchione (a, b), Gennaro Galasso (a, b)

(a) A.O.U. SAN GIOVANNI DI DIO E RUGGI D'ARAGONA, SALERNO; (b) UNIVERSITÀ DEGLI STUDI DI SALERNO

Background: The volume of calcium present at the native aortic valve (aortic calcium volume, ACV) has been associated with the risk of developing paravalvular regurgitation (PVR) after transcatheter aortic valve replacement (TAVR). However, this evidence derives from studies on older generation prostheses. Also, the role of preliminary balloon predilatation on the mechanistic pathophysiological association between ACV and PVR is still poorly investigated.

Methods and results: This study included consecutive patients with symptomatic severe aortic stenosis undergoing TAVR with current-generation self-expandable aortic prosthesis from 2020 to 2024. The ACV was quantified from pre-procedural contrast enhanced multi-slice computed tomography images using the reading software OsiriX (OsiriX-MD v.2.8.2 64-bit). PVR was quantified by transthoracic echocardiography at hospital discharge and defined significant if ≥2+/5+. Patients were divided into two groups: those who underwent balloon predilation and those who did not.

This study included 213 patients (median age 81 years, 31.0% males); 138 (64.8%) patients underwent balloon predilation before TAVR procedure and 75 (35.2%) did not. PVR≥2+ after TAVR was reported in 37 (17.5%) patients. Overall, ACV was significantly associated with PVR≥2+ at univariable logistic regression (OR: 1.07; 95% CI: 1.03–1.12; p<0.001). In subgroup analysis, this association was confirmed in patients without balloon predilatation (OR: 1.30; 95% CI: 1.17–1.54; p<0.001), but not in those with balloon predilatation (OR: 1.03; 95% CI: 0.97–1.07; p=0.278), with significant interaction between subgroups. At ROC analysis, ACV showed a better ability to predict PVR≥2+ with an optimal cutoff of 1380 mm^3. This predictive value was confirmed in the patients without preliminary balloon predilation, but not in the balloon predilatation subgroup.

Conclusions: This real-world study including patients with severe aortic stenosis undergoing TAVR using current-generation self-expandable aortic prostheses, confirmed a significant association between ACV and the risk of developing PVR≥2+ after procedure. Preliminary balloon predilation may mitigate the detrimental effect of ACV on the risk of developing PVR in this TAVR population.

VALVULOPATIE 972
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
BIOMARCATORI DELLO SCOMPENSO (SCOMPENSO CARDIACO)
PROGNOSI (SCOMPENSO CARDIACO)

PROGNOSTIC IMPLICATIONS OF N-TERMINAL PRO-N-TYPE NATRIURETIC PEPTIDE IN PATIENTS UNDERGOING TRANSCATHETER AORTIC VALVE IMPLANTATION

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Background: N-terminal pro–B-type natriuretic peptide (NT-proBNP) is a recognized marker of myocardial wall stress, but its prognostic role in patients undergoing transcatheter aortic valve implantation (TAVI) remains incompletely defined. This study assessed whether NT-proBNP levels at admission and discharge—interpreted using age-specific guideline thresholds—are associated with long-term clinical outcomes post-TAVI.

Methods: We retrospectively analyzed 683 consecutive patients who underwent successful TAVI at Magna Graecia University between 2009 and 2023. NT-proBNP was measured at both admission and discharge. Patients were stratified into low or high NT-proBNP groups based on age-adjusted cut-offs. Among 468 patients with paired measurements, four NT-proBNP trajectory groups were identified: Low–Low, Low–High, High–Low, and High–High. The primary endpoint was a composite of all-cause mortality or heart failure (HF) rehospitalization at 2 years. Multivariable Cox models were used to adjust for confounders.

Results: At admission, 41.6% of patients had elevated NT-proBNP, associated with worse echocardiographic parameters and more comorbidities. Elevated baseline NT-proBNP predicted a higher risk of the primary outcome (26.1% vs. 13.7%; HR 2.23; 95% CI, 1.51–3.28) and all-cause mortality (21.3% vs. 9.6%; HR 2.40; 95% CI, 1.52–3.79). Among patients with serial values, 34.6% had persistently elevated NT-proBNP, while only 10.7% improved. High–High and Low–High groups showed worse outcomes compared to Low–Low; High–Low patients had comparable risk to Low–Low.

Conclusions: NT-proBNP, interpreted with age-specific thresholds, is a strong independent predictor of adverse outcomes after TAVI. Serial assessment adds prognostic value and may help guide postprocedural management.

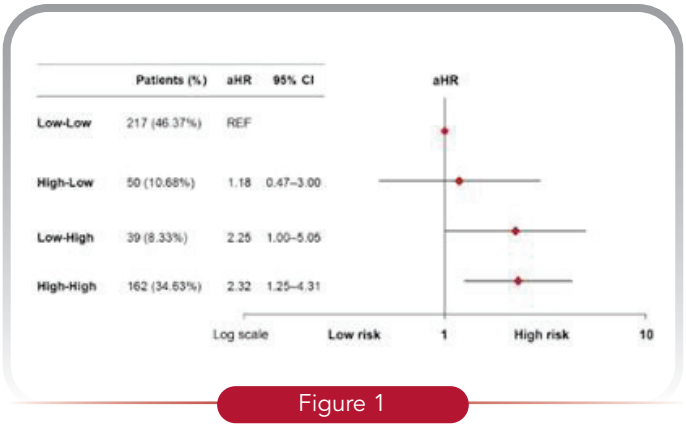


Figure 1

VALVULOPATIE 110
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE)
(IMAGING CARDIOVASCOLARE)
CARDIOPATIE CONGENITE NELL´ADULTO
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE
(IMAGING CARDIOVASCOLARE)

AN INNOVATIVE ECHOCARDIOGRAPHIC SCORING SYSTEM FOR BICUSPID AORTIC VALVE REPAIR

Gianpiero Italiano (a), Fabrizio Tomai (a), Ruggero De Paulis (a)
(a) EUROPEAN HOSPITAL

Background: Aortic valve (AV) repair has emerged as an increasingly adopted surgical alternative to aortic valve replacement (AVR) in bicuspid aortic valve (BAV) patients. Although several favorable anatomic and functional predictors have been described, a standardized methodology for identifying patients with optimal characteristics for AV repair is lacking.

Objectives: To develop and internally validate a novel predictive score - the HOME score - based on routine transesophageal echocardiography (TEE) to predict the feasibility of BAV repair.

Methods: We conducted a retrospective analysis of 203 consecutive patients who underwent surgery for isolated BAV regurgitation (2018-2024). Preoperative TEE parameters were systematically analyzed to identify independent predictors of successful surgical repair.

Results: Four baseline TEE measurements emerged as powerful, independent predictors of BAV repair in multivariate analysis: geometric height≥18 mm (Odds Ratio [OR]: 8.05; 95% confidence interval (CI): 3.15 to 22.94; p=<0.001), commissural orientation≥140° (OR: 8.29; 95% CI: 2.67-25.67; p=<0.001), undamaged leaflets (OR: 20.4; 95% CI 6.59-63.53; p=<0.001), and preserved leaflet mobility (OR: 11.1; 95% CI: 3.98-31.45; p=<0.001). We integrated these findings into the simple, 9-point HOME score. The score demonstrated excellent discrimination for successful repair (Area Under the Curve = 0.89), effectively stratifying patients into groups with low (score 0 – 4), intermediate (5 – 6), and high (7 – 9) likelihoods of a valve-preserving surgery.

Conclusions: The HOME score may help identify BAV patients with a high probability of AV repair in a more standardized and reliable way. Its accuracy requires validation in larger, multicenter cohorts.

VALVULOPATIE 428
ENDOCARDITI (VALVULOPATIE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)

(Q)UESTIONI DI CUORE: UNA FEBBRE MISTERIOSA

Flora Barreca (a), Daniela Calipari (a), Annamaria Dagostino (a), Vincenzo Pisani (b), Francesco Andreozzi (a, b)
(a) SCUOLA DI SPECIALIZZAZIONE IN MEDICINA INTERNA - UNIVERSITÀ DEGLI STUDI MAGNA GRAECIA DI CATANZARO; (b) A.O.U. R. DULBECCO - U.O.C. MEDICINA INTERNA

Uomo di 55 anni giungeva alla nostra attenzione per febbre ad acme serotino fino a 38°C associata a parossismi di tosse secca, persistente da 60 giorni nonostante terapia antibiotica con beta-lattamico da parte del curante. All'esame obiettivo riscontro di soffio olosistolico su Erb e punta e olosistolico con elemento protodiastolico su focolaio aortico, la cui presenza pregressa non era verificabile alla raccolta anamnestica (il paziente riferiva di non avere mai presentato anomalie cardiologiche).Gli ematochimici evidenziavano lieve leucococitosi neutrofila aspecifica, tipizzazione linfocitaria nella norma, ipoalbuminemia con incremento delle componenti alfa-1, gamma (di tipo policlonale) e beta-2-globuline, con consumo di C4. Negative emocolture, tampone tonsillare per S. pyogenes, spermiocoltura e quantiferon. Il TTE confermava il reperto auscultatorio con caratterizzazione di quadro da verosimile endocardite con elemento filamentoso prolassante in atrio sinistro, in associazione a rigurgito mitralico moderato-severo e aortico lieve-moderato, con ispessimento foglietti pericardici e scollamento. L'approfondimento ETE descriveva presenza di tre formazioni filamentose aderenti allo scallop A2 e commissura PM associate ad elemento iso-ipoecogeno su anulus (65 mm) e scallop A1 (110 mm). Confermato l'interessamento con materiale filamentoso su valvola aortica a lembi rimaneggiati. Contestualmente si procedeva ad avvio dell'iter laboratoristico per endocarditi associate a febbre cronica, escludendo Leishmania, e confermando infezione da C. burnetii (un Gram – intracellulare obbligato) IgG 1,81 index(positivo index > 1,1) ed IgM 0,47 index(positivo index > 1,1). L'infezione da C. burnetii si configura come una zoonosi trasmessa per aerosolizzazione e contaminazione di fomiti da parte di latte, deiezioni, urina e materiale placentare di bovidi da allevamento (ovini e bovini). Per quanto la ricostruzione anamnestica non fosse dirimente, si segnala come pratiche di allevamento, macellazione e mungitura irregolari/tradizionali siano ancora diffuse a livello locale, specie nelle aree residenziali a minore tasso di urbanizzazione, aumentando l'incidenza anche al di fuori della stretta cerchia dei lavoratori del settore agroalimentare. La presentazione affrontata è compatibile con il quadro cronico, che si realizza nel 5% dei casi con una clinica da FUO, granulomatosi epatica, o appunto endocardite ad andamento simile a quello da forma batterica subacuta fatale nella totalità dei casi non trattati e prognosi positiva nel 99% dei pazienti sottoposti a terapia tempestiva. Si richiedeva consulenza cardiochirurgica e si avviava terapia antibiotica con Tigeciclina 100 mg/die ev come dose da carico, seguita da 50 mg 1 fl x2/die e Levofloxacina 500 mg 1 flx2/die. Al TTE di controllo a 10 giorni dall'inizio dell'antibioticoterapia permaneva insufficienza mitralica di grado severo originante da multipli jet ed insufficienza valvolare aortica di grado lieve-moderata, in presenza di due immagini di plus in sede mitralica la più grande di circa 12 mm posteriore, estremamente mobile e prolassante in atrio sinistro fino a circa 1 mm al di sotto del piano atrio-ventricolare (versante atriale). Rilevata formazione di circa 20 mm si segnala sul versante atriale dello scallop A2. Mediante approccio off axis parasternale sinistra si segnalano due piccole

formazioni adese alle cuspidi aortiche (la più grande di circa 20 mm). In miglioramento i parametri di sovraccarico di fluidi con LAVi da 42 a 32 ml/m2 e VTD/BSA da 80 a64 ml/m2; si rilevava remissione della tosse, miglioramento di dispnea e astenia. In dimissione PCR 15,7 mg/dl; si avviava terapia domiciliare Doxiciclina 100 mg BID per ulteriori 18 mesi fino a rivalutazione cardiochirurgica.

VALVULOPATIE 990
ENDOCARDITI (VALVULOPATIE)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE)
(IMAGING CARDIOVASCOLARE)
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)

ATTENTI AL LUPUS: UN QUADRO ACUTO DI CARDIO E NEURO LES

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MGB, 20 anni, a circa 15 mesi da COVID 19 comparsa di febbricola serotina (37.5°C), artralgie migranti, adenopatia generalizzata (ascellari, retroauricolari, laterocervicali) con positività alla sierologia per infezione da CMV e streptococco e degli autoanticorpi ANA (1:640) ed ENA, anti-Smith e anti-RNP positivi, con diagnosi di "Connettivite mista". Da circa 1 mese per la comparsa di edemi declivi agli arti inferiori la paziente accedeva presso il DEA dove veniva riscontrata "proteinuria" ed anemia grave trattata con emotrasfusione e si eseguivano, TC torace e TTE con riscontro di versamento pericardico di grado severo "tamponante" e versamento pleurico che motivano il ricovero presso l'U.O.C. di Cardiochirurgia per pericardiocentesi e toracentesi con stabilizzazione del quadro clinico. Veniva praticata terapia con Metilprednisone + Furosemide (+ Cefazolina per 6 giorni. Modificata la diagnosi in LES in overlap con connettivite sistemica la paziente veniva trasferita presso la nostra U.O. per una migliore definizione clinico-diagnostica e terapeuticaIn ingresso buone condizioni generali, febbrile (37.4°C). All'E.O. : soffio sistolico 4/6 su mitrale, edemi declivi bilateralmente in sede basale sinistra. Nel corso della degenza venivano eseguiti esami ematochimici seriati, VES, PCR, PCT, routine immunologica, urinocoltura, emocolture seriate, tampone faringeo, Quantiferon, Marker epatite B e C, anticorpi anti-citomegalovirus, anti virus HZV e anti EBV, dosaggio delle immunoglobuline, dosaggio di C3, C4, proteinuria delle 24 ore. Decorreva un severo incremento degli indici di funzionalità renale (clearence della creatinina 38 mg/dl ->47 mg/dl ->23 mg/dl), in presenza di anemia di grado moderato, ipocomplementemia C3, C4, con deficit quantitativo di IgG (6,3 g/l, valori normali 7-16). e positività ad alto titolo di ANA (>1280 con pattern di tipo omogeneo;), anti-SCL-70 (23.0 U/ml) e degli anti-ds-DNA (>379 U/ml); proteinuria delle 24 ore elevata (7356 mg/24 h). Anticorpi anti-CMV e anti-HZV negativi. Al quarto giorno si sottoponeva ad TEE ed ETE evidenzianti due formazioni iperecogene adese all'apparato cordale del LAM come da pregressa endocardite, aspetto ipercogeno dell'apice dei muscoli papillari, versamento pericardico moderato, versamento pleurico bilaterale sn>dx. insufficienza mitralica severo-moderato: compatibile, alla luce della negatività delle emocolture seriate, con Endocardite di Libman-Sacks, per cui si introducevano Idrossiclorachina, Prednisone, Voclosporina, Micofenolato.

RMN nei limiti, F.O. con papilledema bilaterale con emorragia a fiamma in sede infero-temporale ed essudato cotonoso in sede iuxa-foveolare in occhio destro. Al giorno 17 la paziente mostrava cefalea persistente e refrattaria con vomito, quadro poi peggiorato nonostante l'uso di mannitolo dopo 10 giorni fino ad perdite di coscienza ed episodi epilettici a carattere tonico-clonico, al quadro RMN nuove lesioni frontali paracentrali, parieto-occipitali e

temporali dx come da acuzie vasculitica in NeuroLES, richiedenti avvio di Ciclofosfamide. Ad ulteriori 12 giorni regressione del quadro endocarditico con miglioramento dello stato di coscienza, GSC, e QoL. Si interrompeva follow up poiché la paziente alla luce del miglioramento preferiva essere trasferita per motivi logistici e familiari presso centro capitolino. Le placide modalità di dimissione appaiono antitetiche ad un decorso inizialmente subdolo, poi esploso in una insufficienza multiorgano che ha seriamente messo a rischio la sopravvivenza della paziente.

VALVULOPATIE 387
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE (IMAGING CARDIOVASCOLARE)
GESTIONE DELLA COMPLICANZE PM / ICD (ARITMIE)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)

TRICUSPID REGURGITATION AND RIGHT VENTRICULAR FUNCTION IN PATIENTS UNDERGOING HIS BUNDLE PACING

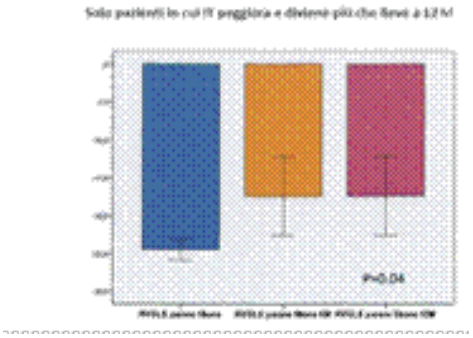
Giulia Lattanzi (a), Giuliana Bardelli (a), Manuel Freschini (b), Alessandro Lupi (a), Francesco Notaristefano (b), Rosanna Lauciello (a), Cinzia Zuchi (a), Anna Mengoni (a), Sandra D´addario (a), Federico Fortuni (a), Erberto Carluccio (a)
(a) S.C. CARDIOLOGIA E FISIOPATOLOGIA CARDIOVASCOLARE, UNIVERSITÀ DEGLI STUDI DI PERUGIA, OSP. S. MARIA DELLA MISERICORDIA (PERUGIA); (b) S.C. CARDIOLOGIA, OSP. S. MARIA DELLA MISERICORDIA (PERUGIA)

INTRODUCTION Significant tricuspid regurgitation, defined as at least moderate, in the presence of leads in the right ventricle (CIEDs) has an incidence ranging from 7.2% to 44.7%; the His bundle pacing appears to be associated with a lower incidence of the onset or worsening of tricuspid regurgitation.

CLINIC STUDY From June 2023 to March 2024, a total of 71 patients (age 75 ±7 years) attending our hospital, indicated for pacemaker implantation due to complete AVB (60%) or SSS (40%), underwent His bundle pacing (HBP). The study evaluate the severity of tricuspid regurgitation, its worsening to at least one grade compared to baseline. In addition, was evaluated the correlation between worsening tricuspid regurgitation and right ventricular systolic function parameters (TAPSE, TDI s' wave, and right ventricular free wall longitudinal strain (RVLS free wall)).
In the group of subjects with worsening to at least moderate grade of tricuspid regurgitation, there was also a significant worsening of the right ventricular free wall longitudinal strain associated with an increasing trend in LV diameters, although these data did not reach statistical significance; this could be explained by LV volume overload. In the population of study, only a 13% increase of at least one grade in tricuspid regurgitation was recorded at the 12-months ecocardiographic follow-up compared to baseline, which was lower than in the two large reviews in scientific literature, where subjects with traditional pacing implant were assessed, and the increase ranged between 20% and 24%
.
DISCUSSION The right ventricular free wall longitudinal strain is an early indicator of right ventricular dysfunction compared to the classic TAPSE, S wave on TDI, and FAC; a reduction in RVLS fw compared to pre-implantation may be a red flag for a group of subjects with moderate tricuspid regurgitation who should be monitored more closely.
The results obtained may be linked both to a more physiological stimulation of the right ventricle, and to a lower incidence of direct damage to the valvular apparatus with the 'Prolapsing technique' used for the stimulation.

CONCLUSION Despite the small statistical size and the short follow-up period of the study, it can be concluded that His bundle pacing associated with the ''prolapsing technique'' may have a favorable impact on the evolution of the right ventricular dysfunction and 'CIEDs'-related tricuspid regurgitation.

Pazienti in cui peggiora IT e diventa almeno moderata (5 pz)	basale	6 mesi	12 mesi	P
VD DTD	34+6	34+6	36+6	0.1
TAPSE	20+3	20+1	22+2	Ns
ONDA S	13+3	13+3	14+4	Ns
RVLS free wall	-24+1	-17+3	-17+3	0.04



Figures

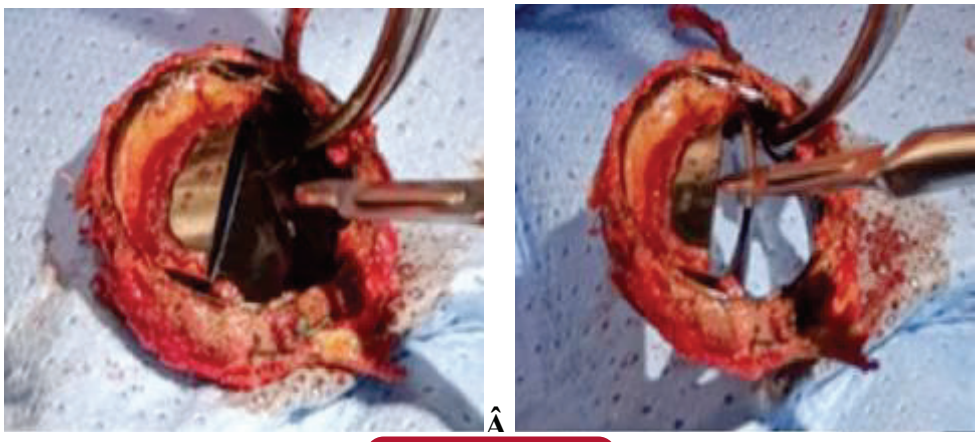
VALVULOPATIE 545
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE (IMAGING CARDIOVASCOLARE)
IMAGING MULTI-MODALE / IMAGING IBRIDO (IMAGING CARDIOVASCOLARE)
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)

A CASE OF MECHANICAL PROSTHETIC MITRAL VALVE DISFUNCTION: A CHALLENGING DIAGNOSIS

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Introduction: Mechanical valve (MV) dysfunction can be caused by thrombosis, pannus ingrowth, degeneration and endocarditis. Identifyng the correct etiology of MV dysfunction is crucial for appropriate management.

Case report: A 60-year-old male with a history of atrial fibrillation (AF) and mitro-tricuspid valvular disease, previously undergoing mitral valvuloplasty for mitral valve prolapse complicated by severe mitral regurgitation, which progressed to severe mitral stenosis and was subsequently managed with mitral valve replacement using a mechanical Sorin Bicarbon prosthesis 29 with concomitant tricuspid annuloplasty and surgical AF ablation. He presents to our emergency department with progressive dyspnea. Echocardiography showed restricted excursion of the leaflets with a marked increase in transprothesis gradient (mean gradient 21 mmHg) and moderate-to-severe tricuspid regurgitation. He was admitted for suspected malfunction of the mechanical prosthesis. Transesophageal echocardiography demonstrated reduced motion of the antero-septal leaflet with a suspected echogenic structure. For this reason, chest CT with contrast was performed, excluding the presence of prosthetic valve thrombosis. The case was discussed in a Heart Team meeting, and surgical correction was recommended. During the cardiac surgery, calcification of the annulus with fibrous tissue was found, causing reduded motion of one of the two leaflets. Replacement of the mitral prosthesis with a Medtronic Hancock bioprosthesis 29 and tricuspid valvuloplasty were performed.



Â

Figures

Discussion: Differential diagnosis between thrombus and pannus is essential because therapeutic approaches are different. In thrombotic obstruction the thromobolysis can be executed, on contrary in the case of pannus the only therapeutic option is surgery (valve replacement or pannus removal). In our case the pannusâ€™ hipothesis was supported by chronic evolution, effective anticoagulation and chest CT.

Conclusion: the presented case illustrated the difficult differential diagnosis of mechanical valve dysfuction and consequent problems with the optimal therapeutic approach.

VALVULOPATIE 697
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE (IMAGING CARDIOVASCOLARE)
FUNZIONE VENTRICOLARE, RIMODELLAMENTO E DANNO D'ORGANO (IPERTENSIONE ARTERIOSA)

MYOCARDIAL WORK: VALORE ADDIZIONALE NELLA STRATIFICAZIONE PROGNOSTICA DEI PAZIENTI CON INSUFFICIENZA AORTICA SEVERA

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(a) DEPARTMENT OF MEDICAL BIOTECHNOLOGIES, DIVISION OF CARDIOLOGY, UNIVERSITY OF SIENA

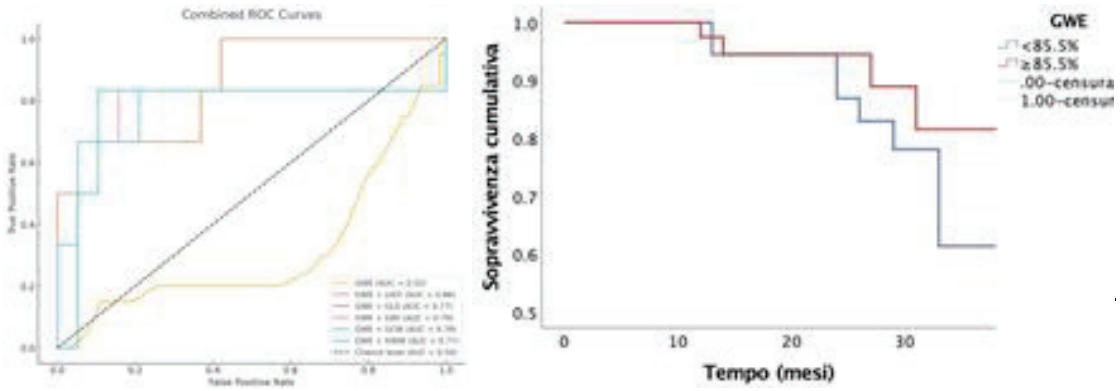
Background: l'indicazione chirurgica è riservata all'insufficienza aortica (IAo) severa con dilatazione ventricolare sinistra (VS) e riduzione della frazione di eiezione (FEVS) anche se una disfunzione VS è già documentabile in fasi precedenti e ancora reversibili. Lo studio del Myocardial Work (MW) con metodica Speckle Tracking è una tecnica che integra il global longitudinal strain (GLS) VS con il suo postcarico, stimato dalla pressione arteriosa sistemica (PA). Solo dati scarsi sono disponibili sui parametri di MW nei pazienti con IAo, soprattutto in termini prognostici.

Obiettivo: valutare una possibile correlazione dei dati di MW preoperatori con l'outcome post-operatorio in pazienti con IAo severa sottoposti a cardiochirurgia.

Metodi: abbiamo screenato in maniera consecutiva pazienti con IAo severa in attesa di intervento presso il nostro Policlinico tra il 07/2020 e il 07/2024, con disponibile ecocardiogramma preoperatorio e misurazione PA contemporanea. Pazienti con valvulopatia aortica mista o combinata con insufficienza o stenosi >lieve, endocardite infettiva acuta, sindrome aortica acuta, anuloplastica o protesi valvolari, fibrillazione atriale al momento dell'esame, mancato consenso informato sono stati esclusi. Tutti i pazienti sono stati sottoposti ad ecocardiogramma completo, inclusa analisi di GLS e MW. L'endpoint primario composito era: mortalità per tutte le cause e/o ospedalizzazione non pianificata per scompenso cardiaco. Gli endpoint secondari includevano: singoli eventi, modifica della classe funzionale New York Heart Association (NYHA) al follow up.

Risultati: la popolazione dello studio ha incluso 83 pazienti con età 71 [62-78] anni, 74% uomini. La maggior parte era sintomatica (NYHA II-IV) al momento della valutazione ecocardiografica (57, 69%), seppur con FEVS conservata (66, 80%). I pazienti sono stati suddivisi secondo gli eventi sviluppati al follow up (in totale 20 durante 25 [15-33] mesi). Tra gli indici ecocardiografici, la pressione polmonare sistolica stimata era più alta nei pazienti con eventi, così come il Global Wasted Work (GWW) mentre il Global Work Efficiency (GWE) era minore; gli altri parametri di MW non differivano tra i due gruppi. All'analisi di regressione Cox, il GWE era significativamente associato con l'endpoint primario (HR 0.939, p=0.028); all'analisi ROC, la combinazione di FEVS e GWE ha mostrato la maggiore sensibilità e specificità nel predire eventi (Figura 1, sinistra). I pazienti con GWE ≤85.5% avevano il peggiore outcome a medio- termine (Figura 2, destra).

Conclusioni: l'uso del MW come parametro addizionale alla FEVS può implementare la stratificazione prognostica dei pazienti con IAo, con un possibile ruolo nell'anticipare il timing chirurgico in caso di pazienti con malattia di grado medio-severo prima che si sviluppi un danno cardiaco irreversibile.


Combined ROC Curves
Sopravvivenza cumulativa
1.0
0.9
0.8
0.7
0.6
0.5
0
10
20
30
Tempo (mesi)
GWE
<85.5%
≥85.5%

Figure

VALVULOPATIE 748
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)
TUMORI CARDIACI (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE)
(IMAGING CARDIOVASCOLARE)

MITRAL VALVE BLOOD CYST IN A PATIENT WITH ISCHEMIC STROKE

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Background. Cardiac blood cysts are rare benign tumors primarily reported in infants and neonates. These lesions typically regress spontaneously within the first six months of life, rendering their persistence beyond infancy, and particularly in adulthood, exceptionally rare. Although most adult cases are asymptomatic and identified incidentally, clinical manifestations such as dyspnea, syncope, valvular dysfunction, and embolic events may occur depending on the cyst's size and anatomical location.

Case Report. We describe the case of a 59-year-old male with hypertension and no prior history nor symptom of cardiac disease, who presented to our Emergency Department in June 2025 with an ischemic stroke. ECG at rest and during monitoring showed no arrhythmias. Brain MRI revealed two recent focal ischemic lesions in the right posterolateral frontal cortical and subcortical regions. During the diagnostic work-up, transthoracic echocardiography (Figure 1) demonstrated severe mitral regurgitation with an eccentric jet, likely attributable to a flail mid-portion of the posterior mitral leaflet. Transesophageal echocardiography (Figure 2) was subsequently performed to evaluate potential cardioembolic sources and revealed a coarse, rounded lesion measuring approximately 9 x 10 mm on the P2 scallop of the posterior mitral leaflet, characterized by hyperechogenic margins and unechogenic center, suggestive of a hematogenous cyst or sequelae of infective endocarditis. Severe eccentric mitral regurgitation was confirmed with the jet directed along the interatrial septum and swirling flow within the left atrium. No other embolic cause was found at ecocolorDoppler, CT angiography of the supra-aortic trunks, brain CT angiography, brain MRI, chest CT angiography. Given the small size of the cerebral infarcts, the patient fully recovered during the same hospital admission and cardiac surgery was not contraindicated after coronary angiography showed no critical stenosis. The patient underwent mitral valve replacement with an ATS No. 27 mechanical prosthesis. Histopathological examination confirmed a cystic lesion attached to the valve leaflet, composed of fibrous tissue with myxoid degeneration and lined by endothelial cells (CD34+, ERG+), consistent with a blood cyst of the mitral valve.

Conclusions. Cardiac blood cysts in adulthood are very uncommon, with fewer than 100 cases documented. They predominantly involve the atrioventricular valves but may also be found in other cardiac structures. The pathogenesis remains controversial, with hypotheses ranging from embryological valve malformations to acquired lesions following inflammation or surgery. Echocardiography remains the cornerstone of diagnosis, while histopathology provides definitive confirmation. Regarding our patient presenting with a cerebral ischemic event likely related to the cyst, the blood cyst was also responsible for severe valvular dysfunction requiring surgical replacement.

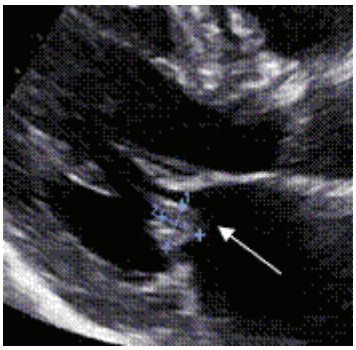


Figure 1



Figure 2

VALVULOPATIE 224
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
ECOCARDIOGRAFIA 3-D (IMAGING CARDIOVASCOLARE)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE) (IMAGING CARDIOVASCOLARE)

NATURAL HISTORY OF ATRIAL FIBRILLATION-INDUCED MITRAL VALVE REMODELLING IN ABSENCE OF SIGNIFICANT MITRAL REGURGITATION: A THREE-DIMENSIONAL ECHOCARDIOGRAPHIC STUDY

Kamil Stankowski (a), Gaspare Maranzano (b), Andrea Baggiano (a), Alberico Del Torto (a), Fabio Fazzari (a), Laura Fusini (a), Riccardo Maragna (a), Manuela Muratori (a), Saima Mushtaq (a), Luigi Tassetti (a), Gianluca Pontone (a, b)
(a) CENTRO CARDIOLOGICO MONZINO IRCCS; (b) UNIVERSITA' DEGLI STUDI DI MILANO

BACKGROUND Atrial fibrillation (AF) associates with mitral regurgitation (MR) due to progressive atrial dilatation and its deleterious effects on the mitral annulus (MA). Multiple studies have investigated the physiopathology of atrial functional MR, whereas the effects of AF on mitral valve (MV) remodelling before MR development are poorly characterized. This study aimed at characterizing MV remodelling in patients with AF without significant MR, according to AF progression.

METHODS This retrospective study included patients undergoing transthoracic and transesophageal echocardiography (TEE) before AF ablation at a single centre. The inclusion criterion was availability of a 3D-TEE MV dataset. The exclusion criteria included: ≥ moderate MR assessed using a multiparametric approach; arrhythmias other than AF; inadequate image quality. A control group of subjects undergoing TEE before patent foramen ovale closure, without AF history, was included. Standard echocardiographic measures were collected, and the 3D mitral datasets were processed with TomTec MV-4D (TomTec Imaging-Systems, Germany).

RESULTS Fifty-six patients with AF were included (34 paroxysmal AF and 22 persistent AF), and 15 control subjects. Mean age was 65 (55-70) years and 47 (84%) were male. Annular parameters exhibited significant evolutive variations across the three groups. MA anterior-posterior and commissural diameters, MA circumference as well as both 2D and 3D annular areas were larger in both AF groups as compared to controls. 3D MA displacement velocity was smaller in both AF groups vs. controls. Leaflet parameters as well showed significant changes. Tenting volume, area and height were larger in both AF groups vs. controls. The anterior leaflet area was larger in both AF groups, whereas the posterior leaflet area was larger in persistent AF only. The anterior leaflet was longer in both AF groups vs. controls. The main findings are: i) annular remodelling starts early in the natural course of AF, before significant MR develops; ii) most annular parameters modify during the progression from sinus rhythm to paroxysmal and, finally, persistent AF; iii) initial annular enlargement is counterbalanced by augmented leaflet area to prevent regurgitation. AF promotes significant geometrical alterations of the MA, including increasing diameters, area and circumference, with most geometrical parameters exhibiting more pronounced changes in the persistent group. A certain degree of geometrical alterations of the MA is tolerated before MR develops and the increase in anterior (and posterior in persistent AF) leaflet area may serve as an adaptive mechanism. Limitations of the present study are its retrospective nature and limited sample size.

CONCLUSIONS In conclusion, MV remodelling and dysfunction are important in the pathophysiology of AF even before significant MR develops and are more pronounced in the persistent form.

VALVULOPATIE 232
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR)
(IMAGING CARDIOVASCOLARE)

ASSESSMENT OF RESIDUAL MITRAL REGURGITATION AFTER TEER USING 4D FLOW CMR: CORRELATION WITH LEFT VENTRICULAR REVERSE REMODELLING VIA MULTIPLE CMR QUANTIFICATION METHODS

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BACKGROUND Transcatheter edge-to-edge repair (TEER) is an established treatment for severe mitral regurgitation (MR) in high-risk patients. However, accurate quantification of residual MR post-procedure remains challenging with echocardiography. Cardiac magnetic resonance (CMR) offers reliable quantification of MR and ventricular remodeling. The comparative performance of classical MR quantification methods versus 4D flow CMR in predicting left ventricular (LV) reverse remodeling after TEER has not been fully established.

PURPOSE To assess the relationship between MR quantification using classical and 4D flow CMR methods and LV reverse remodeling after TEER in a prospective cohort of 50 patients.

METHODS Fifty consecutive patients undergoing mitral TEER were enrolled in a prospective single-center study and underwent 6-month CMR follow-up. MR severity was quantified using classical indirect, 4D flow indirect, and 4D flow direct methods. LV reverse remodeling was defined as a reduction in LV end-diastolic volume index (LVEDVi) >15%. Associations between MR quantification and reverse remodeling were evaluated using logistic regression and receiver operating characteristic (ROC) analysis.

RESULTS Reverse remodeling occurred in 56% of patients. Baseline MR volumes were significantly higher in patients with reverse remodeling, across all quantification methods ($p < 0.05$). MR measurements using 4D flow correlated strongly with the classical indirect method ($r = 0.82$ for 4D flow indirect, $r = 0.83$ for 4D flow direct). Baseline MR quantified by the classical indirect method had the highest predictive accuracy for reverse remodeling (AUC = 0.80), followed by the 4D flow indirect and direct methods (AUC = 0.74 for both). At follow-up, MR reduction was significantly associated with reverse remodeling for both classical indirect (OR = 1.08, 95% CI: 1.01–1.15, $p = 0.039$) and 4D flow indirect methods (OR = 1.10, 95% CI: 1.03–1.18, $p = 0.028$). Although technically feasible, the 4D flow direct method was limited by post-TEER artifacts and showed a weak, non-significant association with reverse remodeling (OR ≈ 1.03, 95% CI: 0.99–1.08, $p = 0.105$).

CONCLUSIONS CMR-based MR quantification is associated with LV reverse remodeling after TEER. The classical indirect method offers the best diagnostic performance, with the 4D flow indirect method as a reliable alternative. The 4D flow direct method, while feasible, is less reliable due to post-TEER artifacts. Incorporating multiparametric CMR and 4D flow techniques in routine clinical evaluation may enhance patient selection and outcome prediction in mitral TEER.

VALVULOPATIE 790
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)
INTERVENTISTICA STRUTTURALE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PROGNOSI (SCOMPENSO CARDIACO)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)

ASSESSING OUTCOMES AFTER M-TEER IN FUNCTIONAL MITRAL REGURGITATION: PREDICTIVE ABITLITY OF THE COAPT RISK SCORE IN A MULTICENTER EUROPEAN REGISTRY

Giovanni Martino (a), Rossella Quarta (b), Letizia Rosa Romano (d), Domenico Simone Castiello (b, c), Annalisa Mongiardo (a), Rodrigo Estevez Loureiro (f), Fabrizio D´ascenzo (e), Carmen Spaccarotella (c), Sabato Sorrentino (a), Ciro Indolfi (b), Alberto Polimeni (b, d), Antonio Curcio (b, d)
(a) "MAGNA GRAECIA" UNIVERSITY OF CATANZARO, ITALY; (b) DEPARTMENT OF PHARMACY, HEALTH AND NUTRITION, UNIVERSITY OF CALABRIA, ITALY; (c) UNIVERSITY OF NAPLE "FEDERICO II"; (d) DIVISION OF CARDIOLOGY, "S.S. ANNUNZIATA" UNIVERSITY HOSPITAL OF COSENZA, ITALY; (e) DEPARTMENT OF CARDIOLOGY, "CITTA' DELLA SALUTE E DELLA SCIENZA" UNIVERSITY HOSPITAL OF TURIN, ITALY; (f) DEPARTMENT OF CARDIOLOGY, UNIVERSITY HOSPITAL ALVARO CUNQUEIRO, GALICIA SUR HEALTH RESEARCH INSTITUTE, VIGO, SPAIN

Introduction: Secondary mitral regurgitation (SMR) is the most common form of MR and is associated with poor prognosis, particularly in heart failure (HF) patients. Transcatheter edge-to-edge repair of the valve (M-TEER) is a therapeutic option for inoperable patients, yet optimal selection remains critical. The COAPT Risk Score predicts all-cause mortality and HF hospitalization after TEER, but its real-world validity is uncertain.

Main Objective: this study evaluates the predictive performance of the COAPT Risk Score in a real-world SMR population undergoing M-TEER from a multicenter registry.

Methods: we included 226 patients with SMR treated with Mitra-Clip and sufficient data to calculate the COAPT Risk Score. Patients were stratified into tertiles of risk. The primary endpoint was all-cause mortality or HF hospitalization at 2 years. Predictive performance was assessed with Kaplan-Meier and ROC analyses.

Results: Median follow-up was 602 days. Kaplan-Meier analysis showed a significant increase in cumulative incidence of the primary endpoint across risk tertiles (p = 0.0236), with a stronger association for mortality (p = 0.008) (Fig. 2).
The COAPT Risk Score had limited predictive ability for the composite outcome (AUC 0.598) and HF hospitalization (AUC 0.555) but performed better for mortality prediction (AUC 0.639) (Fig. 3).

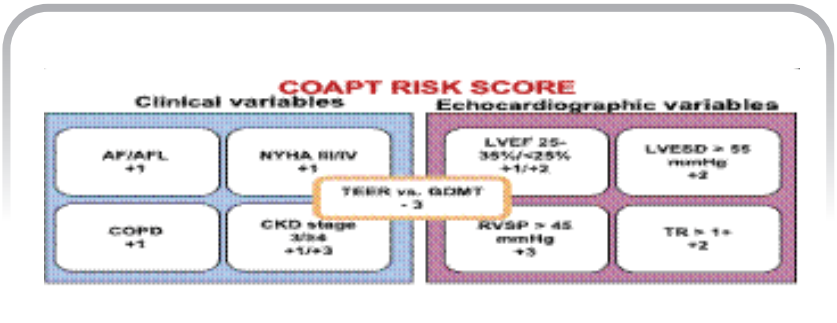


Figure 1

Conclusion: While the COAPT Risk Score is useful for stratifying mortality risk in patients with SMR undergoing M-TEER, yet limitations in predicting HF hospitalization or death, as well as HF hospitalization alone exist. Future studies addressing the optimal patient selection are warranted.

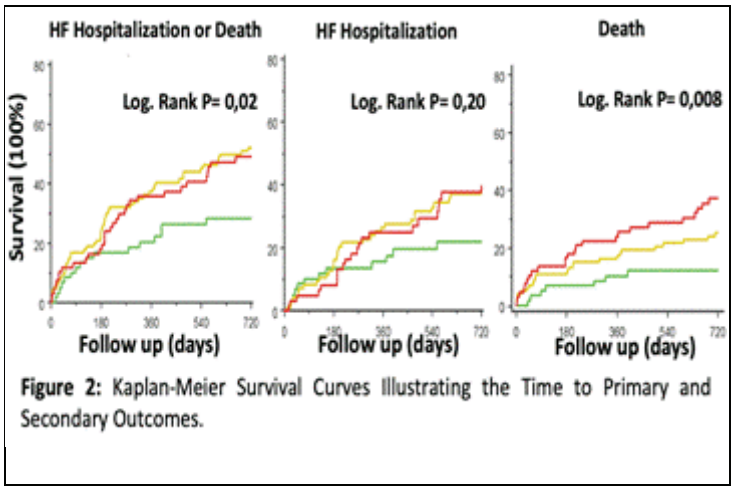


Figure 2: Kaplan-Meier Survival Curves Illustrating the Time to Primary and Secondary Outcomes.

Figure 2

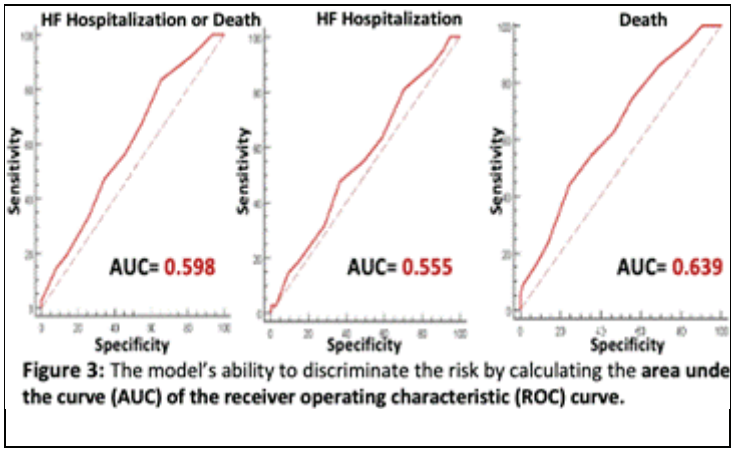


Figure 3: The model's ability to discriminate the risk by calculating the **area under the curve (AUC) of the receiver operating characteristic (ROC) curve.**

Figure 3

VALVULOPATIE 919
PATOLOGIA DELLA VALVOLA TRICUSPIDE (VALVULOPATIE)
ECOCARDIOGRAFIA 3-D (IMAGING CARDIOVASCOLARE)
IPERTENSIONE POLMONARE
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
FISIOPATOLOGIA E CLASSIFICAZIONE (SCOMPENSO CARDIACO)

REGURGITATION-ADJUSTED RIGHT VENTRICULAR-ARTERIAL COUPLING AND CONTRACTILE RESERVE IN PATIENTS WITH TRICUSPID REGURGITATION: A PRESSURE-VOLUME LOOP ANALYSIS

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Background. Understanding right ventricular (RV) function is of pivotal importance in tricuspid regurgitation (TR). However, standard imaging metrics may not reliably capture RV contractility and ventricular-arterial interaction, and may fail to identify overt or latent RV dysfunction in the presence of TR.

Aims. In patients with TR, we employed gold-standard RV pressure-volume loops to: i) evaluate right ventricular (RV) – pulmonary artery (PA) coupling, accounting for tricuspid regurgitant load; ii) assess RV contractile reserve and exercise-induced changes in RV-PA coupling.

Methods: Patients with at least moderate tricuspid regurgitation (TR) underwent invasive hemodynamic assessment at rest (n=19) and during supine exercise (n=17) with pulmonary artery (PA) catheterization and RV pressure–volume loop acquisition to determine: end-systolic elastance (Ees, index of RV contractility), arterial elastance (Ea, index of RV afterload), and RV-PA coupling (Ees/Ea). Additionally, a parallel-elastance model was implemented, including TR elastance (Etr), to compute effective pulmonary arterial elastance (Epa) corrected for tricuspid elastance (1/Epa=1/Ea-1/Etr). Uncorrected pressure-volume loops metrics (Ea and Ees/Ea) were compared with measures corrected for tricuspid regurgitant load (Epa and Ees/Epa). Further, patients were subdivided based on ΔEes changes from rest to exercise in preserved (ΔEes>0) and exhausted (ΔEes≤0) RV contractile reserve.

Results: Mean age was 79 ± 7, 63% were females and 84% of patients received a hemodynamic diagnosis of heart failure with preserved ejection fraction. TR regurgitant volume and fraction were 35 [22-47] mL and 32 [23-47] %, respectively. RV ejection fraction was 60 ± 10%. Ea consistently underestimated afterload compared with Epa (0.39 [0.24-0.61] vs 0.59 [0.37-0.88] p-value <0.001). Consequently, Ees/Ea yielded higher values than Ees/Epa (0.65 ± 0.23 vs 0.46 ± 0.22 p-value <0.001). Both Ees/Ea and Ees/Epa suggested RV-PA uncoupling, generally occurring with values < 1. When patients were stratified by contractile reserve, those with preserved RV reserve (ΔEes > 0, n=9) vs patients with exhausted RV reserve (ΔEes≤0, n=8) showed a significant increase in Ees during exercise (0.43 ± 0.21 vs 0.23 ± 0.17 p-value=0.048) and improved Ees/Epa (0.62 ± 0.28 vs 0.27 ± 0.19 p-value = 0.009). No other clinical or hemodynamic differences were observed at rest or during exercise between the two groups.

Conclusions: In patients with TR, conventional measures underestimate afterload and overestimate

RV–PA coupling. The use of TR-adjusted metrics (Ees/Epa) may provide a more accurate assessment of RV performance. Our data suggest that RV-PA uncoupling may be frequent in patients with TR. Additionally, approximately half of the patients showed absent contractile reserve with further RV-PA uncoupling during exercise.

Variables	ΔEes > 0 (n = 9)	ΔEes < 0 (n = 8)	p-value	Variables	ΔEes > 0 (n = 9)	ΔEes < 0 (n = 8)	p-value
Rest				**Exercise**			
Ees, mmHg/mL	0.25 ± 0.13	0.33 ± 0.18	0.30	Ees, mmHg/mL	0.43 ± 0.21	0.23 ± 0.17	**0.048**
Ea, mmHg/mL	0.39 [0.23-0.61]	0.45 [0.30-0.59]	0.50	Ea, mmHg/mL	0.74 [0.33-0.99]	0.46 [0.33-0.70]	0.26
Epa, mmHg/mL	0.43 [0.33-0.83]	0.73 [0.43-0.95]	0.44	Epa, mmHg/mL	0.78 [0.45-1.08]	0.82 [0.51-1.24]	0.74
Ees/Ea	0.64 ± 0.27	0.64 ± 0.18	0.99	Ees/Ea	0.65 ± 0.17	0.44 ± 0.27	0.07
Ees/Epa	0.48 ± 0.23	0.45 ± 0.17	0.77	Ees/Epa	0.62 ± 0.28	0.27 ± 0.19	**0.009**

Figures

VALVULOPATIE 316
ENDOCARDITI (VALVULOPATIE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)

MANAGING THE INOPERABLE: THE SAT OPTION

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MEMBER OF ERN GUARD-HEART

Background and aim: Suppressive antibiotic therapy (SAT) is a palliative, non-curative approach for selected cases of infective endocarditis (IE), when surgery is not feasible. This retrospective observational descriptive study evaluates SAT's safety and efficacy.

Methods: We analyzed 34 IE patients treated with SAT from 2017 to 2025, selected from cases diagnosed according to ESC 2023 EI guidelines.

Results: The study population was mainly composed of elderly male patients with comorbidities (Table 1). Prosthetic biological valve EI was the predominant presentation (35.3% aortic, 17.8% mitral). Native valve and CIED-related IE were less common (Table 1). Streptococcus species were the most frequently identified pathogens and beta-lactams were the most used antibiotics (Tables 2). The mean duration of SAT was 1022 days, with 76.5% of patients remaining on long-term therapy, despite 20.6% of patients developing antibiotic intolerance. IE recurrence occurred in 11.7% of cases, and overall mortality was 17.6%, with a mean time to death of 376 days (Table 3). These outcomes, consistent with recent reports (SATIE study and Lemmet et al.), suggest

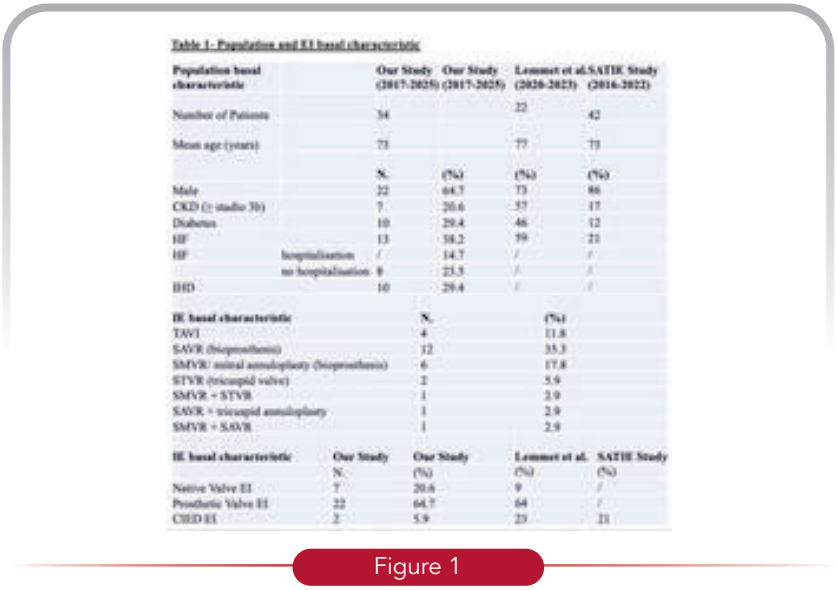


Table 1 - Population and EI basal characteristic

Population basal characteristic		Our Study (2017-2025)	Our Study (2017-2025)	Lemmet et al. (2020-2023)	SATIE Study (2016-2022)
Number of Patients		34		22	42
Mean age (years)		73		77	73
		N.	(%)	(%)	(%)
Male		22	64.7	73	86
CKD (≥ stadio 3b)		7	20.6	57	17
Diabetes		10	29.4	46	12
HF		13	38.2	59	21
HF	hospitalisation	/	14.7	/	/
	no hospitalisation	8	23.5	/	/
IHD		10	29.4	/	/

IE basal characteristic	N.	(%)
TAVI	4	11.8
SAVR (bioprosthesis)	12	35.3
SMVR/ mitral annuloplasty (bioprosthesis)	6	17.8
STVR (tricuspid valve)	2	5.9
SMVR + STVR	1	2.9
SAVR + tricuspid annuloplasty	1	2.9
SMVR + SAVR	1	2.9

IE basal characteristic	Our Study N.	Our Study (%)	Lemmet et al. (%)	SATIE Study (%)
Native Valve EI	7	20.6	9	/
Prosthetic Valve EI	22	64.7	64	/
CIED EI	2	5.9	23	21

Figure 1

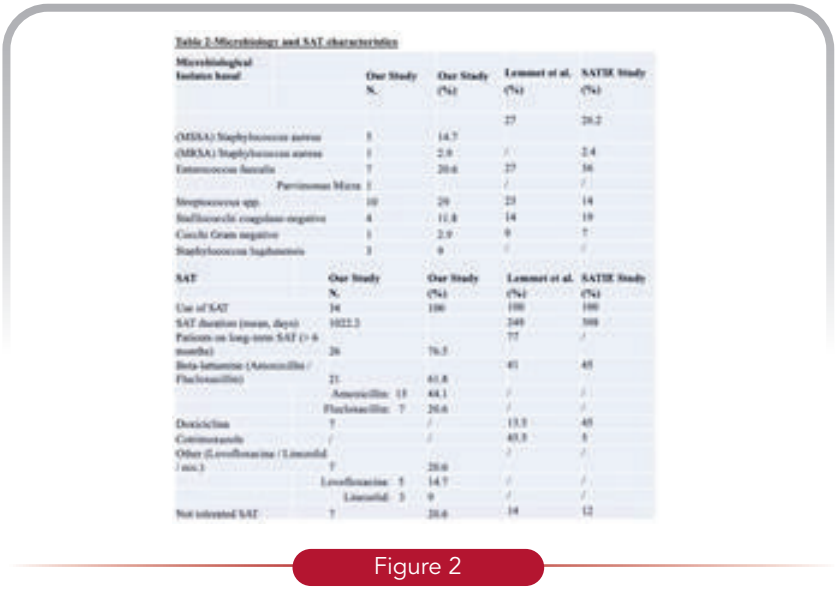


Table 2 Microbiology and SAT characteristics

Microbiological Isolates based	Our Study N.	Our Study (%)	Lemmet et al. (%)	SATIE Study (%)
			27	29.2
(MSSA) Staphylococcus aureus	5	14.7		
(MRSA) Staphylococcus aureus	1	2.9	/	2.4
Enterococcus faecalis	7	20.6	27	36
Parvimonas Micra	1		/	/
Streptococcus spp.	10	29	23	14
Staffilococchi coagulase-negativi	4	11.8	14	19
Cocchi Gram negativi	1	2.9	9	7
Staphylococcus haghaemolyticus	1	6	/	/

SAT	Our Study N.	Our Study (%)	Lemmet et al. (%)	SATIE Study (%)
Use of SAT	34	100	100	100
SAT duration (mean, days)	1022.3		349	300
Patients on long-term SAT (> 6 months)	26	76.5	77	/
Beta-lattamine (Amoxicillin / Flucloxacillin)	21	61.8	41	45
Amoxicillin: 15	44.1		/	/
Flucloxacillin: 7	20.6		/	/
Doxiciclina	7	/	13.5	45
Cotrimossazolo	/	/	45.5	5
Other (Levofloxacina / Linezolid / etc.)	7	20.6	/	/
Levofloxacina: 5	14.7		/	/
Linezolid: 3	9		/	/
Not tolerated SAT	7	20.6	14	12

Figure 2

that SAT can provide effective disease control in high-risk population.

Discussion and conclusion: Current guidelines acknowledge SAT as possible option for inoperable IE patients but emphasize the limited evidence supporting its use and standardized protocols' lack.
Despite some limitations (small sample size, retrospective design, control group's absence), our findings support SAT's efficacy and safety in selected IE cases. Novelty of our study is the use of Positron Emission Tomography (PET) at baseline and follow-up, which revealed the persistence of the infectious process even when echocardiography suggested a resolution. SAT intolerance was slightly higher than recent reports, whereas mortality was substantially lower. Therapy was generally maintained with antibiotic switch, and adverse events remained mild. These efforts could contribute to more comprehensive, evidence-based recommendations for SAT in the management of IE.

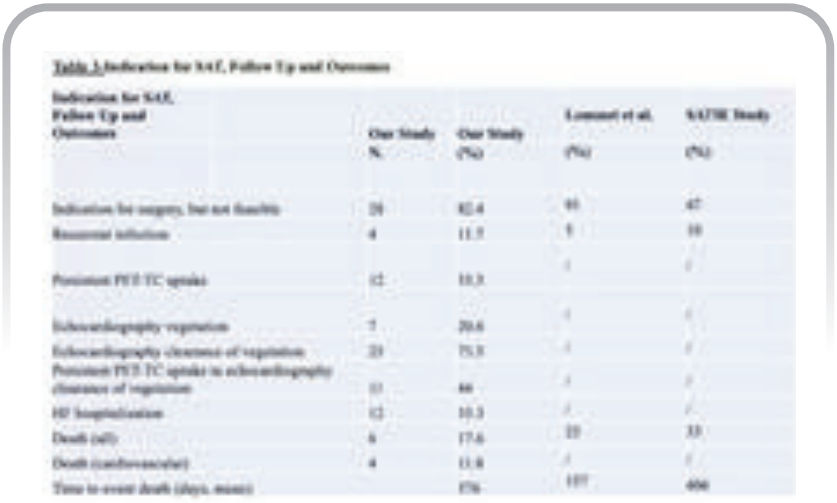


Figure 3

VALVULOPATIE 785
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
PATOLOGIA DELLA VALVOLA POLMONARE (VALVULOPATIE)
CARDIOPATIE CONGENITE NELL´ADULTO
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)

COMBINED TRANSCATHETER AORTIC VALVE AND PULMONARY VALVE-IN-VALVE IMPLANTATION USING SAPIEN S3 PROSTHESIS

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(b) CARDIAC SURGERY, CARDIOTHORACOVASCULAR DEPARTMENT, AZIENDA SANITARIA UNIVERSITARIA GIULIANO ISONTINA, TRIESTE, ITALY

Background: Redo cardiac surgery is associated with increased mortality and morbidity. With the evolution of transcatheter techniques, valve-in-valve implantation (ViV) has become feasible and safe alternative to redo surgery in high-risk patients. Transcatheter pulmonary valve implantation (TPVI) has also become an effective percutaneous alternative for dysfunctional right ventricle–to–pulmonary artery conduits or bioprosthetic valves, with excellent outcomes.

Clinical Case: A 77-year-old lady was admitted to our hospital for worsening heart failure. Past medical history included stage II CKD, peripheral artery disease, previous stenting of the right internal carotid. In 1962 she underwent pulmonary commissurotomy, due to congenital pulmonary valve stenosis, and in 2010 pulmonary valve replacement using bioprosthesis (Carpentier-Edwards Magna 23) with concomitant pulmonary artery plasty and enlargement of the infundibulum using pericardial patch. On admission, echocardiography showed preserved LV function, despite apical hypokinesia with thinned aneurysm of the LV apex, RV dysfunction (TAPSE 16 mm), severe low flow-low gradient aortic stenosis, moderate mitral regurgitation, severe pulmonary regurgitation with moderate tricuspid regurgitation. Right heart catheterization demonstrated increased capillary filling pressures (30 mmHg), severe pulmonary hypertension (PAPs 78 mmHg), low CI (1.59 L/min/m² with Fick's method). The Heart-Team advised THV implantation to treat both the valves, due to the high surgical risk (EuroSCORE II 16%). Preoperative CT showed severe femoral and subclavian disease; thus, despite the presence of apical aneurysm, the patient was scheduled for transapical TAVI and concomitant percutaneous pulmonary ViV. After careful access to the left apex, a 23 mm Sapien S3 Ultra was successfully deployed. A Swan-Ganz catheter were used to confirm severe pulmonary prosthetic regurgitation with mild stenosis. A 23 mm Sapien S3 Ultra valve was manually crimped and delivered antegradely via a 24 Fr sheath through the femoral vein into the pulmonary artery. Final angiography confirmed good position, no bleeding, and proper function. Discharge echocardiography showed both THVs functioning well.

Conclusion: The double ViV technique is feasible and safe. This clinical case demonstrates that Sapien THV can be successfully used for both aortic and pulmonary valves, even in combination and in complex clinical

scenarios. We emphasize the critical importance of correct sequencing between TAVR and TPVI. Although TPVI is often prioritized, we chose to perform TAVR first to prevent the potential acute loss of preload caused by severe right ventricular dysfunction in the setting of severe aortic stenosis. This approach resulted in an excellent short and long-term outcome.

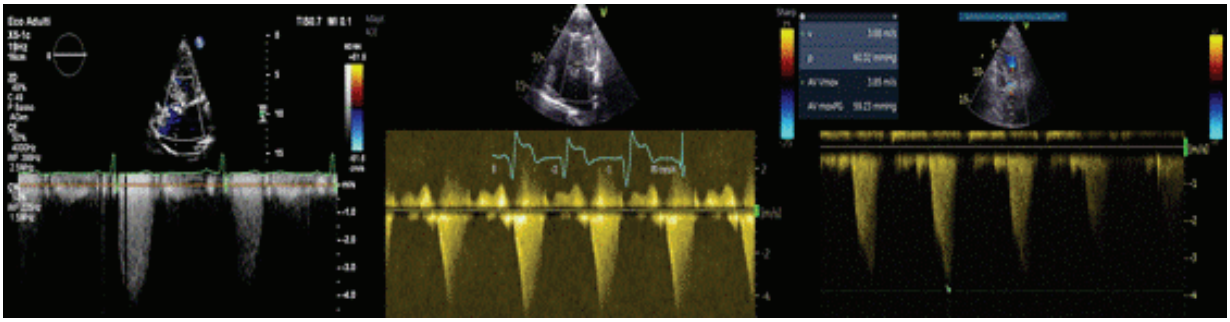
VALVULOPATIE 857
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
CARDIOPATIE CONGENITE NELL´ADULTO
(CARDIOPATIE CONGENITE E MALATTIE DEL CIRCOLO POLMONARE)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)

"BETTER CALL SURGEON"? WHEN ISOLATED SURGICAL TREATMENT MAY NOT BE SUFFICIENT

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Subaortic valve membranes are quite uncommon cardiac conditions of usually unknown origin. Sometimes are deemed to be congenital, sometimes acquired (e.g. calcifications). Diagnosis can be challenging, since clinical presentation may mimic hypertrophic cardiomyopathy due to severe hypertrophy and left-ventricular outflow tract (LVOT) obstruction.

We present the case of a 83 year-old woman without previous relevant clinical history who was visited in an outpatient clinic due to an increase in a heart murmur known since childhood. ECG showed sinus rhythm with very high voltages and echocardiography demonstrated severe aortic valve stenosis and intraventricular gradient. The patient was therefore addressed to our TAVI specialists and underwent transoesophageal echocardiography to further investigate the disease. The exam confirmed the presence of severe aortic valve stenosis (92/53 mmHg, valve area 0.9 cm2) and revealed LVOT obstruction of difficult quantification due to mitral chord systolic anterior motion as well as previously undetected sub-aortic valve membrane. Cardiac surgery was hence planned and the patient underwent aortic valve replacement, sub-aortic membrane removal and mild septal myomectomy. Post-surgical course was regular, except for post-operative left-bundle branch block and persistent LVOT gradient (90 mmHg). Treatment with Diltiazem was initiated and reduction of the gradient was achieved (58 mmHg at discharge). The patient underwent subsequent rehabilitation with near-normalization of the gradient at one month from surgery (16 mmHg). This case provides interesting insights over a challenging case: 1. Multiple overlapping pathological mechanisms (aortic stenosis, subvalvular membrane, LVOT obstruction) make it



Left ventricular outflow tract before surgery (left), after surgery (middle), after Diltiazem was initiated (right).

Figures

difficult to obtain an accurate gradient estimation before surgery; 2. Subvalvular stenosis is a possible, though rare, cause of severe LV hypertrophy and should be assessed in the diagnostic workup; 3. Surgery alone may not effectively resolve LVOT obstruction and should be paired with medical treatment for residual gradients.

VALVULOPATIE 61
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)

SNARE AND CRUSH: A CASE OF VALVE EMBOLIZATION

Consolato Mesiani (a), Tommaso Fabris (a), Francesco Putorti´ (a), Michele Strosio (a), Simone Tripi (a), Antonio Amadio (a), Andrea Panza (a), Chiara Fraccaro (a), Massimo Napodano (a), Giuseppe Tarantini (a)
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Rational: Transcatheter aortic valve implantation (TAVI) has become the standard of care for high-risk patients with severe aortic stenosis (AS). Valve embolization during TAVI, although rare, is a potentially life-threatening event requiring prompt and effective bailout strategies. We report a successful management of bioprosthesis proximal embolization through a combined snaring and balloon-assisted re-TAVI approach in a elderly patient.

Technical Resolution: A 88-year-old male with severe symptomatic AS was scheduled for transfemoral TAVI. Pre-procedural CT revealed a severely calcified native valve, high coronary take-offs, and large sinuses of Valsalva. A 30-mm Hydra self-expanding valve was successfully deployed. Due to significant paravalvular leak, post-dilatation was performed; however, during post-dilatation, pacing loss of capture determined Hydra THV aortic migration and subsequent stiff guidewire position loss. The patient remained hemodynamically stable. A 14 Fr left femoral access was obtained. A new Safari extra-stiff guidewire was advanced through right femoral access in the left ventricle externally in respect of 30-mm Hydra frame. A 25-mm Amplatz GooseNeck snare was advanced via a 7 Fr guide catheter. Successful capture allowed controlled traction to stabilize the valve against the aortic wall, thereby preventing further migration or rotational displacement during the subsequent procedure. Then, a 12 × 40 mm high-pressure balloon was positioned between the Hydra frame and aortic wall. An Edwards SAPIEN 3 Ultra 23-mm balloon-expandable valve was then advanced over the extra-stiff Safari guidewire and successfully crossed the Hydra THV while the Atlas Gold balloon was transiently inflated to displace from the outer aortic curve the self-expanding nitinol-made frame of Hydra valve, thereby avoiding critical interaction between the embolized THV and the Edwards Sapien THV delivery system. Then, the Edwards SAPIEN 3 Ultra 23-mm THV was successfully deployed at nominal volume. Final angiographic assessment revealed mild residual aortic regurgitation without evidence of coronary obstruction or aortic wall injury.

Clinical Implications: This case underscores the critical role of stability during rapid cardiac pacing to prevent THV pop-up, a rare yet potentially hazardous complication of the procedure. It also illustrates an innovative management approach involving snaring the proximal arch of the embolized THV to stabilize the system, alongside the parallel deployment of a new THV using a transiently-inflated balloon to mitigate critical interactions between the embolized and new valves.

Perspectives: To our knowledge, this is the first report

combining these two techniques—antegrade snaring and balloon-assisted displacement—to manage TAVI-related valve embolization. This integrated strategy proved to be both feasible and effective. The successful procedural and clinical outcome supports the consideration of this technique as a bailout option in complex TAVI cases involving valve migration.

VALVULOPATIE 542
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE (IMAGING CARDIOVASCOLARE)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
INTERVENTISTICA STRUTTURALE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

POST-INTERVENTION PROGNOSIS IN SEVERE AORTIC REGURGITATION: AN ANALYSIS OF CLINICAL PRESENTATION AND OUTCOMES

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Background: The prognostic implications of clinical presentation in patients with severe aortic regurgitation (AR) undergoing aortic valve replacement or repair are not well established. This study aimed to assess outcomes in patients treated with surgery or transcatheter aortic valve implantation (TAVI) according to their presentation profile.

Methods: We retrospectively enrolled consecutive patients over 18 years old treated for severe AR at our centre from 2015 to 2024. Exclusion criteria were concomitant more than moderate aortic stenosis, endocarditis, aortic dissection, missing echocardiographic data, or lacking follow-up. Patients were categorized into three groups according to presentation profile: asymptomatic, progressive signs and symptoms [progressive valve syndrome (PVS)], such as New York Heart Association (NYHA) class II or edema, and advanced/acute valve syndrome (AVS). The primary endpoint was all-cause mortality; secondary endpoints included hospitalization for heart failure (HFH) and a composite of mortality or HFH. Kaplan-Meier survival curves and Cox proportional hazards models were used to compare postoperative outcomes in the different groups.

Results: A total of 200 patients (22% asymptomatic, 40% with PVS, and 38% with AVS) were included. Baseline clinical characteristics were similar across groups, except for age, arterial hypertension and diabetes mellitus, which were significantly higher in the PVS one. 86% of patients were treated with surgery and 14% with TAVI. At 10-years follow-up, all-cause mortality was 2.3% in asymptomatic patients, 13.75% in PVS group, and 35.6% in AVS group. HFH occurred in 0%, 10%, and 37% of patients, respectively. The composite endpoint was reached in 2.3%, 17.5%, and 58% of patients, respectively. Therefore, patients with acute presentation had significantly higher all-cause mortality and HF hospitalization compared with the asymptomatic and PVS groups ($p<0.001$). Multivariable analysis confirmed clinical presentation as an independent predictor of both mortality and heart failure hospitalization after AV replacement/repair. Indeed, patients presenting with AVS had increased risk of the composite of all cause-mortality and HFH

[HR 13.6; (95% CI: 1.8-103; p = 0.012)].

Conclusions:
Among patients undergoing valve replacement or repair for severe AR, those presenting acutely exhibit a markedly worse prognosis. These findings highlight the importance of timely diagnosis and intervention, potentially before the onset of acute decompensation.

VALVULOPATIE 381
PATOLOGIA DELLA VALVOLA TRICUSPIDE (VALVULOPATIE)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

TRICUSPID TRANSCATHETER EDGE-TO-EDGE REPAIR FOR SEVER SYMPTOMATIC TRICUSPID REGURGITATION: A SYSTEMATIC REVIEW AND META-ANALYSIS

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(a) DIVISION OF CARDIOLOGY, UNIVERSITY HOSPITAL P. GIACCONE, DEPARTMENT OF PROMISE, UNIVERSITY OF PALERMO; (b) UNIVERSIDAD AUSTRAL, BUENOS AIRES, ARGENTINA; (c) GOVERNMENT MEDICAL COLLEGE KOZHIKODE, KERALA, INDIA

Background: Severe tricuspid regurgitation is associated with elevated morbidity and mortality. In recent years, tricuspid transcatheter edge-to-edge repair (T-TEER) has emerged as a promising procedure for the treatment of this valvular disease. We conducted a systematic review and meta-analysis to compare the effectiveness of T-TEER with optimized medical therapy (OMT) versus OMT alone for the treatment of severe tricuspid regurgitation.

Methods: PubMed, Scopus, and Cochrane databases were searched for randomized controlled trials (RCTs) and observational studies comparing T-TEER plus OMT vs OMT alone. Heterogeneity was assessed with I2 statistics, and a random-effects model was used for all the outcomes.

Results: We included two RCTs and four observational studies with a total of 1805 patients, of whom 849 (47%) underwent T-TEER plus OMT. We found a trend favoring T- TEER for all-cause mortality (risk ratio 0.87; 95% confidence interval (95% CI) 0.66–1.13; P= 0.30) and cardiovascular death (risk ratio 0.77; 95% CI 0.36–1.65; P= 0.50), although without statistically significant difference. Heart failure hospitalizations (risk ratio 0.72; 95% CI 0.61 – 0.85; P= 0.0001) were significantly reduced in patients treated with T-TEER compared with OMT alone. At 1-year follow-up, nearly 90% of patients on OMT remained with severe or greater TR, compared with only 22.6% of those treated with T-TEER. T-TEER increased the likelihood of achieving TR severity ≤ moderate by more than sixfold vs OMT (risk ratio 6.42; 95% CI 3.08 – 13.39; P < 0.001). Functional status and quality of life were significantly improved, with higher KCCQ scores (MD +14.01), longer 6MWT distance (MD +29.35 m), and a greater proportion of patients in NYHA class I – II (risk ratio 1.39; 95% CI 1.27 – 1.51; P < 0.00001).

Conclusion: In patients with severe symptomatic TR, T-TEER is associated with significant improvements in tricuspid regurgitation severity, reduction in heart failure hospitalizations, and enhanced quality of life and functional status, with no apparent effect on all-cause mortality and cardiovascular death.

CardioSic

VALVULOPATIE 1076
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)
ARITMIE VENTRICOLARI (ARITMIE)
MORTE IMPROVVISA / RIANIMAZIONE (ARITMIE)
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE (IMAGING CARDIOVASCOLARE)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)

RISCHIO ARITMICO NEL PROLASSO DELLA VALVOLA MITRALICA CON DISGIUNZIONE DELL'ANELLO MITRALICO: METANALISI DI STUDI LONGITUDINALI

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(a) DIPARTIMENTO DI SCIENZE BIOMEDICHE AVANZATE - UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II ; (b) DIPARTIMENTO DI SALUTE PUBBLICA - UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II; (c) OSPEDALE A. CARDARELLI, DIVISIONE DI CARDIOLOGIA - NAPOLI

Background. La disgiunzione dell'anello mitralico (MAD) è una condizione caratterizzata dall'attacco anomalo del lembo posteriore della valvola mitrale direttamente alla parete atriale. Questa condizione è particolarmente frequente nei pazienti con prolasso della valvola mitrale (MVP). Il crescente interesse verso la MAD deriva da diversi studi che ne hanno suggerito un potenziale ruolo aritmogeno. Tuttavia, i risultati sono ancora controversi e ulteriori ricerche sono necessarie per chiarirne le implicazioni.

Obiettivo. Valutare con maggiore accuratezza il rischio aritmico associato alla presenza di MAD nei pazienti con MVP.

Metodi. È stata condotta una ricerca sistematica nelle banche dati elettroniche Medline, Cochrane e Scopus, dagli inizi fino a maggio 2025. L'analisi si è focalizzata sugli studi che confrontavano MAD aritmica con MAD non aritmica in pazienti con MVP. Due ricercatori (L.O. e M.A.L.) hanno eseguito indipendentemente le ricerche utilizzando i seguenti termini: mitral annular disjunction, mitral valve disjunction, ventricular arrhythmias, mitral valve prolapse, sudden cardiac death. I criteri di inclusione erano: (1) confronto diretto tra MAD aritmica e non aritmica; (2) presenza di MVP; (3) età >18 anni; (4) report sugli outcome aritmici, specificamente l'incidenza di aritmie maggiori definite come aritmie ventricolari e/o morte cardiaca improvvisa.

Risultati. Dopo la revisione di 66 articoli, sono stati identificati 7 studi per un totale di 1977 pazienti con MVP, di cui 1171 con MAD e 806 senza MAD. La MAD è stata definita come separazione anomala tra la giunzione mitralica e la parete ventricolare sinistra ≥1 mm (5 studi) o ≥2 mm (2 studi). La valutazione della MAD è stata effettuata mediante ecocardiografia (3 studi) o risonanza magnetica cardiaca (3 studi). Nei pazienti con MVP, la presenza di MAD è risultata associata a un aumento del rischio aritmico con OR 2.60 (IC95%: 1.99–3.38, I2: 14.7%, p<0.0001). La sensibilità e la specificità erano rispettivamente 0.512 (IC 95%: 0.245–0.778) e 0.667 (IC 95%: 0.506–0.828). L'AUC era 0.561.

Conclusioni. Il prolasso mitralico è generalmente una condizione benigna. Tuttavia, un sottogruppo di pazienti può presentare un rischio maggiore di aritmie, con possibili gravi complicanze, inclusa la morte cardiaca improvvisa. In questo contesto, la presente metanalisi ha evidenziato che la presenza

di MAD rappresenta un significativo fattore di rischio aritmico. Tuttavia, la sua accuratezza predittiva rimane limitata, verosimilmente per l'influenza di ulteriori fattori prognostici e, soprattutto, per l'assenza di protocolli standardizzati per la valutazione della MAD, che includano tecniche di imaging e precisi punti di riferimento anatomici.

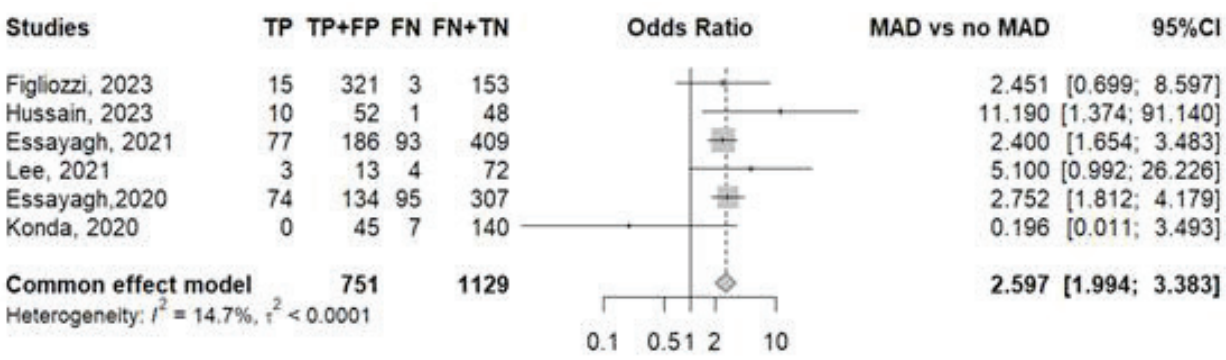


Figure 1

VALVULOPATIE 181
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
FIBRILLAZIONE ATRIALE (FA) (ARITMIE)
PREVENZIONE CARDIOVASCOLARE: INTERVENTI E RISULTATI (PREVENZIONE E RIABILITAZIONE)
MALATTIE DEL METABOLISMO (DIABETE E MALATTIE DEL METABOLISMO)

ROLE OF ATRIAL FIBRILLATION AND RENAL FUNCTION AS A PREDICTORS OF CLINICAL OUTCOME IN PATIENTS WITH AORTIC STENOSIS

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Background – Aortic stenosis is the most relevant valvular disease in the Western world, affecting almost 3% of the general population. It is essential to investigate the predictors of clinical outcomes to better understand their natural history, progression and to better direct the timing of monitoring and treatments.
Aim of study – The aim of this study is to search for predictors of mortality, beneficial events and valve replacement in patients with moderate-severe aortic stenosis.

Materials and Methods – The subjects of the study are 140 patients affected by moderate-severe aortic stenosis from a regional aortic stenosis registry. For each patient, anamnestic, anthropometric and blood samples were collected. Echocardiographic data were performed before, during and after the end of follow-up to identify potential factors that predict clinical outcomes.

Results – The deceased were 50 subjects (36%) of which 22.9% without having replaced the valve, the remaining after the replacement event. The mean follow-up was 24.99±21.72 months. The deceased were extracted from a higher frequency of atrial fibrillation and renal failure a higher blood phosphate level. Among the bio-humorals, eGFR values were always independently significantly associated with mortality: survival curves showed, categorizing for an eGFR greater than/equal to or less than 60 ml/min, the highest risk of death over time for CKD classes < 2. Regarding CV events in the follow-up (24.9±21.7months), approximately one third of the subjects had an atrial fibrillation arrhythmia present, therefore in decreasing order of frequency, heart failure (21%), infarction (7.9%), stroke (2.9%), peripheral ischemia (2.1%). eGFR was significantly lower, while phosphorus appeared higher in the group with CV events (fig. 1) and affected the speed of progression that led to the intervention (fig. 2). Kaplan Meyer curves show significant differences in the risk of CV events over time between groups with eGFR greater than/equal to and less than 60 ml/min and in the latter the valvular disease progresses more quickly.

Conclusions – The results suggest that aortic stenosis certainly appears to be a pathology linked above all to the processes of senescence, but also seems to be influenced in its prognostic evolution by additional determinants such as renal insufficiency and blood phosphorus values. These considerations lead us to reflect on the usefulness of further studies that can explain the proven relationship between phosphorus values and the greater frequency of CV events, and that between worse renal function and greater CV morbidity/mortality. On the other hand, it should be evaluated whether a prognostic score that considers

these predictive variables can help us to better stratify the clinical evolution of aortic stenosis and also consider Atrial Fibrillation as a "high weight" marker capable of influencing the timing of intervention even with less severe echo parameters

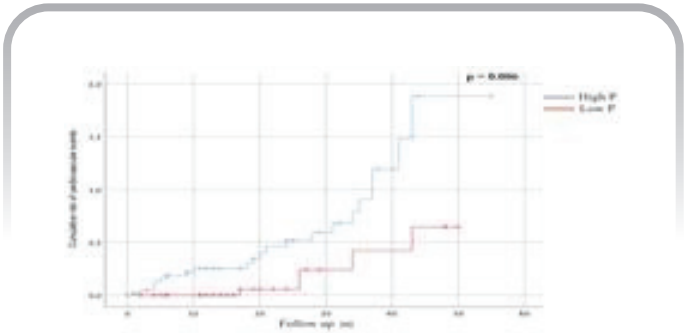


Figure 1

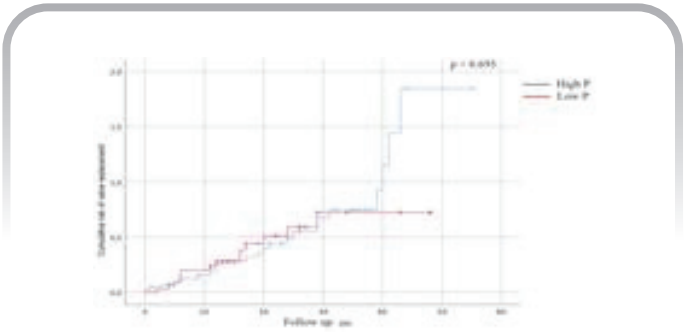


Figure 2

CardioSic

VALVULOPATIE 294
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
TOMOGRAFIA COMPUTERIZZATA A RAGGI X (CT)
(IMAGING CARDIOVASCOLARE)

VALVE ME TWICE - A CASE OF REDO TAVI

Andrea Panza (a), Luca Nai Fovino (a), Tommaso Fabris (a), Francesco Cardaioli (a), Francesco Putortì (a), Giulia Masiero (a), Chiara Fraccaro (a), Massimo Napodano (a), Giuseppe Tarantini (a)
(a) AZIENDA OSPEDALE-UNIVERSITÀ DI PADOVA

Transcatheter aortic valve replacement (TAVR) is becoming the preferred treatment for failed aortic bioprostheses, even in patient with degenerated transcatheter heart valve (THV). These redo procedures pose significant challenges necessitating careful preprocedural planning to avoid complications. An 81-year-old woman was admitted in January 2025 for acute heart failure. She had a prior TAVR with a an Acurate Neo2 M THV in 2021 for severe aortic stenosis. Her medical history included three-vessel coronary artery disease managed medically, a complete AV block with cardiac arrest in January 2024 (treated with pacemaker implantation), and an ascending aorta pseudoaneurysm likely due to THV impingement, conservatively managed. She developed THV endocarditis in 2024, treated with antibiotics, with preserved valve function after resolution. During the current admission, an echocardiography revealed a left ventricular ejection fraction of 40% due to diffuse hypokinesia and structural valve deterioration with severe intraprosthetic aortic regurgitation and a mean gradient of 7 mmHg. Coronary angiography confirmed stable 3-vessel disease. Given the elevated surgical risk (STS-PROM 8.3%) and resolved endocarditis (confirmed by negative CT-PET), a redo TAVR was planned accordingly to local heart team indication. Pre-index CT showed an annulus area of 408 mm², perimeter 72 mm, diameter 22.5 mm, sinotubular junction 25 mm, right and left coronary heights of 15 mm and 8.5 mm. The labeled metrics of Acurate Neo2 THV consist in a 25 mm waist, 30 mm upper crown, 28 mm inflow diameter, and a 32 mm commissural post height. Post-index CT showed a valve frame with a 20.5 mm waist and borderline 2 mm valve-to-aorta (VTA) distance, with a left coronary ostium below the risk plane—indicating high risk for coronary obstruction. The procedural strategy involved the implantation of a short-frame 23 mm balloon-expandable Sapien 3 Ultra THV with a low positioning to preserve coronary reaccess, accepting a quote leaflet overhang. Provisional Chimney stenting was planned to use due to the borderline VTA. Right femoral access was obtained as therapeutic one and two Perclose ProGlide devices were premounted; Then a left femoral access was obtained, from which a 3.5 × 20 mm DES was "parked" in the LAD through a BMW guidewire and 3.5 mm JL catheter. After THV crossing and Safari extra-small wire placement in the LV, the S3U THV was implanted at nominal volume in a low position considered the index THV. Post-deployment angiography confirmed preserved perfusion of the left coronary artery and nor residual regurgitation. Given the absence of impaired coronary flow, the Chimney technique was ultimately not required. Coronary access remained feasible, as confirmed with the incannulation of the LAD after the BMW guidewire removal. A predischarge echocardiogram showed a good THV function with a mean gradient of 12 mmHg, with no residual regurgitation. The patient recovered uneventfully and was discharged after three days. In August 2025 patient was admitted to our word

for worsening angina and she is currently waiting to undergo LM PCI. This case highlights the feasibility and safety of a redo TAVR procedure in a complex clinical scenario involving prior THV degeneration, low coronary height, and a history of infective endocarditis. Careful preprocedural planning with multimodal imaging was critical to mitigate the risk of coronary obstruction. The use of a short-frame THV with low positioning implant strategy, combined with provisional coronary protection allowed successful valve-in-valve deployment while preserving future coronary access.

VALVULOPATIE 700
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)

ECOCARDIOGRAFIA SPECKLE TRACKING COME MARKER PROGNOSTICO NELLE VALVULOPATIE MULTIPLE

Maria Concetta Pastore (a), Maria Alma Iuliano (a), Carmelo Cutaia (a), Paolo Gasparini (a), Giulia Elena Mandoli (a), Luna Cavigli (a), Flavio D´ascenzi (a), Marta Focardi (a), Gianfranco Montesi (a), Serafina Valente (a), Matteo Cameli (a)
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Introduzione: Tra le malattie valvolari cardiache, la coesistenza di stenosi aortica severa ed insufficienza mitralica rende complesse le decisioni terapeutiche, in particolare in caso di gradi intermedi di insufficienza mitralica.
Negli ultimi anni l'ecocardiografia speckle tracking (STE) ha dimostrato un ruolo rilevante come marker prognostico nelle valvulopatie, correlando con eventi avversi quali scompenso cardiaco, fibrillazione atriale e mortalità cardiovascolare. Tuttavia, le evidenze sul suo valore prognostico nei pazienti con valvulopatie multiple restano ancora limitate.

Obiettivi: L'obiettivo di questo studio è stato valutare il valore prognostico delle misure STE pre-operatorie nei pazienti candidati a sostituzione valvolare aortica con concomitante insufficienza mitralica di grado almeno moderato.

Metodi: In questo studio longitudinale prospettico condotto presso il Policlinico Le Scotte di Siena e il Policlinico Gemelli di Roma) sono stati arruolati pazienti candidati ad intervento chirurgico per stenosi aortica con insufficienza mitralica di grado moderato (2+/3+) negli anni 2022-2025. Sono stati esclusi i soggetti con pregressi interventi cardiochirurgici, o impossibilità ad eseguire l'analisi STE. Tutti i pazienti hanno eseguito una valutazione clinica, esami ematochimici, elettrocardiogramma ed ecocardiografia transtoracica preoperatoria comprensiva di STE. Dopo l'intervento, i pazienti sono stati poi seguiti mediante follow up telefonico o visite cliniche, durante il quale sono stati registrati i seguenti eventi, considerati come endpoint primario combinato: mortalità per tutte le cause o cardiovascolare, scompenso cardiaco, fibrillazione atriale di nuova insorgenza, stroke, infarto miocardico acuto.

Risultati: Sono stati inclusi 145 pazienti (età media 74 ± 20 anni, 52% uomini, frazione d'eiezione, FE = 55 ± 9%), di cui, solo 28 avevano subito un intervento di sostituzione valvolare aortica + sostituzione (16) o riparazione (12) valvolare mitralica. Durante un follow up di 10 ± 13 mesi, sono stati registrati 37 eventi (6 morti di cui 1 per cause cardiovascolari, 5 ospedalizzazioni per scompenso cardiaco, 24 fibrillazione atriale, 7 stroke). Tra i parametri clinici e di ecocardiografia base non vi erano differenze significative tra i pazienti con o senza eventi. Tra i parametri STE, lo strain ventricolare sinistro (global longitudinal strain, GLS) era significativamente inferiore nei pazienti con eventi (-10 ± 5% vs. -15 ± 5%) e mostrava un buon potere predittivo dell'endpoint primario (area under curve, AUC = 0.65, p = 0.02, Fig.1) con un cut-off ottimale ≥ -15.6%. L'applicazione delle curve di sopravvivenza di Kaplan Meier ha confermato un'ottima stratificazione prognostica della popolazione per valori di GLS ≥ o <-15.6% (Fig.2). Nel sottogruppo dei pazienti sottoposti a chirurgia combinata aortica e mitralica, il GLS mostrava valori inferiori nei pazienti che hanno sviluppato eventi (-14±5% vs. -17±3%) pur non

raggiungendo la significatività statistica per il numero esiguo di pazienti.

Conclusioni: Lo strain ventricolare sinistro, riflesso di un danno ultrastrutturale miocardico anche in pazienti con FE preservata, può essere considerato un parametro prognostico aggiuntivo da valutare nei pazienti candidati a chirurgia aortica e insufficienza mitralica moderata per migliorare il planning terapeutico chirurgico.

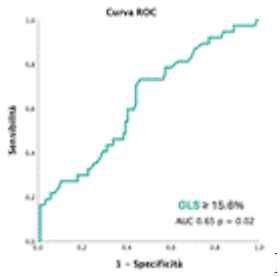


Figure 1

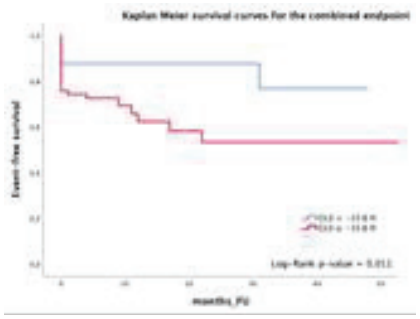


Figure 2

CardioSic

VALVULOPATIE 721
PATOLOGIA DELLA VALVOLA TRICUSPIDE (VALVULOPATIE)
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE (IMAGING CARDIOVASCOLARE)
ECOCARDIOGRAFIA 3-D (IMAGING CARDIOVASCOLARE)

USE OF THREE-DIMENSIONAL ECHOCARDIOGRAPHY TO DEFINE THE ECHOCARDIOGRAPHIC CRITERIA FOR TRICUSPID VALVE PROLAPSE

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Background and aims. Tricuspid valve prolapse (TVP) is reported to occur in up to 50% of patients with mitral valve prolapse (MVP). However, the current methods for diagnosing TVP through echocardiography are often empirical or based on criteria developed for MVP, as there is no established evidence-based echocardiographic criterion specifically for TVP. To address this, we used three-dimensional transthoracic echocardiography to: 1) propose diagnostic criteria for TVP; 2) evaluate the prevalence of TVP in patients with MVP; and 3) assess the clinical implications of TVP regarding tricuspid regurgitation (TR).

Methods. We analyzed fifty age- and sex-matched healthy volunteers (mean age 68 ± 13 years, 54% women) to determine normal tricuspid leaflet displacement and propose criteria for TVP. The threshold for identifying TVP was set at the mean displacement value plus 1.96 standard deviations of each tricuspid leaflet. We then phenotyped 287 consecutive patients with MVP (mean age 72 ± 13 years, 53% women) for the presence and clinical significance of TVP.

Results. In the healthy volunteers, the maximal systolic displacement was measured at 0.2 ± 0.9 mm for the septal leaflet, 0.2 ± 0.7 mm for the anterior leaflet, and 0.7 ± 0.8 mm for the posterior leaflet. Based on these findings, our proposed criteria for TVP included a right atrial displacement of ≥2 mm for all three tricuspid leaflets. Consequently, 196 (68%) of the MVP patients met these proposed criteria for TVP. A three-leaflet TVP was found in 64 patients (32%), and a two-leaflet TVP in 54 patients (27%). The most frequently involved leaftlet was the posterior (164 patients), followed by the anterior (115 patients), and the septal (96 patients). Compared to MVP patients without TVP, those with TVP were more likely to experience moderate-to-severe mitral regurgitation (MR) (38% vs. 18.9%; $p < 0.001$) and moderate-to-severe TR (36% vs. 6.2%; $p < 0.001$). Furthermore, compared to patients with isolated MVP, those with MVP and TVP exhibited a larger right atrium (median 27 mL/m²; interquartile range 22-40 mL/m² vs. 14 mL/m²; 11-20 mL/m²), better right atrial reservoir longitudinal strain (29 ± 13% vs. 21 ± 11%, $p < 0.001$), a higher right ventricular ejection fraction (60 ± 7% vs. 58 ± 8%, $p = 0.012$), and greater right ventricular free-wall longitudinal strain (26 ± 4% vs. 23 ± 5%, $p < 0.001$).

Conclusions. TVP is a frequent and clinically relevant finding in patients with MVP. It is associated with a higher prevalence and severity of TR and MR. Our study proposes novel echocardiographic criteria for diagnosing TVP based on three-dimensional imaging and highlights the importance of differentiating structural TR from functional forms. These findings support the routine assessment of tricuspid valve anatomy in patients undergoing evaluation for MVP, particularly in the context of surgical planning for mitral valve repair

VALVULOPATIE 348
ENDOCARDITI (VALVULOPATIE)
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE (IMAGING CARDIOVASCOLARE)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE) (IMAGING CARDIOVASCOLARE)

TRANSTHORACIC ECHOCARDIOGRAPHY PERFORMANCE IN DETECTING INTRACARDIAC ABSCESSES AND VEGETATIONS ON EACH HEART VALVE: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Background: The TTE performance in detecting intracardiac abscesses and vegetations at different sites is not well defined. This study aimed to assess the sensitivity and specificity of transthoracic echocardiography (TTE) in comparison to transesophageal echocardiography (TEE) for detecting infective vegetations on native valves, prosthetic valves and intracardiac leads, as well as intracardiac abscesses.

Methods: A literature search was conducted on PubMed, Cochrane, and Embase for studies comparing TTE with TEE in detecting vegetations on each native or prosthetic valves, as well on leads. Moreover, studies evaluating TTE performance in detecting abscesses were included. For the sensitivity analysis, both studies involving patients with suspected or confirmed endocarditis were included, whereas for specificity, only the first ones were considered. Due to lack of enough studies, specificity was not analyzed for vegetations on prosthetic material. Heterogeneity was assessed using I^2 statistics, and a random-effects model was applied to all outcomes.

Results: A total of 29 studies were identified, encompassing 662 endocarditis-related findings on 2296 patients. The sensitivity of TTE was moderate-substantial for vegetations on native aortic (61% [95% CI 43-76%]) and mitral valves [60% (95% CI 41-77%)], while only moderate on tricuspid valves [51% (95% CI 22-79%)]. On prosthetic material, the sensitivity was fair on mitral valves [36% (95% CI 19-56%)], fair-moderate on leads [40% (95% CI 29-53%)] and moderate on the aortic valves [52% (95% CI 28-75%)]. Finally, the sensitivity was fair for abscesses [36% (95% CI 29-43%)]. On the opposite, the specificity was almost perfect (≥ 95%) for all the analyzed outcomes.

Conclusion: TTE demonstrated a fair to moderate sensitivity and an almost perfect specificity for vegetations, irrespective of the valve. A fair sensitivity and an almost perfect specificity were also found for abscesses. These findings confirm the role of TEE in safely ruling out infective endocarditis in patients with negative TTE and do not support specific reccomendations for right-side endocarditis.

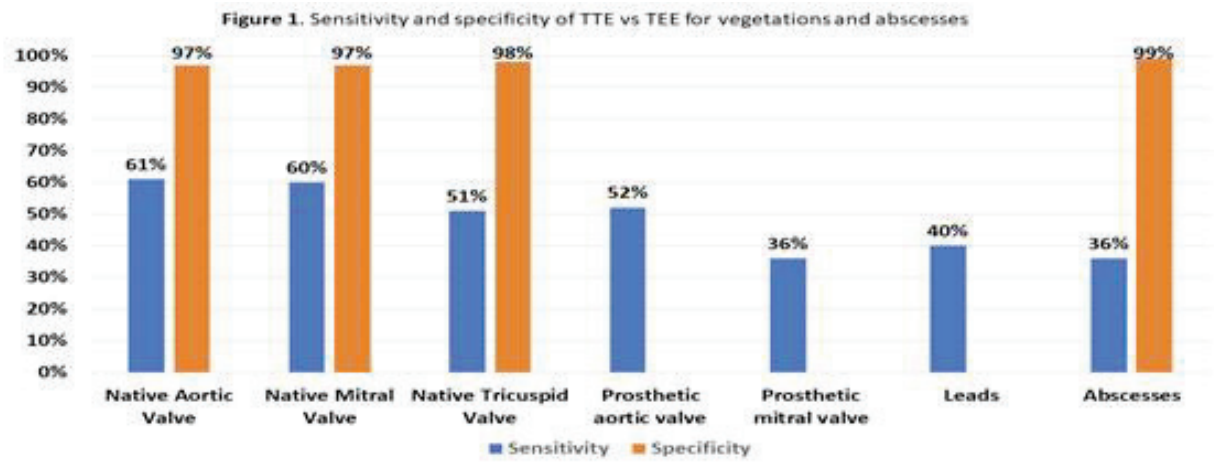

Figure 1. Sensitivity and specificity of TTE vs TEE for vegetations and abscesses
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
61%
97%
60%
97%
51%
98%
52%
36%
40%
36%
99%
Native Aortic Valve
Native Mitral Valve
Native Tricuspid Valve
Prosthetic aortic valve
Prosthetic mitral valve
Leads
Abscesses
Sensitivity
Specificity

Figure 1

VALVULOPATIE 693
PATOLOGIA DELLA VALVOLA TRICUSPIDE (VALVULOPATIE)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)
ECOCARDIOGRAFIA 3-D (IMAGING CARDIOVASCOLARE)
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE (IMAGING CARDIOVASCOLARE)

ADDED VALUE OF DEDICATED, OUTCOME-BASED PARTITION VALUES TO STRATIFY RIGHT VENTRICULAR DYSFUNCTION IN PATIENTS WITH SECONDARY TRICUSPID REGURGITATION

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(a) ISTITUTO AUXOLOGICO ITALIANO, IRCCS, OSPEDALE SAN LUCA, MILANO, ITALIA

BACKGROUND: In patients with secondary tricuspid regurgitation (STR) right ventricular (RV) function has a well-known prognostic significance. Assessing the conventional and advanced echocardiographic RV function parameters in patients with STR might be particularly challenging given the sensitivity of the RV to loading conditions. Several cutoffs for tricuspid annular plane systolic excursion (TAPSE), right ventricular free-wall strain (RVFWS), RV fractional area change (FAC), and RV ejection fraction (RVEF) have been proposed in an attempt to stratify RV systolic dysfunction. Nonetheless, there is ongoing debate regarding the applicability of established cutoff values for RV systolic function in patients with STR.

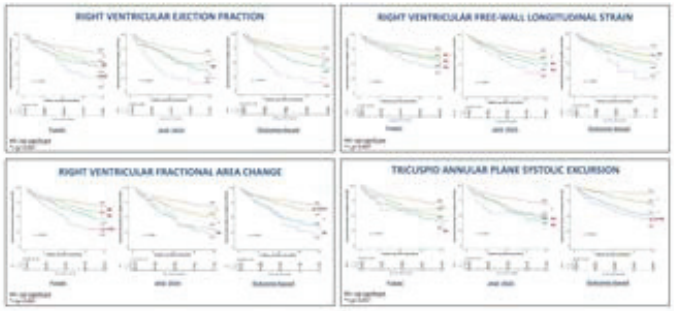
PURPOSE: We therefore sought to: i. to identify prognostically significant partition values of RV function parameters to stratify RV systolic dysfunction in mildly, moderately, or severely reduced; ii. to assess the association of the identified partition values with clinical outcomes in patients with STR in comparison with previously proposed cutoff values.

METHODS: We included 495 consecutive patients (76±13 years, 54% women) with at least moderate STR (50% moderate, 29% severe, 11% massive, 10% torrential) who underwent comprehensive two-, three-dimensional, and speckle-tracking echocardiography. The primary endpoint was a composite of heart failure hospitalization and all-cause mortality. We used K-Adaptive partitioning for survival data algorithm to identify four groups of patients with significantly different rate of composite endpoint according to each one of the RV function parameters (TAPSE, FAC, RVFWS, and RVEF) (Table).

RESULTS: Over a median follow-up of 43 months, we recorded 107 deaths and 123 hospitalizations for heart failure. Using a multiway partitioning algorithm to divide the STR cohort into four subgroups based on composite endpoint incidence, we found the following partition values: 57%, 45%, and 31% for RVEF; -25%, 18%, and 9% for RVFWS; 41%, 32%, and 22% for FAC; and 22 mm, 18 mm, and 13 mm for TAPSE. When previously proposed cutoffs for RV dysfunction were applied to our cohort, Kaplan-Meier survival analysis demonstrated that the use of the newly identified partition thresholds provided superior risk stratification for the composite endpoint, particularly in distinguishing significantly between patients with mild and moderate RV dysfunction (Figure).

CONCLUSIONS: Our findings underscore the need to use dedicated, outcome-based threshold values

to grade the extent of RV dysfunction in patients with STR. They better capture the variations in clinical risk compared to currently recommended stratification and may facilitate more individualized therapeutic decision-making or closer follow-up.



	RIGHT VENTRICULAR FUNCTION			
	Normal	Mildly Reduced	Moderately Reduced	Severely Reduced
EJECTION FRACTION				
Tricuspid Valve Academic Research Consortium 2023	>50	≥45-50	≥35-45	<35
ASE Guidelines 2025	>45	>39-≤45	≥32-≤39	<32
Outcome-based threshold values	>57	>45-≤57	>31-≤45	≤31
FREE-WALL STRAIN				
Tricuspid Valve Academic Research Consortium 2023	>23	20-23	15-19	<15
ASE Guidelines 2025	>20	≥15-≤20	≥11-<15	<11
Outcome-based threshold values	>25	18-25	9-18	<9
FRACTIONAL AREA CHANGE				
Tricuspid Valve Academic Research Consortium 2023	>37	34-37	30-33	<30
ASE Guidelines 2025	>35	>29-≤35	>22-≤29	≤22
Outcome-based threshold values	>41	>32-≤41	>22-≤32	≤22
TAPSE				
Tricuspid Valve Academic Research Consortium 2023	>17	14-17	10-13	<10
ASE Guidelines 2025	>17	≥13-≤17	>10-≤13	≤10
Outcome-based threshold values	>22	>18-≤22	>13-≤18	≤13

Figures

VALVULOPATIE 441
INTERVENTISTICA STRUTTURALE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE (IMAGING CARDIOVASCOLARE)
PATOLOGIA DELLA VALVOLA TRICUSPIDE (VALVULOPATIE)

CLINICAL, FUNCTIONAL AND ECHOCARDIOGRAPHIC OUTCOMES AFTER TRICUSPID TEER: A SYSTEMATIC REVIEW AND META-ANALYSIS

Joao Matteo Rampone (a), Federico Giacobbe (a)
(a) CITTÀ DELLA SALUTE E DELLA SCIENZA

Background: Severe tricuspid regurgitation (TR) causes substantial morbidity, impaired exercise capacity and poor quality of life, yet many patients are at high surgical risk. Transcatheter tricuspid edge-to-edge repair (T-TEER) with TriClip™, MitraClip™ or PASCAL™ has emerged as a less-invasive treatment option, but pooled evidence on echocardiographic reverse remodeling, functional status and quality-of-life (QoL) effects across devices is limited.

Objectives: To perform a systematic review and meta-analysis of studies reporting pre- and post-T-TEER outcomes in patients with at least severe TR, focusing on clinical, functional and echocardiographic outcomes.

Methods: For this meta-analysis, we searched the MEDLINE/PubMed, Embase, Scopus, EMBASE and Google Scholar databases with the specified search string from the database inception until May 2025. We followed PRISMA/Cochrane methodology and included studies reporting paired pre- and post-T-TEER measures. Data extraction and quality assessment were performed by independent reviewers; key echocardiographic, clinical and QoL endpoints were analyzed.

Results: Thirty studies (n = 7,563 patients) met inclusion criteria. Pooled analyses demonstrated a significant reduction in severe or greater TR following T-TEER (RR = 0.39; 95% CI 0.30 to 0.51), with a decrease in effective regurgitant orifice area (EROA; MD = −0.37 cm²; 95% CI −0.42 to −0.31). Right ventricular size decreased: basal RVEDD MD = −3.44 mm (95% CI −4.68 to −2.20) and mid RVEDD MD = −4.40 mm (95% CI −7.92 to −0.88). Markers of venous congestion improved with a smaller IVC diameter (MD = −2.28 mm; 95% CI −4.50 to −0.05). There was a small deterioration in RV contractile indices (RV-FAC MD = −2.02%; 95% CI −3.68 to −0.36; TAPSE MD = – 0.57 mm; 95% CI - 1.12 to - 0.02) and a modest, non-statistically significant change in LVEF (MD = −1.73%; 95% CI −4.94 to 1.47). T-TEER produced clinically and functionally meaningful benefits: proportion of patients in NYHA III–IV fell (RR = 0.44; 95% CI 0.38–0.51), 6MWD increased (MD = +42.4 m; 95% CI 28.2–56.6), and KCCQ score improved (MD = +15.3 points; 95% CI 12.9–17.7). Cardiovascular and all-cause mortality stood at 6.9% and 10.1% respectively; there was no significant incidence of major complications, including stroke (1.5%), major bleeding (6.3%), single leaflet device attachment (4.8%), need for tricuspid surgery (0.9%), and major vascular complications (0.8%).

Conclusion: These results support T-TEER as an effective option for patients with at least severe TR at high surgical risk, leading to significant reduction in EROA, reverse remodeling of RV dimensions, accompanied by clear improvements in symptoms, exercise capacity and QoL (NYHA, 6MWD, KCCQ).

CardioSic

VALVULOPATIE 577
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
TROMBOSI E COAGULAZIONE (ATEROTROMBOSI)

RARA COMPLICANZA TROMBOTICA: CASO CLINICO DI UN PAZIENTE DI 75 ANNI SOTTOPOSTO AD INTERVENTO DI BIOBENTALL DE BONO MODIFICATO

JAntonella Risoli (a, b), Fiammetta Albi (c), Federica Re (c), Geza Halasz (c), Guido Giacalone (d), Federica D´ignazio (b), Giuseppe Zuccalà (a, b), Francesco Landi (a, b), Domenico Gabrielli (c)
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INTRODUZIONE: La trombosi su protesi valvolata biologica impiantata con tecnica di Bentall–de Bono modificata costituisce una complicanza estremamente rara, ma potenzialmente letale. Le bioprotesi presentano infatti un rischio trombotico molto più basso rispetto a quelle meccaniche (dallo 0.37% all'1.26%), sebbene episodi di trombosi possano manifestarsi, soprattutto nei primi mesi postoperatori, quando l'endotelizzazione non è ancora completa [1,2,3]. Nel contesto specifico del Bentall modificato con protesi biologica, l'incidenza di trombosi è pari a 0.11% per anno-paziente [4].Questi dati evidenziano come la trombosi su protesi Biobentall sia da considerarsi un evento eccezionale, riportato prevalentemente come casi isolati o piccole casistiche, ma gravato da conseguenze cliniche potenzialmente catastrofiche.

PRESENTAZIONE DEL CASO CLINICO: Uomo di 75 anni, sottoposto un mese prima a BioBentall–de Bono modificato e duplice bypass aortocoronarico. Giungeva in Pronto Soccorso per ipotensione, insufficienza respiratoria e alterazione dello stato di coscienza. Emogas: lattati 6.8 mmol/L, INR 9.7 ratio. Esami: PCR 29 mg/dl, PCT 11.7 ng/ml, troponina 1222 pg/ml, creatinina 2.14 mg/dl. Emocolture: positive per Staphylococcus Aureus. TC torace con mezzo di contrasto: massa ipodensa (37 mm), fissa, con minimo enhancement post contrastografico, adiacente



Figura 1

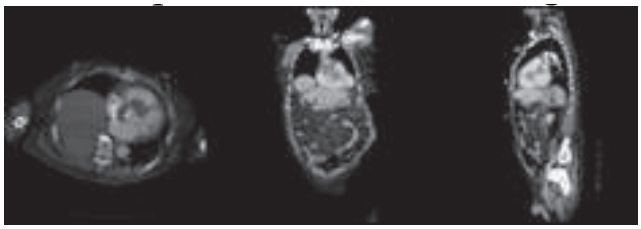


Figura 2

alla valvola aortica ed estesa nel ventricolo destro. Ecocardiogramma bedside: si conferma formazione verosimilmente trombotica (3.5×2.8 cm), adiacente alla protesi aortica. Avviata terapia antibiotica, eparina EV e supporto intensivo; chirurgia esclusa per rischio proibitivo. Esito: decesso nelle ore successive.

DISCUSSIONE: Il caso documenta una complicanza rarissima: trombosi precoce su BioBentall. La concomitante positività alle emocolture per S. aureus suggerisce una possibile endocardite precoce su protesi, che potrebbe aver favorito la trombosi.
La diagnosi differenziale tra trombo e vegetazione resta difficile e richiede imaging multimodale (TEE, TC cardiaca, eventualmente PET/CT) [2,3].Sul piano terapeutico, la chirurgia rimane l'opzione più efficace, ma nei pazienti fragili o instabili l'approccio è limitato al trattamento medico, con esiti spesso infausti [1,4].

CONCLUSIONI: La trombosi precoce su BioBentall è un evento eccezionale ma fatale. Servono follow-up ecocardiografico ravvicinato, corretta gestione dell'anticoagulazione e approccio multidisciplinare per migliorarne l'outcome.

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Figura 3



Figura 4

VALVULOPATIE 1099
INTERVENTISTICA STRUTTURALE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
COMPLICANZE DELLE PROCEDURE DI INTERVENTISTICA (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE) (IMAGING CARDIOVASCOLARE)
PATOLOGIA DELLA VALVOLA TRICUSPIDE (VALVULOPATIE)
TROMBOSI E COAGULAZIONE (ATEROTROMBOSI)

IMPREVISTO SULLA GUIDA: TROMBOSI IN FASE CRITICA DELLA PROCEDURA TRICLIP

Noemi Ritrovato (a), Andrea Mariani (a), Carmenannamaria Spaccarotella (a), Anna Franzone (a), Federica Ilardi (a), Raffaele Piccolo (a), Giovanni Esposito (a)
(a) DIPARTIMENTO DI SCIENZE BIOMEDICHE AVANZATE, UNIVERSITA' FEDERICO II DI NAPOLI

Donna di 80 anni con multipli fattori di rischio cardiovascolare: ipertensione arteriosa, dislipidemia, FA in NAO, PMK per malattia del nodo del seno, stenosi aortica severa sottoposta a TAVI, BPCO.
Terapia domiciliare: Pantoprazolo, Bisoprololo, Apixaban, Furosemide, Eplerenone, Rosuvastatina/ Ezetimibe. Esegue visita di controllo cardiologica per astenia, dispnea e severa inappetenza. L'ecocardiografia transtoracica documenta IT severa (raggio PISA 0.9 cm, backflow vene sovraepatiche), DTDVd basale 47 mm, area Ad 39 cm2, PAPs 34 mmHg, TAPSE 19 mm.
La successiva ecocardiografia transesofegea conferma l'IT primaria con prolasso del lembo settale e jet eccentrico originante dalla commissura antero-settale e diretto posteriormente.
A seguito di discussione in Heart Team si poneva indicazione a riparazione transcatetere edge-to-edge (TriClip). Sospeso NAO 24h prima della procedura. Il giorno della procedura si procedeva a: accesso della vena femorale destra, anestesia generale e guida TEE, somministrazione di 2000 UI di eparina ev al momento dell'accesso e 5000 UI dopo introduzione della guida in atrio destro. Durante l'avanzamento del catetere guida da 24 Fr, si osservava una grossolana formazione trombotica adesa al sistema (figura a). Venivano somministrate 2000 UI di eparina per via endovenosa (secondo ACT 234 sec), seguito da aspirazione manualecon catetere judkins right 4 da 8 Fr. Il successivo controllo ecocardiografico confermava la completa rimozione del trombo. Si procedeva al posizionamento di due TriClip G4 XTW (antero-settale e postero-settale) con evidenza di insufficienza tricuspidalica lieve senza aumento patologico dei gradienti transvalvolari. Somministrate al termine della procedura altre 4.000 UI di eparina secondo ACT

Discussione: L'insufficienza tricuspidalica severa è una condizione clinicamente rilevante. La riparazione percutanea edge-to-edge rappresenta una valida opzione terapeutica ma non priva di complicanze. La trombosi su catetere guida è rara ma possibile. Nel

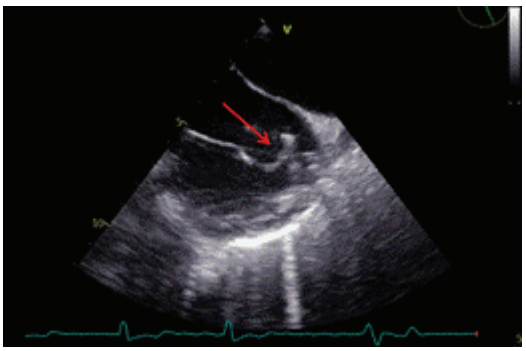


Figura 1

Triluminate Trial, focalizzato sulla riparazione edge-to-edge della valvola tricuspide, non sono stati riportati eventi trombotici maggiori legati alla strumentazione. Tuttavia, gli stessi studi citati suggeriscono che fattori come la fibrillazione atriale, la durata della sospensione del NAO, lo stato infiammatorio sistemico e la stasi ematica atriale destra possano contribuire allo sviluppo di trombosi acuta durante la procedura. Sebbene non esistano al momento linee guida specifiche per la prevenzione della trombosi durante le procedure TriClip, le evidenze disponibili sottolineano l'importanza di un'adeguata eparinizzazione intra-procedurale con monitoraggio dell'ACT (tra 250-300 sec), dell'impiego continuo dell'ecocardiografia transesofagea per l'identificazione precoce di formazioni trombotiche e di una valutazione personalizzata del rischio trombotico

CardioSic

VALVULOPATIE 211
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
PATOLOGIA DELLA VALVOLA TRICUSPIDE (VALVULOPATIE)
TERAPIA NON FARMACOLOGICA (SCOMPENSO CARDIACO)
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

NAVIGATING MULTIPLE VALVULAR HEART DISEASE IN A PATIENT WITH HEART FAILURE

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(a) AZIENDA OSPEDALIERO-UNIVERSITARIA SANT'ANDREA DI ROMA

Clinical presentation An 82-years-old man with hypertension, type 2 diabetes, permanent atrial fibrillation, prior cerebrovascular disease without deficits, sick sinus syndrome treated with VVI pacemaker, and a history of smoking, presented with worsening dyspnea (NYHA III) and recurrent hospitalizations for heart failure. Medical therapy at hospital admission included apixaban, bisoprolol, furosemide, canrenone, metformin, and proton pump inhibitors.

TT Echo at hospital admission: normal-sized LV with global hypokinesia and moderately reduced EF (35%), normal RV size and function, severe bi-atrial enlargement, low-flow low-gradient severe aortic stenosis (AVA 0.78 cm², DVI 0.22, SVi 30 ml/m²) with mild regurgitation, severe tricuspid regurgitation, systolic PAP 55 mmHg, and dilated IVC.
A diagnosis of acute decompensated HF due to multiple VHD was made, and high-dose IV furosemide was started.

Coronary angiography showed no significant CAD, while Cardiac CT completed the diagnostic work-up of severe AS (calcium score ≈2000 HU) and allowed planning for TAVI. After Heart Team discussion, the final decision was to first proceed with TAVI and then to reassess the severity of tricuspid regurgitation at strict follow-up. Dapagliflozin was added to therapy.

TAVI Procedure: A transfemoral TAVI with a 29 mm Navitor prosthesis was performed without complications, achieving good haemodynamic (Grad. max/Gmean 10/6 mmHg, V max 1,6 cm/sec, DVI>0.60, trivial para-valvular leak). Severe TR persisted (PAPs 45 mmHg).
The patient was discharged in stable conditions (NYHA II). At follow-up, he remained clinically stable, though mild oedema and elevated BNP persisted.
Echocardiography showed significant LVEF improvement (35→50%), stable aortic prosthetis function with trivial PVL, but persistent severe TR (EROA 41 mm², VC 8 mm, PAPs 50 mmHg).
TE Echo: normal RV size/function, severe atrial functional TR with four-leaflet morphology, central jet, coaptation gap 6–7 mm, and no relevant pacemaker-lead interference. Anatomy was considered suitable for transcatheter tricuspid edge-to-edge repair (T-TEER).
The Heart Team confirmed the indication, and T-TEER was performed with implantation of a single TriClip XTW, between anterior and septal leaflets. The procedure was successful, with a reduction from severe to mild TR. At post-procedural follow-up, the patient was asymptomatic, hemodynamically stable (HR 52 bpm, BP 140/90 mmHg) and reported improved dyspnea. Echocardiography showed preserved LVEF (55%), a well-functioning aortic prosthesis (mean gradient 4 mmHg, no significant leaks), stable TriClip with mild residual TR (gradient 1–2 mmHg), and no

pericardial effusion.

Discussion Acute decompensated heart failure often results from valvular heart disease, especially multiple valves. Data and guidelines are limited. Diagnosis is challenging. Management should be Heart Team–guided, prioritizing intervention for symptomatic patients or those with ventricular dysfunction.

VALVULOPATIE 157
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
INFIAMMAZIONE E IMMUNITÀ (ATEROTROMBOSI)
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE (IMAGING CARDIOVASCOLARE)

SEVERE AORTIC VALVE STENOSIS AND HEPATITIS C VIRUS INFECTION

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Background and Objectives: Calcific aortic valve stenosis (AS) is the most common valve disease in the elderly. It is an active degenerative disorder in which the end stage is characterized by obstruction of left ventricular outflow.
HCV infection is a global health problem affecting over 3% of world population although the seroprevalence of HCV varies across different geographical regions. Chronic HCV infection is associated with several hepatic and extrahepatic disorders.
The association between HCV infection and aortic valve stenosis has not yet been analyzed. Thus, the aim of the present study was to determine the prevalence of HCV infection in a population with severe aortic valve stenosis, assuming a potential aortic valve structural abnormalities that HCV could determinate.
We studied the association of HCV infection with severe aortic valve stenosis, comparing the prevalence of HCV antibodies among aortic valve stenosis patients, age and gender-matched controls. The diagnosis of aortic valve stenosis was established by echocardiographic demonstration.

Methods: We examined 136 consecutive patients with severe aortic valve stenosis (49 men, 87 women 80+/- 5,43 year, ranging from 62 to 90 years) in whom HCV antibody was examined, compared with a total of 136 age - gender- matched controls without aortic valve stenosis.

Results: Patients with severe aortic valve stenosis show a higher prevalence of HCV infection (23/136- 16,9%) than in control subjects (10/136 – 7,4%) (P: 0,019) (CI 95%:1.17-1.72 ; RR: 2,56)

Conclusion: In this pilot study we observed that the prevalence of HCV infection was higher in patients with severe aortic valve stenosis than in age- and gender-matched control subjects. These findings suggest that HCV infection may play an important role in the active degenerative process of aortic valve obstruction . Aortic valve stenosis could be considered a new extrahepatic manifestations occurring in HCV-related infection. As well as HCV could be considered a new cardiovascular risk factor.
We have hypothesized that the possible pathogenesis leading to aortic valve stenosis in HCV infection could be related to a systemic inflammatory process.
Further studies are warranted to confirm this data and to clarify the pathophysiological mechanisms underlying these findings.

VALVULOPATIE 847
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
RISONANZA MAGNETICA CARDIOVASCOLARE (CMR) (IMAGING CARDIOVASCOLARE)
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE (IMAGING CARDIOVASCOLARE)

VALORE PROGNOSTICO DELLA RISONANZA MAGNETICA CARDIOVASCOLARE IN PAZIENTI ASINTOMATICI AFFETTI DA INSUFFICIENZA AORTICA DI GRADO MODERATO-SEVERO

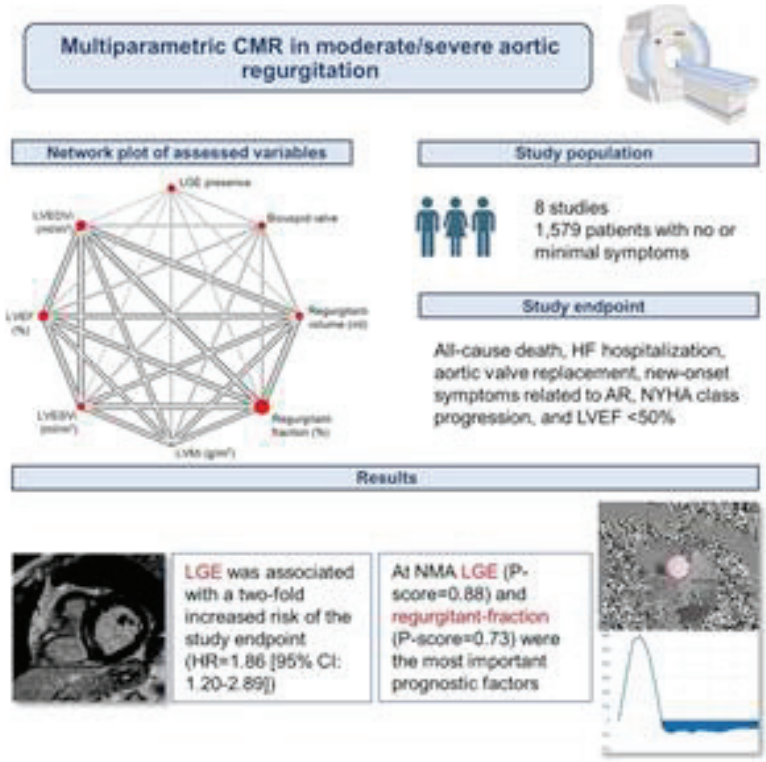
Giovanni Sallese (a, b), Silvana Di Maio (a, b), Marco Francone (b, c), Lorenzo Monti (a, b), Gianluigi Condorelli (a, b), Stefano Figliozzi (a, b)
(a) CARDIO CENTER, IRCCS HUMANITAS RESEARCH HOSPITAL, ROZZANO, MILAN, ITALY; (b) DEPARTMENT OF BIOMEDICAL SCIENCES, HUMANITAS UNIVERSITY, PIEVE EMANUELE, MILAN, ITALY; (c) DEPARTMENT OF RADIOLOGY, IRCCS HUMANITAS RESEARCH HOSPITAL, ROZZANO, MILAN, ITALY

Obiettivo: Valutare la rilevanza prognostica dei parametri derivati dalla risonanza magnetica cardiovascolare (CMR) in pazienti asintomatici o paucisintomatici con insufficienza aortica di grado moderato-severo, mediante una network meta-analysis.

Materiali e Metodi: È stata condotta una revisione sistematica mediante una network meta-analysis attraverso le banche dati PubMed, Embase e Cochrane Library, considerando gli studi pubblicati tra gennaio 2000 e marzo 2024 che indagavano il ruolo prognostico della CMR nell'insufficienza aortica moderato-severa. L'endpoint composito dello studio includeva mortalità per tutte le cause, ospedalizzazione per scompenso cardiaco, sostituzione valvolare aortica (AVR), insorgenza di sintomi di scompenso cardiaco, peggioramento della classe funzionale New York Heart Association (NYHA) e frazione di eiezione ventricolare sinistra (LVEF) <50%. Sono state eseguite sia pairwise che network meta-analysis.

Risultati: Sono stati inclusi otto studi per un totale di 1579 pazienti (75% uomini; età media, 55 ± 5 anni). Un maggiore volume di rigurgito e una più alta frazione rigurgitante sono risultati significativamente associati ad un aumento del rischio di eventi avversi (Hazard Ratio [HR] aggregato, 1.04 per incremento di 1 mL [IC 95%: 1.01–1.06] e HR aggregato, 1.09 per incremento dell'1% [IC 95%: 1.03–1.16], rispettivamente). Indici di rimodellamento ventricolare avverso, rappresentati da un aumento dei volumi telesistolico e telediastolico del ventricolo sinistro, si sono dimostrati predittivi di prognosi sfavorevole (HR aggregato, 1.02 per 1 mL/m² [IC 95%: 1.01–1.03] e 1.02 per 1 mL/m² [IC 95%: 1.01–1.04], rispettivamente). La presenza di late gadolinium enhancement (LGE) ha quasi raddoppiato il rischio di raggiungere l'endpoint composito (HR aggregato, 1.86 [IC 95%: 1.20–2.89]). Non è stato possibile analizzare T1 mapping ed extracellular volume. Nella network meta-analysis, LGE (P = .884) e frazione rigurgitante (P = .727) sono emersi come i più forti indicatori prognostici.

Conclusione: Questa network meta-analysis evidenzia come la frazione rigurgitante e il rimodellamento avverso del ventricolo sinistro, valutati tramite CMR, forniscano informazioni prognostiche cruciali per la stratificazione del rischio nei pazienti asintomatici o paucisintomatici affetti da insufficienza aortica di grado moderato-severo.


Multiparametric CMR in moderate/severe aortic regurgitation
Network plot of assessed variables
Study population
8 studies
1,579 patients with no or minimal symptoms
Study endpoint
All-cause death, HF hospitalization, aortic valve replacement, new-onset symptoms related to AR, NYHA class progression, and LVEF <50%
Results
LGE was associated with a two-fold increased risk of the study endpoint (HR=1.86 [95% CI: 1.20-2.89])
At NMA LGE (P-score=0.88) and regurgitant-fraction (P-score=0.73) were the most important prognostic factors

Figures

VALVULOPATIE 1000
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
PATOLOGIA DELL´AORTA (MALATTIE DEI VASI)
ARTERIOPATIA ARTI INFERIORI (MALATTIE DEI VASI)

A BALLOON-ASSISTED TRACKING TECHNIQUE (BAT TECHNIQUE) FOR COMPLEX FEMORAL ACCESS IN TAVR

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(a) UOC DI CARDIOLOGIA, AOR SAN CARLO E DIPARTIMENTO DI SCIENZE DELLA SALUTE DELL'UNIVERSITÀ DELLA BASILICATA, POTENZA, ITALIA

Transcatheter aortic valve replacement (TAVR) is an established technique for treating severe symptomatic aortic stenosis. Transfemoral (TF) access is accepted as the gold standard and can be successfully achieved in most patients. Severe aortoiliac calcification and tortuosity or small vascular access are the most common factors that define a complex anatomy that could preclude TF access.

We report a case a 73-year-old man with hypercholesterolemia, end-stage renal disease on hemodialysis, arterial hypertension and symptomatic severe aortic valve stenosis. Due to the high risk for surgical valve replacement, he was referred to TAVI Heart Team that decided to undergo TF TAVR.
During the pre-procedure planning we found heavy calcified aortoiliac bifurcation at multidetector computed tomography (MDCT) with mild tortuosity and a favorable sheath to femoral artery ratio (SFAR = 0.85). We chose a balloon expandable valve (Sapien 3 Ultra 26 mm, Edwards Lifescience, Irvine, California).
A first attempt was made to place the 14 Fr Edwards eSheat using a 0.035" Emerald angiographic guide, but it was impossible to pass the aortoiliac bifurcation. Subsequently, a PTA was performed in the ostio-proximal segment of the left common iliac artery with an 8.0 x 40 mm non-compliant balloon (Dorado, BD, Franklin Lakes, New Jersey, USA), with a subsequent unsuccessful attempt to place the eSheat. A further attempt was made by exchanging the Emerald guide with the Amplatz Super Stiff guide (Boston, Marlborough, Massachusetts, USA), which also failed. At this point, the balloon-assisted tracking technique (BAT) was used with an 8.0 x 40 mm balloon positioned at the tip of the eSheath. With a gentle, continuous push, it was possible to cross the aortoiliac bifurcation, bringing the eSheath into position. The valve was successfully delivered during rapid ventricular pacing. At the end of the procedure, aortogram and angiography of aortoiliac axis were performed, revealing no complications. The patient was discharged without complications.

The balloon-assisted tracking technique was a well-known technique to manage difficulties of transradial access, where arterial spasm, tortuosity and atherosclerotic plague may play a significant role. The BAT technique applied in the peripheral vascular setting to facilitate TF TAVI could be a useful technique to allow a safer large bore sheat advancement, minimizing vascular damage and major bleeding. To our knowledge, this is the first report of useful BAT technique in aortoiliac districts during TAVR procedure.

CardioSic

VALVULOPATIE 706
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE (IMAGING CARDIOVASCOLARE)
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)
PATOLOGIA DELLA VALVOLA TRICUSPIDE (VALVULOPATIE)
PROGNOSI (SCOMPENSO CARDIACO)
VALUTAZIONE ECOCARDIOGRAFICA DELLA FUNZIONE VENTRICOLARE (IMAGING CARDIOVASCOLARE)

NOVEL PROGNOSTIC INSIGHTS IN MULTIVALVULAR DISEASE: UNVEILING THE ROLE OF RIGHT VENTRICULAR-PULMONARY ARTERY COUPLING

Eleonora Suvini (a), Davide Margonato (a), Francesco Ancona (a), Stefano Stella (a), Giacomo Ingallina (a), Federico Biondi (a), Giorgio Fiore (a), Monica Barki (a), Ludovica Bognoni (a), Rizza Vincenzo (a), Francesco Maisano (b), Yan Topilsky (c), Eustachio Agricola (a)

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Introduction. Multiple valvular heart disease [MVD] is defined as the presence of a regurgitant
and/or a stenotic lesion affecting at least two cardiac valves. Despite being a clinical common and relevant problem, data on MVD are limited, and parameters assessed for risk stratification in patients with singular VD have not been validated in the context of MVD, and their applicability is unknown. Thus, we aimed to assess the prognostic role of a surrogate of right ventricular-pulmonary artery coupling [RVPAc] in patients affected by one of the most common MVD, i.e. moderate mitral regurgitation [MR] and concomitant moderate tricuspid regurgitation [TR].

Methods. We collected clinical and echocardiographic data of patients with a diagnosis of moderate MR+ moderate TR in two centers between 2016-2022. The outcome of interest was all-cause death, and RVPAc was estimated through tricuspid annular plane systolic excursion/PA systolic pressure [TAPSE/PASP] ratio.

Results. In the 905 patients included, mean age was 75±13 years, 53% female; mean left-ventricular ejection fraction [LVEF] was 45±14% and mean PASP 48±16 mmHg. In restricted spline curve analysis, the TAPSE/PASP ratio cut-off associated with hazard >1 of the outcome was ≤0.36. At baseline, a low TAPSE/PASP ratio was associated with worse New York Heart Association class, higher Charlson Comorbidity Index [CCI], more prevalence of atrial fibrillation [AF] and worse left and right-sided chambers remodeling (all $p<0.005$). After a median follow-up of 2.3 years, patients with low TAPSE/PASP ratio showed significantly worse survival ($p<0.001$), and TAPSE/PASP ≤0.36 remained a powerful predictor of outcome after comprehensive adjustment for age, gender, CCI, coronary artery disease, AF, LVEF and right atrium area (adjusted HR 1.92, 95% confidence interval 1.24-2.98, p-value= 0.003). Finally, nested Cox regression model showed that TAPSE/PASP presented significant incremental prognostic value in associating with the outcome compared to its constituents (TAPSE and PASP as separate variables), improving model fit from $\chi^2 = 58$ to 65 (p-value =0.008)

Conclusions. In this large cohort of patients with moderate MR+moderate TR, RVPAc assessed by echocardiography was strongly associated with worse baseline clinical presentation and poor long-term prognosis even after comprehensive adjustment. We propose to include RVPAc to further improve risk-stratification and predict long-term prognosis of patients affected by this MVD.

VALVULOPATIE 809
VALUTAZIONE ECOCARDIOGRAFICA DELLE VALVOLE CARDIACHE (IMAGING CARDIOVASCOLARE)
PATOLOGIA DELLA VALVOLA TRICUSPIDE (VALVULOPATIE)
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
PROGNOSI (SCOMPENSO CARDIACO)

UNMASKING THE PROGNOSTIC BURDEN OF CONCOMITANT TRICUSPID REGURGITATION IN MODERATE LEFT-SIDED VALVE DISEASE

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Introduction. Tricuspid regurgitation (TR) is a highly prevalent valvular disease (VD), with an independent prognostic role demonstrated in different clinical scenarios. However, in the context of left-sided VD, the role of concomitant TR in affecting patients' clinical and echocardiographic characteristics and their prognosis is poorly defined, particularly in case of non-severe left-sided VD. Thus, we sought to determine whether concomitant moderate TR affected baseline clinical profile and long-term prognosis of patients with moderate left-sided VD.

Methods. From 2016 to 2022, we collected clinical and echocardiographic data of patients with a diagnosis of isolated moderate left-sided VD, to compare them with patients with the same left-sided VD but accompanied by concomitant moderate TR. Thus, three pairs of groups were analyzed: 1) isolated moderate aortic regurgitation (AR, n= 294) vs. moderate AR plus moderate TR (n=162), 2) isolated moderate aortic stenosis (AS, n=252) vs. moderate AS plus moderate TR (n=101), and 3) isolated moderate mitral regurgitation (MR, n= 261) vs. moderate MR plus moderate TR (n=1195). The primary endpoint was all-cause mortality.

Results. Across all three pairs comparisons, patients with concomitant moderate TR exhibited a higher baseline prevalence of chronic kidney disease and atrial fibrillation, had higher Charlson Comorbidity Index scores, and more frequently carried cardiac implantable electronic devices (p-value <0.05 for all). Echocardiographically, these patients consistently showed lower left ventricular ejection fraction (LVEF) and stroke volume index, along with higher pulmonary artery systolic pressure (PASP), reduced tricuspid annular plane systolic excursion (TAPSE), and elevated right atrial pressure compared with patients with isolated left-sided VD (p-value <0.05 for all).
After a median follow-up of 3.3 years, survival did not differ between patients with isolated moderate AR and those with concomitant TR (p-value =0.242). In the AS cohort, the group with concomitant TR had lower unadjusted survival (p-value =0.025) over a median follow-up of 2.4 years, and the increased hazard of all-cause death remained significant after adjustment for clinical variables, but not in a second adjustment model including the main echocardiographic confounders. Finally, in patients with moderate MR, after a median follow-up of 3.2 years, concomitant moderate TR was associated with reduced survival both univariably and

after multivariable comprehensive adjustment on main clinical and echocardiographic variables (adjusted hazard ratio 2.99, 95% confidence interval 1.19-6.49, p-value =0.019).

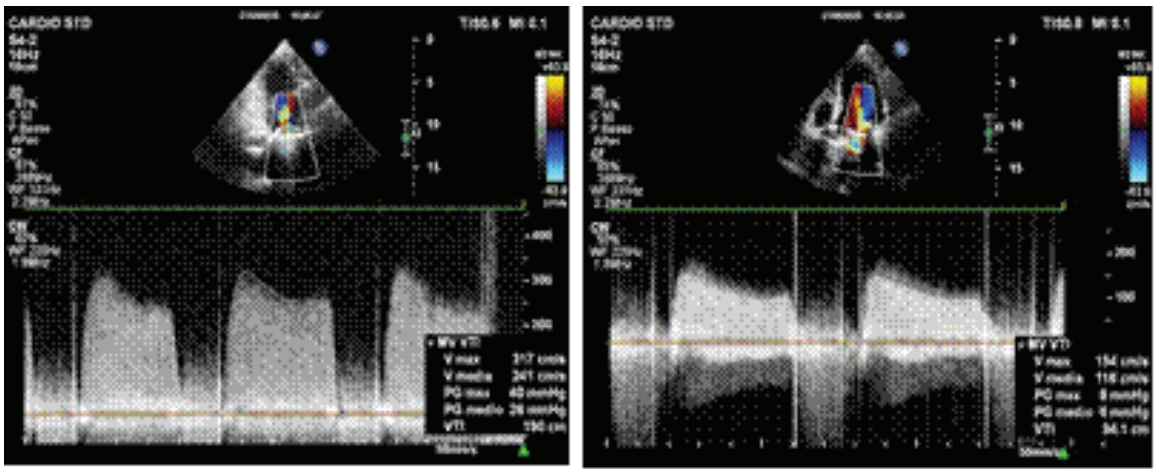
Conclusions. In our real-world study focusing on multiple moderate VD, concomitant moderate TR was consistently associated with a worse clinical and echocardiographic profile compared to patients with isolated moderate left-sided VD. In the context of moderate MR, coexisting TR was associated with worse survival even after comprehensive adjustment, underscoring a particularly adverse association.

VALVULOPATIE 661
ASSISTENZA INTENSIVA CARDIOVASCOLARE IN ACUTO (ASSISTENZA CARDIACA IN ACUTO)
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)
TROMBOSI E COAGULAZIONE (ATEROTROMBOSI)
FARMACI CARDIOVASCOLARI (FARMACI CARDIOVASCOLARI E NUTRACEUTICI)

TAILORED LOW-DOSE THROMBOLYSIS FOR MECHANICAL MITRAL VALVE THROMBOSIS IN A HIGH BLEEDING RISK ELDERLY PATIENT WITH BIVENTRICULAR DYSFUNCTION: A CASE REPORT

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An 82-year-old woman presented to the emergency department after a fainting episode without loss of consciousness. She had history of valvular heart disease with severe biventricular dysfunction underwent dual mechanical replacement of aortic and mitral valves in 2021. She also had chronic kidney disease and she was implanted with an ICD for secondary prevention. The latest echocardiographic data reported normally functioning of aortic and mitral mechanic prostheses with respective mean gradients 7 and 2 mmHg. On admission, she had heart failure symptoms requiring diuretics, non-invasive ventilation and nitroglycerin infusion, her INR value was 1.3 due to unsupervised anticoagulation therapy (warfarin). Echocardiography revealed a severe biventricular dysfunction, a normal function of aortic prosthesis. The mitral prosthesis showed signs of dysfunction with increased gradients (14 mmHg) and multiple anterograde jets. Transoesophageal echocardiography confirmed thrombosis of the mitral mechanical valve. A cardiac surgery evaluation ruled out further surgery due to the patient's advanced age, poor general condition and



Figures

severe biventricular dysfunction. Given the non-acute nature of the mitral prosthesis thrombosis and stable hemodynamic, systemic thrombolysis was not initially indicated. Instead, anticoagulation with unfractionated heparin (UFH) was started, achieving satisfactory levels of anticoagulation. Despite this, the thrombus persisted, and the mean mitral valve gradient increased to 24 mmHg (figure 1) leading to hemodynamic worsening and signs of acute pulmonary pre-oedema. Since there was no improvement with UFH and no absolute contraindications were found, fibrinolytic therapy was initiated. Due to the patient's moderate bleeding risk (linked to age and severe chronic kidney disease), a reduced-dose Alteplase regimen was used (15 mg bolus followed by 50 mg iv infusion over 60 minutes, 0.75 mg/kg), with a protocol for patients under 65 kg. Post-fibrinolytic echocardiographic on the same day showed a significant reduction in thrombus and an improved of the prosthetic valve function, with the mean gradient dropping to 6 mmHg (figure 2). In the following days, it further decreased to 3 mmHg, unfortunately, a stroke occurred in the Patient. The fibrinolytic therapy used in this case was a "tailored" approach, based on the myocardial infarction protocol but modified to suit the patient's condition applying a modified version of the protocol designed for patients weighing less than 65 kg. The maintenance dose infusion was prolonged from 30 to 60 minutes to minimize bleeding risk. Severe chronic kidney disease was also considered although renal clearance of alteplase is minimal (approximately 5%), because this condition could potentially prolong the drug's half-life. Moreover, this approach aligns with the latest guidelines of valvular heart disease 2025, which recommend slow infusion of fibrinolytic agents in similar cases.

VALVULOPATIE 1090
INTERVENTISTICA STRUTTURALE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
INTERVENTISTICA CORONARICA
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

TAVI-IN-TAVI WITH LEFT MAIN ORTHOTOPIC SNORKEL-STENTING FOR DEGENERATED COREVALVE EVOLUT R AT 10-YEAR FOLLOW-UP

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Background: As TAVI reaches 10 years of follow-up from the first implantations, long-term durability data are now available and structural valve degeneration (SVD) has become an emerging clinical challenge. Redo-TAVI can be technically demanding, especially in patients at high-risk of coronary obstruction, when supra-annular devices are used and the sinotubular junction is narrow or calcified. The simultaneous coronary stenting represents a necessary safeguard in anatomically unfavorable settings.

Case report: An 84-year-old woman (160 cm, 84 kg) with hypertension, dyslipidemia, COPD and prior TAVI in 2015 (CoreValve Evolut R 26 mm, after aborted SAVR for porcelain aorta) presented in March 2025 with chest pain and asthenia. Echocardiography showed severe SVD of Evolut R bioprosthesis (Vmax 4.5 m/s, mean gradient 42 mmHg, EOA 0.7 cm²) with mild paravalvular leak and preserved LV systolic function (LVEF 58%). Coronary angiography showed 40-50% distal left main (LM) stenosis and diffuse coronary irregularities. Given the high-risk anatomy (TAVR Score: 8.59%) and a 4-year mortality rate of 40% for untreated aortic stenosis, the Heart Team recommended redo-TAVI with planned LM protection. In September 2025, a TAVI-in-TAVI procedure was carried out using a balloon-expandable prosthesis (a 23 mm Sapien 3 Ultra Valve) deployed within the previously implanted self-expanding device but below the height of left coronary ostium origin. Simultaneous PCI of the LM was performed with a "orthotopic snorkel" stent (XIENCE 4.0×48 mm) from the Evolut frame to prevent left coronary artery occlusion by Evolut leaflets displacement. The procedure was supported by TEE guidance, left radial angiographic monitoring, right radial cerebral protection with Claret system and arterial retrograde pacing. Vascular hemostasis was succesful achieved with perclose devices.
Final result: intraprocedural TEE confirmed correct positioning of the new valve, normal cusp excursion, no residual transvalvular gradient. The clinical course was uneventful and the patient was discharged in good condition.

Discussion: This case exemplifies the new era of TAVI practice, evolving from an early innovation to a mature therapy now challenged by the issue of long-term durability. As SVD emerges as a predictable finding at extended follow-up, clinicians are increasingly faced with complex reinterventions. In our patient, the combination of TAVI-in-TAVI with LM stenting provided a tailored approach to restore valvular competence while preserving coronary perfusion in anatomically unfavorable settings. Literature supports simultaneous coronary stenting as an effective coronary protection technique [1-4], while long-term follow-up data confirm TAVI durability up to 10 years [5, 6], underscoring the growing relevance of redo-TAVI, particularly in elderly

and high-risk patients. The success of redo-TAVI relies on preserving the delicate balance between aortic root flow, sinus washout and coronary filling: our case highlights the importance of careful multimodality pre-procedural planning and the adoption of standardized protective strategies to ensure procedural success.

Conclusion: ith the increasing number of patients reaching a decade after their first TAVI, structural valve degeneration is now a real-world issue. Redo-TAVI with adjunctive techniques such as orthotopic snorkel stenting can represent a safe and effective solution in high-risk anatomies, provided the procedure is performed in experienced centers.

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VALVULOPATIE 672
ENDOCARDITI (VALVULOPATIE)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
ECOCARDIOGRAFIA TRANS-ESOFAGEO (ETE)
(IMAGING CARDIOVASCOLARE)

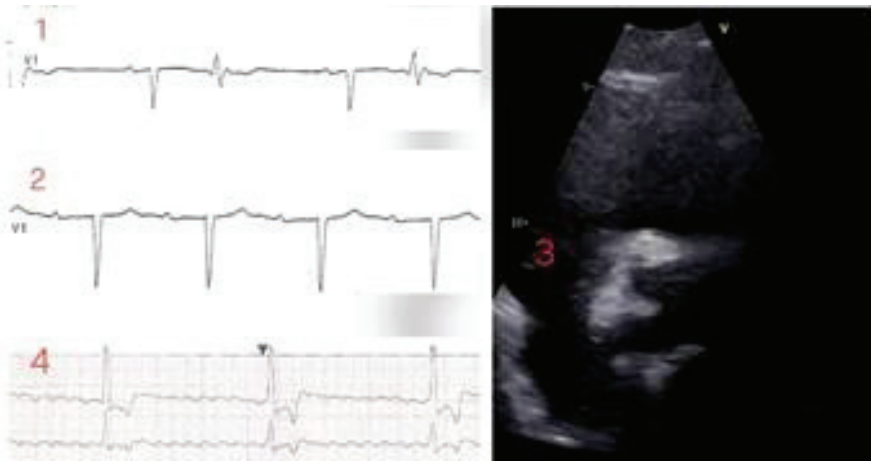
FROM CONDUCTION DELAY TO COMPLETE BLOCK: ANNULAR ABSCESS IN PROSTHETIC AORTIC VALVE ENDOCADITIS

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Background: Prosthetic valve endocarditis (PVE) is associated with high morbidity and mortality. Periannular extension with abscess formation is a severe complication that may result in atrioventricular (AV) conduction disturbances due to involvement of the conduction system, often requiring urgent surgical management.

Case report: A 75-year-old man, who underwent bicuspid aortic valve replacement with a bioprosthesis in 2014, was admitted with progressive dyspnea, orthopnea, and peripheral edema. ECG showed sinus rhythm with PR 180 ms and ventricular bigeminism (FIG. 1). Transesophageal echocardiography (TEE) revealed thickened bioprosthetic cusps with mild regurgitation.
During hospitalization, fever and decompensated heart failure developed, blood cultures grew S. Caprae and a repeat echocardiogram documented severe intraprosthetic regurgitation (PHT 300 ms, abdominal aortic flow reversal). Serial ECGs monitoring showed progressive PR prolongation (360 ms) (FIG. 2) and episodes of 2:1 AV block. Follow-up TEE demonstrated increased thickening and echogenicity of the non-coronary cusp, with perivalvular thickening and a maximum hyper-echogenic area of 8 mm involving the right coronary sinus and the mitro-aortic junction, consistent with endocarditis complicated by annular abscess formation (FIG. 3).
During the following days, the patient developed bradyarrhythmic atrial fibrillation with complete AV block (HR 20 bpm) (FIG. 4), requiring temporary pacing. The conduction disorder was considered secondary to annular abscess extension.
Given the rapid clinical deterioration, after having discussed the case in Heart Team, a urgent redo aortic valve replacement with annular debridement was performed. Postoperatively, sinus rhythm was restored with residual first-degree AV block without episodes of advanced conduction abnormalities.

Conclusion: This case report illustrates the possible rapid progression of a prosthetic valve endocarditis complicated by annular abscess and advanced conduction disturbances. This emphasizes the need for prompt diagnosis, Heart Team evaluation, and early surgical intervention.



Figures

VALVULOPATIE 1038
SHOCK CARDIOGENO (ASSISTENZA CARDIACA IN ACUTO)
PATOLOGIA DELLA VALVOLA MITRALE (VALVULOPATIE)
INTERVENTISTICA STRUTTURALE
(CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)

MITRAL TRANSCATHETER EDGE-TO-EDGE REPAIR IN THE ACUTE SETTING AS A RESCUE THERAPY: AN ONGOING MONOCENTRIC EXPERIENCE

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Background: Transcatheter edge-to-edge repair (TEER) is an established treatment for chronic severe mitral regurgitation (MR), but its role as rescue therapy in hemodynamically unstable patients remains less defined.

Objectives: To describe real-world characteristics and outcomes of patients undergoing TEER at a single tertiary center, comparing elective versus acute presentations, and to detail procedural and clinical results in the acute cohort.

Methods: We conducted a retrospective, single-center analysis of consecutive patients who underwent TEER (MitraClip or PASCAL) for severe MR between January 2019 and December 2024 at a tertiary-care university hospital. Patients were categorized as elective (hemodynamically stable) or acute (unstable/cardiogenic shock per SCAI definition). Pre-specified variables included demographics, MR etiology, risk scores, procedural characteristics, and clinical, echocardiographic, laboratory outcomes. Standard parametric and non-parametric tests were applied.

Results: Ninety-three patients underwent m-TEER: 80 elective (86%) and 13 acute (14%); 61% were male. Acute patients were younger (median 72 vs 80 years; p=0.048), more symptomatic (NYHA > II: 100% vs 59%; p=0.0049), and had higher risk (STS 15.8±8.6 vs 8.0±4.2, p<0.001; EuroSCORE II 8.8±6.4 vs 4.8±3.4, p=0.001). Secondary MR predominated in the acute group (84.6% vs 37.5%; p<0.001). In the acute cohort, m-TEER were performed using PASCAL devices in 54% of the patients and MitraClip devices in 46%; a single device was implanted in 69% of the patients. Procedural success was 100% with no intraprocedural deaths. MR severity decreased from universally severe to ≤ moderate at discharge (p<0.001). Pulmonary artery systolic pressure significantly decreased acutely (53.2±16.3 to 37.7±14.8 mmHg; p<0.001) and at follow-up (32.7±13.2 mmHg; p=0.004), while LVEF was unchanged. Hemoglobin increased (10.8±2.0 to 12.9±2.1 g/dL; p=0.036) and creatinine decreased (1.77±1.93 to 1.37±0.70 mg/dL; p=0.028). At a median follow-up of 359 days, 70% of acute patients were alive; guideline-directed medical therapy optimization was achieved in 67% (p=0.041). Among acute cases, survival tended to be higher after ischemic presentations compared to acute decompensated heart failure (0/5 vs 4/8 deaths; p=0.057). TEER consistently enabled short-term goals (e.g., weaning from inotropes/IABP and IV diuretics) and facilitated candidacy for LVAD or major surgery.

Conclusions: In this monocentric experience, TEER as rescue therapy for acute severe MR was feasible and safe, providing rapid MR reduction, hemodynamic improvement (especially pulmonary pressures), laboratory stabilization, and enabling escalation of heart failure medicaments, despite unchanged LVEF. These results support TEER as a potential bridge-to-recovery or bridge-to-advanced therapies in selected unstable patients. Larger prospective studies are warranted.

VALVULOPATIE 924
INTERVENTISTICA STRUTTURALE (CARDIOLOGIA INTERVENTISTICA, CORONARICA E STRUTTURALE)
CARDIOMIOPATIE (MALATTIE DEL MIOCARDIO E DEL PERICARDIO)
PATOLOGIA DELLA VALVOLA AORTICA (VALVULOPATIE)
ARITMIE VENTRICOLARI (ARITMIE)

TRANCATHETER AORTIC VALVE REPLACEMENT IN HYPERTROPHIC CARDIOMYOPATHY

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Introduction: Aortic stenosis (AS) is a narrowing of the aortic valve opening, which restricts blood flow from the left ventricle into the aorta during systole. This condition increases the pressure load on the left ventricle, leading to left ventricular hypertrophy and it can lead to heart failure if left untreated. The stenosis is usually due to calcific degeneration, congenital bicuspid aortic valve, or rheumatic heart disease. Severity is usually assessed by echocardiography, using measurements such as aortic valve area, mean transvalvular gradient, and peak aortic jet velocity. Hypertrophic cardiomyopathy is (HCM) is a genetic heart disease characterized by left ventricular hypertrophy (LVH) that cannot be explained solely by abnormal loading conditions (such as hypertension or aortic stenosis). Histologically, it shows myocyte hypertrophy and disarray with interstitial fibrosis. It frequently presents with asymmetric septal hypertrophy, which can cause left ventricular outflow tract (LVOT) obstruction in many patients. It is associated with diastolic dysfunction, arrhythmias, and an increased risk of sudden cardiac death. HCM and AS may coexist. In these cases, the obstruction is both fixed (valvular) and dynamic (septal), making diagnosis and treatment more challenging.

Case presentation: We present the case of a 79-year-old woman, who presented to the emergency department with progressively worsening dyspnoea. Her medical history included hypertension, dyslipidemia, bilateral degenerative maculopathy, and ischemic stroke in 2022. Her cardiovascular history was more interesting: she was diagnosed with HCM and underwent septal myectomy in 1982 and 2004. In 2006, due to ventricular arrhythmias, she underwent an implantable cardioverter-defibrillator (ICD) implantation, which was subsequently upgraded to an ICD pacemaker in 2013. In 2024, she experienced a decrease in exercise tolerance, followed by the onset of shortness of breath in 2025.

Clinical assessment and decision making: Echocardiography revealed severe aortic stenosis with a low-flow, low-gradient profile. On physical examination, the patient reported oppressive chest pain, worsening dyspnea, and marked asthenia. Vital signs were within normal limits, although blood pressure was elevated above the normal range; cardiac rhythm was sinus with a normal heart rate, and oxygen saturation was preserved. TAVI protocol computed tomography scan was performed, revealing anatomy suitable for percutaneous placement of an aortic valve prosthesis.

Clinical course: The prosthetic valve was implanted, and immediately afterward, the patient developed hypotension, so an electrocardiogram was performed to rule out ACS. Since the medical team was aware of HCM, intravenous fluids and intravenous beta-blockers were started, with improvement in blood pressure. After the procedure, the patient was transferred to the intensive care unit for monitoring. She experienced

vomiting followed by a vasovagal reaction with a hypotensive episode (blood pressure 60/30 mmHg), which was managed with an adrenaline bolus and intravenous fluid resuscitation. The day after, shortly after removal of the femoral venous sheaths, the patient developed atrial fibrillation with a rapid ventricular response (heart rate 160 bpm). She was treated with IV metoprolol, IV magnesium sulfate, and IV amiodarone. Subsequently, oral sotalol was initiated, leading to restoration of sinus rhythm.
During her in-hospital stay, the patient experienced a recurrence of atrial fibrillation with rapid ventricular response (heart rate 160 bpm). In the presence of the medical emergency team, electrical cardioversion at 150 joules was performed twice, without success. A slow infusion of amiodarone was subsequently administered, resulting in conversion to sinus rhythm. Throughout this period, intravenous hydration was maintained at a rate of 50 mL/h to minimize the risk of hypotensive episodes.

Discussion: This case highlights the clinical complexity of managing an elderly patient with severe aortic stenosis and a history of hypertrophic cardiomyopathy, prior ICD implantation, and multiple comorbidities. Severe aortic stenosis with a low-flow, low-gradient profile often poses diagnostic and therapeutic challenges, particularly in patients with coexisting structural heart disease.
Transcatheter aortic valve implantation (TAVR) was selected as the optimal treatment option, given the patient's age, comorbidities, and surgical risk profile. She initially presented with hypotension during the procedure and, postoperatively, also complicated with atrial fibrillation with rapid ventricular response, a complication that can significantly impact morbidity and mortality.
This case underlines the importance of close monitoring in the immediate postprocedural period and the need for tailored strategies in high-risk patients undergoing TAVR. Furthermore, it illustrates the challenges posed by the coexistence of multiple cardiovascular diseases, which require individualized decision-making by a multidisciplinary heart team.

Conclusion: This case emphasizes the importance of individualized management of high-risk patients undergoing TAVR, particularly in the presence of complex comorbidities such as hypertrophic cardiomyopathy and a history of arrhythmias. In HCM with LVOT obstruction, removing or reducing afterload (the resistance against the heart pumps), can paradoxically worsen the obstruction and associated symptoms.
Removing the afterload by solving aortic stenosis could lead to suicide ventricle.
In patients with AS and HCM after TAVR, fluids and beta-blockers are recommended to. Careful peri-procedural monitoring and prompt management of post-TAVR atrial fibrillation are essential to ensure favorable clinical outcomes.


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