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Prognostic value of angiography-derived fractional flow reserve and translesion gradient after drug-coated balloon angioplasty

http:www.cardiocirugia.sld.cu - Jue, 07/03/2025 - 10:00

Quant Imaging Med Surg. 2025 Jun 6;15(6):5739-5751. doi: 10.21037/qims-24-2238. Epub 2025 May 30.

ABSTRACT

BACKGROUND: Angiography-derived fractional flow reserve (AccuFFRangio) has emerged as a reliable tool for coronary functional assessment, demonstrating high concordance with invasive fractional flow reserve (FFR). This study aimed to determine the previously uninvestigated predictive value of combining AccuFFRangio with translesion gradient (TLG) following drug-coated balloon (DCB) angioplasty.

METHODS: This retrospective study included 232 patients treated with DCB angioplasty. Post-DCB AccuFFRangio and TLG were successfully measured in 218 patients. The vessels were classified according to dichotomous post-DCB AccuFFRangio and TLG. The primary endpoint was 2-year risk of target vessel failure (TVF), which is a composite of target vessel revascularization, target vessel myocardial infarction (MI), and cardiac death.

RESULTS: The optimal cutoff for post-DCB AccuFFRangio was 0.89. A post-DCB AccuFFRangio ≤0.89 was strongly associated with higher rates of TVF (14.3% *vs.* 2.8%; P=0.002), and a TLG of >0.03 was associated with increased rates of TVF (13.5% *vs.* 4.9%; P=0.046). Key predictors of adverse outcomes included male gender, smoking status, higher residual diameter stenosis, and post-DCB AccuFFRangio and TLG. In multivariate analysis, AccuFFRangio was independently predictive of TVF. The patient subgroup with high TLG and low AccuFFRangio had significantly higher rates of TVF (15.2%) as compared to the other groups (P=0.005).

CONCLUSIONS: Immediate post-DCB AccuFFRangio and TLG can be effectively used for stratifying risk and predicting long-term outcomes in patients undergoing DCB angioplasty. Post-DCB AccuFFRangio, in particular, offers significant prognostic insights beyond traditional clinical and imaging parameters, suggesting its potential as a critical tool in postangioplasty patient management.

PMID:40606399 | PMC:PMC12209666 | DOI:10.21037/qims-24-2238

Categorías:

Enhanced Recovery and Reduced Complications with Minimally Invasive Coronary Artery Bypass Grafting Compared to Open Sternotomy

http:www.cardiocirugia.sld.cu - Jue, 07/03/2025 - 10:00

Acta Inform Med. 2025;33(2):135-139. doi: 10.5455/aim.2025.33.135-139.

ABSTRACT

BACKGROUND: Minimally invasive coronary artery bypass grafting (MICS CABG) via left anterior thoracotomy has emerged as a less invasive alternative to conventional open sternotomy (OPEN CABG), offering potential benefits in perioperative outcomes and complication rates.

OBJECTIVE: The aim of this study was to compare procedural characteristics, ventilation duration, drainage volumes, and postoperative complications between MICS CABG and OPEN CABG in a single-center cohort in Bosnia and Herzegovina.

METHODS: This retrospective cross-sectional study included 262 patients who underwent surgical revascularization between January 2019 and June 2023.

RESULTS: MICS CABG was associated with a shorter median procedure time (2.5 vs. 3.5 hours, p<0.001) and reduced mechanical ventilation duration (11.0 vs. 14.0 hours, p<0.001). Although ICU stay was similar (3.0 days, p=0.001), total hospitalization was shorter for MICS CABG (6.0 vs. 7.0 days, p<0.001). Postoperative drainage was significantly lower at all measured time points (p<0.05), and transfusion requirements were reduced for red blood cells (0 vs. 2 units, p<0.001), fresh frozen plasma (0 vs. 2.5 units, p<0.001), and platelets (p=0.035). Use of inotropic agents was less frequent in MICS CABG, both at low (50.4% vs. 62.8%, p=0.043) and medium doses (4.0% vs. 16.0%, p=0.001). Wound infections were numerically lower in the MICS group (p=0.437).

CONCLUSIONS: Compared to open sternotomy, MICS CABG demonstrated significant advantages in operative time, ventilation duration, blood loss, and complication rates, supporting its role as a safe and effective alternative for coronary revascularization.

PMID:40606238 | PMC:PMC12212263 | DOI:10.5455/aim.2025.33.135-139

Categorías:

Importance of Clinical, Laboratory, and Genetic Risk Factors for Incident CAD

http:www.cardiocirugia.sld.cu - Jue, 07/03/2025 - 10:00

Circ Genom Precis Med. 2025 Jul 3:e004937. doi: 10.1161/CIRCGEN.124.004937. Online ahead of print.

ABSTRACT

BACKGROUND: Prior work suggests modifiable cardiovascular risk factors (CRFs) account for 80% to 90% of the risk for incident myocardial infarction. The contributions of genetic and other novel CRFs have not been simultaneously assessed in contemporary data sets.

METHODS: In the United Kingdom Biobank, CRFs were identified and Cox proportional hazards models with traditional CRFs (hypertension, diabetes, dyslipidemia, waist-to-hip ratio, diet, exercise, alcohol, and socioeconomic deprivation) and contemporary/genetic CRFs (Lp(a) [lipoprotein(a)], hsCRP [high-sensitivity C-reactive protein], familial hypercholesterolemia variants, and polygenic risk score for coronary artery disease) were constructed for coronary artery disease. Coronary artery disease was defined as a first-time myocardial infarction diagnosis or coronary revascularization. R2 was calculated for each model, and the percent contribution of each individual CRF was calculated by the R2 percent decrease after its removal.

RESULTS: Among 299 707 individuals, the mean (SD) age was 56.2 (8.1) years, and 166 533 (55.6%) were women. Over a median (interquartile range) follow-up of 11.0 (9.6-12.5) years, 17 409 (5.8%) of participants developed myocardial infarction. R2 increased from the base model (R2, 0.021 [0.020-0.022]), to the clinical model (R2, 0.045 [0.043-0.046]), to the contemporary/genetic model (R2, 0.053 [0.052-0.055]). The most powerful individual CRFs were hypertension (R2 loss, 15.2% [14.5-17.1]) and polygenic risk score for coronary artery disease (R2 loss, 12.4% [10.8-13.3]), followed by dyslipidemia (R2 loss, 3.4% [2.6-3.5]), diabetes (R2 loss, 2.2% [1.5-2.0]), hsCRP (R2 loss, 1.8% [1.5-2.0]), and Lp(a) (R2 loss, 1.5% [1.2-1.8]).

CONCLUSIONS: Novel CRFs like polygenic risk score for coronary artery disease, hsCRP, and Lp(a) have similar importance, comparable to traditional CRFs such as hypertension, dyslipidemia, and

diabetes, for incident myocardial infarction, highlighting important identifiable residual risk factors.

PMID:40605734 | DOI:10.1161/CIRCGEN.124.004937

Categorías:

Participation in a comprehensive cardiac rehabilitation program improves mid- and long-term prognosis in survivors of acute coronary syndrome

Protección miocárdica - Jue, 07/03/2025 - 10:00

Am J Prev Cardiol. 2025 Jun 13;23:101042. doi: 10.1016/j.ajpc.2025.101042. eCollection 2025 Sep.

ABSTRACT

BACKGROUND: Cardiovascular disease is the leading cause of death in developed nations. While survival rates of myocardial infarction have improved in recent decades due to advanced treatment options, secondary prevention efforts are often neglected. This study evaluates the effects of participation in a comprehensive cardiac rehabilitation program (CCR) on survival in patients presenting with acute coronary syndrome (ACS).

METHODS: In Hungary, since January 2014, data on patients with ACS have been mandatorily entered into the National Myocardial Infarction Register. This Register now holds information on 155,000 ACS events involving over 130,000 patients. A retrospective analysis was performed on the data of said Register.

RESULTS: We examined data on 76,153 ACS cases that occurred from 2014 to 2019. For the purposes of this study, we focused on early survivors, and 66,905 patients were included in our analysis (alive 30 days after the index event). The main modifiable protective factors, analyzed by binary regression model, were percutaneous coronary intervention (PCI), direct admission to a PCI-capable hospital, and participation in a comprehensive cardiac rehabilitation (CCR) program. In Hungary, such programs include supervised physical exercise as well as patient education on smoking cessation, dietary changes, and medication compliance. Our study showed that participation in CCR programs was associated with a 42 % reduction in 1-year mortality for patients with ST-elevation myocardial infarction (STEMI) and improved long-term survival rates across various patient subgroups. Despite its efficacy, the participation rate in CCR was low, with only 21 % of eligible patients completing such programs. The lowest CCR participation rate was in non-ST-elevation myocardial infarction (NSTEMI) patients who did not undergo PCI; these patients also had the highest mortality rates. Factors predicting lower participation rates were older age, male gender, NSTEMI presentation, and lack of percutaneous coronary intervention (PCI).

CONCLUSION AND RELEVANCE: This study shows a significant survival benefit of participation in a comprehensive cardiac rehabilitation program in early survivors of ACS. Unexpectedly, this finding was contrasted by a very low participation rate in this highly effective and cost-effective intervention. Increasing awareness of CCR's benefits both amongst patients and providers, as well as increasing access to and availability of CCR should significantly improve survival rates following ACS.

PMID:40606515 | PMC:PMC12221284 | DOI:10.1016/j.ajpc.2025.101042

Categorías: Protección miocárdica

Cardioprotection Through Pharmacological Activation of Sirtuin 5 in a Murine Model of Acute Myocardial Infarction

Protección miocárdica - Jue, 07/03/2025 - 10:00

Drug Des Devel Ther. 2025 Jun 27;19:5489-5505. doi: 10.2147/DDDT.S509337. eCollection 2025.

ABSTRACT

PURPOSE: Sirtuins (SIRTs) play a critical role in redox and metabolic regulation of the myocardium; however, the cardioprotective potential of SIRT5 in terms of infarct size (IS) reduction is still elusive. Herein, we employed the newly synthesized SIRT5-specific agonist, MC3215, developed by our group, to explore for the first time the pharmacological activation of SIRT5 as a target for cardioprotection.

METHODS AND RESULTS: In in vitro screening experiments, SIRT1 and SIRT5 agonists, namely, MC2606 and MC3215, at 1-20 μM were added to cardiomyoblasts (H9c2) and human endothelial cells (EA.hy-926) during 24 h hypoxia/2 h reoxygenation (H/R). SIRT1 and SIRT5 agonists mitigated H/R injury. Male C57BL/6J mice underwent 30 min ischemia (I) followed by 2 h or 24 h reperfusion (R). Mice received vehicle, the SIRT1 or SIRT5 agonists at 20 and 30 mg/kg at the 20th min of ischemia, and IS was quantified via triphenyl-tetrazolium chloride staining (n=5-7/group). MC3215-mediated SIRT5 activation reduced IS at 24 h R at 20mg/kg compared to controls (25.18±2.7% vs 38.80±4.7%). MC3215 treatment resulted in reduced protein malonylation in all experimental settings. Targeted mass-spectrometry-based metabolomics in the ischemic heart at the 10th min of R suggested increased fatty acid oxidation, as indicated by increased N3-Trimethyllysine and D-pantothenate. Concomitantly, molecular analysis indicated that the SIRT5 agonist activated AMPKα and Reperfusion Injury Salvage Kinase (RISK) pathway. Additionally, at 3 h reperfusion, MC3215 led to increased mitofusin 2 without altering apoptosis, paving towards improved mitochondrial dynamics. Co-administration of SIRT5 inhibitor, TW-37, abrogated MC3215-mediated cardioprotection.

CONCLUSION: SIRT5 pharmacological agonism emerges as a novel cardioprotective target, leading to RISK pathway activation and mitochondria-related metabolic effects, converging at salvaging ischemic myocardium from I/R injury.

PMID:40606000 | PMC:PMC12214431 | DOI:10.2147/DDDT.S509337

Categorías: Protección miocárdica

Association of Serum Thromboinflammatory Biomarkers With Atherosclerotic Plaques and Burden in a Community-Based Population

Protección miocárdica - Jue, 07/03/2025 - 10:00

Arterioscler Thromb Vasc Biol. 2025 Jul 3. doi: 10.1161/ATVBAHA.125.322586. Online ahead of print.

ABSTRACT

BACKGROUND: The pathogenesis of atherosclerosis involves complex mechanisms, with inflammation playing a central role. Thromboinflammation may contribute to its development and progression. We investigated the association between circulating thromboinflammatory biomarkers and atherosclerotic plaques.

METHODS: Participants aged 50 to 75 years from the baseline survey of the PRECISE study (Polyvascular Evaluation for Cognitive Impairment and Vascular Events) were included. Serum levels of thromboinflammatory biomarkers (sGPVI [soluble glycoprotein VI]; sADAMTS13 [soluble a disintegrin and metalloproteinase with thrombospondin type 1 motif, member 13]; and sP-selectin) were assessed by ELISA and Luminex assays and categorized into quartiles based on their empirical distribution within the study population. Eligible participants underwent imaging using computed tomography angiography and magnetic resonance imaging for coronary atherosclerosis, intracranial atherosclerosis, and extracranial atherosclerosis, respectively.

RESULTS: A total of 3019 participants (mean age, 61.20±6.68 years; 46.47% male) were analyzed. After multivariable adjustment, participants in the fourth quartile of sGPVI levels had higher odds of

coronary atherosclerotic plaque burden (common odds ratio, 1.42 [95% CI, 1.14-1.76]; *P*=0.0017). Conversely, those in the highest sADAMTS13 quartile had lower odds of coronary plaques (odds ratio, 0.75 [95% CI, 0.60-0.93]; *P*=0.0094), as well as reduced coronary plaque burden, including segment involvement score (common odds ratio, 0.75 [95% CI, 0.61-0.93]; *P*=0.0087) and segment stenosis score (common odds ratio, 0.75 [95% CI, 0.61-0.93]; *P*=0.0086). No significant associations were observed between sGPVI or sADAMTS13 levels and intracranial or extracranial atherosclerosis. Likewise, after multivariable adjustment, no significant associations were observed between sP-selectin levels and coronary, intracranial, or extracranial atherosclerosis.

CONCLUSIONS: In our study, serum sADAMTS13 levels showed a negative association with both the presence and burden of coronary atherosclerosis, while sGPVI levels showed a positive association with the burden of coronary atherosclerosis. However, significant associations between the level of thromboinflammatory biomarkers, intracranial atherosclerosis, and extracranial atherosclerosis were not found.

PMID:40605745 | DOI:10.1161/ATVBAHA.125.322586

Categorías: Protección miocárdica

Association between statins use and mortality in critically ill patients with sepsis included myocardial injury: a retrospective cohort study

Protección miocárdica - Jue, 07/03/2025 - 10:00

Eur J Med Res. 2025 Jul 2;30(1):543. doi: 10.1186/s40001-025-02711-3.

ABSTRACT

BACKGROUND: The treatment of patients with sepsis included myocardial injury (SIMI) remains a subject of debate. Given the pharmacological effects of statins in both sepsis and cardiovascular disease, this study aimed to investigate the association between statins use and the prognosis of SIMI.

METHODS: Patients with SIMI were primarily identified from the MIMIC-IV database. The patients were categorized into statins use and non-statins use groups, followed by propensity score matching (PSM) analysis to address baseline discrepancies between the groups. Univariate and multivariate Cox regression analyses were employed to assess the impact of statins on the prognosis of SIMI patients. The primary endpoint was 28-day all-cause mortality, with secondary outcomes including 90-day and 1-year all-cause mortality. To investigate whether the effects of certain factors vary across subgroups, subgroup analyse were performed.

RESULTS: The cohorts before and after PSM comprised 2550 and 1368 patients, respectively. In the PSM cohort, statins use was associated with a reduced 28-day all-cause mortality (hazard ratio [HR] = 0.65, 95% confidence interval [CI] 0.53-0.79, P < 0.001), 90-day all-cause mortality (HR = 0.65, 95% CI 0.54-0.77, P < 0.001), and 1-year all-cause mortality (HR = 0.72, 95% CI (0.53-0.79), P < 0.001). In addition, subgroup analyse suggested potential interactions between statins use and factors such as chronic kidney disease (CKD).

CONCLUSIONS: Statins use is associated with a reduced short-term and long-term all-cause mortality rates in patients with SIMI.

PMID:40605094 | DOI:10.1186/s40001-025-02711-3

Categorías: Protección miocárdica

Association of serum uric acid-to-high-density lipoprotein cholesterol ratio (UHR) with risk of myocardial infarction among individuals with diabetes: a cross-sectional

analysis using data from NHANES 2005-2020

Protección miocárdica - Jue, 07/03/2025 - 10:00

Eur J Med Res. 2025 Jul 2;30(1):554. doi: 10.1186/s40001-025-02845-4.

ABSTRACT

BACKGROUND: The serum uric acid-to-high-density lipoprotein cholesterol ratio (UHR) is a novel indicator of cardiometabolic health that has demonstrated strong predictive potential in various studies. However, the association between UHR and the occurrence of myocardial infarction (MI) among individuals with diabetes has not been well-established. This study aimed to assess the relationship between UHR and the presence of MI in diabetic individuals and to provide evidence for early identification of high-risk groups.

METHODS: This cross-sectional study included 7039 adult participants from the NHANES 2005-2020 data set. The association between UHR and MI risk was examined using UHR quartile grouping, multivariable logistic regression, and restricted cubic spline (RCS) analyses. Subgroup analyses were performed to evaluate whether the predictive value of UHR differed among population subgroups. All statistical procedures incorporated appropriate sample weights to ensure nationally representative estimates.

RESULTS: UHR was significantly elevated among participants with diabetes who had MI ($p < 0.001$). MI prevalence rose progressively across UHR quartiles (8.20% vs. 8.55% vs. 9.01% vs. 14.87%; $p < 0.001$). In the unadjusted model, each 1-unit increase in UHR was associated with a 4.5% higher odds of MI (OR = 1.045, 95% CI 1.021-1.071, $p < 0.001$). Participants in the highest quartile (Q4) had 1.957 times higher odds of MI compared to those in the lowest quartile (Q1) (95% CI 1.399-2.735, $p < 0.001$). RCS analysis revealed no significant non-linear association, suggesting a potentially linear relationship between UHR and the odds of MI. No significant interaction was observed across subgroups, such as sex, race, and education level (P for interaction > 0.05).

CONCLUSIONS: Elevated UHR was significantly associated with higher odds of MI in individuals with diabetes, demonstrating potential predictive value. As a simple and cost-effective indicator, UHR may assist in the early identification and stratification of individuals at higher likelihood of cardiovascular disease among people with diabetes; however, prospective studies are warranted to confirm its clinical utility.

PMID:40605038 | DOI:10.1186/s40001-025-02845-4

Categorías: Protección miocárdica

Stem cells in the treatment of myocardial injury-induced cardiomyopathy: mechanisms and efficient utilization strategies

Trasplante cardíaco - Jue, 07/03/2025 - 10:00

Front Pharmacol. 2025 Jun 18;16:1600604. doi: 10.3389/fphar.2025.1600604. eCollection 2025.

ABSTRACT

Cardiac tissue injury and repair have always been a research hotspot in the field of cardiovascular disease. Limited and lost myocardial cells are non-renewable, and the current clinical treatment effect is still poor. The stem cells-based treatment strategy for cardiomyopathy is expected to solve the current treatment pain points. A variety of stem cells have the potential to differentiate into cardiomyocytes and form cardiac tissue, and the strong paracrine activity of stem cells also plays an important role in the regulation of inflammation, oxidative stress and cardiomyocyte apoptosis in cardiac tissue. Limited by the survival rate and stem cells activity after stem cells transplantation, the effect of stem cells therapy on cardiomyopathy is still not ideal. Pretreatment of stem cells or

genetic modification to enhance the adaptability of stem cells to the environment, or the use of new biomaterials to assist stem cells transplantation is an effective optimization scheme and significantly enhances the therapeutic effect of stem cells therapy for cardiomyopathy. In this review, the types of stem cells widely studied in the treatment of cardiomyopathy, the role of stem cells in the treatment of cardiomyopathy, and how to efficiently use stem cells to treat cardiomyopathy are described in detail, which provides a theoretical basis for promoting the preclinical research and clinical transformation of stem cell therapy for cardiomyopathy.

PMID:40606613 | PMC:PMC12213730 | DOI:10.3389/fphar.2025.1600604

Categorías: Trasplante cardíaco

Label-Free Evaluation of Lung and Heart Transplant Biopsies Using Tissue Autofluorescence-Based Virtual Staining

Trasplante cardíaco - Jue, 07/03/2025 - 10:00

BME Front. 2025 Jul 2;6:0151. doi: 10.34133/bmef.0151. eCollection 2025.

ABSTRACT

Objective and Impact Statement: We present a panel of virtual staining neural networks for lung and heart transplant biopsies, providing rapid and high-quality histological staining results while bypassing the traditional histochemical staining process. **Introduction:** Allograft rejection is a common complication of organ transplantation, which can lead to life-threatening outcomes if not promptly managed. Histological examination is the gold standard method for evaluating organ transplant rejection status, as it provides detailed insights into rejection signatures at the cellular level. Nevertheless, the traditional histochemical staining process is time-consuming, costly, and labor-intensive since transplant biopsy evaluations typically necessitate multiple stains. Furthermore, once these tissue slides are stained, they cannot be reused for other ancillary tests. More importantly, suboptimal handling of very small tissue fragments from transplant biopsies may impede their effective histochemical staining, and color variations across different laboratories or batches can hinder efficient histological analysis by pathologists. **Methods:** To mitigate these challenges, we developed a panel of virtual staining neural networks for lung and heart transplant biopsies, which digitally convert autofluorescence microscopic images of label-free tissue sections into their bright-field histologically stained counterparts-bypassing the traditional histochemical staining process. Specifically, we virtually generated hematoxylin and eosin (H&E), Masson's Trichrome (MT), and elastic Verhoeff-Van Gieson stains for label-free transplant lung tissue, along with H&E and MT stains for label-free transplant heart tissue. **Results:** Blind evaluations conducted by 3 board-certified pathologists confirmed that the virtual staining networks consistently produce high-quality histology images with high color uniformity, closely resembling their well-stained histochemical counterparts across various tissue features. The use of virtually stained images for the evaluation of transplant biopsies achieved comparable diagnostic outcomes to those obtained via traditional histochemical staining, with a concordance rate of 82.4% for lung samples and 91.7% for heart samples. Moreover, virtual staining models create multiple stains from the same autofluorescence input, eliminating structural mismatches observed between adjacent sections stained in the traditional workflow, while also saving tissue, expert time, and staining costs. **Conclusion:** The presented virtual staining panels provide an effective alternative to conventional histochemical staining for transplant biopsy evaluation. These virtual staining panels have the potential to enhance the clinical diagnostic workflow for organ transplant rejection and improve the performance of downstream automated models for the analysis of transplant biopsies.

PMID:40606521 | PMC:PMC12217214 | DOI:10.34133/bmef.0151

Categorías: Trasplante cardíaco

Post-operative management of children after lung transplantation

Trasplante cardíaco - Jue, 07/03/2025 - 10:00

JHLT Open. 2025 May 27;9:100301. doi: 10.1016/j.jhlto.2025.100301. eCollection 2025 Aug.

ABSTRACT

Post-operative care for children and adolescents who undergo lung transplantation is a challenge because of the potential for numerous complications during this period, which can considerably impact the short- and long-term outcomes. The immediate post-operative phase is particularly critical, and complications are frequent; therefore, knowledge, early recognition, and appropriate treatment of these complications are imperative and can only be achieved through close collaboration between a wide range of medical specialties. The aim of this review is to provide an abbreviated overview of the optimal post-operative management of children in an intensive care unit, as well as to describe frequently occurring complications and their treatment.

PMID:40606299 | PMC:PMC12219461 | DOI:10.1016/j.jhlto.2025.100301

Categorías: Trasplante cardíaco

Heart Transplantation in post-infarction ventricular septal rupture: Contemporary outcomes from the 2016-2021 National Inpatient Database

Trasplante cardíaco - Jue, 07/03/2025 - 10:00

JHLT Open. 2025 Jun 3;9:100278. doi: 10.1016/j.jhlto.2025.100278. eCollection 2025 Aug.

ABSTRACT

INTRODUCTION: Ventricular septal rupture (VSR) is a devastating complication of myocardial infarction (MI), with high mortality, particularly in cardiogenic shock (CS). Heart transplantation (HT) has emerged as a potential alternative to surgery or transcatheter closure (TCC). This study evaluates contemporary trends and outcomes of HT in post-MI VSR using the National Inpatient Sample (NIS) database.

OBJECTIVES: To assess in-hospital mortality and resource utilization of HT compared to surgical repair or TCC for post-MI VSR with CS.

METHODS: We analyzed NIS data (2016-2021) for MI-VSR hospitalizations with CS. Patients undergoing HT were compared to those receiving surgical repair or TCC. Primary and secondary endpoints included in-hospital mortality (IHM), total hospital charges (TOTCHG), and length of stay (LOS). Multivariable logistic regression adjusted for age, sex, race, comorbidities, and hospital characteristics, with surgical repair as the control.

RESULTS: Of 2,514,025 acute MI hospitalizations, 4765 (0.20%) had VSR. IHM was 82% with CS vs. 60% without. Among VSR-CS patients, 30 (1.2%) underwent HT, 600 (24.1%) surgical repair, 225 (9.2%) TCC, and 1635 (65%) medical therapy. IHM was 0% for HT vs. 66% (surgery), 75% (TCC), and 97% (medical therapy). All HT patients received mechanical circulatory support [IABP (50%), Impella (27%), ECMO ± Impella (10%), ECMO (13%)].). Patients undergoing HT had an average LOS approximately 20 days longer than those treated surgically (p = 0.004; 95% CI: 13.78-47.29) and 15 days longer with TCC (p = 0.008; 95% CI: 19.32-54.23). Similarly, mean total hospital charges (TOTCHG) were higher for HT patients ($1,456,693) compared to surgical repair ($325,032; p = 0.001; 95% CI: $145,002-$634,293) and TCC ($210,032; p = 0.001; 95% CI: $119,230-$542,200).

CONCLUSIONS: From 2016 to 2021, among VSR-CS admissions in the United States, patients who underwent HT had no in-hospital mortality, in contrast to the high in-hospital-mortality observed with surgical or transcatheter closure. Despite inherent selection biases, including survival to transplantation, HT was associated with favorable outcomes compared to surgical repair. While promising, these findings are preliminary due to the small sample size and selective nature of the

patient cohort. Further studies are required before HT can be broadly recommended as a primary treatment option.

PMID:40606297 | PMC:PMC12219360 | DOI:10.1016/j.jhlto.2025.100278

Categorías: Trasplante cardíaco

The value of systematic study and biobanking of explanted hearts: Insights from an international ISHLT pathology survey

Trasplante cardíaco - Jue, 07/03/2025 - 10:00

JHLT Open. 2025 May 30;9:100306. doi: 10.1016/j.jhlto.2025.100306. eCollection 2025 Aug.

ABSTRACT

This study evaluates global practices for managing explanted hearts, with a focus on tissue collection and biobanking protocols. A survey conducted through the International Society for Heart and Lung Transplantation (ISHLT) assessed responses from centers across Europe, North America, and Other Countries. Results demonstrated significant variability in tissue sampling, grossing protocols, and storage practices. While 78.8% of centers had grossing protocols, fewer (73.1%) adapted sampling based on pathology. Fresh tissue collection was prevalent in 63.5% of centers, but volumes varied: North America led with higher sampling rates (10-25 samples per heart), while Europe and Other Countries collected fewer samples. Coronary artery sampling also showed regional differences. Fresh tissues enable advanced molecular studies, while fixed tissues remain fundamental for histopathology. Standardized global protocols for sampling, storage, and reporting could enhance the clinical and research value of explanted hearts, optimizing post-transplant care and driving innovation in cardiac medicine.

PMID:40606294 | PMC:PMC12219514 | DOI:10.1016/j.jhlto.2025.100306

Categorías: Trasplante cardíaco

Differences in wait-list mortality: Temporary vs durable circulatory support devices

Trasplante cardíaco - Jue, 07/03/2025 - 10:00

JHLT Open. 2025 Jun 2;9:100312. doi: 10.1016/j.jhlto.2025.100312. eCollection 2025 Aug.

ABSTRACT

BACKGROUND: In 2018, changes in the United Network for Organ Sharing (UNOS) allocation system led to a shift in practices, making durable left ventricular assist devices less desirable as a bridge to transplantation compared to temporary mechanical circulatory support. This study compares the composite outcome of waitlist mortality and delisting incidence at 1 year between these two support types.

METHODS: All actively listed adult patients on mechanical circulatory support listed for heart transplantation under the current UNOS system from October 2018 to October 2021 were included, excluding those with right ventricular devices, biventricular devices, total artificial hearts, and extracorporeal membrane oxygenators. The primary outcome was the composite of waitlist mortality and delisting due to clinical deterioration at 1 year. Survival analysis was conducted using Kaplan-Meier curves and multivariable Cox regression.

RESULTS: A total of 4,569 patients were included, with 1,877 on temporary mechanical circulatory support and 2,692 on left ventricular assist devices. Propensity-score matching was performed on

660 patients divided into two groups. The event rate was lower in the left ventricular assist device group compared to the temporary mechanical circulatory support group (15.9% vs 35.2%, $p < 0.001$). Temporary mechanical circulatory support had a significantly higher multivariable hazard ratio (HR) for outcome events (HR 3.37, $p < 0.001$). The HeartMate 3 (HM3) had the best outcomes compared to all other device types.

CONCLUSION: In this propensity-score-matched analysis, durable mechanical circulatory support had better outcomes than temporary mechanical circulatory support. HM3 had the lowest risk of composite outcomes.

PMID:40606293 | PMC:PMC12221459 | DOI:10.1016/j.jhlto.2025.100312

Categorías: Trasplante cardíaco

Left ventricular longitudinal function is reduced but partially compensated by increased radial function after heart transplantation

Trasplante cardíaco - Jue, 07/03/2025 - 10:00

JHLT Open. 2025 May 31;9:100308. doi: 10.1016/j.jhlto.2025.100308. eCollection 2025 Aug.

ABSTRACT

BACKGROUND: In healthy hearts, left ventricular atrioventricular plane displacement (LVAVPD) measured by cardiac magnetic resonance (CMR) contributes to ~60% of stroke volume. LVAVPD has been shown to correlate with maximal cardiac output and exercise capacity and is an independent predictor of outcomes in patients with heart failure. We aimed to assess if longitudinal pumping is altered, if LVAVPD is associated with exercise capacity, and if any difference in longitudinal pumping could be explained by the presence of a right bundle branch block (RBBB) in heart-transplanted patients.

METHOD: This single-center study included 34 heart-transplanted patients who had undergone CMR and a cardiopulmonary exercise test as part of a clinical post-transplant surveillance program. Data was compared to 34 healthy sex- and age-matched controls.

RESULTS: Heart-transplanted patients had decreased LVAVPD (10.3 vs 13.7 mm, $p < 0.01$), lower longitudinal contribution (46% vs 53%, $p < 0.01$), and lower septal contribution (-3% vs 8%, $p < 0.01$) to stroke volume compared to controls. Furthermore, the lateral contribution was increased (44% vs 28%, $p < 0.01$) in the heart-transplanted patients. Longitudinal contribution to stroke volume was neither associated with exercise capacity ($p = 0.20$) nor cardiac output at rest ($p = 0.62$). There was no difference in LVAVPD in patients with and without RBBB ($p = 0.81$).

CONCLUSION: Heart-transplanted patients have decreased left ventricular longitudinal function compared to healthy controls, in part compensated by an augmented lateral function. Longitudinal function is not associated with cardiac output at rest or exercise capacity in this patient group. Whether the altered pumping mechanics seen are associated with outcome remains to be investigated.

PMID:40606292 | PMC:PMC12221465 | DOI:10.1016/j.jhlto.2025.100308

Categorías: Trasplante cardíaco

Cardiac lymphoma requiring urgent heart transplant due to ventricular tachycardia storm: a case report

Trasplante cardíaco - Jue, 07/03/2025 - 10:00

Eur Heart J Case Rep. 2025 Jun 5;9(7):ytaf279. doi: 10.1093/ehjcr/ytaf279. eCollection 2025 Jul.

ABSTRACT

BACKGROUND: Primary cardiac lymphoma (PCL) involves the heart almost exclusively although it can extend to surrounding structures including the pericardium. Most PCLs in adults are of B-cell origin and their signs and symptoms are generally non-specific and depend on their location and size. In general, cancer patients usually have a slim chance of receiving heart transplantation (OHT), although it's not an absolute contraindication depending on the decision of the multidisciplinary team and the experience of each institution.

CASE SUMMARY: A 48-year-old man, with an ultimate diagnosis of primary cardiac follicular B-cell lymphoma presented to our hospital mimicking hypertrophic cardiomyopathy. He initially presented with worsening heart failure and ventricular tachycardia storm (VT-S) that required urgent cardiac OHT. The final pathological analysis of the explanted heart revealed the presence of a PCL without extra-cardiac extension. In addition to initial immunosuppression with mycophenolate mophethyl, corticosteroids, and tacrolimus, he was switched to Everolimus and dose reduction of Tacrolimus. Rituximab + Bendamustine was initiated to reduce the risk of cardiotoxicity and myelotoxicity associated to R-CHOP. The follow-up body PET-CT, *trans*-thoracic echocardiogram, cardiac magnetic resonance imagings and biopsies were normal. During a regular follow-up heart biopsy procedure to ascertain rejection, the patient developed torrential tricuspid regurgitation and required surgical valve replacement.

DISCUSSION: After 5.5 years of follow-up, the patient remains asymptomatic, with normal graft function, in NYHA FC I, and without oncological relapses despite receiving a modified chemotherapy regimen. Selected patients with a PCL can be managed with OHT and a modified chemotherapy regimen. They could also be followed up using a non-invasive approach to monitor rejection.

PMID:40606016 | PMC:PMC12210231 | DOI:10.1093/ehjcr/ytaf279

Categorías: Trasplante cardíaco

Atrial Fibroblasts-Derived Extracellular Vesicles Exacerbate Atrial Arrhythmogenesis

Trasplante cardíaco - Jue, 07/03/2025 - 10:00

Adv Sci (Weinh). 2025 Jul 3:e07627. doi: 10.1002/advs.202507627. Online ahead of print.

ABSTRACT

Cardiac fibroblasts (CFs) secrete exosomes, and their cargo represents a new means of cellular communication in cardiovascular diseases, including atrial fibrillation (AF). We aimed to explore the contribution of atial CFs (ACFs)-derived exosomes to AF development. Cultured primary human ACFs (hACFs) and rat ACFs are treated with angiotensin II, and the secreted exosomes are transferred to rats. Action potential duration and L-type calcium current (ICa) are tested. Global microRNA-224-5p knock-in and fibroblast-specific microRNA-224-5p knock-in (FMKI) mice underwent an inducible AF test. Transferred exosomes of Ang II-induced hACFs and primary adult rat ACFs increased AF incidence and prolonged AF duration. The inhibitor of exosomes and knockdown of Dicer rescued the AF phenotype. MicroRNA array suggested upregulated microRNA-224-5p level in both primary adult rat ACFs and ACFs-secreted exosomes. microRNA-224-5p agonist shortened atrial effective refractory period (AERP) and promoted AF. Mechanistically, microRNA-224-5p bound to CACNA1C and inhibited its transcription. Moreover, global microRNA-224-5p knock-in and FMKI mice exhibited increased inducible AF incidence, accompanied by diminished ICa current in ACMs. Exosome microRNA-224-5p is enhanced in ACFs isolated from atria and plasma of AF patients, and positively correlated with recurrence after radiofrequency ablation. In summary, ACFs-derived exosome microRNA-224-5p contributes to AF by inhibiting CACNA1C to drive atrial electrical remodeling.

PMID:40605550 | DOI:10.1002/advs.202507627

Categorías: Trasplante cardíaco

Atrial septostomy in the management of pulmonary arterial hypertension: past, present, and future

Trasplante cardíaco - Jue, 07/03/2025 - 10:00

Eur J Med Res. 2025 Jul 2;30(1):552. doi: 10.1186/s40001-025-02776-0.

ABSTRACT

Pulmonary arterial hypertension (PAH) is currently an irreversible disease, with many patients eventually progressing to right heart failure, severely affecting their quality of life and posing a life-threatening risk. Percutaneous atrial septostomy was first performed in infants with transposition of the great arteries in 1966. Since then, it has been used as a palliative treatment for patients with end-stage PAH, significantly improving their quality of life and providing a buffer period while waiting for lung transplantation. However, this method does not fundamentally alter the malignant outcomes of patients with PAH. This study reviews the development and evolution of atrial septostomy, summarises various emerging technologies, and systematically explains the mechanisms, efficacy, and prognosis of palliative treatment in patients with PAH. Furthermore, new ideas for this treatment approach are proposed with the hope that it will bring more benefits to patients with PAH in the future and be more fully utilised.

PMID:40604947 | DOI:10.1186/s40001-025-02776-0

Categorías: Trasplante cardíaco

Prescription patterns of traditional Chinese medications and potential consequences in patients with new-onset cardiac or vascular-related diseases: a nationwide cohort study

Trasplante cardíaco - Jue, 07/03/2025 - 10:00

BMC Complement Med Ther. 2025 Jul 2;25(1):216. doi: 10.1186/s12906-025-04945-4.

ABSTRACT

BACKGROUND: The patterns of Chinese medicine prescriptions, corresponding diagnoses, co-morbidities, and Western medication (WM) use among patients with cardiac or vascular-related diseases are uncertain. This research aimed to examine the patterns of Chinese medications (CMs, specifically in terms of extract granules), corresponding diagnoses, co-morbidities, and the use of WMs within specified follow-up periods among patients with potential of recurrent cardiac or vascular-related diseases and relevant outcomes.

METHODS: We conducted a retrospective cohort study using Taiwan's National Health Insurance Research Database. We enrolled patients with newly diagnosed cardiac or vascular-related diseases without cancer(s), transplantation, bleeding diagnoses, or catastrophic illness during the 2-year period prior to the corresponding diagnosis. Prior and non-prior CM users were matched based on their propensity scores. Finally, we compared the CM and WM patterns prescribed by physicians, and co-morbidities in the 6 months following the diagnosis and the secondary cardiac or vascular-related events in the 2 years following the diagnosis between the two groups using the standardized mean difference.

RESULTS: Of 191,025 patients with newly diagnosed cardiac or vascular-related diseases, 39,341 (20.60%) were prescribed CMs. Moreover, after propensity score matching, we identified 39,168

prior CM users and 39,168 non-prior CM users. Regardless of prior CM use, both groups had a relatively high rate of comorbidities; CM or specific WM use; and incidence of severe cardiovascular, cerebrovascular, or thromboembolic events (33.81% vs. 31.97%) and severe bleeding (18.32% vs. 16.57%). Only CM exposure within 6 months after the index date differed significantly between the groups (73.51% vs. 30.34%).

CONCLUSION: We found that over 30% of patients with newly diagnosed cardiac or vascular disease initiated CM use, while 73.5% of prior CM users continued. This finding highlights the need for healthcare professionals to carefully assess the risk-to-benefit ratio of CM use alongside WMs for patients with cardiac or vascular-related diseases.

PMID:40604744 | DOI:10.1186/s12906-025-04945-4

Categorías: Trasplante cardíaco

Early-onset restrictive cardiomyopathy with life-threatening arrhythmia caused by a homozygous desmin mutation: a case report

Trasplante cardíaco - Jue, 07/03/2025 - 10:00

BMC Pediatr. 2025 Jul 2;25(1):508. doi: 10.1186/s12887-025-05866-4.

ABSTRACT

Restrictive cardiomyopathy (RCM) is a rare cardiac disease characterized by the predominance of severe diastolic dysfunction, normal or mildly increased ventricular wall thickness, and either normal or mildly reduced ejection fraction. All known RCM genes are localized on autosomes. In most cases, the mutations are inherited in an autosomal dominant mode or appear as de novo mutations. The present report describes a case with early-onset RCM and life-threatening arrhythmia, which was inherited in an autosomal recessive manner. The child developed ventricular arrhythmia at one month of age, and a mixed phenotype dominated by restrictive cardiomyopathy with coexistent hypertrophic cardiomyopathy (RCM - HCM) at one year of age. and required hospitalization for anti - heart failure treatment due to heart failure at three years of age. The patient suffered from ventricular fibrillation and cardiac arrest at four years of age, which was rescued by extracorporeal membrane oxygenation and subsequent heart transplantation. Whole genome sequencing of the proband revealed a novel homozygous missense variant (NM_001927.3: c.1243 C > T [p.R415W]) in the Desmin (DES) gene, which was inherited from heterozygous unaffected parents. This case further expands our knowledge of desmin-related cardiomyopathy in children.

PMID:40604581 | DOI:10.1186/s12887-025-05866-4

Categorías: Trasplante cardíaco

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