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# I CONGRESSO ACADÊMICO INTERNACIONAL DO CORAÇÃO

## Apresentação

É com imensa satisfação que, em nome da Comissão Organizadora, apresento os anais dos trabalhos científicos apresentados no **CARDIO 2023**, o Primeiro Congresso Acadêmico Internacional do Coração, promovido pela Faculdade de Ciências Médicas de Minas Gerais.

O **CARDIO 2023** foi uma iniciativa do corpo discente da nossa instituição e ocorreu nos dias 27 e 28 de outubro de 2023. Ao longo desses dois dias, contamos com a participação de mais de 400 inscritos e a apresentação de mais de 100 temas livres. O evento contou também com conferências nacionais e internacionais, além de mesas-redondas que abordaram as mais recentes inovações e perspectivas na área da saúde cardiovascular.

Ocupar a presidência da primeira edição deste Congresso foi tanto um desafio quanto um privilégio. Gostaria de expressar minha profunda gratidão a todos os envolvidos, que acreditaram e contribuíram para o sucesso de nossa missão. Um evento dessa magnitude só se concretiza graças ao esforço e dedicação de muitos. Agradeço especialmente aos meus mentores e inspirações na Medicina, Dra. Gabriela Aires Ribas, Dr. Marcus Bolívar, Dra. Ana Cláudia Máximo e Dr. Ildeu Almeida, que estiveram ao meu lado nos momentos de altos e baixos. Estendo meus agradecimentos a todos os 29 membros da comissão organizadora do Congresso e à equipe técnica do Teatro Feluma, que foram cruciais para o êxito de nossa programação científica.

A saúde cardiovascular sempre exerceu um fascínio especial em minha vida, desde antes do ingresso na Faculdade. Realizar um Congresso focado no futuro da Cardiologia é uma experiência incrível, especialmente em uma era marcada por avanços rápidos, com tratamentos inovadores, Medicina Baseada em Evidências e pesquisas de ponta. Atualmente, podemos falar sobre terapia genética, inteligência artificial, novas drogas e telemedicina. Durante o evento, contamos com palestrantes que compartilharam o que há de mais recente em cada uma dessas áreas.

Contudo, ao olharmos para o futuro, devemos ter a sensatez de não esquecer os fundamentos: a ponta do cateter jamais deve ofuscar a importância da prevenção de doenças, da anamnese minuciosa e do exame físico bem executado. A inovação, por mais brilhante que seja, não pode se sobrepor ao cerne da Medicina. A Medicina é uma ciência que cuida de vidas, e trata não apenas as cardiopatias, mas também as questões familiares, emocionais e sociais. De que adianta toda a inovação sem o acesso equitativo à saúde? Este é o futuro que almejamos?

# I CONGRESSO ACADÊMICO INTERNACIONAL DO CORAÇÃO

Enfrentamos o aumento dos custos na assistência médica, enquanto observamos uma crescente desvalorização dos profissionais de saúde. Lidamos com questões éticas, justiça, autonomia, tomadas de decisões difíceis e conflitos de interesse. Mais do que nunca, apesar de todas as adversidades, temos não só o privilégio, mas também a responsabilidade de impactar positivamente a vida das pessoas. Possuímos ferramentas que podem curar alguns, mas em nós reside a capacidade de aliviar o sofrimento e proporcionar esperança a muitos. Embora a jornada seja longa e exigente, repleta de sacrifícios, é uma jornada bela. Espero que, ao longo desse caminho, consigamos manter nossos propósitos alinhados, inspirando-nos em nossos professores, pacientes e colegas. Que o encanto do coração humano continue a nos motivar a sermos melhores, a aprender mais e a fazer a diferença.

Desejo que os trabalhos apresentados em nosso evento, agora reunidos nesta publicação, sejam de grande proveito a todos. Agradeço e desejo uma ótima leitura.

Atenciosamente,

**FELIPE MÁXIMO DE ALMEIDA**

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**Presidente do CARDIO 2023**

# I CONGRESSO ACADÊMICO INTERNACIONAL DO CORAÇÃO

A Revista Interdisciplinar Ciências Médicas valoriza a qualidade dos trabalhos publicados, no entanto, se exime da responsabilidade de avaliação (nos quesitos ético-legais, rigor científico e formatação), aprovação e critérios de publicação dos resumos.

O Comitê Científico do evento tem total responsabilidade pela publicação dos trabalhos de acordo com os quesitos ético-legais, rigor científico e a formatação que instituíram.

Os resumos que porventura não foram publicados, mas foram aprovados, não estavam em conformidade com as diretrizes estabelecidas.

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## REVIEW ABSTRACT

# Diagnosis and surgical treatment of Ebstein Anomaly in neonates: a systematic review

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## ABSTRACT

**Introduction:** Ebstein Anomaly represents 1% of all congenital heart defects and is characterized by detachment of the insertion of the septal and mural leaflets of the tricuspid valve into the right ventricle. This anomaly often causes enlargement of the atrial cavity, tricuspid insufficiency and right ventricular failure dysfunction.

**Objective:** to summarize findings about the diagnosis and surgical treatment of Ebstein Anomaly in neonates.

**Methods:** this is a systematic review and the searched databases were Lilacs, PubMed, Scopus. The descriptors were: “Ebstein Anomaly AND diagnosis AND treatments AND Neonates”. Observational articles published between 2013 and 2023, in English, that addressed the topic were selected. The search found 103 articles, and seven studies were selected after applying the eligibility criteria. **Results:** Ebstein Anomaly can be diagnosed through prenatal ultrasound scanning of the fetal anatomy, which should be done between 18 to 22 weeks of gestation. Postnatal diagnosis is made by transthoracic echocardiography. In both cases, this condition is detected by apical displacement of the tricuspid valve from the atrioventricular annulus greater than 0.8 cm/m<sup>2</sup> of body surface area. Indications for surgery in neonates included severe right heart failure, severe cyanosis, and cardiac abnormalities. The Cone Reconstruction technique has shown promising results for neonatal cases, leading to improved biventricular function and cardiopulmonary exercise capacity. The Starnes operation as a single ventricle palliation method is also a procedure performed in critically ill neonates, but the ventricular volume overload due to the physiology of the systemic-pulmonary shunt after the surgical procedure often results in a critical hemodynamic state. Plastic Surgery of the Tricuspid Valve is well accepted as a surgical technique in neonates. **Conclusion:** the diagnosis can be made before or after birth, and surgical treatment is usually performed in critically ill patients with variable outcomes.

**Keywords:** Ebstein Anomaly; Diagnosis; Treatment.

## REVIEW ABSTRACT

# Cardiovascular manifestations in pediatric patients with multisystemic inflammatory syndrome associated with COVID-1: a systematic review

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## ABSTRACT

**Introduction:** The Multisystem Inflammatory Syndrome (MIS-C) is a rare hyperinflammatory disease that affects pediatric patients, which is a complication of a previous SARS-Cov-2 infection. Despite having a multisystem involvement, cardiac implication is one of the most frequent manifestations in MIS-C, found in up to 68 to 70% of the cases. The cardiovascular manifestations of this clinical entity have been associated with significant morbidity and mortality. **Objective:** Describe the involvement of the cardiovascular system which affects the pediatric population with MIS-C associated with COVID-19. **Methods:** A systematic review through the search of scientific articles in the PUBMED database, using the descriptors “Cardiovascular”, “Multisystem Inflammatory Syndrome”, “COVID-19”, “Pediatric patients”, separated by the boolean operator “AND”. Were included articles published from 2022 to 2023. **Results:** According to studies, cardiovascular involvement was observed in all patients with MIS-C in the form of changes in echocardiography (ECO), electrocardiography (ECG), or increased cardiac enzyme levels. Many children with a cardiac manifestation have non-specific ECG changes, which includes T-wave changes, ST-segment abnormalities, and corrected QT prolongation. ECO revealed pericardial fluid in most patients, heart valve insufficiency, and myocardial dysfunction, with generally mild or moderate depressed ejection fraction. In addition, cardiogenic or vasodilatory shock are described in up to a half of MIS-C diagnoses. About the cardiac enzymes, BNP elevation was more common in patients with cardiovascular involvement than cardiac troponin, occurring in 71%-100% of the cases. **Conclusion:** Abnormalities in the cardiovascular system in children with this condition are of various nature, from changes in the echocardiographic image, through arrhythmias, to heart failure<sup>3</sup>. There is a strict relationship between inflammatory state and cardiac impairment, which is one of the main target organs.

**Keywords:** Cardiovascular System; COVID-19; Child.

## CASE REPORT ABSTRACT

### Minoca: have you ever heard of it? A case report

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#### ABSTRACT

**Introduction:** The main cause of death in the world is due to cardiovascular diseases, especially Acute Coronary Syndrome (ACS). It is a cardiac emergency characterized by typical chest pain, changes in the electrocardiogram (ECG) and elevation of myocardial injury markers. Faced with the clinical suspicion of acute myocardial infarction (AMI), fast and effective treatment aimed at obstructive coronary artery disease becomes necessary. However, some cases may be infarction with unobstructed coronary arteries, defined as MINOCA (Myocardial Infarction with Nonobstructive Coronary Arteries). **Objective:** To describe an unusual case of chest pain treated at a tertiary hospital in Belo Horizonte/MG whose diagnosis was established by magnetic resonance imaging (MRI) of the heart. **Methods:** Case evaluation during hospitalization, analysis of medical records and electronic databases Scielo, UpToDate and PubMed. **Results:** Female, 60 years old, hypertensive and dyslipidemic, comes to the emergency room due to typical chest pain started two hours before. Immediately, an ECG was performed which showed no ST-segment elevation. ACS protocol was initiated (HEART SCORE 7) and troponin collection, which was elevated (2614 ng/ml with a reference value lower than 9). Given the hypothesis of non-ST elevation AMI, the patient was referred for cardiac catheterization that did not show any coronary atheromatosis. Despite the absence of obstructive arterial lesions, the investigation was carried out with MRI of the heart, which showed areas of recent small infarcts, confirming the diagnosis of MINOCA. She received drug treatment with dual platelet antiaggregation, statins and beta-blockers and guidance for cardiological follow-up after discharge. **Conclusion:** Early recognition of myocardial injury is essential to reduce the risk of death in these patients. However, curiously, some cases are not an obstructive coronary lesion and MRI becomes useful for the correct definitive differential diagnosis and appropriate treatment.

**Keywords:** MINOCA; Acute Coronary Syndrome; Chest Pain; Heart attack.

## CASE REPORT ABSTRACT

# Challenge for the diagnosis of pericardial tuberculosis: a case report

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## ABSTRACT

**Introduction:** Tuberculosis (TB) continues to challenge public health. Caused by Koch's bacillus, *Mycobacterium tuberculosis*, its epidemiological indices reflect a persistent problem. In 2019, ten million people developed TB worldwide, with 1,2 million deaths<sup>1</sup>. In addition to its classic form, the pulmonary, this pathology can affect extrapulmonary tissues, which comprise 15-20% of cases of tuberculosis<sup>2</sup>. Among these forms, pericardial tuberculosis is a rare involvement. However, given the aggressiveness of the disease, including it as a differential diagnosis is crucial. **Objective:** To report the case of a 33-year-old male patient with pericardial tuberculosis. **Methods:** This is a descriptive study, in which the information from the case report was obtained by reviewing the medical records, interviewing the patient and discussing the case with the responsible medical team. **Results:** Patient admitted to the emergency with precordial pain, dry cough for 40 days, fever of 38.6 °C, dyspnea, weakness, hyporexia and polyuria. He denies comorbidities, smoking and alcoholism. He has a history of peritoneal tuberculosis treated 8 years ago. On physical examination: reduced breath sounds in the left hemithorax. Performed electrocardiogram: no significant changes. Referred for imaging examination: at CT and ECHO, left pleural effusion and mild pericardial effusion, with a mass whose etiology remains to be clarified. A biopsy of the pericardial effusion was performed: granulomas were found (common in tuberculosis). Thus, tuberculous pericarditis was confirmed and treatment with a quadruple scheme was initiated, with progressive improvement of the condition. **Conclusion:** Although the extrapulmonary forms of tuberculosis affect less of the population, it should be taken into account as a diagnostic hypothesis, as Brazil concentrates 1/3 of the cases in the Americas<sup>2</sup>, which highlights the importance of early diagnosis. Furthermore, the treatment of the disease, despite being free, is time-consuming, leads to evasion of drugs, which turns patients into true disseminators of Koch's bacillus.

**Keywords:** Pericarditis; Tuberculosis; Echocardiography; Cardiology.

## CASE REPORT

# Periareolar access for minimally invasive mitral valve surgery: case report

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## ABSTRACT

**Introduction:** The minimally invasive (MI) approach for mitral valve surgery (MVS) has been consolidated as an efficient technique, with less complications and better patient evolution. The most used approach of this technique is the right anterolateral minithoracotomy (RAM), but more recently the periareolar access has presented itself as an efficient option and with better cosmetics. **Objectives:** Report a case of MI MVS through periareolar access, highlighting the advantages and specifics of this groundbreaking technique. **Methods:** This case report was written utilizing medical records and the technique reviewed through articles from PubMed. **Results:** A 50 year-old female patient without comorbidities, diagnosed with myxomatous mitral valve degeneration leading to significant mitral insufficiency with prolapse of segments 2 and 3 of the posterior leaflet, underwent MVS repair with quadrangular resection of part of segment P2 and P3 associated with annuloplasty with implantation of semi-rigid mitral ring by RAM through periareolar access. This access was made through the nipple-areolar complex that is located at 4th intercostal space providing a closer and ideal straight access to the heart. Throughout the surgery an autotransfusion system was used and the intraoperative transesophageal echocardiography showed no mitral reflux. The operation went without medical complications, the time cardiopulmonary bypass was 105 minutes and clamp time was 80 minutes. The patient was extubated at the operating room and admitted to the Intensive Care Unit (ICU) in spontaneous breathing, hemodynamically stable and without vasoactive drugs. The next day, the patient was discharged from the ICU. **Conclusion:** Thus, as presented by the case report and in the literature used, the periareolar access in MI cardiac surgery proved to be effective and cosmetically attractive due to the low complication rates, less damage and post-surgical scars, in addition to the reduced hospitalization time.

**Keywords:** Cardiac surgery; Minimally Invasive; Mitral Valve; Periareolar access.

## CASE REPORT ABSTRACT

# Infectious endocarditis of the tricuspid valve: a case report

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## ABSTRACT

**Introduction:** Endocarditis is the endocardium's inflammation. A rare but serious form of infective endocarditis, with a high mortality rate, is Fungal Endocarditis (FE). *Candida albicans* is the most common cause of FE, causing over half of all cases, due to factors that allow greater adhesion to the heart valves, followed by tissue proliferation and destruction. FE can affect healthy individuals but is more associated with immunosuppressed states and injecting drug use. The diagnosis is challenging because of the symptom's similarity with bacterial endocarditis, but the echocardiography and histopathological examination can be useful. **Objective:** To report on the case of a 37-year-old man who had a clinical presentation of a severe tricuspid valve infectious endocarditis, of fungal etiology. **Methods:** Analysis of medical and anatomopathological reports of the surgical treatment the patient underwent. **Results:** A 37-year-old man is admitted to the emergency department with prostration, malaise, and dyspnea. The patient informs of a recent hospitalization due to pneumonia. He also reports a medical history of diabetes and chronic kidney disease, currently undergoing hemodialysis through an active arteriovenous fistula. A transthoracic echocardiogram revealed tricuspid valve regurgitation and a mobile echogenic mass. Additionally, blood cultures identified *Candida albicans* growth in two separate samples. Antifungal therapy was initiated with anidulafungin along with vancomycin and meropenem due to sepsis. However, the patient developed severe electrolyte and fluid imbalance, progressing to coma. **Conclusion:** FE is a rare pathology that involves patients at a young age and an early diagnosis is essential for good prognosis. Autopsy and histological analysis are the golden standard to confirm the diagnosis and etiology of endocarditis. Echocardiography can also be used to identify large valve vegetations, typical of the fungal form. The most recommended treatment is early valve replacement surgery associated with antifungal therapy, given the high mortality rate of EF.

**Keywords:** Infective endocarditis; Endocarditis; Fungi; Case reports.

## CASE REPORT ABSTRACT

# Challenges in the diagnosis and treatment of Wolff-Parkinson-White syndrome: a case report

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## ABSTRACT

**Introduction:** Wolff-Parkinson-White syndrome (WPW) is a congenital disease characterized by the presence of an abnormal conduction pathway and accompanied by a subsequent ventricular pre-excitation. This syndrome affects 0.1% of the population, and their electrocardiographic findings include a short PR interval, QRS prolongation, and Delta wave presence. The association of these with clinical symptoms of tachycardia determines the diagnosis. The first-line treatment for this condition is catheter ablation. In asymptomatic cases, but with the presence of the electrocardiographic pattern described, the patient is not considered the carrier of the syndrome, and the indication of ablation becomes a challenge. **Objective:** To present the history of a patient with WPW and discuss available treatment options. **Methods:** Clinical case report according to CARE criteria (Consensus-based Clinical Case Reporting Guideline Development). **Results:** Female patient, 59 years old, previous history of arterial hypertension using Losartan 50mg BID and Amlodipine 5mg MID. She presents well-controlled blood pressure and no target organ damage. In April 2023, the patient experienced sudden-onset tachycardia, mainly at night, with abrupt termination. She denied syncope, dyspnea, precordial pain, and a family history of sudden death. Physical examination revealed no abnormalities. The Holter and the ergometric test showed a WPW-type preexcitation pattern and a supraventricular extra systolic arrhythmia. The patient was diagnosed with WPW syndrome, and catheter ablation was indicated. Currently, the patient is under cardiological follow-up. **Conclusion:** Due to the low prevalence, the inespecificity of the symptoms, and the possibility of an intermittent electrocardiographic pattern, the diagnosis of the syndrome is a challenge. Catheter ablation is the gold standard of treatment by the American Heart Association, being minimally invasive and resolving in 94.1% of cases. In the absence of symptoms, an interdisciplinary and individualized approach is required, in which multiple therapeutic conduits are considered.

**Keywords:** Wolf-Parkinson-White Syndrome; Electrical Catheter Ablation; Preexcitation Syndrome.

## CASE REPORT ABSTRACT

# Approach to ventricular tachycardia associated with arrhythmogenic left ventricular cardiomyopathy in the emergency room: a case report

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## ABSTRACT

**Introduction:** Structural heart diseases progressively compromise the heart, which can result in re-entry mechanisms, the main cause of sustained ventricular tachycardia (VT), which often leads to hemodynamic instability and high mortality. **Objective:** To provide guidance on the importance of recognizing and appropriately managing ventricular tachycardia. **Methods:** This is a case report from a hospital in the metropolitan area of Belo Horizonte, Brazil. **Results:** A 72-year-old male patient with hypertension, chronic obstructive pulmonary disease, chronic atrial fibrillation (AF), left ventricular dilated cardiomyopathy of unknown etiology, and obesity. Previous examinations: Coronary angiography in 2016 showed no abnormalities, and an echocardiogram in 2021 revealed an ejection fraction of 50%, mitral annular calcification, mild aortic insufficiency, aortic ectasia, normally contracting right ventricle, and eccentric left ventricular hypertrophy. The patient presented to the emergency care unit with agitation, dyspnea, palpitations, and near-fainting. On clinical examination, heart rate (HR) was 240 bpm, blood pressure (BP) was inaudible, and an electrocardiogram confirmed sustained VT. A synchronized electric countershock of 200 joules was performed, restoring rhythm with AF, HR of 76 bpm, BP of 120/80 mmHg, oxygen saturation of 96%, and complete resolution of patient symptoms. The patient was transferred to a cardiology intensive care unit. Cardiac magnetic resonance revealed morphological signs suggestive of arrhythmogenic left ventricular cardiomyopathy. An implantable cardiac defibrillator (ICD) was implanted for secondary prophylaxis. The patient had a stable clinical and laboratory course without new arrhythmia episodes and was discharged after 11 days for outpatient follow-up. **Conclusion:** Managing sustained VT is a major healthcare challenge due to its potential lethality, necessitating experienced professionals to make critical decisions. Patients with structural heart diseases are at risk of developing these arrhythmias. Therefore, implanting an ICD is recommended for patients who have recovered from sustained VT to prevent recurrence and provide secondary prophylaxis against sudden death.

**Keywords:** Ventricular Tachycardia; Implantable Defibrillator; Emergency Room.

## CASE REPORT ABSTRACT

# 3D echocardiography for measuring rheumatic mitral stenosis: a case report

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## ABSTRACT

**Introduction:** Rheumatic mitral stenosis (MS) is a post-infectious sequel of acute rheumatic fever and represents the most common valve disease in developing countries, including Brazil. Echocardiography plays a fundamental role in determining the pattern, extent, and severity of MS. Two-dimensional (2D) echocardiography is conventionally used, and currently, three-dimensional (3D) echocardiography has provided a more accurate valve assessment. **Objective:** To highlight the differences in measurements obtained between two-dimensional and three-dimensional echocardiography. **Methods:** This is a case report seen during a consultation at a clinic in Belo Horizonte, Brazil. **Results:** The patient is a 49-year-old female with a previous history of rheumatic fever, experiencing dyspnea on exertion and not taking any regular medications. The transthoracic echocardiogram showed preserved left ventricular (LV) global systolic function, with a LV ejection fraction (LVEF) of 65%. The rheumatic mitral valve exhibited moderate stenosis (planimetry/PHT area 1.6 cm<sup>2</sup>), with a maximum and mean gradient of 11 and 6 mmHg, respectively, and mild mitral regurgitation. Due to persistent complaints of dyspnea, a transesophageal echocardiogram was performed for 3D valve evaluation and measurement of the valve area by multiplanar reconstruction, resulting in a measurement of 1.3 cm<sup>2</sup>. The pulmonary arterial systolic pressure was 45 mmHg at rest. **Conclusion:** The 3D echocardiography in multiplanar reconstruction improves alignment of the mitral valve imaging plane, leading to a more accurate assessment of MS severity. As per the Brazilian Guidelines for Valve Diseases (2020), patients with a mitral valve area (MVA) smaller than 1.5 cm<sup>2</sup> indicate significant stenosis, and in the presence of dyspnea, mitral valve repair is justified. 3D echocardiography enables a more precise evaluation of MVA and the degree of stenosis in patients. Therefore, it is a promising tool to be considered as an adjunct to conventional echocardiography, assisting in determining valvular interventions.

**Keywords:** 3D Echocardiography; Mitral Valve Stenosis; Rheumatic Fever.

## ORIGINAL RESEARCH ABSTRACT

# Epidemiological analysis of acute myocardial infarction hospitalizations in adults in Brazil

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## ABSTRACT

**Introduction:** Recent evidence points to a concerning trend of stable or increasing incidence of coronary artery disease and acute myocardial infarctions (AMI) among adults. This trend may be attributed to evolving behavioral patterns, including unhealthy diets, sedentary lifestyles, and substance abuse. Nonetheless, the investigation of this phenomenon is hindered by limited research focusing on this age group in Brazil. **Objective:** To analyze the hospitalization rates for AMI among adults in Brazil between 2018 and 2022. **Methods:** This ecological and epidemiological study investigated data from the Hospital Information System of Brazilian National Unified Health System (SIH/SUS) managed by DATASUS about the hospitalization for AMI in the population aged from 20 to 44 years old from 2018 to 2022. Variables included were gender and race/ethnicity and the Microsoft Excel program was used for the analysis. **Results:** The analysis revealed a noteworthy 25.5% rise in hospitalizations over the study period. While 2018 recorded the lowest count (8,426 cases), 2022 documented the highest (10,572 cases). In terms of gender, the hospitalizations of AMI were higher in men (34,075 cases) compared to women (13,993 cases), yet the rate of increase was more pronounced among women (29.7%) compared to men (23.8%). Considering race/ethnicity, individuals identified as brown exhibited the highest number of hospitalizations (18,138 cases), while significant increases were noted among native (50%), brown (48.8%), and black (40.8%) populations. The only group displaying a decrease was individuals of Asian ethnicity. **Conclusion:** The study's findings underline a significant rise in AMI cases among adults. These results emphasize the critical importance of recognizing risk factors and promoting healthier lifestyle habits. Consequently, further investigations are warranted to explore the prevalence and contributing factors of this issue within Brazil. It is essential to acknowledge that limited information and underreporting represent potential limitations to addressing this problem comprehensively in the country.

**Keywords:** Myocardial infarction; Adult; Epidemiology; Healthy lifestyle.

## CASE REPORT ABSTRACT

# Diagnostic challenge: uncovering a complex case of heart failure caused by cardiac amyloidosis

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## ABSTRACT

**Introduction:** Transthyretin amyloidosis is a rare cause of restrictive cardiomyopathy of a progressive nature. As a more prevalent condition than previously estimated, and since this condition mimics other heart diseases, it is vital to make an early diagnosis using scintigraphy as a non-invasive exam. Moreover, it is necessary to adopt a posture of high suspicion of the presence of the disease in different clinical scenarios to prevent consequences that can lead to the development of cardiac insufficiency with reduced ejection fraction. **Objective:** Relate a case of transthyretin amyloidosis explaining more about this rare condition. **Methods:** The reported case was taken at Hospital Santa Casa of Montes Claros and the bibliography used was searched at Pubmed and Scielo, using the terms “Amyloidosis transthyretin”, “Heart failure” and “Renal insufficiency”. Articles were found in both English and Portuguese. **Results:** The 62-year-old patient had a previous diagnosis of controlled systemic arterial hypertension, and was admitted at Santa Casa of Montes Claros with edema in lower limbs and worsening of dyspnea. After being admitted, the patient developed heart and kidney failure. He presented oliguria, jugular swelling, presence of B4 with regular rhythm, cardiac frequency of 76 bpm, arterial pressure of 110 x 70 mmHg, hepatomegaly and ascites. His ECO showed 42% of ejection fraction, and pulmonary artery pressure of 40mmHg. Cardiac MRI found biatrial enlargement, systolic dysfunction of the left ventricle, delayed diffuse pattern enhancement all over the myocardium. Myocardium scintigraphy (SPECT) with bone tracer showed cardiac capture compatible with cardiac amyloidosis. **Conclusion:** This case report helps to convey the knowledge behind a rare condition, cardiac amyloidosis. The medical community benefits from learning about hard diagnosis and the path that led to the conclusion of a case like this to prevent further complications due to underdiagnosis.

**Keywords:** Amyloidosis transthyretin related; Heart failure; Renal insufficiency

## SYSTEMATIC REVIEW

# Mavacamten in hypertrophic obstructive cardiomyopathy: a systematic review of non-invasive therapeutic potential

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## ABSTRACT

**Introduction:** Hypertrophic cardiomyopathy (HCM), a rare inherited cardiac condition, is often caused by genetic mutations in sarcomere proteins. Hypertrophic obstructive cardiomyopathy (HOCM) is a common subtype associated with potential complications. Mavacamten, a specific  $\beta$ -myosin heavy chain modulator, shows promise in reducing HOCM-related issues by stabilizing myosin function. Clinical trials support its efficacy in improving various parameters, making it a promising therapeutic approach. **Objective:** Evaluate the therapeutic efficacy and safety of mavacamten in HOCM, focusing on its impact on LVOT gradient, cardiac structure, function, and patients overall health status. **Methods:** We conducted a systematic review using PubMed and Scielo databases, with keywords: “Hypertrophic obstructive cardiomyopathy,” “Myosin heavy chain,” and “Drug therapy management.” **Results:** A total of 5 studies were chosen, encompassing 790 patients, with an average age of  $58.2 \pm 11.9$  years. Mavacamten demonstrated a statistically significant enhancement in cardio-pulmonary exercise testing measures in the EXPLORER-HCM trial, most notably peaks in VE/VCO<sub>2</sub> ratio, METs, and exercise time ( $P < 0.001$ ). Echocardiographically, it fully resolved mitral valve systolic anterior motion in 80.9% of patients vs. 34.0% in the placebo group after 30 weeks ( $P < 0.0001$ ). Diastolic measures like LAVI and lateral E/e' also improved. In the VALOR-HCM study, mavacamten significantly improved all KCCQ scores after 16 weeks compared to placebo ( $p < 0.001$ ). A meta-analysis of four trials confirmed its superior clinical response (Log OR=0.65;  $p=0.01$ ). While overall effects on KCCQ, PVO<sub>2</sub>, and EF were insignificant compared to placebo, the HOCM subgroup saw notable improvements in KCCQ and PVO<sub>2</sub> but a decreased EF. Adverse events were similar between mavacamten and placebo. (Log OR=-0.23,  $p=0.56$ ). **Conclusion:** Mavacamten shows promise in HOCM treatment, improving clinical and echocardiographic measures, especially KCCQ scores and exercise testing. However, nuances, including decreased EF in the HOCM subgroup, need consideration. Safety aligns with placebos. Further research is crucial to grasp long-term benefits and challenges.

**Keywords:** Cardiomyopathy Hypertrophic; Myosin heavy chain; Mavacamten; MYK-416.

## CASE REPORT ABSTRACT

# Alcoholic cardiomyopathy

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## ABSTRACT

**Introduction:** Dilated cardiomyopathy is the end result of various diseases that affect myocardial tissue. Alcoholic etiology is rare, with complex and partially understood mechanisms. Excessive alcohol consumption is an independent risk factor for heart failure (HF), yet the investigation of alcoholic cardiomyopathy (ACM) can be overlooked, as there are no pathognomonic criteria and the diagnosis is essentially presumptive. **Objective:** To describe a case treated at a hospital in Belo Horizonte, Brazil. **Methods:** Case follow-up during hospitalization, analysis of the medical record, and review of electronic databases Scielo, UpToDate, and PubMed. **Results:** Male, 48 years old, admitted to the emergency room with nonspecific symptoms for 3 days, including epigastric fullness and resting dyspnea. On the electrocardiogram, atrial fibrillation rhythm was observed. An echocardiogram was performed, which ruled out the presence of intracavitary thrombi and showed significant diffuse dilation with biventricular dysfunction (ejection fraction of 30%), biatrial dilation, and mitral valve tethered by ventricular remodeling with moderate mitral insufficiency. Rhythm reversal strategy, HF treatment, and etiological investigation were pursued, excluding ischemic, rheumatic, Chagas, and immunological causes. Cardiac resonance confirmed severe dilated cardiomyopathy. Given the aforementioned, along with chronic and excessive alcohol consumption, the diagnosis of ACM was established. The patient was discharged with sinus rhythm, optimized clinical treatment, functional class I (NYHA), and outpatient referral for heart transplant evaluation. **Conclusion:** ACM is a serious and underdiagnosed disease. The diagnosis is based on excessive alcohol intake, structural cardiac alterations, and exclusion of other causes. Echocardiogram is essential to identify ventricular dilation, ventricular wall thinning, and diastolic and systolic dysfunction. Treatment follows the same principles as HF of other etiologies. Early clinical suspicion improves prognosis through standardized treatment and lifestyle changes.

**Keywords:** Heart failure; Ethanol; Diagnosis.

## REVIEW ABSTRACT

# Opportunities and challenges for cardiology in the context of telemedicine: a systematic review

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## ABSTRACT

**Introduction:** Cardiovascular diseases correspond for 32% of deaths globally, being preventable through democratization of access to information. In this perspective, the World Health Organization defines telemedicine as the provision of remote services to facilitate access and opportunity to provide services to the population. Thus, telemedicine applied to cardiology emerges as an interesting and outreach modality for the population, covering areas, such as teleconsulting, telediagnosis, telemonitoring and teleregulation. **Objective:** To assess progress and obstacles in cardiology in the context of telemedicine. **Methods:** A systematic review was carried out from selected scientific articles in the UpToDate, Cochrane and PubMed databases, published between 2018 and 2023, with the following descriptors “Telemedicine”, “Cardiology”, “Heart” and “Health”. As for the exclusion criteria, the following were defined: revisional study design and methodological inconsistency between objectives and outcomes. **Results:** From 10 selected articles, it was found that telecardiology was effective in reducing the time for diagnosis, lowering the risk of complications in the 74% of referrals of patients to other cities for specialized care. In the rationalization of costs and time, both for the patient, also for the health system, in the improvement of the continuity of clinical care, mainly in chronic conditions and in the detection of atrial fibrillation (sensitivity of 95%). Although, telecardiology faces some barriers to its implementation, such as the availability of a minimum telecommunication infrastructure in health units, mainly in so-called remote areas, the high cost of technology and the need for qualification, besides training of human resources. **Conclusion:** Telemedicine in the context of cardiology can represent a tool to improve the provision of services, health care and the quality of life of the population, despite the challenges for its implementation.

**Keywords:** Telemedicine; Cardiology; Heart; Health.

## CASE REPORT ABSTRACT

### Cardiac involvement in systemic sclerosis

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#### ABSTRACT

**Introduction:** Systemic sclerosis (SSC), or scleroderma, is a systemic autoimmune disease that affects connective tissue, with Raynaud's phenomenon and skin thickening being the most prevalent symptoms. Cardiac involvement is clinically evident in approximately 10-30% of patients with the disease, but it is estimated that over 70% of scleroderma patients have subclinical cardiac abnormalities. Manifestations include fibrosis, myositis, conduction system abnormalities, coronary artery disease, pericarditis, and heart failure. Almost a third of deaths from SSC occur due to cardiac complications. **Objective:** To report a case of increased left ventricular (LV) thickness, with an appearance of impregnation and probable cardiac fibrosis, due to SSC. **Method:** Case follow-up during hospitalization, analysis of the medical record, and review of electronic databases Scielo, UpToDate, and PubMed. **Results:** A.C.L., male, 61 years old, with controlled hypertension, under rheumatology and pulmonology follow-up due to scleroderma and pulmonary hypertension, taking Prednisone, Methotrexate, and Losartan. A previous echocardiogram from 2022 indicated right ventricular (RV) enlargement with mild hypertrophy and significant pulmonary hypertension. An echocardiogram from July 2023 showed significant enlargement of the right chambers with RV dysfunction, PSAP 60 mmHg, mild pericardial effusion, and left ventricular dysfunction (ejection fraction of 48%), with moderate increase in wall thickness and an appearance of impregnation. **Conclusion:** Cardiac involvement in SSC can be divided into primary, when the involvement occurs through the disease's pathophysiological mechanisms, or secondary, when it occurs due to dysfunction of other organs, mainly renal and pulmonary. The impregnation appearance identified on the echocardiogram suggests primary cardiovascular damage, caused by aberrant deposition of extracellular matrix in the heart, a hypothesis awaiting confirmation through magnetic resonance imaging. Thus, the importance of early diagnosis of cardiovascular complications in SSC is evident, as cardiac involvement is the leading cause of death, necessitating symptomatic management and careful monitoring of disease progression.

**Keywords:** Heart failure; Complications; Diagnosis; Scleroderma; Systemic.

## ORIGINAL RESEARCH ABSTRACT

# Correlation between cardiac arrhythmia and conduction disorders mortality with the emergence of COVID-19 in Brazil: an ecological study

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## ABSTRACT

**Introduction:** Cardiac arrhythmias, characterized by heart rhythm alterations, pose a complex medical challenge and are among the leading causes of morbidity and mortality worldwide. With the onset of Covid-19 in Brazil in 2020, a new layer of complexity was added to the landscape. Analyzing the potential correlation between the pandemic and the increased mortality from cardiac arrhythmias and heart conduction disorders could contribute to enhancing the prevention, diagnosis, and treatment of these clinical conditions. **Objective:** Analyze Covid-19 infection waves potential association with increased mortality from cardiac arrhythmias and rhythm disturbances. **Methods:** Analyzed mortality data from the Brazilian Unified Health System's Hospital Information System (SIH/SUS), January 2017 to June 2023, correlating with Covid-19 infection waves in each region. **Results:** The findings reveal distinct trends in mortality rates from cardiac arrhythmias across different regions of Brazil during the considered years. A significant increase was observed starting from 2020, when the first Covid-19 cases were recorded in the country. The waves of infection correlated with spikes in arrhythmia-related mortality, particularly in the North, Northeast, and Midwest regions. Possible reasons for this surge may include the use of controversial medications, like azithromycin and hydroxychloroquine, which have potential arrhythmia-related side effects in treating Covid-19, and the fact that arrhythmias are a risk factor for Covid-19-infected patients. Hospital overload during critical pandemic moments and delays in seeking medical care during the pandemic might also have had negative impacts. Socioeconomic inequalities within regions could have contributed to a less effective response in these aspects. **Conclusion:** This study underscores the intricate interplay between the waves of Covid-19 infection and cardiac arrhythmias mortality. Considering regional inequalities and socio-economic factors in analysis is vital. Given the study's ecological nature, the bias of the ecological fallacy and limitations, such as the availability and quality of analyzed data, must be recognized.

**Keywords:** Cardiac Arrhythmia; COVID 19; Health Quality Management; Indicators of Morbidity and Mortality

## REVIEW ABSTRACT

# Cryoablation versus radiofrequency ablation for atrial fibrillation management in patients with left common pulmonary veins: a systematic review

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## ABSTRACT

**Introduction:** Cryoablation (CB) and radiofrequency ablation (RF) are the primary methods used for the interventional treatment of atrial fibrillation (AF). However, when it comes to patients with left common pulmonary veins, the exact results of these procedures are not clearly defined in existing literature. To the best of our knowledge, this is the first systematic review to evaluate outcome differences between CB and RF in this particular patient group. **Objective:** We aim to conduct a systematic review, examining data concerning CB and RF procedures in patients with a singular pulmonary vein trunk. **Methods:** A systematic review was performed in the databases Pubmed/MEDLINE, Scopus, and Web of Science, using the terms “atrial fibrillation”, “left common pulmonary veins”, “radiofrequency ablation”, “cryoablation” and similar keywords. The included papers were completely revised. **Results:** Five studies were included, comprising 538 patients in total. 234 patients were submitted to RF ablation, whereas 304 patients underwent CB. The mean procedure time of CB ablation was significantly lower in all five studies ( $p < 0.001$ ). Four out of five papers also identified a significantly lower mean fluoroscopy time in patients submitted to CB ablation ( $p < 0.001$ ). No studies found significant differences in the success rates of pulmonary vein isolation between the two techniques. While the post-procedure recurrence of AF did not differ between groups, one study pointed out that the incidence of pulmonary vein reconnection was lower among patients submitted to CB ( $p = 0.025$ ). Complication rates were similar between the analyzed groups. **Conclusion:** For patients with left common pulmonary veins undergoing interventional correction of AF, post-procedure AF recurrence and intraprocedural complications did not differ between the two techniques. However, CB presents a lower total procedure and fluoroscopy times and may be associated with a lower incidence of post-procedure pulmonary vein reconnection, when compared to RF ablation.

**Keywords:** Atrial fibrillation; Pulmonary veins; Radiofrequency ablation; Cryoablation.

## REVIEW ABSTRACT

# Breakfast skipping and late night dinner eating as a risk factor for cardiovascular disease: a systematic review

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## ABSTRACT

**Introduction:** Cardiovascular disease (CVD) stands as a prominent global cause of mortality. The focal point of extensive research lies in the prevention and mitigation of risk factors through lifestyle modifications. While the majority of published studies concerning the influence of dietary factors on CVD underscore nutritional components, recent evidence points to the significant role played by eating habits. Notably, consistent late-night dinner eating (LNDE) and breakfast skipping (BS) have emerged as noteworthy contributors to the development of CVD and its associated risk factors. **Objective:** Evaluate the impact of eating habits, such as BS and LNDE, as a risk factor for CVD. **Methods:** A systematic literature search was conducted across three databases, PubMed, Scopus and Wiley Online Library, using a combination of terms concerning “CVD” and “feeding habits”. Data collection occurred throughout July and August 2023. The inclusion criteria were observational study articles published in English within the past 10 years. Among 76 studies, 14 articles were selected as fitting the criteria chosen. The Newcastle-Ottawa Scale (NOS) was used to assess the quality of the studies, all of which demonstrated eligibility in accordance with the established criteria. **Results:** Studies show that LNDE and BS may be associated with an increase risk of various causes of CVD mortality, such as myocardial infarction, angina pectoris, stroke and heart failure [1]. Furthermore the association between BS and LNDE increases four to fivefold the likelihood of reinfarction and postinfarction angina after hospital discharge following myocardial infarction [2]. Complex abnormal eating behavior around sleep is also associated with an increased risk of obesity and insulin resistance both potential predictors for CVD such as myocardial infarction [3]. **Conclusion:** There is potential significance of eating behavior in the primary prevention of CVD. However, further studies are necessary to confirm and explore the underlying mechanisms of these findings.

**Keywords:** Cardiovascular Diseases; Feeding Behavior; Epidemiology; Preventive Medicine.

## CASE REPORT ABSTRACT

# Infectious endocarditis without entry port in congenital bicuspid aortic valve: case report

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## ABSTRACT

**Introduction:** Bicuspid aortic valve is the most common congenital heart disease. This condition may cause aortic stenosis and/or regurgitation associated with risk of infective endocarditis (IE). As for IE, interurrences can occur before, during and after treatment, covering systems, such as cardiac and neurological. **Objective:** A case report of a patient with congenital bicuspid aortic valve that evolved to IE without an identified port of entry, which caused the need of heart surgery. **Methods:** Data were collected from medical records about the case presented and a bibliographical survey from the last five years presented at UpToDate and PubMed databases, with the descriptors “endocarditis”, “bicuspid aortic valve disease” and “aortic valve insufficiency”. **Results:** Male, 20 years old, diagnosed with congenital bicuspid aortic valve, presented with fever, myalgia, headache, and diarrhea in January 2021, negative result for COVID-19. The symptoms persisted after treatment, evolving with Osler’s nodes and Janeway’s lesions in the hands, feet, and diastolic murmur in grade II/VI aortic focus. A transthoracic echocardiogram showed endocarditis in the aortic valve of undetermined background, presence of vegetation, small abscess in the upper portion of the valve and significant aortic regurgitation. Hemoculture revealed *Staphylococcus aureus* sensitive to oxacillin, whose antibiotic therapy aimed at stabilizing the condition for subsequent surgical intervention of valve replacement due to worsening by IE. After the surgery, the patient progressed with ischemic stroke (CVA) and heart failure (HF), requiring a new valve repair in the future. **Conclusion:** It is known that *S. aureus* infection increases the risk of HF, which is a common cause of the need for cardiac surgery in patients with IE after the condition has stabilized. Furthermore, 80% of patients with IE, ischemic cerebrovascular changes may occur, which, accompanied by unexplained fever, is an important sign for the diagnosis in patients with valvular disease.

**Keywords:** Bicuspid Aortic Valve Disease; Endocarditis; Aortic Valve Insufficiency.

## CASE REPORT ABSTRACT

# Percutaneous aortic valve implantation using valve-in-valve technique in a patient with severe aortic stenosis: a case report

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## ABSTRACT

**Introduction:** Aortic stenosis is characterized by degenerative processes affecting the aortic valve leaflets, leading to calcification and reduced valve caliber, increasing morbidity and mortality, especially in the elderly population with chronic systemic diseases due to the potential for cardiac and extracardiac complications. An alternative therapeutic option for patients with severe aortic stenosis and/or high surgical risk is transcatheter aortic valve implantation (TAVI), involving the surgical replacement of the deficient valve with a bioprosthesis via catheterization. **Objective:** To present a case of a patient with severe aortic stenosis and the management of Valve-in-Valve TAVI (ViV TAVI) performed at a hospital in Belo Horizonte. **Method:** A case report was developed through medical records and reports, supported by a bibliographic search in scientific articles from the Latindex, Cochrane, and PubMed databases between 2019 and 2023. **Results:** A 79-year-old male patient with a history of hypertension presented with exertional dyspnea in 2013 and was diagnosed with severe aortic stenosis with an ejection fraction (EF) of 68%. He underwent TAVI and developed postoperative atrial fibrillation, which became permanent. In 2021, he experienced syncope, dyspnea, diaphoresis, hypotension, and crepitant rales at the lung bases, consistent with cardiogenic shock. Preoperative transthoracic echocardiography revealed hypertrophied left and right atria, EF of 61%, hypertrophied and hypocontractile right ventricle, significant bioprosthesis reduction, mild aortic insufficiency, pulmonary systolic arterial pressure (PSAP) of 84 mmHg, and ascending aorta dilatation, with a EUROSCORE II of 43%. The case was discussed with the interventional cardiology and cardiovascular surgery teams, leading to the recommendation of a TAVI ViV transfemoral procedure, which successfully replaced the damaged valve. **Conclusion:** This case report highlights the efficient application of ViV TAVI with positive morphofunctional outcomes, including improved cardiac function, recovery of left and right ventricular functions, and an EF of 67.5%, indicating a successful procedure.

**Keywords:** Aortic Valve Stenosis; Transcatheter Aortic Valve Replacement; Heart Diseases.

## CASE REPORT ABSTRACT

# Subclavian steal syndrome as a differential diagnosis of chest pain: a case report

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## ABSTRACT

**Introduction:** Subclavian steal syndrome is the name given when a reversal vertebral blood flow occurs by stenosis or occlusion in the pre-vertebral subclavian artery, mainly due to atherosclerosis. It causes vertebrobasilar symptoms and/or arm ischemia. Atypically, in this case, there was chest pain. Doppler ultrasound is the gold standard for diagnosis and the preferred surgical treatment is angioplasty with stenting. **Case description:** A 59-year-old woman with left precordial pain radiating to the neck and paresthesia of the LUA, sought care and underwent cardiac screening tests, which came out negative. While in pain, she also had vertigo, headache, cold sweats and syncope. After physical examination, she had asymmetrical pulses, with no pulse in her left arm. She underwent Doppler ultrasound, which showed monophasic flow in the arteries of the LUA. Cervical angiotomography was requested and the syndrome was confirmed. The patient was referred to a vascular surgeon, who performed angioplasty of the left subclavian artery with placement of an 8x37 expandable balloon stent covering the entire occlusion area. Control arteriography after angioplasty showed re-established and normalized flow. In the immediate postoperative period, the patient had palpable, full and symmetrical pulses in both sides. She was discharged 24 hours after the procedure with dual oral antiplatelet therapy and still haven't returned. **Discussion:** Subclavian steal syndrome is an underdiagnosed condition. This syndrome has a predilection for the left side and it's male-biased. The symptoms are divided into 2 groups: upper limb ischemia and neurological symptoms. The diagnosis is made using pulsed Doppler. Treatment can be performed with revascularization surgery, percutaneous transluminal angioplasty and atherectomy. Percutaneous modalities show better results by reducing morbidity and mortality, and better long-term effectiveness. **Conclusion:** Subclavian steal syndrome also marks atherosclerotic disease, which is associated with coronary artery disease, highlighting the importance of proper diagnosis and treatment.

**Keywords:** Chest pain; Angioplasty; Ultrasonography, Doppler.

## CASE REPORT ABSTRACT

# Cardiovascular rehabilitation success following CABG: a case study based on ergospirometry assessment

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## ABSTRACT

**Introduction:** Cardiovascular rehabilitation following Coronary Artery Bypass Grafting (CABG) surgery has emerged as a favorable therapeutic modality for improving patients' functional capacity. Currently, the cardiopulmonary exercise test (CPET) is the gold standard for assessing this improvement. **Objective:** To report the success of cardiovascular rehabilitation in a patient with Coronary Artery Disease (CAD) after CABG surgery based on the results of CPET. **Method:** This case report was based on the collection of medical record data and cardiopulmonary test reports during and at the end of cardiovascular rehabilitation. **Results:** A 69-year-old non-smoking male with a history of CAD, undergoing outpatient follow-up after CABG surgery due to a coronary event involving the inferior and inferoseptal walls due to multivessel lesions. He initiated a scheduled 4-month cardiovascular rehabilitation program, three times a week, with a duration of 50 minutes per session. The sessions had a progressive increase in effort based on the patient's subjective perception. The first CPET, conducted after one month, revealed a peak  $\text{VO}_2$  of 2.06 L/min, corresponding to 73% of the estimated maximum. The anaerobic threshold was reached at a consumption of 1.47 L/min (71% of the estimated maximum) at a heart rate of 96 bpm. The final test of the program showed a maximum  $\text{VO}_2$  of 2.42 L/min, 85% of the predicted value, with the anaerobic threshold reached at 1.78 L/min (63% of the estimated maximum) at a heart rate of 101 bpm. This represented a 12-percentage-point improvement. **Conclusion:** Cardiopulmonary rehabilitation proved to be an excellent therapeutic strategy for restoring the patient's functional capacity, exceeding expectations described in the literature. This improvement was demonstrated by the analysis of  $\text{VO}_{2\text{max}}$  in a CPET with maximal effort criteria (Respiratory Exchange Ratio >1.1).

**Key words:** Cardiac Rehabilitation; Tertiary Prevention; Coronary Disease

## CASE REPORT ABSTRACT

# Multifactorial Chylomicronemia Syndrome: case report

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## ABSTRACT

**Introduction:** Chylomicronemia is the accumulation of chylomicrons in circulation and significant increase in plasma triglyceride concentration. The two forms of chylomicronemia on the Fredrickson Classification are: Familial Chylomicronemia Syndrome (FCS) and Multifactorial Chylomicronemia Syndrome (MCS). These are, respectively, prototypes of monogenic and polygenic conditions underlying severe genetically-based HTG and represent a differential diagnosis from each other. **Objective:** Reporting a case in which the diagnosis of MCS was fundamental, due to the increased cardiovascular risk caused by this condition. **Methods:** Medical records collected during the patient's hospitalization were analyzed and the approach taken by the assisting team was compared with the literature. **Results:** Female, 54-year-old, diagnosed with severe hypertriglyceridemia. She has carotid artery disease and Class III heart failure in progressive worsening. She denies prior pancreatitis and alcohol ingestion but has a history of hypertension and DMII. Her mother and brothers have a positive history of vascular diseases and dyslipidemia. On examination: BMI of 30.4 kg/m<sup>2</sup>, signs of lipodystrophy, phlebomegaly, without xanthomas. Laboratory tests results (mg/dL): TC 1,384, HDL 25, non-HDL-c 1359, TG 1965 LDL (Martin) 293. After optimized treatment, TG reduction < 20%. After the initial evaluation, she developed acute coronary syndrome and underwent coronary revascularization. The diagnosis of FCS was highly likely, with a score of 11 points. However, genetic testing for hypertriglyceridemia and pancreatitis revealed a pathogenic heterozygous variant in the LPL gene, indicating MCS as the right diagnosis. **Conclusion:** Pathogenic heterozygous variants in the LPL gene can lead to the presentation of HTG, such as MCS, and sometimes overlap phenotypically with FCS. Individuals with MCS may have an increased cardiovascular risk, partly due to associated non-communicable chronic diseases and may benefit from ApoC3 inhibition. Genetic diagnosis is crucial to guide proper management, based on control of traditional risk factors and more specific lipid-lowering therapies.

**Keywords:** Hypertriglyceridemia; Chylomicrons; Heart Disease Risk Factors.

## REVIEW ABSTRACT

# Cardiovascular health beyond caffeine consumption: a systematic review with meta-analysis

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## ABSTRACT

**Introduction:** Caffeine is a psychotropic drug which stimulates the central nervous system. Its consumption raises questions about its actual effects on the body. Studies point to benefits associated with a moderate intake profile (<400 mg/day), such as a lower incidence of coronary artery disease (CAD), acute myocardial infarction (AMI) and other cardiovascular diseases (CVD). **Objective:** Assess the impacts of caffeine on cardiovascular health. **Method:** A search was conducted in the PUBMED by MEDLINE database, with the main search criterion being the study design, including clinical trials, meta-analyses, and prospective cohort studies. Initially, 20 articles were selected, but 9 of them didn't meet the scope of the work. **Results:** The analysis showed a decrease in mortality risk by 7% to 23% (RR=0.85, 95%CI=0.77, 0.93) and incidence (I<sup>2</sup>=59.6%, P=0.01) of CVD for consumption up to 4 cups/day of coffee, compared to non-consumers, while higher intake wasn't associated with any lower risk. However, consumption of ≥4 cups per day increased the risk of CVD in already hypertensive patients (HR=4.5; 95% CI: 1.4, 14.2). For the incidence of CAD, an 18% reduction (95% CI) was identified in women (0.73–0.92) (p<0.001) and 13% (0.80–0.86) (p=0.001) in men and women followed for ≤10 years. **Conclusion:** Consumption up to 400mg/day of caffeine reduces the risk of CVDs and isn't associated with cardiovascular toxicity. Higher values of consumption, in patients with CVDs, worsen heart conditions. Therefore, coffee, when consumed within a moderate profile, can be considered a safe beverage associated with cardiovascular benefits, and its consumption is inversely proportional to the incidence of these heart conditions up to the limit established by the moderate profile.

**Keywords:** cardiovascular disease; coronary artery disease; caffeine; coffee; heart.

## CASE REPORT ABSTRACT

# Electrocardiographic signal of “shark fin”: a predictor of severe coronary injury

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## ABSTRACT

**Introduction:** The electrocardiographic pattern known as the “Shark fin,” also referred to as the lambda wave or giant R waves. It is formed by the merging of QRS waves, ST segment, and T waves and is associated with ST-segment elevation acute myocardial infarction, most commonly involving the occlusion of the left coronary artery. It leads to high risk of death due to cardiac arrest (CA) and cardiogenic shock. This alteration can easily be confused with other conditions such as wide complex tachycardia and changes associated with hyperkalemia.

**Objective:** Reporting a case in which the discovery of the shark fin pattern prompted the appropriate diagnosis and treatment. **Methods:** The medical records collected during the patient’s hospitalization were analyzed, and the approach taken by the assisting team was compared with the current literature. **Results:** Male, 59 years-old, active smoker, brought to the emergency due to a sudden consciousness’ loss. He was diagnosed with a CA that led to resuscitation efforts until spontaneous circulation was restored. Afterwards he was transferred to a tertiary hospital, where he was admitted, intubated and underwent general examinations. He clinically improved and was extubated after 3 days, being discharged without a definitive diagnosis of the cause of the CA. During an ambulatory Holter monitor test, significant ST segment changes were observed, suggesting sudden ischemic injury with an electrocardiographic pattern of “Shark fin”. Echocardiogram showed no evidence of left ventricular dysfunction. Coronary angiography was requested, revealing a critical 95% stenosis in the circumflex artery. A successful pharmacological stent implantation was performed angiographically. **Conclusion:** The “Shark Fin” is characterized by a high-risk giant wave associated with a significant myocardial ischemic burden. This pattern is associated with occlusion/subocclusion of the left coronary artery or its proximal branches, and its diagnosis is essential to a precise patient’s management.

**Keywords:** Electrocardiografia; Heart Arrest; Shock, Cardiogenic.

## CASE REPORT ABSTRACT

# The importance of optical coherence tomography in defining the etiology of Acute Coronary Syndrome

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## ABSTRACT

**Introduction:** The etiological diagnosis of Acute Coronary Syndrome (ACS) is challenging, besides the use of invasive methods. Coronary Optical Coherence Tomography (OCT) demonstrates a favorable cost-benefit ratio in cases where coronary angiography alone fails to determine the causal factor of ACS. **Objective:** Reporting a case in which the use of OCT was decisive for the etiological diagnosis and treatment of ACS. **Methods:** The case report was based on medical records collected during the patient's hospitalization. **Results:** Female, 71-years-old, former smoker of 60 pack-years, admitted to a secondary hospital with a diagnosis of ST-segment elevation acute coronary syndrome in leads V5-V6, DI and AVL. Antithrombotic therapy and fibrinolysis were administered and the patient was transferred to a tertiary hospital for rescue catheterization due to the absence of reperfusion criteria. Admitted 8 hours after symptom onset, hemodynamically stable, asymptomatic while on nitroglycerin infusion. Underwent coronary cineangiography revealing an image suggestive of thrombus near the origin of the first diagonal branch of the left anterior descending coronary artery (LAD). Opted for full anticoagulation along with aspirin and clopidogrel for a week and a subsequent study showed LAD with mild stenosis and persistence of a negative image in the diagonal branch. After three weeks, underwent another catheterization using OCT in the LAD, revealing a ruptured thin-cap fibroatheroma. Successful angiographic-guided coronary angioplasty of LAD was performed with a drug-eluting stent. **Conclusion:** OCT demonstrates high accuracy in characterizing coronary artery diseases, including stenotic plaques. Depending on their characteristics, even subtle plaques can be unstable, carrying the risk of rupture or erosion leading to ACS. It is estimated that 25% of ACS cases are caused by plaques with less than 50% luminal obstruction. In this case, the use of the adjunct imaging method was crucial to recognize and evaluate the origin of the thrombus, enabling appropriate intervention.

**Keywords:** Coronary Angiography; Coronary Artery Disease; Diagnostic Techniques and Procedure

## CASE REPORT ABSTRACT

# Importance of optical coherence tomography in approaching suspected lesion in a patient with acute coronary syndrome

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## ABSTRACT

**Introduction:** Optical Coherence Tomography (OCT) provides high-resolution data of coronary anatomy, enabling quantitative and qualitative analysis of lesions and facilitating planning of percutaneous coronary intervention, as well as optimization following stent implantation. **Objective:** Reporting the case of a patient with an intermediate lesion, considered non-culprit in the acute phase of myocardial infarction. **Methods:** The case report was based on medical records collected during the patient's hospitalization. The approach taken by the assisting team was analyzed and compared with the literature. **Results:** A 59-year-old obese diabetic patient presented with typical angina and hypotension. An electrocardiogram revealed ST-segment elevation in leads DII, DIII, avF, and ST-segment depression in leads DI and avL. Thrombolysis with Alteplase was chosen, and during the procedure, the patient experienced a shockable cardiopulmonary arrest that was successfully reversed. A coronary cineangiography was performed, revealing 70% lesions in the anterior descending artery (ADA) and mid-segment of the circumflex artery (CXA), and 80% at the right coronary ostium (RCA). The patient underwent angioplasty of the ACD with the implantation of two drug-eluting stents. During the hospitalization, another angioplasty was performed, and a drug-eluting stent was implanted in the ADA. The case was selected for OCT to better evaluate the intermediate lesion in the ACX. The imaging method revealed a ruptured thin-cap fibroatheroma measuring 36mm in length, prompting a reconsideration of the culprit artery in the acute event. Two drug-eluting stents were successfully implanted without complications. **Conclusion:** The complementary use of imaging methods is crucial in managing intermediate coronary lesions, which present a challenging scenario. In the reported case, additional propaedeutic was required, and the OCT played a crucial role in treatment determination. Thus, a retrospective analysis prompts to question whether the lesion treated at a later stage might not have been the actual cause of the initial acute event.

**Keywords:** Percutaneous Coronary Intervention; Coronary Angiography; Coronary Artery Disease

## REVIEW ABSTRACT

# Primary complete repair versus palliation in complete atrioventricular septal defect: a systematic review

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## ABSTRACT

**Introduction:** Complete atrioventricular septal defect (CAVSD) is a congenital heart disease characterized by a common atrioventricular junction in which pulmonary overflow is the main pathophysiology feature. The standard treatment is complete repair performed between 3 and 6 months of age. In highly symptomatic children, earlier intervention may be required. This can be achieved by primary complete repair or by initial pulmonary artery banding (PAB), creating a partial obstruction at the main pulmonary artery to diminish pulmonary overflow. **Objective:** Compare both treatment approaches in children with CAVSD, evaluating repercussions, reoperation and mortality rates. **Methods:** This article is a systematic review using Pubmed, Google Scholar and Scielo databases. The inclusion criteria were articles published between 2003 and 2023, in Portuguese, English and Spanish, resulting in 41 articles. The exclusion factors used were: duplicate articles and opinion articles. Based on the article main subject, the inclusion and exclusion criteria, 10 articles were selected. **Results:** Complete AVSD repair in neonates has been reported to have great outcomes, however current data demonstrate increased mortality and major complication rates in younger and lower-weight infants undergoing corrective surgery. For those patients, PAB is shown as a viable method to prevent pulmonary overflow and to bridge them to complete repair. Nevertheless, Fong and colleagues correlated PAB in children under 3 months with a higher number of long-term deaths ( $P = 0.039$ ). Also, Pontailier's article admits PAB as a risk factor for left atrioventricular valve reoperation ( $P = 0.029$ ), consequently increasing mortality ( $P = 0.027$ ). These results indicate a lack of consensus between the outcomes of each intervention. **Conclusion:** Present results regarding early primary repair and palliation using PAB are divergent. This indicates that the decision of primary approach should be made according to each Hospital's team experience and patient's clinical conditions.

**Keywords:** Pulmonary artery, Complete Atrioventricular Septal Defect, Corrective surgery

## REVIEW ABSTRACT

# Diagnostic utility of admission brain natriuretic peptide in distinguishing Takotsubo Syndrome from Acute Myocardial Infarction: a systematic review and meta-analysis

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## ABSTRACT

**Introduction:** The reliable distinction between Takotsubo Syndrome (TTS) and Acute Myocardial Infarction (AMI) in the emergency department is challenging, but the use of biomarkers may improve this differentiation.

**Objectives:** To assess the diagnostic utility of brain natriuretic peptide (BNP) levels at admission as a biomarker for distinguishing TTS from AMI. **Methods:** A systematic review was conducted by searching the databases PubMed/MEDLINE, Scopus, and Web of Science. The search terms included “Takotsubo syndrome”, “Acute myocardial infarction”, “Brain Natriuretic Peptide” and similar keywords. A subsequent meta-analysis was performed using the random-effects model and the inverse variance method in RevMan v5.3, with significance set at  $P < 0.05$ . **Results:** Four studies were included, comprising 1517 patients. Among these, two studies distinguished between ST-elevation myocardial infarction (STEMI) and non-ST-elevation myocardial infarction (NSTEMI) cases. One study exclusively included STEMI patients within the AMI group, while the fourth paper did not subdivide the AMI group. In total, 542 patients exhibited TTS, whereas 975 had AMI, with 519 categorized as STEMI and 359 as NSTEMI. Admission BNP levels were significantly higher in the TTS group compared to the AMI group (531.90 [95%CI 411.45-652.34] vs. 112.79 [95%CI 73.05-152.53], in pg/mL,  $p < 0.0001$ ). Similarly, admission BNP levels were elevated in the TTS group if compared to both the NSTEMI (531.90 [95% CI 411.45-652.34] vs. 145.55 [95%CI 49.23-241.88], in pg/ml,  $p < 0.0001$ ) and STEMI (531.90 [95%CI 411.45-652.34] vs. 137.53 [95%CI 32.84-242.21], in pg/mL,  $p < 0.0001$ ) groups. **Conclusion:** This systematic review with meta-analysis for the first time showed compelling evidence that BNP at admission may be able to discriminate between TTS and AMI, regardless of ST elevation.

**Keywords:** Takotsubo syndrome; Myocardial infarction; Natriuretic Peptide, Brain; Biomarkers.

## CASE REPORT ABSTRACT

# Fetal echodopplercardiogram as a diagnostic tool for total anomalous drainage of pulmonary veins: a case report

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## ABSTRACT

**Introduction:** The total anomalous pulmonary venous drainage (TAPVD) accounts for 2% of congenital heart diseases (CHD) and it is characterized by failure of the connection between the pulmonary veins and the left atrium. Early identification is a challenge for pediatric cardiologists, since only 12% are prenatally diagnosed. The treatment is surgical, carried out in the first days of life. **Objective:** To report a case of rare CHD early diagnosed. **Methods:** Qualitative analysis of medical records and examination reports, associated with a bibliographic review in Pubmed and EBSCO databases. 25 articles were analyzed, 7 were selected. **Results:** A 39-year-old pregnant woman, G2 P1, with previous hypertension, hypothyroidism, hypercholesterolemia and diabetes underwent a fetal morphological ultrasound that showed no alterations. However, the fetal Doppler echocardiogram, at 31 weeks and 2 days, demonstrated moderate aortic stenosis, persistence of the left superior cava vein draining into the coronary sinus and TAPVD. The diagnosis was confirmed in another exam performed at 35 weeks. Later it was requested that the fetus had to be assisted in a reference center. Studies have shown that one early diagnosis is of the main strategies for the treatment of TAPVD, which depends on available technology, the sonographer's expertise, screening policies and access to services. Fetal Doppler echocardiography is an excellent method, but it has limitations due to access and availability of professionals. Early detection makes it possible to refer the case to a specialized center, providing birth planning and therapies in the first hours of life, but despite this the mortality is high. **Conclusion:** TAPVD is a rare CHD, but it has a high morbidity, therefore, prenatal diagnosis is extremely important for the management of cases, with the aim of obtaining favorable outcomes. Training of professionals and ensuring the availability of Doppler echocardiograms are necessary for early identification.

**Keywords:** Cardiovascular Abnormalities; Heart Defects, Congenital; Echocardiography