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109886

MODALITY: E-POSTER YOUNG RESEARCHER - NON-CASE REPORT
CATEGORY: CARDIOVASCULAR IMAGING

TITLE: ASSESSMENT OF MYOCARDIAL STRAIN IN AORTIC STENOSIS

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Aortic stenosis (AS) is the most common primary valve disease in the US and Europe. The gold standard diagnosis of AS is to perform an echocardiogram (ECO) and the measurements to classified the severity are: maximum jet velocity (Vmax), maximum and mean transvalvular pressure gradient (GM) and aortic valve area by the continuity equation. The myocardial strain assessment through the global longitudinal strain (GLS) is one of the most promising techniques for the early detection of reduced left ventricular ejection fraction (LVEF) and has become useful in AS scenario by correlating with the severity of AS. The GLS is a technique to assess the myocardial deformation suffered by myocardial fibers through Speckle tracking (normal value is below -18%). Several studies have already shown that the reduction in GLS precedes the decrease in LVEF, with relative reductions of 15% in GLS predicting a subsequent decrease in LVEF. This study aims to detect early changes in ventricular systolic function not only based on LVEF by Simpson's method, but also through the assessment of the GLS in the AS and to correlate the pattern of changes in the GLS with the degree of stenotic impairment observed. General objective: Assess global and segmental LV systolic function through myocardial strain in aortic stenosis. Secondary objectives: Characterize the distribution pattern of the GLS in the AS; correlate the degree of AS with the myocardial GLS; correlate LVEF by Simpson's method and GLS. Methods: This is an observational, descriptive, cross-sectional study. Results: A total of thirty patients were obtained, with a prevalence of 33% of major AS, 36.7% of moderate AS, 16.7% of mild AS and 13.3% of paradoxical AS was evidenced. An inverse relation between the severity of the AS and the GLS could be seen, that is, the more severe the stenosis, the lower the GLS value. We observed an average GLS in important AS of -17.6%, in moderate AS of -18.86%, in mild AS of -19% and in paradoxical AS of 16.85%. Regarding the pattern of segmental distribution of GLS values, there was a greater involvement of the mid-basal segments than the apical segments of the LV. Conclusion: The present study suggest a progressive impairment of LV systolic function assessed by the GLS as the severity of AS progresses, even though there is no direct impact on the LVEF measurement what can be primordial on the decision of early valve replacement despite the severity of AS founded on ECO.

109890

MODALITY: E-POSTER YOUNG RESEARCHER - NON-CASE REPORT
CATEGORY: HEART FAILURE/ CARDIOMYOPATHY/ TRANSPLANT

TITLE: ALCOHOL ABLATION VERSUS SURGICAL MYECTOMY IN THE TREATMENT OF OBSTRUCTIVE HYPERTROPHIC CARDIOMYOPATHY: A SYSTEMATIC REVIEW USING THE PRISMA METHOD.

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Introduction: Alcoholic septal ablation (ASA) consists of a selective infusion of high-grade alcohol in a septal branch that supplies the basal interventricular septum. It is a technique used as an alternative to surgical myectomy in obstructive hypertrophic cardiomyopathy (HOCM). The procedure seeks to create an iatrogenic infarction and, as a consequence, reduce left ventricular outflow tract (LVOT) obstruction. AAS has been improved over time, with benefits similar to myectomy. Objective: To analyze the benefit of treating hypertrophic obstructive cardiomyopathy with alcohol septal ablation as an alternative to myectomy. Methodology: This is a systematic review following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses – PRISMA methodology. The literature search was carried out between January and February 2022, using the Scientific Electronic Library Online (SciELO), PubMed and Latin American and Caribbean Literature (Lilacs) databases. Thirty-three articles were selected, in English and Portuguese, excluding those that did not fit the objectives of this review and the methodological recommendations. The filters used were "human" and "published in the last 10 years". The descriptors used were "obstructive hypertrophy cardiomyopathy", "myectomy" and "alcohol ablation". Results: Rigopoulos et al., found that threatening arrhythmic events seem to be rare after ASS and occur more in patients with an estimated very high risk of sudden death. One study confirmed these findings, finding ventricular tachyarrhythmia or 30-day sustained ventricular fibrillation in only 7% of patients. ASS is a therapeutic alternative in patients with advanced age or comorbidities and showed shorter hospital stay and reduced post-procedure pain. Naidu et al., concluded that ASS results were similar to those of myectomy up to 8-10 years, in 90% of patients, showed to be able to reduce LVOT and relieve symptoms. Another relevant finding was the need for experienced services to perform SSA so that complications are less and the greatest therapeutic effects. Conclusion: AAS has become an alternative to myectomy that can be considered in carefully selected patients. Data show similar functional and hemodynamic benefit to myectomy, in addition to shorter hospital stay, reduced pain and associated complications.

109942

MODALITY: E-POSTER YOUNG RESEARCHER - NON-CASE REPORT
CATEGORY: COVID-19 AND CARDIOVASCULAR SYSTEM

TITLE: DECREASED T3 LEVELS AS A MARKER OF CLINICAL WORSENING IN PATIENTS WITH SARS-COV-2 AND ITS CORRELATION WITH SERUM TROPONIN AT DIAGNOSIS - A RETROSPECTIVE COHORT STUDY

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Introduction The SARS-COV-2 pandemic had a great impact on the morbidity and mortality of affected patients. T3 has a direct impact on cardiomyocytes, causing myocardial injury in patients with SARS-COV-2. Clinical observations have revealed a relatively high (up to 64%) prevalence of sick euthyroid syndrome among COVID-19 patients, with some exhibiting a profound decrease in thyroid hormone levels. We know that low levels of T3 in sick patients occur early, correlate with disease severity, and that normalization of hormone serum concentrations is related to clinical recovery. Objective The objective of the study is to describe the changes in thyroid hormones present in patients diagnosed with COVID-19. The primary outcome of the study is to assess the relationship between T3 levels and the degree of cardiac involvement. Methods Samples from PCR positive patients for COVID-19 who were referred for admission to the ward or clinical ICU of a tertiary hospital were included. Serum samples stored in the COVID-19 biobank at Hospital de Clínicas de Porto Alegre were used. Half of the samples collected in the year 2020 and half collected in the year 2021 were requested. In the requested serum, T3 levels were measured on arrival at the hospital and around day 7 of hospitalization. Results The number of patients enrolled in the study was 119. The mean age of patients was 61±29 years. About 31.09% of the patients in the study died and 68.90% were discharged from the hospital. Among patients who died, T3 on the 1st day of hospitalization had a mean of 52.01±16.48 and among patients who were discharged, the mean T3 on the first day of hospitalization was 62.25±22.14. On arrival at the hospital, among those who died, the mean troponin was 823±152 and among those who were discharged was 176±34.5. The T3 levels on the 7th day of the patients who died had an average of 42.66±7.22 and of those who were discharged it was 60.98±21.53. Conclusion: The study seeks to evaluate two tests that are relatively possible to obtain in patients admitted to hospitals of great complexity in the context of the COVID-19 pandemic, with the objective of helping medical teams in taking conducts and evaluating the prognosis of these patients. It is possible to infer that patients who have T3 levels below 50 have a higher risk of death associated with elevated troponin values, regardless of other clinical factors.

112331

MODALITY: E-POSTER YOUNG RESEARCHER - NON-CASE REPORT
CATEGORY: CARDIAC ARRHYTHMIAS/ ELECTROPHYSIOLOGY/ ELECTROCARDIOGRAPHY

TITLE: A NEW MACHINE LEARNING-BASED MODEL FOR RISK STRATIFICATION OF PATIENTS UNDERGOING VENTRICULAR TACHYCARDIA ABLATION

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Background: Monomorphic ventricular tachycardia (VT) is a life-threatening condition. Catheter ablation is an effective treatment method for many patients, but significant variability is observed in postprocedural mortality, due to the high burden of comorbidities and other factors. Therefore, there is a high need for an accurate risk stratification system. Aim: We sought to implement a machine learning pipeline to predict 1-year all-cause mortality in patients undergoing VT ablation. Methods: For 265 consecutive VT ablation patients at our center, we processed procedural, demographic and medical history data, their laboratory and echocardiographic findings (63 parameters). To predict 1-year all-cause mortality, several supervised machine learning models were trained and evaluated using 5-fold cross-validation with applying recursive elimination to identify the optimal subset of input features. We quantified their performance with the area under the receiver operating characteristic curve (AUC); we identified the most important predictors by Shapley values. Finally, we used topological data analysis to visualize patient subgroups with different mortality risks. Results: 57 (22%) patients died during the 1-year follow-up. The best predictive performance was achieved by a random forest model with 18 input features [AUC: 0.73 (95% CI: 0.68-0.78)], which significantly outperformed previously published risk scores (LVT [AUC: 0.63 (95% CI: 0.55-0.70), p<0.001], PAINESD [AUC: 0.63 (95% CI: 0.55-0.71), p=0.009]). The most important predictors were mitral E-wave deceleration time, cardiac resynchronization therapy, age, electrical storm, and hemoglobin concentration. In the topological network based on the input features of the above model, we identified five groups with differing clinical characteristics and mortality rates (Figure).Conclusions: Our machine learning model could effectively predict 1-year all-cause mortality in VT ablation undergo. Thus, it facilitates the identification of high-risk patients and the personalization of treatment and follow-up strategies, ultimately leading to improved outcomes.

