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ECHOCARDIOGRAPHIC STRAIN IMAGING TO ASSESS IMMEDIATE AND SHORT TERM EFFECTS OF SUCCESSFUL PERCUTANEOUS BALLOON MITRAL VALVOTOMY ON LEFT ATRIAL AND RIGHT VENTRICULAR MECHANICS

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Background: Strain imaging for Left atrium and Right Ventricle have been used as a novel assessment tool to evaluate their functional status. However, their implication is not fully established regarding the effect of percutaneous balloon mitral valvotomy (BMV) in patients with rheumatic severe mitral stenosis. In the present study, we sought to assess the Global LA Strain and RV Strain in patients undergoing BMV procedure and to assess its effectiveness as a marker of Successful BMV in a tertiary care centre.

Methods and results: It is an observational study and was conducted in a tertiary health care centre of North India from the Year 2018 to 2020. 66 consecutive patients with suitable mitral valve anatomy for BMV procedure were taken, out of which 52 patients underwent successful BMV procedure and finally 38 patients could be followed up till 3 months. Global LA strain and RV Strain were being calculated using special software (GE Healthcare, ECHO PAC Version 203) at three temporal sequences for each patient and were statistically analyzed. The mean age of the study population (n=38) was 31.63 ± 10.15 years and 55% were females. Global LA strain was impaired in patients with severe mitral stenosis and improved both at 24 hrs and 3 months following BMV (-10.09± 5.7% vs -13.83± 6.6% vs -17.33± 6.6%, p < 0.001). There was a significant decrease in mitral mean gradient (MV MG) (17.36 ± 3.5 mmHg vs 9.30± 3.1 mmHg vs 7.15± 3.1 mmHg, p < 0.001) and RV Systolic Pressure (RVSP) (72.71± 12.83mmHg vs 50.72± 12.25 mmHg vs 34.28± 11.5, p < 0.001) after BMV. There was a significant negative correlation between RV strain and RVSP (Pearson r = -0.4462, P value < 0.0050).

Conclusions: Global LA and RV strain can be considered as an indicator of respectively left atrial and Right ventricular function, and its improvement may be taken as a good indicator of successful BMV.

Machine Learning Based Diagnosis of Heart Failure with Preserved Ejection Fraction among South Asian Patients

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Background: Diagnosis of Heart Failure with preserved Ejection Fraction (HFpEF) remains challenging even for an astute clinician with the current diagnostic tests, algorithms and scoring systems. The use of Machine Learning (ML) in cardiovascular research has expanded exponentially in recent years. In this study we studied the predictive accuracy of a machine-learning model for the diagnosis of HFpEF in South Asian patients.

Methods and Results: A single center retrospective data of 1068 admitted patients with a clinical diagnosis of HF were obtained. From this data outliers were removed based on box-and-whisker plot study. This data was then segregated into three: without HF, HF with reduced ejection fraction and HFpEF. Finally, we arrived at 530 patients’ data with left ventricular ejection fraction (LVEF) values of >45%. This data set was randomly divided into two parts: 80% as Training dataset and 20% as Test dataset. Two ML techniques such as Logistic Regression and Neural Networks were chosen to build the prediction models. Orange Data Mining Software version 3.28 was used to build these models. The overall performance of the ML methods has been reported using Precision, Recall and F1 scores (F1 score is the harmonic mean of precision and recall; measure that combines precision and recall).

The table summarizes precision, recall and F1 score of both models. The predicted results from the ML models are compared with HFA PEFF score. The details will be discussed in the presentation.
and cytokine induced myocardial injury. However, they are usually associated with severe COVID-19 disease, associated comorbidities and elevated inflammatory markers. Endotheliopathy, hypercoagulable state and cytokine storm impose an additional risk of thrombosis. In contrast to other viruses, COVID-19 myocarditis involves direct myocardial injury with macrophage predominance and myocyte necrosis and may present as STEMI mimics in ECG.

**Methods and Results:** A 53yr female, asymptomatic, with no comorbidities, was detected COVID-19 positive on family screening. Her electrocardiogram (ECG) showed diffuse ST segment elevation with T inversion in V2-V6. Echocardiogram showed hypokinesia of anterior wall of left ventricle (LV) with huge, apical LV clot of of 2.9x1.9cm, ejection fraction of 42%, with minimal pericardial effusion. Her CKMB (72.8 ng/mL), Troponin I (0.9ng/mL), d dimer levels (1471.6 ng/mL) were elevated with mildly elevated CRP (17.8 mg/L) and LDH (677 IU/L). Ferritin and IL-6 were within normal limits. CT chest showed mild peripheral ground glass opacities. She was diagnosed as case silent myocardial infarction and treated conservatively with heparin, anti-platelets, statins, beta blockers and ACE inhibitors, later switched to oral anticoagulation. Low dose steroid for 3 days was given in view of lung involvement. Coronary angiogram done 3 weeks later showed normal coronaries.

**Conclusion:** In acute COVID setting differentiating coronary versus NCMI is a Herculean task. STEMI mimics in ECG during COVID is well reported but Echo also misleads as seen in our case and imposes a higher risk for bleeding from thrombolysis and invasive procedures. Role of microvascular disease can still be a possibility in this case of asymptomatic COVID-19 disease, necessitating need for further studies in the field of NCMI. Direct myocardial and endothelial injury by SARS-CoV-2 is still possible without significantly elevated inflammatory markers as in this case. Cardiovascular complications are possible even in mild or asymptomatic COVID-19 illness and thus go unrecognised initially, which necessitates screening during acute setting and after recovery.

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**A RARE CASE OF CEREBELLAR INFARCT SECONDARY TO LEFT ATRIAL MYXOMA**

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**Background:** Atrial myxomas are the most common type of primary cardiac tumor, which is mostly sporadic, but some are familial. Most are solitary and located in left atrium arising from interventricular septum near fossa ovalis, with an incidence of surgically resected cases of 0.5 – 0.7 per million population and prevalence of <5 per 10,000. Typically manifests in a woman after third decade of life, with a variable presentation mimicking mitral valve disease and may present with arrhythmias, intracardiac flow obstruction, embolic phenomenon and associated constitutional symptoms. Neurologic complications include cerebral infarct due to embolus, cerebellar involvement is very rare

**Methods and Results:** A 45Y old male patient with no comorbidities presented with dyspnea on exertion since 5 months, palpitations and pedal edema since 2 weeks. His past history reveals a decompressive craniotomy for posterior fossa 20 months back for B/L cerebellar infarct (Left-Right). On examination, there was a rough rumbling low pitched mid-diastolic murmur at the apex, a high pitched pan systolic murmur in tricuspid area and an early diastolic low-pitched sound just after the S2. Patient also had uncoordinated body movements with tilting towards left, ataxia and intention tremors since 20 months. Echocardiography showed dilated cardiac chambers, severe tricuspid regurgitation and pulmonary arterial hypertension and a large myxoma of size 8x3 cm attached to the interatrial septum which is causing a functional MS. Patient was taken up for surgery with excision of LA myxoma along with mitral and tricuspid valve repair.

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**Fig. A. Echocardiogram Showing Apical LV Clot. Fig. B & C. Coronary Angiogram Showing Normal Epicoronaries.**

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