

## Prognostic value of myocardial performance index assessed by tissue Doppler imaging in acute STEMI patients undergoing reperfusion therapy

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**Background:** The Tei index of myocardial performance (MPI), which combines parameters of both systolic and diastolic ventricular function, is a useful prognostic factor in many clinical settings. This study was done to assess the long-term prognostic value of MPI in patients discharged from hospital after acute myocardial infarction (AMI) and to determine an optimal cut off value for MPI to predict patients at risk of future cardiovascular events.

**Methods:** Clinical, Echocardiographic, Doppler parameters were recorded from 201 patients between Day 3 and Day 5 post STEMI. MPI was calculated using Tissue Doppler Imaging as the sum of Isovolumetric Contraction Period and Isovolumetric Relaxation Period divided by Ejection Time. Patients were followed for minimum 200 days post discharge.

**Results:** During follow up period there were 42(21%) Major Adverse Cardiovascular Events (MACE) defined as 6 (3%) deaths, 24 (12%) heart failure admissions, and 12(6%) admissions for acute coronary syndrome. After multivariate analysis by logistic regression  $MPI \geq 0.55$ ,  $E/E' \geq 15$  were found to be significant predictor of MACE. (OR-6.54; 95%CI-2.1-21.5; p value-0.001) (OR-3.321; 95%CI-1.141-9.669; p value-0.028). In a subgroup of patients with preserved ejection fraction (LVEF >40%) MPI was found to be a significant predictor of MACE. Area Under ROC Curve (AUC) for MPI in predicting MACE was found to be 0.845. Optimal cutoff point for MPI in predicting MACE was found to be  $\geq 0.54$  (85.7 % sensitive and 76.3 % specific).

**Conclusions:** The Tei index of myocardial performance (MPI) assessed by Tissue Doppler imaging (TDI), is a useful tool for risk assessment in patients following myocardial infarction, and in a subgroup of patients with normal or only mildly impaired systolic function. A cut-off value of  $\geq 0.54$  should be used to identify patients at risk for future cardiovascular events.

## Correlation of echocardiographic epicardial fat thickness with severity of coronary artery disease – An observational study

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**Background:** Epicardial adipose tissue is true visceral fat deposited around the heart, particularly around subepicardial coronary vessels. While little is known about the pathophysiologic and metabolic roles of epicardial fat, it has been implicated in the development of coronary atherosclerosis. Recent reports have shown that epicardial adipose tissue expresses numerous genes for cytokines and proteins associated with atherosclerosis.

**Objectives:** To study the correlation of epicardial fat thickness assessed by 2D echo with severity of coronary artery disease.

**Methods:** The study included sixty five consecutive patients of Kasturba hospital, Manipal who underwent echocardiography

and diagnostic coronary angiography from June to September 2013. The epicardial fat thickness on the free wall of the right ventricle was measured at end-systole from the parasternal long and short-axis views of 3 consecutive cardiac cycles. Coronary angiograms were analyzed for the extent and severity of coronary artery disease using Gensini's score.

**Results:** The patients with a higher epicardial fat thickness were associated with a higher Gensini's score although the p value was not found to be significant ( $p=0.104$ ). The univariate analysis part of the study concludes that epicardial fat and CAD are significantly associated (sax,  $p<0.016$ ), (plax,  $p<0.040$ ). Multivariate analysis showed that age (odds ratio (OR) 1.25,  $p=0.022$ ), epicardial fat thickness (OR 0.31,  $p=0.293$ ), diabetes (OR 6.59,  $p=0.148$ ) and smoking (OR 14.12,  $p=0.130$ ) were independent factors affecting significant coronary artery stenosis.

**Conclusions:** The univariate analysis part of the study concludes that epicardial fat and CAD are associated (sax,  $p<0.016$ ), (plax,  $p<0.040$ ). However after adjusting for other covariates, this association was not found to be significant.

## A study of ventricular function in patients with mitral stenosis – Pre and post BMV using newer echo techniques

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**Background:** Mitral stenosis (MS) is a narrowing of the mitral valve orifice, which results in increased impedance of filling of the LV in diastole. Mitral stenosis causes substantial morbidity worldwide and is more prevalent in the developing countries where the incidence of RHD is high. Percutaneous balloon valvuloplasty (BMV) is the treatment of choice in patients with a favourable valve morphology. Mitral stenosis results in increased left atrial and pulmonary venous pressure as well as impairment of ventricular function. TDI, strain and strain rate echocardiography is a technique for assessing myocardial systolic and diastolic function both globally and regionally.

**Aim:** To compare the biventricular function in pre and post balloon mitral valvotomy patients by newer echocardiographic indices and to assess its utility as a direct myocardial parameter for identifying abnormal diastolic function and its response to therapy.

**Methods:** 37 patients who underwent BMV were assessed by 12 lead ECG and Echocardiography. TDI, strain and strain rate were enhanced and recorded to look for ventricular functional changes.

**Results:** The present study included 37 patients who underwent balloon mitral valvotomy. Tissue velocity ( $E'$ ) of lateral wall, inferior wall and posterior wall was found to be increased soon after a successful BMV. Data analysis was done with the SPSS software using the paired sample test. The results showed a statistically significant improvement of ventricular performance ( $p<0.05$ ). The RV (right ventricle) strain and strain rate showed significant improvement in post BMV patients ( $p<0.05$ ).

**Conclusion:** Our study demonstrated significant improvements in Tissue Doppler velocities of left ventricle after a successful balloon mitral valvotomy. Newer echocardiographic indices like tissue Doppler, strain and strain rate imaging play an important role in the assessment of right and left ventricle function. Hence, strain and strain rate can quantify the improvement of right ventricular function after balloon mitral valvotomy.