subset of patients. In recent years, fQRS is being evaluated as a prognostic marker in different patient population, not only in coronary artery disease, but also in Brugada syndrome, long QT syndrome, Arrhythmogenic right ventricular dysplasia and cardiac sarcoidosis. Determination of prognosis is an important issue in management of acute coronary syndrome patients. So we planned to evaluate the significance of fQRS in standard surface ECG for determining prognosis.

**Methods:** This study was done among admitted patients with acute coronary syndrome in IPGMER, Kolkata, from November 2012 to May 2014. Inclusion Criteria: Patients presented first time with acute coronary syndrome, above 18 years of age, both male and female. Exclusion Criteria: 1. Associated major other comorbidities like malignancy, severe liver disease, end stage renal failure, cerebrovascular accident, sepsis etc guarding the prognosis. 2. Patients who are unable to follow-up. 3. Patients with previous history of acute coronary syndrome. Every patient was followed up for a period of 6 months.

**Results:** A total number of 256 patients (Male:Female = 163:45) were included. As 48 patients were lost to follow up, 208 subjects were analyzed. Among them total 102 patients (Male:Female = 78:24) had fQRS in their ECG. Multivariate analysis showed that presence of fQRS predicts mortality (HR- 1.62, 95% CI-1.89-2.38, P < 0.01) independently. Moreover, cardiac events also occurred significantly higher in patients with fQRS (HR- 7.16, 95% CI-3.17-20, P < 0.01).

**Conclusion:** fQRS is an independent predictor of mortality and adverse cardiac events in ACS patients.

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**Role of Tissue Doppler echocardiography (TDI) in the diagnosis of CSA as an adjunct to treadmill testing (TMT)**


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**Aims and Objectives:** To determine if Tissue Doppler echocardiographic imaging (TDI) performed at rest in patients with suspected stable angina pectoris (CSA) is able to predict the presence of significant coronary artery disease (CAD).

**Materials and Methods:** The study comprised of 400 consecutive patients with clinically suspected CSA, no previous cardiac history, and a normal ejection fraction. All patients were examined by echocardiography with TDI, exercise treadmill testing (TMT), and coronary angiography (CAG). Regional longitudinal systolic (s’), early diastolic (e’), and late diastolic (a’) and mitral inflow E and A myocardial velocities were measured by colour TDI at mitral annular sites and averaged to provide global estimates. Duke score (DS) was used as the outcome of the exercise ECG. Patients with an area stenosis of ≥70% in at least one epicardial coronary artery were categorized as having a significant CAD.

**Observation and Results:** Patients with significant CAD (n = 170) were compared with patients without significant CAD (n = 230). TDI revealed diastolic dysfunction by decreased e’ , reversed E/A ratio and increased E/e’ and systolic dysfunction by reduced s’ in patients of CAD. Both e’ [odds ratio (OR): 1.5 (1.1–1.9, P < 0.01) per cm/s decrease] and s’ [OR: 1.7 (1.1–2.5, P < 0.05) per cm/s decrease] remained independent predictors of CAD after multivariable adjustment for baseline, exercise ECG, and conventional echocardiographic parameters. Area under the receiver operating characteristic curve (AUC) for exercise ECG and TDI in combination was significantly higher than AUC for exercise ECG alone (0.84 vs. 0.79, P < 0.01).

**Conclusion:** In patients with clinically suspected CSA Echocardiography with TDI performed at rest helps in better prediction of significant CAD than conventional echocardiography by demonstration of reduced s’and e’ velocities and increased E/e’ ratio and reversed MV E/A ratio, and colour TDI improves the diagnostic performance of exercise treadmill test.

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**Angiotensin-converting enzyme gene insertion/deletion polymorphism in Indian patients with myocardial infarction**

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**Introduction:** The objective of the study is to test the association of the angiotensin-converting enzyme gene insertion/deletion (I/D) polymorphism with myocardial infarction (MI).

**Methods:** This study comprised 50 Indian myocardial infarction cases with an age range from 35-60 years including 40 males and 10 females, plus 20 healthy unrelated individuals of nearly matched age and sex as a control group. For all subjects, genomic DNA testing for the angiotensin-converting enzyme gene
Clinical and economic outcomes of patients with coronary artery stenosis on the basis of fractional flow reserve measurement during daily practice

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Background: A significant proportion of patients with borderline stenosis underwent PTCA without a prior functional evaluation. The FFR provides a well defined cut off value for deciding whether to revascularise or to defer intervention.

Methods: Ours was a single centre retrospective observational study of 125 patients between the year August 2011 to June 2014. There were 96 males and 29 females with a mean age of 60 years. FFR was done on 1 vessel in 96 patients, 2 vessels in 24 patients and 3 vessels in 4 patients. Intra coronary adenosine was used in 58 patients, Intravenous adenosine in 21 patients and both (IC & IV) in 451 patients. The maximum dosage of Intra coronary adenosine was 180 mg.

Results: Following FFR, patients were divided into 3 groups based on the FFR values.

Group-1: FFR <0.75, Group-2: FFR 0.75-0.80, Group-3: FFR >0.80.
- There were 26 patients in Group 1 (FFR <0.75) and 15 patients underwent PTCA, 9 patients had CABG and 2 patients were treated medically.
- In Group 2 (21 patients) 14 patients underwent PTCA, 4 patients were treated medically and 3 patients had CABG.
- In Group 3 (FFR >0.80) out of 97 patients 85 patients were treated medically, 10 patients had PTCA and 2 patients had CABG. In the 85 patients (100 vessel segments 100 stents were considered saved (Economic saving).

Patients were followed up for 3 years. 8 patients were eligible for 3 year follow up. 6 patients were asymptomatic, 1 patient had class-2 angina.

28 patients were eligible for 2 years follow up. 22 patients were asymptomatic, 1 patient had SCD and 1 patient had NSTEMI.

50 patients were eligible for 1 year follow up. 46 patients were asymptomatic.

Conclusion: Deferral of PCI in borderline lesion based on FFR measurement is safe in daily clinical practice and is also a cost reducing strategy.

Outcomes & long term follow up of 976 outpatients’ Trans Radial diagnostic procedures in a tertiary care Hospital

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Background: Trans Radial diagnostic procedures have essentially replaced Trans Femoral procedures in many hospitals across the world. Very little data is available on the safety and long term outcome of patients subjected to outpatient Trans Radial diagnostic procedures.

Methods: We performed 976 outpatient Trans Radial procedures between March 2007 and May 2014. Without admitting patients, they were triaged into a radial lounge and shifted to Cathlab for procedure. All patients had Trans Radial access Coronary Angiogram and were sent home 4 hours after observation in the lounge. 775 Patients were contacted telephonically and outcomes gathered. All the procedures were performed with 6 Fr Terumo sheath and 6 Fr Tiger (Terumo) was the most commonly used diagnostic catheter. Nikorandil was the cocktail used in majority of patients catheters. Hemostasis was achieved with manual compression with a locally designed bandage which was kept for 4 hours.

Results: Radial access was achieved in 97 percent of patients. 3% (32) patients were crossed over to femoral access for a variety of

Association of tobacco usage (both smokeless and smoked forms) on carotid intima media thickness in coronary artery disease patients

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Introduction: though smoking has been characteristically linked to increased cardiovascular risk and mortality, the stand on smokeless tobacco is still debatable. The present study aims to ascertain the association of tobacco usage (both smokeless and smoked forms) on carotid intima media thickness (CIMT) in patients with pre-existing coronary artery disease (CAD).

Methodology: The analysis of the records of all 357 patients with coronary artery disease, attending the preventive cardiology clinic at a tertiary care hospital in New Delhi, between 2008 and 2013 was undertaken for the current study. The records contained details of medical history, physical examination, demographic characteristics, biochemical parameters, electrocardiograms, and CIMT measures using duplex ultrasound (US) scans.

Results & Discussion: Of the 357 patients in this study, 84 were females, 273 were males, with a mean age of 48.6±13.17 years, of whom 61 were known diabetics and 101 had long standing hypertension. 189 were smokers, 22 used only smokeless tobacco and 146 used both forms of tobacco.

The mean CIMT (mCIMT) values for 357 individuals were 0.77±0.23mm. With increasing age, there was an increase in mCIMT (correlation coefficient=0.23, p<0.001). Mean TC was 153.8±39.5 mg/dl, HDL was 35.8±9.66 mg/dl, LDL was 89.9±30.6 mg/dl, TG was 135.9±80.3 mg/dl.

There was a statistically significant correlation between usage of tobacco in both smokeless and smoked form with increase in mCIMT (p<0.001). Additionally, increased duration and frequency of tobacco usage was associated with increased CIMT (p<0.001), not surprisingly. Usage of both forms together did not reproduce a statistically significant change in mCIMT over usage of a single form.

Conclusion: In this study of mCIMT was increased in patients using tobacco in both smokeless and smoked form. This signifies that, the present trend towards transitioning patient from smoked to smokeless form in de-addiction does not seem to translate to any benefit as far as decreased cardiovascular risk is concerned, and hence emphasis should be laid on complete stoppage of tobacco use in both forms in such patients.

insertion/deletion (I/D) polymorphism was done using PCR amplification for detection of both the D and I alleles.

Results: Cases had a higher frequency of DD (28.4%) and ID (62.1%) genotypes than II (9.5%) genotype. Compared to controls, cases had a significantly higher frequency of ID genotype.

Conclusion: The angiotensin-converting enzyme gene I/D polymorphism is probably a risk factor for MI among Indian cases.