Cardiology

423. Study of Premenopausal Indian Women Presenting with Chest Pain for Coronary Artery Disease
R Ostwal, AK Sharma
Jagjivanram Hospital, Mumbai.

Aim: Risk factors and incidence of coronary artery disease in premenopausal Indian women were evaluated. Utility of non-invasive or invasive diagnostic modalities in evaluation of coronary artery disease in premenopausal Indian women were also studied.

Material and Methods: A prospective study was carried out at Jagjivanram Hospital on 52 premenopausal females presenting with chest pain. All these females underwent detailed evaluation and investigations for coronary artery disease.

Results: The mean age of the patient in the study group was 40.57 ± 3.79 years. Out of 52 patients, 11 patients (21%) were found to have coronary artery disease and mean age was 42.36 ± 2.76. Important risk factors for coronary artery disease in premenopausal females were hypercholesterolemia (91%), hypertriglyceridemia (82%), diabetes (55%) and hypertension (64%). False positive stress test in premenopausal females was 30%. Combining stress test with myocardial perfusion scan increased the sensitivity and specificity of diagnosing coronary artery disease in premenopausal females (which has not been reported before in Indian studies).

Conclusion: Coronary artery disease in premenopausal Indian women is not uncommon. Commonest risk factors are dyslipidemia, diabetes and hypertension. Stress test combined with myocardial perfusion scan increase the sensitivity and specificity of diagnosing CAD in premenopausal Indian women.

427. Study of Lifestyle Risk Factors for Coronary Heart Disease in Native Population
MA Kamili, G Ali, HS Wazir, IH Dar, SH Dar
Government Medical College, Srinagar.

Factors influencing the development of coronary heart disease are grouped together as social lifestyle risk factors. The factors known to influence the occurrence of coronary heart disease are illiteracy, job stress, housing, family structure and size, smoking, dietary influences like meat, fat and alcohol intake and sedentary habits. The differences in lifestyle risk factors in rural and urban populations are responsible for the difference in occurrence of coronary heart disease in the population. To determine the prevalence of these lifestyle risk factors of coronary heart disease in the general population, under present scenario of conflict, a study was conducted in the rural and urban areas of the two Districts (Anantnag and Srinagar) of Kashmir Valley. Out of the total population of 44305, target population was 13893. Of these 13893 subjects 23.99% were surveyed (Males 73% and females 27%). A house-to-house survey was conducted in a cluster of three villages in rural areas and three municipal demarcated localities in urban areas of both the districts. A questionnaire regarding various lifestyle risk factors was framed and was recorded in each subject. Statistical analysis of the data was done at the end of the study. Prevalence of various listed factors was illiteracy 50%, smoking 46.99%; nuclear family 51.21%, sedentary lifestyle 47.21%, obesity 22.73% (WHR > 0.9), BMI > 27 (20.17%), non vegetarian diet 83.86% and high fat intake in 60% of the population studied. Details will be presented.

431. A Study of Plasma Homocysteine Concentration in Patients of Acute Coronary Syndromes
A Raizada, PC Mathur, P Rastogi
Gajra Raja Medical College, Gwalior, MP.

Thirty proven patients (24 males, 6 females) of acute coronary syndrome were included in the study to assess prevalence of hyperhomocysteinemia as a risk factor and to correlate it with other classical risk factors. Of the cases 19 had Q-wave and 4 had non-Q wave myocardial infarction while 7 had unstable angina. tHcy concentration was estimated by chemiluminescent enzyme immunoassay technique.

73.33% cases showed elevated tHcy concentration. Mean tHcy in ≤ 45 year age group was significantly higher than that for > 45 year age group (39.55 ± 15.95 µmol/L vs. 15.71 ± 4.43 µmol/L, p < 0.0001). Among cases although higher tHcy levels were observed in men than in women (32.75 ± 17.57 µmol/L vs. 18.96 ± 11.5 µmol/L, p = 0.079) current smokers than in non-smokers (32.63 ± 18.31 µmol/L vs. 26.10 ± 15.47 µmol/L, p = 0.318) normotensives than in hypertensive (30.22 ± 18.01 µmol/L vs. 29.67 ± 17.21 µmol/L, p = 0.93) non-diabetics than in diabetics (31.87 ± 17.5 µmol/L vs. 18.3 ± 5.69 µmol/L, p = 0.101) dyslipidemics than in those with normal lipid profile (31.14 ± 17.21 µmol/L vs. 26.10 ± 15.47 µmol/L, p = 0.101) but they were not statistically significant. 10% cases had raised tHcy concentration as the lone risk factor.

Notably the youngest cases was 22 years old and he showed highest tHcy levels recorded in the study (i.e. 60.67 µmol/L). Our results suggest that tHcy concentration is associated with a heightened risk for cardiovascular disease especially in ≤45 age group and that tHcy levels are not significantly influenced by conventional cardiovascular risk factors.

433. Prevalence of Coronary Heart Disease in Native Population
MA Kamili, G Ali, HS Wazir, IH Dar, AM Gagjoo
Government Medical College, Srinagar.

Coronary heart disease is one of the major causes of morbidity and mortality in the general population of both the developing and developed countries. Prevalence of coronary heart disease in Indian subcontinent is presently one of the highest and is further on an increase. In the State of J and K the population like any other developing community, is undergoing lifestyle changes but the unusual stress and strain for the last 15 years of conflict situation in the state apparently has contributed to increase the prevalence of coronary heart disease. Therefore an epidemiological study was conducted to assess the prevalence of coronary heart disease in both urban and rural areas of the Valley during years
2001-2003. The present study was carried out in the urban and rural areas of the twin Districts of Anantnag and Srinagar by random sampling. The total population of the study area comprised of 44305 persons, out of which the target population was 13893. The study was carried out on 3128 (23%) subjects. Chi square test was used for statistical analysis. The overall prevalence of coronary heart disease was 13893. The study was carried out on 3128 (23%) subjects.

The overall prevalence of coronary heart disease in the population studied by all diagnostic measures was 7.54%. The overall rural prevalence was 6.70% and urban prevalence was 8.37%. Prevalence of coronary heart disease was higher in males 7.88% and slightly lower in females 7.54%. Details of the epidemiological study will be presented.

439. Apolipoprotein A-1/B Ratio and Modified Lipid Tetrad Index : Correlation with Coronary Artery Disease in Indians

RN Dwivedi, BD Mangal, SK Saxena, AL Chandani, M Ahmed, RK Bansal, AR Antony
KPS Institute of Medicine and G SVM Medical College, LPS Cardiology, Kanpur.

Objectives : 1. To evaluate apolipoprotein A-1/B ratio and other lipid indices for sensitivity of prediction for coronary artery disease. 2. To propose a modification of comprehensive lipid tetrad index.

Methods : Individuals in the age group 25-60 with evidence of coronary artery disease by clinical evaluation, ECG, echocardiography, stress test (TMT), cardiac enzymes or angiography was studied. Controls matched for age sex and risk factors from the same cohort was also studied. Extended lipid profile of these patients including lipoprotein A, apolipoproteins A-1, B and various ratios obtained from them including modified lipid tetrad index were analysed for correlation with coronary artery disease.

Results : Though the mean value of total cholesterol, triglycerides, LDL, VLDL were elevated and mean value of HDL was lower in patients when cases were compared to controls, they failed to reach statistical significance. The mean value of Ln (a) in the patient group (28.89 ± 12.31) was significantly higher than that of controls (20.57 ± 8.89). Though the mean value of apolipoproteins A and B were different in the cases and control group, it was nonsignificant. The LDL/apo B ratio, LDL/HDL ratio and Triglyceride/apolipoprotein A ratio, were not significantly different between cases and controls; but the difference between cases and controls of Apolipoprotein A-1/B ratio was statistically significant (t = 2.0, p < 0.05). The total cholesterol/HDL ratio was significantly elevated especially in males (4.4 ± 1.65 in controls and 6.04 ± 1.95 cases). Comprehensive lipid tetrad (total cholesterol x triglyceride x Ln(a) / HDL) was significantly elevated in cases when compared to controls (t = 4.18, p < 0.05). We propose a modification of comprehensive lipid tetrad index - The modified lipid tetrad index (total cholesterol x triglycerides x Ln(a) / HDL) was also significantly elevated when compared to controls (t = 3.94, p < 0.05).

Conclusion : The present study showed a significant positive correlation between raised Ln(a) level, total cholesterol/HDL ratio and development of CAD. Apolipoprotein A-1/B ratio, comprehensive lipid treated index and modified lipid tetrad index also showed significant correlation with CAD.

440. Echocardiographic Detection of Left Atrial Thrombus and CVA Patients with Atrial Fibrillation

D Majumdar, S Guha, SK Pal, N Chatterjee, R Majumdar, P Sarkar, AK Bandyopadhyay
Medical College, Kolkata.

We analysed patients who presented with cerebro-vascular accidents (CVA) and who had concurrent atrial fibrillation and tried to estimate the incidence of left atrial thrombus both by trans thoracic (TTE) and trans esophageal echo (TEE).

Patients of CVA were selected on the basis of CT scan findings of non-haemorrhagic infarcts. 106 patients were studied and subjected to both versions of echocardiography in the same settings.

The patients were divided into those having atrial fibrillation due to rheumatic heart disease and those due to non-rheumatic causes, the bulk of which were formed by dilated cardiomyopathy. The results were tabulated, compared and statistically analyzed and were as follows

<table>
<thead>
<tr>
<th>Disease Type</th>
<th>No. of patients</th>
<th>Mean LA Size (mm)</th>
<th>Thrombus by TTE</th>
<th>Thrombus by TEE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rheumatic heart</td>
<td>62</td>
<td>47.1</td>
<td>18</td>
<td>32</td>
</tr>
<tr>
<td>Non rheumatic causes</td>
<td>44</td>
<td>39.8</td>
<td>8</td>
<td>12</td>
</tr>
</tbody>
</table>

The results of the study revealed that TEE, as expected, is a more sensitive tool for detection of atrial thrombus than TTE. As evidenced by the fact that a greater number of atrial thrombus was detected by TEE than TTE. It was also observed that patients having AF due to rheumatic heart disease have a greater incidence of thrombus (51.9%) than the patients of non-rheumatic causes (27.2%). The left atrial size had a direct correlation with the incidence of thrombus, in that, patients having a greater left atrial size were noted to have a greater incidence of atrial thrombus.

455. Inferior Wall Myocardial Infarction - Review of 42 Cases

N Mohanty, SS Mohapatra, Acharya, P Deiveekan
MKCG Medical College, Berhampur, Orissa.

Forty two cases of inferior wall MI diagnosed by clinical features, ECG changes and raised cardiac enzymes were categorised into two groups. Group A inferior MI without RV infarction (30 patients). Group B inferior MI with RV infarction (12 patients). Incidence of inferior MI was 30%. The incidence of RV involvement in case of inferior MI was 28-58%. Time of presentation, symptomatology, complications, ECG changes, serum enzymes, and echo cardiographic changes were compared between inferior MI without RV MI and inferior MI with RV MI. Though chest pain, abdominal symptoms common in inferior MI, nausea and vomiting more commoner in RV MI. Moreover raised JVP, hypotension, RVS, commonest signs and RV MI than without. Complications like arrhythmias (VPCs, AF, VT, CHB and AV blocks) commoner in RV MI. Mortality more in RV MI (16.7%) vs 10% in lone inferior MI. The mean maximal ST elevation was higher with RV infarction. RV dilatation, RVd/LVd > 0.7 was found in RV infarction. All patients of inferior MI had regional wall motion abnormality of left ventricle inferior wall in 2DEcho and 100% of inferior wall MI with RV involvement showed abnormality of RV inferior wall as compared to lone inferior MI (10%).
CRP in AMI - A Unique Prognostic Indicator

S Bhakta, SK Lath, SR Pattnaik, BK Barik, B Pradhan, S Tripathi, RC Sethy

VSS Medical College, Burla, Sambalpur, Orissa.

Aim and objective: Plaque rupture, the commonest cause of acute myocardial infarction (AMI) is associated with raised level of acute phase reactants like C-reactive protein. CRP is a marker of atherosclerotic inflammation and insult of myocardial necrosis. In this study serum CRP level in AMI patients at the time of hospital admission was correlated with their subsequent inhospital prognosis.

Material and Methods: In the present study, 61 AMI patients with varied types of presentation and risk factors were taken. Fifty healthy age and sex-matched volunteers were taken as control. Non-cardiac causes, which can raise the CRP level, were excluded from both groups. Blood samples of AMI patients for CRP were sent at the time of their hospital admission. Other cardiac markers like CK-MB and troponin I also estimated for diagnostic purpose as well as to correlate with CRP as a prognostic indicator. Patients were followed up for complications like LVF, repeat cardiac discomfort, arrhythmia, cardiogenic shock and death.

Observation - Raised level of CRP (8.20 ± 3.86 ms/ 1 SD) was noted in AMI patients compared with controls (3 ± 1.195 mg/ 1 SD). Patients with > 6 mg/l of CRP developed more (82.85%) complications like arrhythmia, CCF, pericarditis and repeat chest discomfort. Only 15.36% patients with < 6 mg CRP developed complications. (p < 0.001). 11 patients (18%) expired out of them 10 had > 6 mg / 1 CRP (91%). More complications observed when CRP levels were raised within 6 hr duration of symptoms (70.83%). In contrast to it other cardiac markers (CK-MB and TROP-I) failed to predict the prognosis within 6 hr duration of symptoms. After 6 hr, prognostic value of CRP and other cardiac markers correlated well.

Conclusion: The serum CRP level on hospital admission is an indicator short-term of prognosis of AMI irrespective of the duration of symptoms.

Atrial Fibrillation - A Study by Colour Doppler 2D Echocardiography and Its Correlation with Aetiology and Clinical Profile

JM Timane, MM Hardas, SS Agrawal
Indira Gandhi Medical College, Nagpur - 18.

Objective: To study Doppler echocardiographic features of atrial fibrillation (AF), its clinical profile and aetiology.

Methods: We assessed a total of 80 cases of AF - newly diagnosed and/or known cases attending OPD or admitted in ICMC Hospital, Nagpur. Detailed history, examination, routine investigations, ECG and echocardiography was done.

Results: In our study M:F ratio was 1:1.1, with mean age of 44.9 yrs (range 15.83 yrs). Rheumatic heart disease was the most common aetiology (44 cases (55%) followed by cardiomyopathy 9 (11.25%) cases, thyrotoxicosis and COAD 7 (8.75%) cases each. Congestive heart failure was the most common complication seen in 64 (80%) cases, followed by fast ventricular response 52 (65%) cases and thromboembolism in 12 (15%) cases. Forty nine cases (61.25%) had left atrial (LA) size > 40 mm. LA thrombus (LAT) was found in 10 (12.5%) cases. Mean pulmonary artery pressure was higher in case with LAT (46.7 mmHg) compared to those without LAT (36.1 mmHg) P < 0.05. Sixty three percent cases of stroke had LA size > 40 mm and all had presence of clinical risk factors.

Conclusion: Echocardiography is a safe non invasive an a reliable procedure to study LA size, LAT and presence of valvular pathology. Echocardiographic LA enlargement has prognostic value in identifying a subset of cases at increased risk of stroke.

To Investigate the Performance of a Novel Assay for N-Terminal pro-brain Natriuretic Peptide (NT-pro BNP) in Predicting Left Ventricular Function in Patients with Diabetes Mellitus or Hypertension

S Ather, S Mehrotra, M Chandra, CG Agarwal, VS Narain, V Atam
King George’s Medical University, Lucknow.

Objective: To investigate the performance of a novel assay for N-Terminal pro-brain natriuretic peptide (NT-pro BNP) in predicting left ventricular function in patients with diabetes mellitus or hypertension.

Design and Method: NT pro BNP levels were compared to echocardiographic findings in 25 patients (enrolled till now), of which 14 had systemic hypertension and 11 had diabetes mellitus. All of them were clinically examined and categorized as having clinical CHF or not. These patients were now subjected to echocardiographic evaluation by 2 different physicians blinded to above results. Blood samples were then sent for examination of NT pro BNP levels by a neutral laboratory not knowing any of the above results.

Results: Of the 25 patients enrolled so far in this study only 3 patients were clinically diagnosed as having CHF which was later confirmed by echocardiography, but the more important aspect was that in the other group (n=22) echocardiographic left ventricular dysfunction was found in 15 patients. Patients with normal echocardiographic left ventricular function had a mean NT pro BNP levels of 196 ± 80 pg/ml whereas those with abnormal function had a NT pro BNP level of 523 ± 102 pg/ml. In these patients NT pro BNP levels showed a high negative predictive value (100% for NT pro BNP values < 50 pg/ml) while in those patients who had LV dysfunction NT pro BNP levels showed a high positive predictive value (90% with NT pro BNP levels > 100 pg/ml).

Conclusions: Clinical examination has poor sensitivity in diagnosing congestive heart failure especially in early cases to which majority of patients belongs. NT pro BNP can reliably screen diabetic and hypertensive patients for the presence or absence of left ventricular dysfunction with high sensitivity thus helping in making early diagnosis.

Coronary Artery Disease in Young - A Different Disease?

GP Parale, SS Pawar, SN Kothawale
Ashwini Co-operative Hospital, Solapur.

The present study was undertaken with the aim of studying the clinical and angiographic profile of acute myocardial infarction (AMI) in young vs old patients. 96 patients of AMI of either sex were studied. Diagnosis of AMI was based upon clinical history, examination, 12-lead surface ECG changes and increase in levels of cardiac enzymes. PredischARGE angiography was done in all patients young AMI was considered if age of patient is ≤ 40 years and old if > 40 years. Patients were divided in two groups: group I comprised young and group II old. 42 patients (38 M; 4 F) were in group I and 54 43 M; 11F) in group II. Mean age of patients in group I was 34.9 years and group II was 58.17 years. Chest pain and dyspnea were chief complaints but 6 patients in group II presented with additional symptoms of left ventricular failure, which is important predictor of poor outcome after AMI. In group I 36 patients had anterior infarction and 6 had inferior infarction. 83.33% of patients in group II had residual significant block (i.e. > 75% of lumen is occluded), while the same was observed in
465. Smoking Associated with Malignancy, Hypertension, Obstructive Pulmonary and Concurrent Coronary Artery Disease - Report of Six Cases

S Dwivedi, S Srivastava, G Dwivedi
UCMS-GTB Hospital, Delhi; Northwick Park Hospital, London.

Heavy smoking leads to coronary artery disease (CAD), hypertension (HTN), chronic obstructive pulmonary disease (COPD), oral, nasopharyngeal, bronchial and other visceral malignancies. However, development of all above lesions in a given individual over a period of time due to unabated smoking is a matter of grave concern both for treating physician and public health experts. Present communications is based on the study of six cases who had concurrent CAD, HTN, COPD and malignant lesions due to incessant smoking. Age range of these cases was 35-79 years and smoking index (SI) varied from 140-390 (Table 1). The youngest was a 35 years man having smoking index of 300 presenting with acute coronary syndrome, COPD, HTN and buccal leukoplakia.

### Table 1

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Age/Sex</th>
<th>SI</th>
<th>Disease sequence</th>
<th>HDL-chol (mg/dl)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>35, M</td>
<td>300</td>
<td>non Q MI/COPD/Leukoplakia/HTN</td>
<td>28</td>
</tr>
<tr>
<td>2.</td>
<td>62, M</td>
<td>240</td>
<td>HTN→COPD→Oral/Laryngeal Leukoplakia→CAD LAD calcification</td>
<td>38</td>
</tr>
<tr>
<td>3.</td>
<td>65, M</td>
<td>100</td>
<td>Laryngeal Ca→COPD/HTN→CAD (TVI)</td>
<td>37</td>
</tr>
<tr>
<td>4.</td>
<td>79, M</td>
<td>390</td>
<td>Squamous cell bladder Ca→COPD/HTN→CAD (Twice TUR)</td>
<td>20</td>
</tr>
<tr>
<td>5.</td>
<td>60, F</td>
<td>360</td>
<td>Ca cervix→COPD/HTN→Inf. MI</td>
<td>20</td>
</tr>
<tr>
<td>6.</td>
<td>60, M</td>
<td>140</td>
<td>COPD→Inf MI/HTN (LVH)→Oral Leukoplakia</td>
<td>32</td>
</tr>
</tbody>
</table>

Smoking was the common etiological agent responsible for multiple lesions comprising malignancy, COPD and CAD in all our cases. Most of them had smoking index above 200. As cessation of smoking exerts considerable beneficial effect on development, recurrence and prognosis of these diseases; our cases amply highlight the prognostic, management and public health implication of continuous smoking.

467. Therapeutic Efficacy and Safety of Nabevolol in Cases of Congestive Heart Failure (CHF)

M Gurinder, N Bhalla
SGRD Institute of Medical Sciences and Research, Amritsar, Punjab.

Thirty patients of CHF on routine medical treatment of heart failure ranging between 50-70 years of age and both sexes were recruited in the study. Patients having COPD, asthma, bradycardia, shock, sick sinus syndrome were excluded from the study. Patients were put on tab. Nabevolol 5 mg OD in addition to routine treatment of heart failure.

Detailed history and clinical examination. Including pulse, blood pressure, heart rate, NYHA class and exercise parameters in the form of distance traveled in 6 minutes walk was noted at start of therapy and during each follow-up visit i.e. at the end of 2nd week, 4th week and 16th weeks. Exercise intolerance of patient was divided into 3 categories.

<table>
<thead>
<tr>
<th>Exercise intolerance</th>
<th>Distance traveled in meters in 6 minutes walk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild</td>
<td>426-550</td>
</tr>
<tr>
<td>Moderate</td>
<td>150-425</td>
</tr>
<tr>
<td>Severe</td>
<td>&lt; 150 meter</td>
</tr>
</tbody>
</table>

Echocardiography done at start of therapy and after 16 weeks of treatment.

Observations: CAD was found to be the cause of CHF in 23 (76.67%) and dilated cardiomyopathy in 7 (23.3%) patients. The mean heart rate of 85.3 beats/min at the start of therapy had lowered to 73.17% beat/min after 16 week of treatment.

At the start of therapy, according to grades of exercise intolerances 5 (16.67%) were in mild category and 25 (83.33%) were in moderate group but after 16 weeks of Rx 9 (30%) were in mild and 21 (70%) were in moderate group.

The mean distance traveled in meter during 6 min walk at the start of therapy was 379.60 and after 16 week of treatment it increased to 408.83 m (p < 0.01).

The mean EF of 31.07% at start of study had increased to 36.60% after 16 weeks (p <0.001). There was improvement of 8 (26.6%) patients out of total 10 (33.3%) patients of Grade-III NYHA after 16 weeks of treatment.

In G-II functional class, out of 15 (50%) patients, 12 (40%) were improved after 16 weeks. In G-I functional class all 5 patients remained dyspnoc on unaccustomed exercise although frequency and severity was reduced.

During the study (4 (13.3%), 2 (6.6%), 1 (3.3%) patients had dizziness, headache and nausea respectively.

It is concluded that Nabevolol improves the cardiovascular function, exercise capacity and NYHA class in addition to decreasing heart rate, systolic and diastolic blood pressure of patient when given along with the routine treatment of CHF.

470. Epidemiological Survey of Congenital Heart Disease

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Kolkata Rly. Hospital (ADP); I. Sen Charitable Hospital, Chaibasa, Jharkhand - 833 201.

Object: Congenital heart disease occurs in 1-2% of live births. Considering our population, we have a large number of patients with congenital heart disease.

Material: The total 10,500 children from 'Ho' race were examined from the year 1970-90 between the age group of 1 year to 8 years, suffering from different seasonal and chronic diseases.
Out of which 52 children were isolated as they were having congenital heart disease.

Discussion: CHD is found in between 0.32 to 0.65 percent of all live birth and 0.1 percent of all who survive infancy. It accounts for 1 to 2 per cent of all cases of organic heart disease. All patients were examined biochemically X-ray, echo-cardiographically and nutritional assessment. Thereafter subjected to evaluation:

1. Arterial septal defect (ASD) 60%
2. Ventricular septal defect (VSD) 15%
3. Co-arotation of aorta 20%
4. Patent ductus arterious (PDA) 5%

Etiology of CHD amongst tribal Ho cannot be evaluated with this findings only but the Hos are having more CHD children. Chromosome counting by karyotyping and DNA analysis has shown various anomalies in genotyping. 10 CHD cases were taken into a/c.

471. Cardiac Autonomic Neuropathy and its Correlation with QTc Dispersion in Type 2 Diabetes

S Hariprasad, R Balasubramanium
Kasturba Medical College, Manipal - 576 104.

This study was conducted on 60 patients of diabetes mellitus type 2 and 30 healthy controls to correlate severity of diabetic cardiac autonomic neuropathy with QTc interval and QTc dispersion. Five standard cardiovascular response tests were carried out (i.e. Valsalva ratio, expiration-inspiration ratio, immediate heart rate response to standing, fall of systolic blood pressure on standing and sustained hand grip test) to determine the severity of cardiac autonomic neuropathy by scoring system. QTc dispersion was determined by subtracting heart rate-corrected minimum QTc interval (QTc min) from maximum QT interval (QTc max) from standard electrocardiogram. Severity of cardiac autonomic neuropathy strongly correlated with QTc dispersion (r=0.760; p=0.001). Correlation of severity of cardiac autonomic neuropathy with QTc max and QTc mean was also found but weaker than with QTc dispersion (r=0.663, r = 0.542, p = 0.0001 each) and no correlation was found with QTc min (r = 0.177; p = 0.17). This shows that QTc dispersion is a better predictor of cardiac autonomic neuropathy than any of above three QTc intervals. QTc max, QTc mean and QTc dispersion were significantly higher (p < 0.01) in diabetes with autonomic neuropathy (450 ± 23, 423 ± 22 and 57 ± 12 msec; n=30) than without neuropathy (407 ± 14, 397 ± 15 and 20 ± 7 msec; n=30) and control subjects (408 ± 120, 399 ± 19 and 19 ± 7 msec; n=30) but QTc min remained same in the three groups (393 ± 21, 387 ± 12, 389 ± 19 msec, respectively) (p > 0.05). Correlation of QTc dispersion was stronger with QTc max (r = 0.781; p < 0.001) than QT mean (r = 0.625; p = 0.001) but not with QTc min (r = 0.097; p = 1.0) which suggests that regional increase in QT interval due to autonomic neuropathy strongly correlated with QTc dispersion. Thus, QTc dispersion is sensitive, non-invasive, simple and cost-effective predictor of cardiac dysautonomia (Indian Heart J 2000;52:421-426).

472. Coronary Artery Disease in Young Risk and Clinical Profile in East Delhi Tertiary Care Hospital

S Dwivedi, A Aggaral, AA Dung Dung, G Dwivedi
UCMS, University of Delhi - GTB Hospital, Delhi. North Wick Park Hospital, UK.

Introduction: Ethnicity, smoking, socioeconomic status (SES), consanguinity, stress, central obesity and dyslipidaemia have been incriminated for epidemic of premature CAD in young (age 20-35 yrs) South Asians. However, comprehensive data on aforesaid risk factors in suburban cosmopolitan town is scarce.

Objectives: Present study was planned to elucidate the role of ethnicity, smoking, pedigree, consanguinity, socioeconomic status, stress and dyslipidaemia in young acute CAD.

Methodology: Twenty consecutive admitted patients (Jan-Apr 2004) suffering from acute myocardial infarction (AMI) and/ or acute coronary syndrome (ACS) and another twenty age, sex and ethnically matched healthy control subjects from the basis of this study. They were assessed for SES, smoking index (SI), pedigree details, stress factors (final loss, marital discord, job stress, family conflicts, large family), consanguinity, hypertension (HTN) diabetes (DM) and dyslipidaemia.

<table>
<thead>
<tr>
<th>Observations</th>
<th>Cases (N=20)</th>
<th>Controls (N=20)</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (yrs)</td>
<td>32.0 ± 0.67</td>
<td>28.6 ± 3.2</td>
<td></td>
</tr>
<tr>
<td>Male:Female</td>
<td>20:0</td>
<td>20:0</td>
<td></td>
</tr>
<tr>
<td>Hindu:Muslim:Others</td>
<td>14:6:0</td>
<td>13:6:1</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>SI</td>
<td>194.2 ± 199.3</td>
<td>123 ± 37.2</td>
<td></td>
</tr>
<tr>
<td>Family size</td>
<td>4.2 ± 2.5</td>
<td>2.4 ± 1.9</td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>13 (65%)</td>
<td>6 (30%)</td>
<td></td>
</tr>
<tr>
<td>SES Middle</td>
<td>6 (30%)</td>
<td>11 (55%)</td>
<td></td>
</tr>
<tr>
<td>Upper</td>
<td>1 (5%)</td>
<td>3 (15%)</td>
<td></td>
</tr>
<tr>
<td>F/H of Premature CVS diseases</td>
<td>7</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

Sikhs and young females who do not smoke were free from manifest ACS in this series. Beedi smoking was the most significant risk factor producing CAD in young. Consanguinity was not observed in any of our case. Majority (60%) had anterior/ anteroseptal infarction. One patient died.

Conclusions: High smoking index, stress, and low HDL are significant risk factors among low and middle socioeconomic group for acute CAD in young subjects. Stress of large family, cosmopolitan life, positive family history and economic deprivation also play their role in accelerated CAD.

473. Predictive Value of Exercise Stress Test in Post MI Patients Undergoing CAG

BK Amin, RA Vhora, RS Bhuriya, AH Saiyed, SJ Shah, PV Thakkar
BJ Medical College, Ahmedabad.

Introduction: The post MI stress test has emerged as the means of selecting patients at him risk among those who are asymptomatic and have an uncomplicated convolescense; permitting the implementation of aggressive management that might reduce morbidity and mortality.

Aims and Study: Predicting the anatomical condition of coronary arteries, functional status of the heart and ultimate outcome by predictive value of exercise stress test in post MI patients undergoing coronary, angiography.

Material and Methods: Study of 50 post MI asymptomatic patients treated by thrombolysis. All patients were under 65 years of age, 20 females and 30 males. All patients underwent symptom limited exercise stress test according to modified Bruce protocol followed by coronary arteriography and left ventriculography by percutaneous transfemoral technique.

Results: Eighteen patients had positive exercise stress test majority were male more than 55 years. Test was terminated in 14 patients due to angina and in 4 patients due to dyspnoea as an end point. There was significant occlusion of LAD in 35 patients, of LCx in 23, of RCA in 29, of proximal LAD before SI in 18 and of RMCA in 3 patients. A greater proportion of patients

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with significant ST-segment depression had severe narrowing in LAD and LCx. Prevalence of MVD was significantly higher among patients with angina pectoris during exercise stress test. Likelihood of negative exercise stress test response increases with EF more than 30%.

Conclusion: Study shows significant positive predictive value in patients with triple vessel disease and significant negative predictive value in patients with single vessel disease while no significant difference in the involvement of double vessel disease.

<table>
<thead>
<tr>
<th>Sr. K+ level in mEq/l</th>
<th>Total cases</th>
<th>Prolonged PR interval</th>
<th>Presence of U-wave</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild 3.1-3.5)</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Moderate (2.6 - 3)</td>
<td>14</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td>Severe (£ 2.5)</td>
<td>20</td>
<td>05</td>
<td>20</td>
</tr>
</tbody>
</table>

There were one (2.9%) case of mild, 14 (40%) cases of moderate and 20 (57.1%) cases of severe hypokalemia. At the time of admission all 35 (100%) cases showed flattening of T-wave with presence of U-wave in ECG and prolonged QTc - interval in 32 (91.4%) cases. ST - depression was found only 20 (57.1%) cases. Out of 10 cases of AV-block, 6 (17.1%) cases had first degree AV-block with prolonged PR - interval and 4 (11.4%) cases had second degree AV - block.

Out of 10 cases of AV - block 9 (90%) cases had AV-block with serum potassium level ≤ 2.5 mEq/lit and 1 (10%) case had AV-block with serum potassium 2.8 mEq/lit.

Conclusion: Various types of ECG changes occur in moderate to severe hypokalemia and do not specify level of hypokalemia. However AV - block was present in majority cases of severe hypokalemia and presence of AV-block with other features of hypokalemia ECG changes preclude immediate potassium supplementation before the availability of serum potassium level reports.

**486. Prognostic Importance of C-Reactive Protein in Patients with ST Elevation Myocardial Infarction: A Prospective Follow Up Study**

R Joshi, OP Gupta
MGIMS Sevagram, Wardha.

Objective: To evaluation the prognostic role C-reactive protein (CRP) level estimation in ST elevation myocardial infarction.

Methodology: All patients presenting with ST elevation myocardial infarction between December 2001 and March 2003 were included in the study, and C-reactive protein estimation was done on admission, at 48 and 96 hours. All patients were prospectively followed up for a minimum of 90 days. Primary end point was mortality and secondary end points were reinfarction, angina requiring hospitalization, congestive cardiac failure, life threatening arrhythmias, and stroke.

Summary of Results: Study population comprised 112 consecutive patients with a total of 8699 patient-days of followup. Patients presented on an average after 9 hrs of symptom onset. Total mortality and event rate was 14.2%, and 25.8% respectively. Mean CRP on admission was 8.83 ± 1.85 mg/dl, and 1.28 ± 2.34, and 1.29 ± 3.08 at 48 and 96 hrs respectively. Tere was no statistically significant difference in the mean CRP in the mortality group vs survivors on admission (3.86 ± 3.35 vs 3.32 ± 0.67, p < 0.00001) as well as at 48 an 96 hrs. On admission CRP was best predictor of mortality. ROC curve for CRP values revealed 4.8 mg/dl as the cut off with highest sensitivity and specificity, but even at a lower cut off of 0.6 mg/dl the results were significant (OR 19.88, 95% CI 4.01-93.67). Multivariate analysis CRP level correlates with 90 day mortality.

Conclusion: Elevated on admission CRP level correlates with 90 day mortality in STEMI. The increased risk for mortality is evident even at a cut off 0.6 mg/dl.

**487. Clinical Profile of Peripartum Cardiomyopathy in Primigravida vs Multigravida**

A Sheila, C Ross, J Rajendran, S Kumar, SS Iyengar
St. John’s Medical College Hospital, John Nagar, Bangalore, Karnataka - 560 034.

Introduction: Peripartum cardiomyopathy is a disease of unknown etiology. Literature regarding clinical presentation and outcomes is scanty.

Aim: To compare the clinical presentation and outcomes in primigravida and nonprimigravida.

Methods and Results: In 23 women admitted with the
dysfunction.

thyrotropin values had significant systolic and/or diastolic
thyrotoxic patients, 3) Hypothyroid patients with higher
patients (30.7% overt and 12.5% subclinical) as compared to
compared to thyrotoxic state (10% overt and 6.7% subclinical),
g) Ratio between early and late peak velocities.

e) Ejection fraction,
d) IVS/LVPW ratio,
c) Left ventricular posterior wall thickness,
b) Interventricular septum thickness,
a) Left ventricular diameter in diastole and systole,

Material and Methods: Total 106 patients were included.
Nine-two patients were evaluated after echocardiography and
investigations. There were 80 female and 12 male patients. Mean
age was 30.5 years. Forty-seven cases of primary hypothyroidism,
12 cases of Grave’s disease, 20 of multinodular goiter and 40 of
toxic adenoma were included. Euthyroid patients with goiter,
patients with valvular heart disease, chronic obstructive airway
disease, diabetes, alcoholic, smoker and ischaemic heart disease
patients were included.

They were classified as: a) Overt hypothyroidism (31 patients),
b) Sub clinical hypothyroidism (16 patients), c) Over thyrotoxicosis
(30 patients), d) Sub clinical thyrotoxicosis (15 patients).

Parameters measured were:
a) Left ventricular diameter in diastole and systole,
b) Interventricular septum thickness,
c) Left ventricular posterior wall thickness,
d) IVS/LVPW ratio,
e) Ejection fraction,
f) Peak velocity of early left ventricular filling and late ventricular
filling,
g) Ratio between early and late peak velocities.

Conclusions: 1) Systolic dysfunction was significant in
hypothyroid state (22.6% overt and none in subclinical) as
compared to thyrotoxic state (10% overt and 6.7% subclinical),
2) Diastolic dysfunction was present significantly in hypothyroid
patients (30.7% overt and 12.5% subclinical) as compared to
thyrotoxic patients, 3) Hypothyroid patients with higher
thyrotropin values had significant systolic and/or diastolic
dysfunction.

Conclusions: Peripartum cardiomyopathy is more severe and
with a high rate of fetal loss in primigravida. However the
associated mortality is more in the nonprimigravida.

488. Evaluation of Left Ventricular Function in Thyroid Disorders by Echocardiography

C Velani, NJ Padwal, ND Moulick, GC Rajadhyaksha
LTMMC, Sion, Mumbai.

Aim: To determine the presence of systolic and/or diastolic
dysfunction in thyroid disorders.

Material and Methods: Total 106 patients were included.
Ninety-two patients were evaluated after echocardiography and
investigations. There were 80 female and 12 male patients. Mean
age was 30.5 years. Forty-seven cases of primary hypothyroidism,
12 cases of Grave’s disease, 20 of multinodular goiter and 40 of
toxic adenoma were included. Euthyroid patients with goiter,
patients with valvular heart disease, chronic obstructive airway
disease, diabetes, alcoholic, smoker and ischaemic heart disease
patients were included.

They were classified as: a) Overt hypothyroidism (31 patients),
b) Sub clinical hypothyroidism (16 patients), c) Over thyrotoxicosis
(30 patients), d) Sub clinical thyrotoxicosis (15 patients).

Parameters measured were:
a) Left ventricular diameter in diastole and systole,
b) Interventricular septum thickness,
c) Left ventricular posterior wall thickness,
d) IVS/LVPW ratio,
e) Ejection fraction,
f) Peak velocity of early left ventricular filling and late ventricular
filling,
g) Ratio between early and late peak velocities.

Conclusions: 1) Systolic dysfunction was significant in
hypothyroid state (22.6% overt and none in subclinical) as
compared to thyrotoxic state (10% overt and 6.7% subclinical),
2) Diastolic dysfunction was present significantly in hypothyroid
patients (30.7% overt and 12.5% subclinical) as compared to
thyrotoxic patients, 3) Hypothyroid patients with higher
thyrotropin values had significant systolic and/or diastolic
dysfunction.

Conclusions: Peripartum cardiomyopathy is more severe and
with a high rate of fetal loss in primigravida. However the
associated mortality is more in the nonprimigravida.

670. Carotid IMT in Healthy Control and Cardioidiabetic
Railway Population in North India

A Gupta, S Joshi, M Kaushal, P Bansal, SK Sharma, S Sharma
Railway Hospital, New Delhi.

Introduction: Carotid intima to media thickness is a surrogate
marker of atherosclerosis. Increasing prevalence of metabolic
syndrome, Type 2 DM, CAD and hypertension in India, make it
more relevant to identify atherosclerosis at its earliest.

Material and Methods: We selected 61 cases (48 male, 13
female) (Group A) from our Cardioidiabetes clinic, who were
having established CAD with Type 2 DM, dyslipidemia and
hypertension either alone or in combination. We also took 50
healthy (35 males, 15 females) control cases (Group B).

Carotid IMT was measured by B mode ultrasound with 7.5
MHz transducer using “Leading Edge Principle”.

Results: Mean IMT in CAD cases of cardioidiabetes clinic
(Group A) was 0.80 ± 0.03 mm as compared to 0.62 ± 0.01 mm
in healthy control population (Group B). No significant
difference between male and female population was observed.

Conclusions: We observed lower values of Carotid IMT in
healthy control population of 0.62 ± 0.01 mm as compared to
other large Indian study of 0.74 ± 0.14 mm (CUPS study - control
population). In CAD population we find IMT thickness of 0.80 ±
0.03 mm, which is more or less comparable to other Indian studies.

699. Risk Factors Study in First Degree Relatives of Patients
with Premature Coronary Artery Disease - A Preventive Aspect

PN Dighore, VS Sahashrabhojaney, RG Salkar, HR Salkar,
PP Joshi
Government Medical College, Nagpur.

Objectives: To study risk factors for coronary artery disease
in patients with ischemic heart disease and their first degree
relatives. Analysis and comparison of these risk factors present
in first degree relatives to age and sex matched controls without
family history of IHD.

Methodology: This case control study carried out in
Government Medical College, Nagpur, included 78 patients
of premature ischemic heart disease, by ECG criteria and known
cases admitted in ICCU 130 first degree relatives and equal
number of age and sex matched controls were studied for presence
of major risk factors like age, smoking, hypertension (BP ≥ 140/
90 mm Hg), diabetes (Fasting blood sugar ≥ 126 mg/dl), BMI
and lipid profile.

Results: Analysis of risk factors in 130 first degree relatives of
78 cases of IHD revealed, smoking in 70 (53.8%) cases Vs 40
(30.7%) in controls (P < 0.05). Hypertension in 33 (25.3%) cases
versus 14 (10.7%) controls (P < 0.05). Diabetes in 21 (16.1%) cases
versus 14 (10.7%) in controls (P < 0.05). High triglyceride and low HDL
was significantly present in cases than controls. BMI is
comparatively more in cases.

Conclusion: The present study suggest that smoking is most
prevalent (P < 0.05) risk factor in first degree relatives of patients
of IHD as compared to controls. Diabetes is significantly present
in first degree relatives (P < 0.05) as compared to controls and
appears to run in families. Dyslipidemia is also prevalent in first
degree relatives significantly with low HDL cholesterol and high
triglyceride. Hypertension is also significantly (P < 0.05) more
in first degree relatives. Thus preventive and therapeutic
interventions should begin early in first degree relatives of patients
with premature IHD to prevent development of CAD.

*Adjudged Best Papers and got an award of Rs. 1000/- each from Chairman Scientific Committee, Diamond APICON 2005.