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STUDY OF RISK FACTORS, PRESENTATION AND ANGIOGRAPHIC FINDINGS IN YOUNG ADULTS WITH ACUTE MYOCARDIAL INFARCTION

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ABSTRACT

Introduction: Coronary heart disease (CHD) in Indians has reached an epidemic proportion and has the highest rate amongst all ethnic groups studied CAD occurring in Indians are often premature (<40 years of age) a generally follows a malignant course. The incidence of classical risk factors is low although high triglyceride, low HDL cholesterol, high Lp (a) level, hyperinsulinemia and central obesity show a substantial prevalence.

Aims: To correlate the risk factors with coronary artery disease, angiographic characteristics individually in females, males, smokers, diabetics, patients with multiple risk factors and find out number of vessels involved in different subgroups.

Materials and method: The present study was single centre institution based prospective study. This study conducted from Two years (from January 2014 to December 2015) in a tertiary care hospital of West Bengal. 50 patients were included in this study.

Result: Proportion of male 40(80.0%) were higher than female 10(20.0%). Approximately one-fifth 9(18.0%) of the patients were Diabetes in this study. 16 (32.0%) patients had history of premature CAD. In this study, 33(66.0%) had no Hypertension but 1734.0%) had Hypertension. almost one third of the study population had Hypertension, again attributable to obesity, lack of exercise, smoking etc. Among arteries LAD was the most commonly involved (46.0%). Proximal lesion was more common, lesions were mostly focal, Patients with MI had thrombotic occlusion. Echocardiography showed RWMA in 18 cases (36.0%). This echo includes all patients with RWMA including ACS. ECG was found to be abnormal in 39 (78.0%) patients, in the form of ST-T changes, ST elevation, T wave changes. LV Dysfunction was present in 18

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cases. In this study, 15(30.0%) patients were treated medically, PICA was done in 31(60%) patients and 4(8.0%) patients underwent CABG.

Conclusion: we concluded that the risk factors with coronary artery disease, angiographic characteristics and number of vessels involved in different subgroups.

Keywords: coronary artery disease, acute myocardial infarction, risk factors, presentation and angiographic findings

INTRODUCTION

Coronary heart disease (CHD) in Indians has reached an epidemic proportion and has the highest rate amongst all ethnic groups studied CAD occurring in Indians are often premature (<40 years of age) a generally follows a malignant course. The incidence of classical risk factors is low although high triglyceride, low HDL cholesterol, high Lp (a) level, hyperinsulinemia and central obesity show a substantial prevalence.

Several factors such as genetic, metabolic, early-life, convention and non-conventional risk factors were suspected to cause high CE morbidity and mortality rates among Indians.

However, the results from the INTERHEART study conclusive established the role of behavioural and conventional risk factors in prediction of CHD risk among Indians[1].

Projections show that CVD has reached epidemic proportions many developing countries. In India, mortality attributable to CVD expected to rise by 103% in men and by 90% in women from 1985 2015 (Bulatao and Stephens 1992) More importantly, the disease catches Indians young. Therefore, to stop the ruthless assault of CVD in developing countries, there is an urgent need to represent the disease in the health agenda of these countries.

Coronary angiographic studies have revealed high incidence of double and triple vessel disease, diffuse disease, distal disease and significant left ventricular dysfunction during initial presentation. The difficulties encountered during interventional procedures and surgeries are often related to late presentation, diffuse disease, small caliber vessel and LV dysfunction. The lifelong management with medicines, interventional procedures, bypass surgery and repeat interventions often poses serious problems due to financial constraints. Angiographic data from different centers in India have confirmed the occurrence of premature, extensive; sever atherosclerosis amongst Indians at a young age. Sharma et al (1985)[2] reported occurrence of MI due to secondary atherosclerosis in patients in age group 20 to 35 years. An angiographic study of 1066 consecutive male patients at CMC hospital Vellore[3] done showed significant CAD among 877 patients, of those 55% were <50 years of age, 34% were <45 years of age and 12% were <40 years of age, although the mean age of the patients was 48 years, triple vessel disease was more common (55%) than double vessel disease (24%) and single vessel disease (24%) combined. Multiple site obstruction in each vessel were a common finding and preclude the percutaneous interventions. Recent report from AIIMS[4] New Delhi have also confirmed the high

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prevalence of triple vessel disease. The high prevalence of triple vessel CAD (35%) was also reported in nonsmoking pre-menopausal women[5].

An incidence of triple vessel disease in post-menopausal was reported to be 57% from another centre[6].

Goal of the study is to evaluate and correlate the outcome of young Indians (40 yrs & below) with different risk factors, presentation, & angiographic profile. By this study we aim to know what the most important risk factors are for young Indians, so that we can stress upon modifiable risk factors, educate, and make young group more and more aware and alert to lower down the morbidity and mortality. As we all know this age group are among the most active and productive group. If we can minimize the coronary artery disease burden in this group, overall economical burden will be less.

AIMS & OBJECTIVES-

A) To correlate the risk factors with coronary artery disease.

B) To find out angiographic characteristics individually in

Females

Males

Smokers

Diabetics

- Patients with multiple risk factors

C) To find out number of vessels involved in different subgroups

MATERIALS & METHODS

STUDY AREA-

Study was done in the cardiology department of a tertiary care hospital of West Bengal and final angiographic outcome of all the enrolled patients were evaluated in Cathlab.

STUDY POPULATION-

All patients of 40yrs and below who underwent coronary angiogram were taken into consideration.

SAMPLE SIZE:

A total of 50 patients (age 40yrs and below were taken in the study from January 2014 to December 2015 in our hospital. Written consent was taken from each patient after detailed counseling, patients were enrolled with reference to inclusion and exclusion criteria.

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STUDY PERIOD:

Two years (from January 2014 to December 2015)

INCLUSION CRITERIA

a) Males and females of 40yrs and below

b) Patients with angina/angina equivalent, unstable angina, acute

STEMI/NSTEMI

e) Patients with ischemic ECG changes

d) RWMA in echocardiography

e) Old MI

EXCLUSION CRITERIA

a) Cardiomyopathy

b) Alternative diagnosis to chest pain

c) ESRD, Comorbidities with poor prognosis

STUDY DESIGN

The study will be single centre institution based prospective study.

PARAMETERS TO BE STUDIED:

Patients with typical or atypical clinical presentation and / or ECG changes together with positive Troponin -T or CPK-MB at least once above 2.5 times the upper limit of normal will be considered as STEMI or NSTEMI.

Risk factors for CAD and its co-morbidities will be documented at the time of admission, by completing a questionnaire: diabetes mellitus, smoking, family history of CAD, cerebrovascular accident (CVA) / transient ischemic attack (TIA), chronic renal failure, dyslipidemia, coronary artery disease history (if prior AMI, PCI or CABG).

All patients included in the study will be subjected to coronary angiography. The angiographic characteristics such as extent of CAD (characterized by the number of vessels with angiographic lesions over 50.0% one two or three arteries).

RESULT AND DISCUSSION

Most of the patients 30 (60.0%) were in the age group 36-40 years. 8(10.0%) and 12 (24.0%) patients were in age groups 25-35 years and 31-35 years respectively.

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Proportion of male 40(80.0%) were higher than female 10(20.0%). female number was less probably because of Atypical presentation denial of facts/suppression of symptoms, less access for medical evaluation, symptoms being considered as anxiety functional etc.

Approximately one-fifth 9(18.0%) of the patients were Diabetes in this study. Diabetes is becoming major issue in young Indians, cause being lack of physical activity, high caloric food intake leading to obesity. This group had a tendency towards more than one vessel involvement.

In this study, 33(66.0%) had no Hypertension but 1734.0%) had Hypertension. almost one third of the study population had Hypertension, again attributable to obesity, lack of exercise, smoking etc.

It was found that 25(50.0%) patients had history of smoking this is we should really stress upon because, more than half of the study group had h/o smoking, even some females were victim of passive smoking as well. ACS was one of the common and important presentation in this group.

Most of patients with smoking had SVD in CAG. Two patients had TVD in CAG. Seven patients had normal/ Nonsignificant lesion on CAG.

If we analyse as a whole, in smokers ACS is one of the common & first presentation. This group had LAD as culprit artery.

16 (32.0%) patients had history of premature CAD. This was again a remarkable and notable finding consistent with few previous studies [Zimmerman FH, Cameron A, Fisher LD, NgG. (1995)[7].] younger patients with strong family history of premature CAD is consistent finding and should be considered important risk in young.

In coronary angiogram SVD was the most common type of involvement followed by DVD and TVD. Majority of patients with any risk group had SVD as the characteristic CAG finding with LAD as the most common culprit artery. Among artery proximal lesion was more commonly found.

Among arteries LAD was the most commonly involved (46.0%). Proximal lesion was more common, lesions were mostly focal, Patients with MI had thrombotic occlusion.

Echocardiography showed RWMA in 18 cases (36.0%). This echo includes all patients with RWMA including ACS.

ECG was found to be abnormal in 39 (78.0%) patients, in the form of ST-T changes, ST elevation, T wave changes.

LV Dysfunction was present in 18 cases.

In this study, 15(30.0%) patients were treated medically, PICA was done in 31(60%) patients and 4(8.0%) patients underwent CABG.

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CONCLUSION

In this study following important conclusions can be drawn.

Smoking is one of the main risk factor which is associated the incidence of CAD. Most of patients with smoking had SVD in CAG. This group had LAD as most common culprit artery. So avoiding smoking is one the most important issue which can help to reduce major burden of CAD in young Indians.

Significant number of patients with strong family history has high risk for CAD.

Males are also prone for CAD at young age.

Majority of the patients who had significant disease, LAD remains the culprit artery.

Severity of disease increases with increase in number of risk factors.

Apart from thrombotic lesion in Myocardial infarction lesions are usually focal in nature, where as in diabetic tendency of diffuse diseases exists.

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Table: Distribution of Sex all patients

SEX	Frequency	Percentage
Female	10	20.0%
Male	40	80.0%
Total	50	100.0%

Table: Distribution of Smoking

Smoking	Frequency	Percentage
No smoking	23	46.0%
Passive smoking	2	4.0%
Tobacco	2	4.0%
Smoking (< 10/ day)	13	26.0%
Smoking (> 10/ day)	10	20.0%
Total	50	100.0%

Table: Distribution of Diabetes of all patients

Diabetes	Frequency	Percentage
No Diabetes	41	82.0%
Diabetes	9	18.0%
Total	50	100.0%

Table: Distribution of Number of Vessels involved in CAG

CAG	Frequency	Percentage
Normal	9	18.0%
Non Significant	6	12.0%
Single Vessel Disease	27	54.0%
Double Vessel Disease	4	8.0%
Triple Vessel Disease	4	8.0%
Total	50	100.0%

Table: Distribution of artery involvement

ARTERY	Frequency	Percentage
NA	15	30.0%
LAD	23	46.0%
RCA	2	4.0%

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LCX	2	4.0%
LAD/RCA	1	2.0%
LAD/LCX	3	6.0%
LAD/LCX/RCA	4	8.0%
Total	50	100.0%

Table: Distribution of vessels in male/ female

SEX			
CAG	**Female**	**Male**	**TOTAL**
DVD	1	3	4
Row %	25.0	75.0	100.0
Col %	10.0	7.5	8.0
N	3	6	9
Row %	33.3	66.7	100.0
Col %	30.0	15.0	18.0
NS	1	5	6
Row %	16.7	83.3	100.0
Col %	10.0	12.5	12.0
SVD	5	22	27
Row %	18.5	81.5	100.0
Col %	50.0	55.0	54.0
TVD	0	4	4
Row %	0.0	100.0	100.0
Col %	0.0	10.0	8.0
TOTAL	10	40	50
Row %	20.0	80.0	100.0
Col %	100.0	100.0	100.0