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Myocardial Infarction in ‘‘Young’’ Adult: Risk Factors and Presentation

Dr. Mayank Jain[1], Dr. Surbhi Kiyawat[2], Dr. Priyanka Kiyawat*[3]
[1]Consultant Interventional Cardiologist, Choithram Hospital & Research Centre, Indore, Madhya Pradesh, India
[2](M.B.B.S/Physician) Private Practice
[3]Asst. Prof. MGM Medical College & M.Y. Hospital, Indore, Madhya Pradesh, India

***Corresponding author**
Dr. Priyanka Kiyawat

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Abstract: There are limited study of the risk factors and clinical characteristics of patients presenting with myocardial infarction (MI) at a young age in India. To study clinical profile of young patient with MI in India. The young MI patients were more likely to be male (80%), with high BMI (31 kg/m^2), with a family history of premature coronary artery disease (49%) and to be current smokers (57.1%). 36% patients had none or only one traditional risk factor for MI. Male gender, Smoking, obesity and a family history of premature coronary artery disease being particularly prevalent in young MI patients.

Keywords: myocardial infarction, Diabetes mellitus, hypertension, dyslipidaemia.

INTRODUCTION

Myocardial infarction (MI) in the ‘‘young’’ is a significant problem, however there is scarcity of data MI in the ‘‘young’’. Traditional differences described in the risk factor profile of younger MI compared to older patients include a higher prevalence of smoking, family history of premature CHD and male gender. Recently, other potentially important differences have been described. Most ‘‘young’’ MI patients will present with non-ST elevation MI but the proportion presenting with ST-elevation MI is increasing. Studies discussing the risk factor profile of younger MI are available in Western literature, such similar studies are however sparse in India.

The need for such a study assumes tremendous significance as it is well known that the patient population and pattern of disease in India varies considerably from that of the West. We undertook a multicentric, observational study to find out possible risk factors associated with young MI.

METHODS

STUDY POPULATION

We identified a cohort of 308 patients aged 45 years or younger presenting with acute MI between January 2014 and February 2018. we excluded patients with a diagnosis of unstable angina. Participation was voluntary, and informed written consent was taken.

Data Collection

Patient demographics, clinical characteristics were collected, Myocardial infarction was defined according to the third universal definition of myocardial infarction [1]. The young MI group was defined as patients aged 45 years or younger. Diabetes mellitus, hypertension, dyslipidaemia, smoking, family history of premature coronary artery disease, were defined according to the American College of Cardiology definitions for measuring the clinical management and outcomes of patients with acute coronary syndromes [2]. Obesity was defined as a BMI of≥ 30 kg/m^2. Lipids, fasting glucose and HbA1c were tested and blood pressure was documented. Categorical variables are expressed as frequencies and percentages. Continuous variables are expressed as mean and standard deviation [3].

RESULTS & OBSERVATIONS

BASELINE CHARACTERISTICS

Table-1 shows the baseline characteristics of study participants.

Table-1: Baseline demographic and clinical data of study patients (n=308)

Characteristic	
Age (Years) (mean± SD, range)	40.1± 3.4(21-45)
Sex	**No. (%)**
Male	246 (80%)
Female	62 (20%)
Type of Presentation	
STEMI	64 (20.8%)
NSTEMI	244 (79.2%)
Risk Factor	
Smoking	248 (80.5%)
Current	176 (57.1%)
Former	72 (23.4%)
Hypertension	110 (35.7%)
Dyslipidemia	176 (57.1%)
Family history of premature CAD	150 (48.7%)
Diabetes	42 (13.6%)
BMI(mean± SD)	31.05 ± 6.4
Obesity	154 (50.0%)

DISCUSSION

Little is known about group of patients presenting with young MI in India**.** We found that young MI patients were more likely to be male, current smokers, have a family history of premature CAD with a high BMI.

The higher proportion of males in the young MI patients in our study is consistent with the fact that CAD is known to occur 7 to 10 years earlier in men than women [3]and is also consistent with the previous international literature examining young MI [4-6].

Our study reports a rate of current cigarette smoking consistent to other studies examining young MI [5, 7-9]. Smoking was a common risk factor in the young MI group with 80.5% having smoked at some time and 57.1% being current smokers.

Obesity was common in our young MI patients, is consistent with the findings of the Framingham Heart Study [10]. The rates of diabetes and hypertension were lower in the premature MI patients as compared to the older MI patients in other study. As diabetes and hypertension increase with age and is consistent with the previous international literature examining young MI [5].

In our study 48.7% young MI patients reported a family history of premature CAD, which was more frequent compared to the older MI patients in other studies, suggests that there may be a genetic predisposition to developing an MI at a young age and is consistent with previous studies in the literature [5, 11, 12]

Limitations of our study

This study represents risk factors contributing in young MI patients. As this study was confined to a small population of India and had several limitations. Therefore, it is imperative to undertake large population-based studies in India to identify MI-risk factors. There are many emerging risk factors [lipoprotein (a), insulin resistance, C-reactive protein, inflammatory factors] or genetic markers that have been implicated in premature CAD, were not studied.

CONCLUSION

We found that young MI patients were predominantly male, with a high incidence of a family history of premature CAD, cigarette smoking and obesity. Targeting the modifiable risk factors of CAD with a special focus on smoking cessation and reducing obesity is likely to the best strategy for primary prevention of young MI patients.

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