

Clinical profile of acute myocardial infarction in the young

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Abstract

Background: There is a rising incidence of acute myocardial infarction (MI) in young adults. It is important to identify and control cardiovascular risk factors at an early age to prevent the incidence in cases of young MI. **Aim:** To study the clinical profile of acute myocardial infarction in young patients. **Material and Methods:** Patients aged 40 years or younger admitted to with a diagnosis of acute MI were studied for clinical presentations, risk factors and management outcome. **Results:** Majority of patients presented with typical chest pain. 5 patients presented with atypical symptoms, one had only sweating, two had heaviness of chest, one had epigastric pain, one had sudden collapse. The most common risk factor was smoking in 68% followed by alcoholism 40%, Obesity 38%, Metabolic syndrome 38%, HTN 28% DM 26%. Of the total 50 patients, 47 (94%) patients survived whereas 3 (6%) patients succumb to death. **Conclusion:** There is a need to increase awareness among the young population regarding the entity of MI in young hence stressing on modifying life style. This simple measure can make a large difference in preventing the occurrence of MI in young.

Key Words: Young adults, myocardial infarction, presentation, risk factors, outcome

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INTRODUCTION

Cardiovascular diseases are one of the major health problems reaching epidemic proportions. In fact, they are the most common cause of deaths in the world followed by cancer. Previous studies have reported that there is a rising incidence of acute myocardial infarction in the young. Although acute MI is an uncommon entity in the young, it constitutes the incidence is increasing in young patients and has become important problem for such patients and their treating physicians because of its devastating effect on their more active lifestyle. There is a rising incidence of acute MI in young adults.¹ Although acute MI mainly occurs in older patients, young men and women can suffer MI. This disease carries a significant

morbidity, psychological effects and financial constraints for the person and the family when it occurs at a younger age.² Hence, it is important to identify and control cardiovascular risk factors at an early age to prevent the incidence in cases of young MI, to reduce the risk of MI at young age, to reduce the severity and complications. So, this study was carried out to study the clinical profile of acute myocardial infarction in young patients.

MATERIAL AND METHODS

This descriptive observational study was carried out in the Department of Medicine of a Tertiary Care Centre in Maharashtra over a period of two years. Approval from Institutional Ethical Committee was taken prior to the commencement of the study.

Study population

Patients aged 40 years or younger admitted to with a diagnosis of acute MI during the period of the study.

Inclusion Criteria

All patients aged 40 years or younger admitted with a diagnosis of acute MI. Most published studies have used a cut off point of 40 years and below to define young MI, hence in this study patients in the age 40 years and below were included. The final diagnosis of acute MI was based on two of the following criteria - ischemic chest pain for at least 30 minutes and ECG evidence of myocardial injury.¹

Exclusion Criteria

- Patients aged < 18 years
- Those patients 40 years or younger with acute MI who refused to give their written informed consent for the study.
- Patient who were not wished to continue in the study after giving the consent.

The patients were interviewed (or their relatives) who were eligible and given such written informed consent. The complete history was taken and the clinical examination was done. The weight and height measurements were converted into body mass index BMI= weight (kg) / Height (meters)². ECG and echocardiography was done along with angiography. Patients were managed accordingly.

Statistical analysis

Statistical analysis was carried out with the help of SPSS (version 20) for Windows package (SPSS Science, Chicago, IL, USA).

RESULTS

Patients belonged to age groups varying from 20 years to 40 years with a mean age of 34.16±4.81. Majority of patients belonged to age group of 36-40 years. Majorities were males (88%), and only 6 patients (12%) were females. There were 14 patients who had a normal BMI (28%). 28 patients had BMI between 25-30 kg/m²(56%). 8 patients had BMI between 31-35 kg/m²(16%). Out of 50 patients, 18% of patients belonged to lower class, the number of patients in middle class were 52%, and 30% patients were from lower middle class.

Table 1: Characteristics of the study population

Patient characteristics	No. of cases
Age	
18-25 years	01 (2%)
26-29 years	04 (8%)
30-35 years	17 (34%)
36-40 years	28 (56%)
Sex	
Male	44 (88%)
Female	06 (12%)
BMI	
<25 kg/m ²	14 (28%)
25-30 kg/m ²	28 (56%)
31-35 kg/m ²	08 (16%)
Socio-economic status	
Lower class	09 (18%)
Lower middle class	15 (30%)
Middle class	26 (52%)

Majority of patients presented with typical chest pain. 5 patients presented with atypical symptoms, one had only sweating, two had heaviness of chest, one had epigastric pain, one had sudden collapse.

Table 2: Clinical presentation of study population

Clinical presentation	No. of cases
Typical chest pain	44 (88%)
Atypical presentation	06 (12%)
Sweating	01
Heaviness of chest	03
Epigastric pain	01
Sudden collapse	01

Out of 50 patients with MI, 2% had family history of IHD, 24% had DM, and 36% had family history of HTN. Out of 50 patients, most common risk factor is smoking which is 68 %. Descending order of risk associated with MI in young was alcoholism 40%, Obesity 38%, Metabolic syndrome 38%, HTN 28% DM 26%, IHD 4%, and CKD 4%. Out of 50 patients, 45 (90%) patients have increased serial CPK MB and 5 (10%) patients have normal serial CPK MB. On ECG, 24 patients had AAMI (48%), 3 had anterolateral, 1 had anterior and inferior wall MI and 2 had anteroseptal MI. A total 38% i.e. 21 patients had inferior wall MI (IWMI- 42%). Out of 50 patients, 47 (94%) patients have increased Trop I and 3(6%) patients have normal Trop I. In patients with severe LV systolic dysfunction, all had AAMI. In the moderate LV systolic dysfunction group, 8 had AAMI and 4 had IWMI, and each 1 patient anteroseptal and anterolateral wall MI. In the mild dysfunction group, 7 had AAMI, 11 had IWMI and 2 had anterolateral location and 1 of Anterior+Inferior wall MI. 47 patients underwent coronary angiogram. 3 patients did not give consent for coronary angiogram. 38 patients had SVD (76%), 6 patients had DVD (12%). 3 patients had triple vessel disease (6%).

Table 3: Type of treatment given

Management	Number	Percentage
PTCA and stenting	38	76%
Thrombolysis	8	16%
Rescue PTCA	2	4%
CABG	2	4%

Majority of patients (38) underwent PTCA and stenting (76%), 8 underwent thrombolysis (16%), 2 patients had to undergo rescue PTCA as one patient developed hypersensitivity reaction and one had failure of thrombolysis. 2 patients with TVD underwent CABG. One patient did not undergo either thrombolysis as he presented too late for thrombolysis, or PTCA could not be done as he had developed acute renal failure. He was treated with antiplatelet agents. Of the total 50 patients, 47(94%) patients survived whereas 3(6%) patients succumb to death.

DISCUSSION

This was an observational study of clinical profile of 50 patients aged 40 and below admitted with a diagnosis of

acute MI. In this study MI in young was found to be more common in males as compared to females. MI in young was distinctly rare in premenopausal women. Also in a study on MI in young, Choudhury L and Marsh JD³ have concluded that MI in young is predominantly a disease of men. In our study majority of patients were in the age group of 30 – 40 years. In a study done by Tambyah *et al*⁴ on premature MI of the 32 patients studied, ages ranged from 32 to 40 years. About 25% of acute MI in India occur under the age group of 40 and 50% under the age group of 50. One center reported a 47-fold increase in the incidence of first MI under the age of 40 in the last 20 years.⁵ Majority of patients presented with typical chest pain in this study. In a study done by Chen *et al*⁶ was concluded that younger patients with coronary artery disease commonly present with an acute coronary syndrome without history of angina. In this study AWTMI was most frequent location of MI on ECG. In a study done by Tambyah *et al*⁴ on MI in young AWTMI was the most common location of MI. In a study done by Stone *et al*⁵ patients with anterior infarction had a substantially worse in-hospital and follow-up clinical course compared with those with inferior infarction, evidenced by a larger infarct size, lower admission left ventricular ejection fraction and higher incidence of heart failure and serious ventricular ectopic activity, in-hospital death and total cumulative cardiac mortality. In this study also AWTMI was found in 5 out of 6 patients who had complications like complicated arrhythmias, cardiogenic shock and cardiac arrest. In our study all patients had atherosclerotic changes on CAG, single vessel disease is the most common feature, LAD was most common infarct related artery. In a study done by Tambyah *et al*⁴ on MI in young all patients had evidence of atherosclerotic disease, majority had single vessel disease and LAD was the most common infarct related artery. In another study done by Chen *et al*,⁶ premature coronary artery disease was associated with acute coronary syndromes and complex stenosis morphologic features at angiography. Irregular lesions, filling defects, or both suggesting clot formation or plaque rupture has been recognized by angiography, angiography and autopsy in patients with unstable angina and myocardial infarction. In young MI there is angiographically complex stenosis morphologic features, and less extensive coronary artery disease.⁷ In this study, smoking, dyslipidemia and metabolic syndrome was the most common risk factor. According to a study done by Ismail *et al* a majority of young adults with acute MI have at least one identifiable risk factor. The risk factors noted are smoking, diet rich in cholesterol, sedentary lifestyle, diabetes, hypertension, paternal history of cardiovascular

disease.² In this study, prothrombotic states were not a risk factor. In this study, complications in young MI is minimal with good outcome in majority. In a study done by Moccetti *et al*⁸ Survival after myocardial infarction (MI) is influenced by multiple factors, of which age stands out as a major non-modifiable predictor of long term prognosis. Short and medium term prognosis in young MI survivors is known to be excellent. Young MI survivors had less severe coronary disease than older patients, which may explain their early favorable outcome. Left ventricular dysfunction would be expected to influence prognosis. It is important not only to diagnose early and treat adequately acute MI in young also it is essential to identify and prevent or treat risk factors at primary and secondary level. Majority of patients in this study were diagnosed with Diabetes, Hypertension. Patients with family history should especially be screened for risk factors. After the management 94% patients recovered, rest were died. Site for MI was significantly related to the outcome. Of the 3 died patients 2 were having 2 ASMI and 1 of Anterior and Anterior +inferior.

CONCLUSION

There is a need to increase awareness among the young population regarding the entity of MI in young hence stressing on modifying life style in terms of healthy diet, exercise, avoiding smoking and screening for risk factors in those at high risk. This simple measure can make a large difference in preventing the occurrence of MI in young.

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