Study of Clinical Profile, Risk Factors and Outcome of Acute Myocardial Infarction- A Rising Threat to Young Adults in Western India

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Abstract:

Introduction : Acute myocardial infarction in young adults is on the rise and is a leading cause of premature death worldwide now as compared to the last decade. Many risk factors are preventable, therefore their identification and taking necessary precautions can save many young adults.

Aim: To study clinical profile, risk factor and outcome of acute myocardial infarction in patient aged 45 yrs or younger than 45yrs.

Materials and methods: It was a cohort study conducted at GMERS Medical College and Hospital Vadnagar during November 2017 to March 2019.Total 56 patients with acute myocardial infarction aged 45 yrs or less than 45years were enrolled. A predefined Performa was used to collect patients history which includes name, unique id, sex, sociodermographic profiles, risk factors, clinical presentation, ECG findings, cardiac enzymes(CK-MB and Troponin I),serum lipid profile and chest X-ray and 2DECHOfindings and treatment outcomes.

Results: In this study out of 56 patients 40(71.43%) were male and 16(28.57%) were female. 44.64% patients were overweight and chest pain(71.4%) was the most common symptom followed by sortness of breath(46.4%). Smoking/tobacco(73.21%) was the commonest risk factor followed by dyslipdemia(66.07%) and family history(53.57%). In ECG most common was anterior wall MI(51%) followed by inferior wall MI (29%) . 92% had ST segment elevation and 8% had non ST segment elevation MI and Mortality was 3.5% .

Conclusion: Acute myocardial infarction in young adults is on rising trend now, so we need to strengthen preventive measures and increase awareness regarding cardiovascular risk factors. We also need to strengthen our research to identify new risk factors associated with acute myocardial infarction.

Keywords: Acute myocardial infarction; young adults; Echocardiography.

Introduction

India is going through an epidemiologic transition whereby burden of communicable diseases has been declining slowly, but that of non-communicable diseases has been rising rapidly, thus facing a dual burden[1].Initially Acute Myocardial Infarction was considered a disease, occurring exclusively in elderly population. Prior to 1950s it was rare to see a case of AMI in less than 30 years of age, and it was uncommon between 30 and 40 years of age [2]but recently, the incidence of AMI in young patients has increased. It is well established that ischemic heart disease is more common in people residing in urban areas as compared to rural population, probably due to higher level of stress, sedentary lifestyle and intake of high calorie diet [3,4]. Acute myocardial infarction in young adults is on the rise and is a leading cause of premature death worldwide. Acute myocardial infarction in young adults leads to significant morbidity, psychological effects and financial constraints for the person as well as his/her family [1]. The incidence of coronary artery disease in young has been reported to be 12-16% among Indians [2].Many risk factors are preventable, therefore identification and taking necessary precautions can save many young adults. Elevated blood pressure, smoking, diabetes, obesity, high cholesterol, inactivity, an unbalanced diet, binge drinking alcohol, and related substances are all risk factors. Additionally, AMI in very young patients aged ≤ 35 years has been poorly described but is estimated to be less than 2%[5]. The prevalence of CAD as well as AMI has progressively increased in India in the last three decades from 1.1% to 7.5% in the urban and 2.1% to 3.7% in the rural population [6].Moreover AMI in young patients is a graver problem for the individual as well as the community

because of greater loss of active life years, as well as a greater stain on healthcare[7].

Materials and methods

It was a cohort study conducted at GMERS Medical College and Hospital Vadnagar during November 2017 to March 2019. Total 56 patients attending Medicine emergency and outpatient department with acute myocardial infarction aged 45 yrs or less than 45years were enrolled in this study.. In this study we tried to include all eligible cases during study period after taking informed consent. We maintained confidentiality by limiting the identifying variables to a minimum. A predefined Performa was used to collect patients history which includes name, unique id, sex, sociodermographic profiles, risk factors, clinical presentation, ECG findings, cardiac enzymes(CK-MB and Troponin I),serum lipid profile and chest X-ray and 2DECHOfindings and treatment outcomes.

Inclusion Criteria

Young Adults 45 yrs or younger than 45years attending emergency or outpatient department of Medicine Department at GMERS Medical College and Hospital Vadnagar from november 2017 to march 2019.

Exclusion Criteria:

Patients already having congenital heart disease, pregnant females and patients who refused to give consent.

Result:

In this study we found 56 patients of aged 45 yrs or less attended emergency or outpatient department of Medicine Department with sign and symptoms of acute Myocardial Infarction at GMERS Medical College and Hospital, Vadnagar. Among them 40(71.43%) were male and 16(28.57%) were female patients. Out of 56 patients 1 patient from 21 to 25 years age group , 10 patients were from 26 to 30 years age group, 13 patients were from 31 to 35 years age group , 15 patients were from 36 to 40 years age group and remaining 17 patients were from 41 top 45 age group. youngest patient was 23 years old male. Out of 56 patients 16(28.57%)patients had normal body mass index , 25(44.64%) patients were overweight and 15(26.78%) were obese. In clinical presentation chest pain(71.4%) was the most common symptom followed by sortness of breath(46.4%). In risk factors smoking/tobacco(73.21%) was the commonest risk factor followed by dyslipdemia (66.07%) and family history(53.57%).

Table 1: Presenting clinical features of acute myocardial infarction in young adults (n=56)

Presenting clinical features	No. Of patients	Percentage
Chest pain	40	71.4
Sortness of breath	26	46.4
Profuse swaeting	22	39.28
Nauses	15	26.78
Epigastric pain and vomiting	15	26.78
Sudden collapse	2	3.57

Table 2:riak factors associated with acute myocardial infarction in young adults (n=56)

Risk factor	No. of patients	Percentage
Smoking/tobacco	41	73.21
Dyslipidemia	37	66.07
Family history	30	53.57
Alcoholic	28	50
Diabetes	22	39.28
Hypertension	21	37.5
H/o substance abuse	5	8.9

In cardiac markers 51patients had elevated ck-MB level and 47 had elevated Troponin-I level. In lipid profile 41 had Triglyceride level >160mg%, 39 had LDL >100mg% and 35had HDL <60mg%.In ECG findings to the site of MI in young adults most common was anterior wall MI(51%) followed by inferior wall MI (29%) and anteroseptal wall MI(20%).ECG finding at the presentation to hospital showed 92% had ST segment elevation MI and 8% had non ST segment elevation MI. In Echocardiography findings left ventricular ejection fraction was ≥50% in 21 patients, 40-49% in 24 patients and <40 cent in 6 patients.In this study

overall 2(3.5%) young patients were died and remaining 54 patients were recovered from MI.

Discussion

In this study 56 patients of aged 45 yrs or less attended emergency or OPD of Medicine Department with sign and symptoms of acute myocardial infarction at GMERS Medical College and Hospital, Vadnagar were enrolled. Mean age of the patients was 38.64 which is well corrlelaed with with study by Bhardwaj R et al. [8] (mean age 35.4yrs) and Neki NS et al.[9] (mean age 38.7yrs). In our study 40(71.42%) were male and 16(28.57%) were females which is consistent with some Indian

and International studies [10-12]. Higher prevalence in male is due higher prevalence of smoking like common risk factors in male. In present study smoking/tobacco(73.21%) was the commonest risk factor which is comparable with study of Coronavirus et al.[13], Sood n et al. [14] and Pandya t et al. [15]. In clinical presentation chest pain(71.4%) was the most common symptom this was correlated with study of Andreas w et al. [11].Majority of patients(44.64%)in this study were overweight which is well correlated with study of Gupta R et al. [16]. In this study ECG findings to the site of MI in young adults most common was anterior wall MI(51%) followed by inferior wall MI (29%) and anteroseptal wall MI(20%). ECG finding at the presentation to hospital showed 92% had ST segment elevation MI and 8% had non ST segment elevation MI. Similar findings were reported in studies conducted by Sricharan KN et al. [17], and Rathod KS et al. [18], Deshmukh PP et al. [19], where the majority of the Acute Myocardial Infarction cases were ST segment elevation MI . If patient appear to hospital immediate to onset of MI, in ECG often ST segment elevation is observed. To observe dynamic changes serial ECG are necessary. In present study Echocardiography findings showed left ventricular ejection fraction was ≥50% in 21 patients, 40-49% in 24 patients and <40 cent in 6 patients. Our finding were correlated with previous studies [20-22]. Majority of young acute myocardial infarction patients had good clinical outcome in this study. Mortality in this study is 3.5% which is 1.7% in study of Indramohan V et al. [23]. This difference may be due to limited sample size.

Limitations

1GMERS Medical College and Hospital, Vadnagaris rural area so we were found small sample size, which may limit the generalisability of the findings. Due to logistic constrains angiography and angioplasty were not done.

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