

Outcome of Patients with Acute Myocardial Infarction in A Tertiary Care Center**Dr. Hetal Chauhan***, **Dr. Sathwik Gummadi****, **Dr. Vaibhavi Patel****, **Dr. Arpan Patel*****

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KEY WORDS : acute myocardial infarction, risk factors, outcome**ABSTRACT**

Background : Cardiovascular Diseases is a global health problem and an important cause of morbidity and mortality in the developed as well as the developing countries. Acute myocardial infarction is a key component of the burden of cardiovascular diseases. A majority of patients with acute myocardial infarction have at least one identifiable risk factor. This study aimed to assess the risk factors, clinical profile and the outcome of acute myocardial infarction.

Methods : This study included 50 patients admitted to coronary care Unit of our tertiary care hospital with acute myocardial infarction fulfilling the inclusion criteria. Detailed history was obtained from all patients. Patients were managed according to standard guidelines.

Results : Incidence of acute myocardial infarction was greater in male (70%) than females (30%). HTN was most prevalent co-morbidity (58%) followed by Diabetes Mellitus (40%). Smoking was most prevalent modifiable risk factor (54%) followed by dyslipidemia (52%) and tobacco chewing (36%). All smokers were male. Anterior wall myocardial infarction was most common presentation (46%). Single vessel disease was most common abnormality (17%) on coronary angiography. Most common complications were heart failure (18%) and cardiogenic shock (18%). 5 patients (10%) were died due to various complications of acute myocardial infarction.

Conclusion : Smoking, dyslipidemia & tobacco are common modifiable risk factors in acute myocardial infarction. Hypertension and Diabetes Mellitus are common non modifiable risk factors. Anterior wall myocardial infarction is most common presentation. Most patients have single vessel disease. Outcome is good in majority patients.

INTRODUCTION

Cardiovascular diseases are an important cause of morbidity and mortality in the developed as well as the developing world. By 2030, WHO predicts that 32.5% of the deaths occurring worldwide will be caused by cardiovascular diseases (CVD)¹. In India alone, cardiovascular diseases account for 25% of the total deaths. More than 80% cardiovascular deaths were from middle and low income country in 2005. Researchers project that CVD alone will be responsible for more deaths in low income countries than infectious diseases.² In our country the CVD risk factors among the rural as well as the urban poor and middle class are on the rise. The burden of cardiovascular diseases is very much at our doorstep. This is a frightening scenario considering that India is home to almost 17% of the world's population.

Like many other non-communicable diseases, cardiovascular diseases have a long latency and have numerous modifiable risk factors. One of the important advances in cardiovascular research has been with regard to the identification of risk factors associated with cardiovascular diseases. Based on these risk factors treatment plans have been drawn and meticulously tested with the goal of altering the outcome. Numerous studies have been conducted to highlight the importance of risk factors associated with cardiovascular diseases. Acute myocardial infarction (AMI) is a key component of the burden of cardiovascular diseases. Majority of patients with acute myocardial infarction have at least one identifiable risk factor. This study highlights risk factors, clinical profile and outcomes of acute myocardial infarction in a tertiary care hospital.

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MATERIALS AND METHODS

50 Patients admitted to our hospital with a diagnosis of acute MI from year 2017 to 2019 were studied regarding the risk factors, clinical presentation, complications and outcome within that admission who were full filling inclusion criteria. Patients of both sex, of any age having first time myocardial infarction (diagnosed by history, ECG & Enzymes), within 48 hours onset of chest pain, both thrombolysed or non thrombolysed were included. Patients having chronic obstructive pulmonary disease, cor-pulmonale, valvular heart disease, congenital heart disease, previous myocardial infarction, complete heart block, arrhythmias, cardiomyopathy, ECG evidence of LBBB, suspected pulmonary embolism or associated pericardial disease were excluded. Detailed history was obtained from all patients, including the presence of risk factors like Diabetes Mellitus (DM), Hypertension (HTN), smoking, alcohol & tobacco Chewing, family history of ischemic heart disease (IHD). Baseline Investigation were done in all patient including complete blood count, blood sugar, renal function test, lipid profile, chest x-ray. Cardiac biomarkers, namely highly sensitive troponin I and CPK-MB were done in all patients. Patients were managed according to standard guidelines.

RESULTS

As shown in table 1, incidence of AMI is higher in the age group of 51-70 years and higher in male (70%) than females (30%). In later age group incidence of AMI is increased gradually in females. Retrosternal chest pain lasting more than 30mins is dominant symptom in AMI (86%) followed by sweating (50%), palpitation (32%), dyspnea (28%), syncope (2%). As shown in table 2, HTN is most prevalent co-morbidity (58%) present in our study. Smoking is most prevalent (54%) modifiable risk factor present in patients with AMI and all of them were male. Figure 1 describes that Out of 50 patients 25 (50%) had 2 or more risk factors.

Anterior wall MI (AWMI) is most common ECG presentation than any other types of AMI (46%). Inferior wall MI (IWMI) is second most prevalent type AMI (22%) (table 3). Cardiac markers CPK was elevated in 90% and Troponin I was elevated in 96% patients. AWMI is most common cause for severe LV dysfunction found in echocardiography. In present study, out of 23 patients presented with AWMI 5 patients had LVEF of $\leq 30\%$, 8

patients had LVEF of 31-40%, 8 patients had LVEF of 41-50% and rest 2 had normal LVEF ($>51\%$) (Table-4).

Out of 33 patients undergone for coronary angiography (CAG), 17 patients (34%) had single vessel disease, 7 patients (14%) had double vessel disease and 4 patients (8%) had triple vessel disease. Rest 5 patients (10%) had normal coronaries. 17 Patients didn't undergo for CAG because of reasons like altered renal function, hemodynamic instability, elderly age & patient deference. Some of our Patients died before progressed to coronary unit due to complications. Primary percutaneous coronary intervention (PCI) is treatment of choice for AMI. In present study out of 50, 8 patients (16%) underwent primary PCI. 42 patients, who were unable to transfer to coronary unit at time presentation, treated with thrombolysis. Then out of 42, 14 patients (28%) underwent CAG & then PTCA. 2 Patients (4%) gone for CABG. 5 patients with normal coronaries and 21 patients who refused for per cutaneous intervention were managed medically (table 5).

Complications occurred in 50% patients in which heart failure (18%) and cardiogenic shock (18%) were commonest followed by tachyarrhythmia (12%) and heart block (2%). 9 patients with heart failure was managed successfully without any mortality. Out of 9 patients who were complicated by cardiogenic shock, 7 patients treated successfully & rest 2 patients died. Out of 6 patients who complicated by tachyarrhythmia, 2 patient died and 4 revived successfully. One Patient progress to Heart Block & could not revived. Among different types of AMI, AWMI is common cause for death. In present study, Out of 5 (10%) mortality, 3 (6%) patients died of AWMI, 1 (2%) died of LWMI and another 1 (2%) due to IWMI+PWMI.

Table 1 : Age Distribution

AGE	MALE	FEMALE	TOTAL	%
<40	2	0	2	4%
41-50	6	0	6	12%
51-60	13	4	17	34%
61-70	11	5	16	32%
71-80	3	3	6	12%
>80	0	3	3	6%
TOTAL	35	15	50	100%

Table 2 : Prevalence Of Risk Factor In Patients With Mi

RISK FACTOR	NO OF PATIENTS	%
HTN	29	58%
DM	20	40%
SMOKING	27	54%
TOBACCO CHEWING	18	36%
ALCOHOL	14	28%
FAMILY HISTORY	15	30%
DYSLIPIDEMIA	26	52%

Figure - 1 : Frequency of Risk Factors

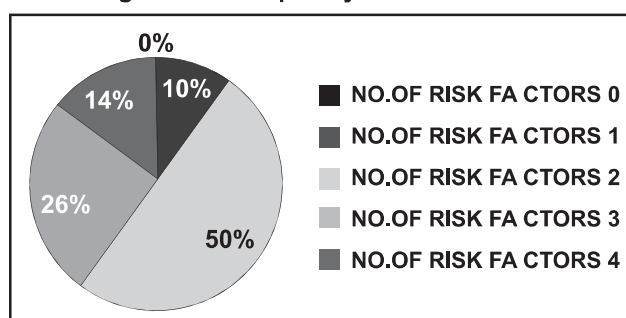


Table - 3 : Type of Presenting Mi

TYPE OF MI	NO OF PATIENTS	%
AWMI	23	46%
IWMI	11	22%
LWMI	3	6%
IWMI+RWMI	2	4%
IWMI+PWMI	1	2%
ANTERO-SEPTAL MI	4	8%
AWMI+LWMI	6	12%
TOTAL	50	

Table.4 : Echocardiography Findings in Different Mi

LVEF%	AWMI	IWMI	ANT SEPTAL MI	AWMI+LWMI	LWMI	IWMI+RWMI	IWMI+PWMI	TOTAL
<=30	5	0	0	4	0	0	1	10
31-40	8	2	4	2	0	1	0	17
41-50	8	6	0	0	3	0	1	18
>51	2	3	0	0	0	0	0	5
TOTAL	23	11	4	6	3	1	2	50

Table 5 : Treatment Modality Used For Mi

TREATMENT	NO OF PATIENTS	%
PRIMARY PCI	8	16%
THROMBOLYSIS & PTCA	14	28%
CABG	2	4%
MEDICAL MX ONLY	26	52%
TOTAL	50	

DISCUSSION

In this study, incidence of acute MI was higher in age group of 51-70 year. In a study done by Harlan M. Krumholz et al³ on relationship of age with AMI, 34% patients under age of 65 years. In present study, 62% patients were below age of 65 years. MI was found to be more common in males as compared to females in younger age group. Incidence of AMI increases with age in females. This is because of protective effect of estrogen in young females. Balakumaran V et al⁴ also shows higher incidence of AMI in males (66%). Alvaro Avezum MD⁵ has concluded that MI is predominantly a disease of men, about 2/3rd of patients (67%) in study were male. In our study also 70% of patients were male. Malik MJ et al⁶, has been concluded that 93% of patients presented with chest pain as chief complaint. This also comparable to our study that about 86% of patients were presented with typical chest pain. In this study smoking, dyslipidemia and tobacco chewing are most common risk factors (54%, 52%, 36% respectively). Balakumaran V et al⁴ also concluded that smoking is commonest risk factor in AMI. In Patel G. N. Ravi et al⁷, majority of adults with AMI had at least one identifiable risk factor and the risk factors noted were smoking (64.70%), sedentary lifestyle (23.52%), diabetes (52.94%), hypertension (34%), paternal history of cardiovascular disease (26.47%). This is similar in our

study where HTN, DM and family history were also risk factors (58%, 40%, 30% respectively). All patient had minimum one risk factor for AMI.

In a study Hiremath RG et al⁸, on correlation of ECG & CAG findings in AMI, AWMI was the most common location (32%) of MI, this is also comparable to our study where AWMI is most frequent location of MI on ECG (46%). In our study, CAG showed single vessel disease (34%) was the most common feature and LAD was most common infarct related artery. In Hiremath RG et al⁸, all patients had evidence of atherosclerotic disease, 58% of patients had single vessel disease and LAD was the most common infarct related artery. In a study done by P H Stone et al⁹, 23 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 & serious ventricular ectopic activity, in-hospital death and total cumulative cardiac mortality. Sathishkumar et al¹⁰ also showed high mortality in anterior wall MI. Similarly our study also AWMI was found to have higher incidence of severe LV dysfunction and complications like arrhythmias, cardiogenic shock and death compare to other inferior or lateral wall MI.

In this study, complications in AMI are minimal with good outcome in majority. According to Morcetti Tet al¹¹, 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. Young MI survivors have less severe coronary disease than older patients, which may explain their early favourable outcome. It is important not only to diagnose early and treat adequately AMI, it is also 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 after an attack of MI. Hence it is important to diagnose and treat these conditions at an early stage before they can lead to such devastating complications. Patients with family history should especially be screened for risk factors. There is a need to increase awareness among the population regarding the entity of MI in Adults 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.

CONCLUSION

Smoking, dyslipidemia & tobacco are common modifiable risk factors in acute myocardial infarction. Hypertension and Diabetes Mellitus are common non modifiable risk factors. Anterior wall MI is most common presentation on acute myocardial infarction. Most patients of acute myocardial infarction have single vessel disease. Outcome is good in majority patients.

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