Study of clinical outcomes of patients suffering from acute Myocardial Infarction in Pravara Rural Hospital, Loni

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Abstract

Introduction: The aim of present study was to study the immediate outcome of fibrinolytic therapy, to correlate the time of institution of fibrinolytic therapy with clinical outcomes in patients suffering from Acute Myocardial Infarction in Pravara Rural Hospital, Loni.

Material and methods: It was a retrospective study carried out in collaboration with the Department of Medicine, Pravara Rural Hospital, Loni. All complete records of the patients diagnosed with AMI of age 18 & above of both gender and who received fibrinolytic therapy were included in the study. Records of patients with reinfarction, history of renal disorders, congenital cardiac defects, cardiomegaly, and peripheral vascular diseases were excluded. The age, gender, co-morbidities, history of addiction, time to institution of fibrinolytic therapy, immediate clinical outcome, ECG changes was collected from the records.

Results: 150 patient's records were included for the study, of which 122(81.3%) were males and 28(18.6) were females. The average age of patients was 56.95±12 years. The common comorbidities seen in the present study were Diabetes mellitus and Hypertension. Addiction of tobacco chewing, smoking and Alcohol consumption was observed in 67.3% of patients. STEMI was observed in 73.3% of patients, while NSTEMI and other ECG abnormalities were observed in 26.6% of patients. Only 21(14%) patients reported within one hour of complaints, 63 (42%) patients reported after between 1 and 6 hours, while 51(34%) patients reported after 6 hours. There was no correlation found in the time of institution of fibrinolytic therapy and clinical outcome of the patients.

Conclusion: Delay in hospitalization of patient of AMI is common. There is a rising trend of AMI seen in the younger age group leading to pre mature death and mortality. AMI was commonly observed in males of middle age group, addiction of tobacco, history of hypertension and diabetes and ECG changes of ST segment elevation. There was no correlation found between the time of institution of fibrinolytic therapy and immediate clinical outcome of the patients. Further studies are required to establish the reasons behind delay in hospitalization of patients.

Keywords: Acute Myocardial Infarction, Thrombolytics, Fibrinolytic, Acute coronary syndrome.

Introduction

Coronary artery disease (CAD, also called coronary heart disease, or CHD) is caused by the narrowing of coronary arteries. If a coronary artery suddenly becomes completely blocked, it can result in a myocardial infarction.[1]

Coronary heart disease (CHD) is the single most common cause of death globally, with 7.4 million deaths in 2013, accounting for one-third of all deaths.[2] In contrast to developed countries, where mortality from CHD is rapidly declining, it is increasing in developing countries.[3] Asian region has one of the highest cardiovascular mortality rates in the world.[4] In India, more than 10.5 million deaths occur annually, and it was reported that CVD led to 20.3% of these deaths in men and 16.9% of all deaths in women.[5] The mortality varies from 35% in more developed urban locations.[6] Using clinical criteria, older epidemiology studies reported CHD in urban Indian locations in 1.5%-4.0% of the population.[7-19] Prevalence of CHD was lower in rural locations at 0.5%-2%.[20-29]

Myocardial Infarction (MI) is the irreversible necrosis of heart muscle secondary to prolonged ischemia. The mainstay for treatment of acute attack of MI is fibrinolytic therapy (FT), percutaneous coronary intervention (PCI) and coronary artery bypass graft (CABG).

PCI has been found to be superior to FT when performed in a timely manner. However, owing to the facilities required for performing PCI, it is not universally available.[30] PCI is not useful in occasion of delay and the mortality remains high despite of procedure done.[31] Although, given a choice of therapy for MI, PCI is preferred, but it is more important to timely administer some form of reperfusion therapy rather than the mode of treatment.[32]

CABG involves replacement of affected blood vessel with grafts obtained from aorta via open heart surgery. This procedure improves the blood supply to the heart. CABG is more effective at improving the symptoms of angina in the form of pain mitigation when compared with PCI at 1 and 5 years after therapy. A repeat coronary revascularization is required less commonly after CABG as compared to that done after PCI. When the number of cerebrovascular accidents are compared after the therapy, it is more commonly in patients undergoing CABG than with PCI.[33,34]

It is crucial to institute fibrinolytic therapy to diagnosed patients of MI within an hour. Streptokinase is the drug of choice in Acute Myocardial Infarction. Alteplase is advantageous over streptokinase in terms of higher thrombolytic efficacy, but, the incidence of hemorrhage remains high.[35]

Along with the fibrinolytic therapy, Aspirin or Clopidogrel with or without heparin is instituted to prevent reocclusion. The incidence of reinfarction, and as consequence mortality, is lowered with continuation of aspirin/clopidogrel prophylaxis in post – Myocardial Infarction patients.[35]

In view of the burden of disease in rural and urban areas, it was of interest to study the clinical outcomes of Acute Myocardial Infarction in our setup. The aim of present study was to study the immediate outcome of fibrinolytic therapy, to correlate the time of institution of fibrinolytic therapy with clinical outcomes in patients suffering from Acute Myocardial Infarction in Pravara Rural Hospital, Loni.

Methods and Materials

It was a retrospective study carried out in collaboration with the Department of Medicine, Pravara Rural Hospital, Loni. The study was conducted after the approval of The Institutional Ethics Committee. Complete records of Acute Myocardial Infarction patients admitted to the Intensive Care Unit of PRH, Loni, from 2013-2015 were included.

All complete records of the patients diagnosed with AMI of age 18 & above of both gender and who received fibrinolytic therapy were included in the study. Records of patients with reinfarction, history of renal disorders, congenital cardiac defects, cardiomegaly, and peripheral vascular diseases were excluded. Also, records of patients with history of chronic drug intake for rheumatic arthritis, bronchial asthma, chronic obstructive pulmonary disease. The records thus satisfying the inclusion and exclusion criteria were included in the study.

The age, gender, co-morbidities, history of addiction, time to institution of fibrinolytic therapy, immediate clinical outcome, ECG changes was collected from the records.

Results

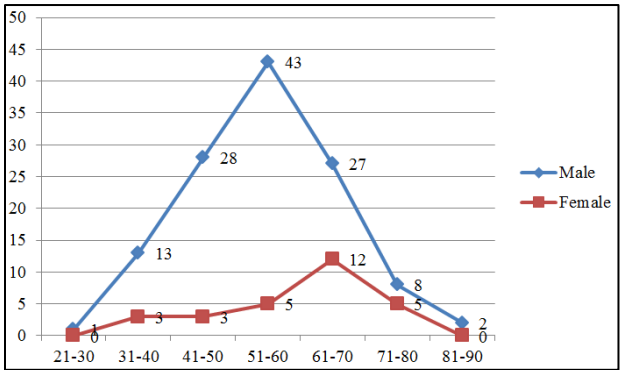

Fig. 1: Distribution of patients according to age group.

150 patient's records were included for the study, of which 122 (81.3%) were males and 28 (18.6) were females. Most of the patients belonged to age group of 51-60 years (50, 30%) followed by 61-70 years (39, 26%) and 41-50 years (31, 20.6%), as shown in Fig. 1.

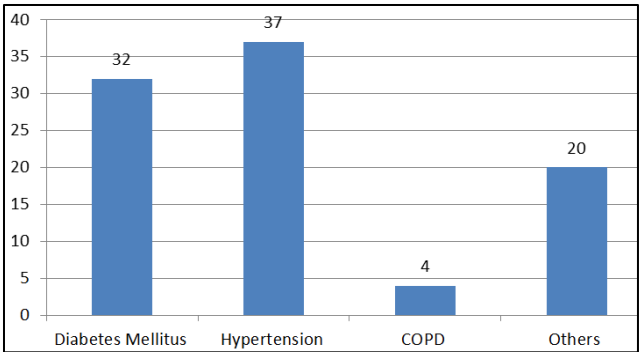

Fig. 2: Distribution of patients according to comorbidities.

Of all patients, 93(62%) were suffering from comorbid conditions. Hypertension (37, 21.3%) followed by Diabetes mellitus (32, 21.3%) were the most common comorbidities observed in the patients (Fig. 2). Forty nine (32.6%) patients had no history of any addiction, while 101(67.3%) patients had history of addiction of alcohol and tobacco.

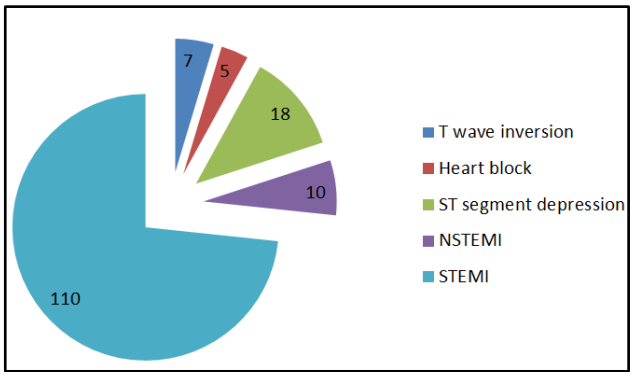

Fig. 3: Distribution of patients according to ECG changes seen during discharge of the patients.

STEMI (110, 73.3%) followed by ST segment depression (18, 12%) were the most common ECG changes seen among the patients (Graph no. 3).

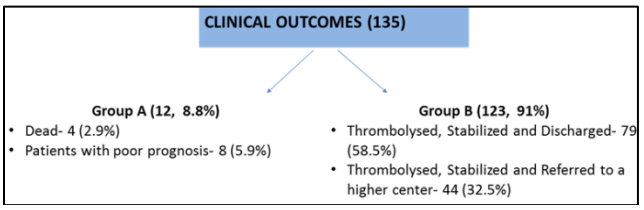

Fig. 4: Clinical outcome of patients

Fifteen patients took discharge against medical advice or on request. These patients were not considered for clinical outcome. Of the 135 patients, those with poor prognosis (8, 5.9%) and who died (4, 2.9%) were in group A (12, 8.8%). Similarly, patients who were thrombolysed, stabilized and discharged (79, 58.5%) or referred to a higher center (44, 32.5%) were included in group B (123, 91%), as displayed in Figure no. 4.

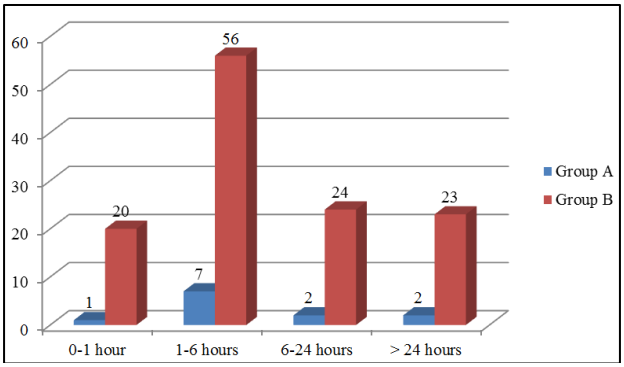

Fig. 5: Distribution of patients according to time of institution of therapy and clinical outcome

Group A- Dead and poor prognosis patients.
Group B- Stabilized and discharged or referred patients.

Fig. 5 displays distribution of patients according to time of institution of therapy and clinical outcome. Most of the patients belonged to the 1-6 hours category in both group A and B.

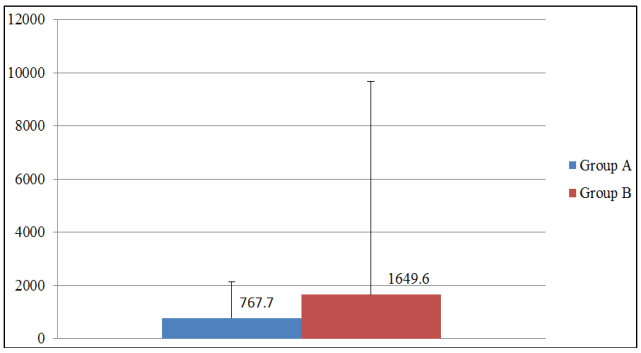

Fig. 6: Time of institution of fibrinolytic therapy in Group A and Group B.

Fig. 6 displays the time of institution of groups A (767.7±1366) and group B (1649±8018). On comparing the groups, there was no statistically significant difference between outcome of the two groups with respect to time of institution of therapy (P= 0.78, Mann-Whitney test)

Discussion

The aim of present study was to find the correlation between the time of institution of fibrinolytic therapy with the clinical outcome in the patients of Myocardial infarction. All patients in the study received Streptokinase as fibrinolytic agent.

The average age of patients in the present study was 56.95±12 years. The average age of patients in studies done by Kumar V et al,[36] Mishra TK et al[37] and Kumar N et al[38] was 58.90±12.3, 56.34±11.88 and 58.25±9.69 years respectively. The mean age in our study is similar to their studies. The finding that MI was more commonly seen in males is supported by Kumar V et al,[36] Mishra TK et al[37] and Kumar N et al,[38] Holay MP etal[39] and Misiriya KJ et al.[40] The age group of 51-60 years was commonly affected in males, while age group of 61-70 years was commonly affected in females. A bimodal distribution was observed in the present study (Fig. 1). This could be due to more exposure to stress in this age group in males and hormonal protection in females till menopause.

The common comorbidities seen in the present study were Diabetes mellitus and Hypertension. Being a retrospective study, BMI for obesity of patients could not be assessed. Sanghvi S et al[41] observed Hypertension and dyslipidemia as common comorbidities. Diabetes mellitus, Hypertension and dyslipidemia were common comorbities seen in study done by Mishra TK et al.[37] Sinha SK etal[42] observed obesity as common comorbidity in patients of Myocardial infarction.

Addiction of tobacco chewing, smoking and Alcohol consumption was observed in 67.3% of patients. The addiction of Tobacco consumption was common in study done by Sanghvi S et al,[41] Kumar N etal[38] and Sinha SK et al.[42] Similar to our study, Mishra TK et al[37] observed smoking and alcoholism to be common in patients.

STEMI was observed in 73.3% of patients, while NSTEMI and other ECG abnormalities were observed in 26.6% of patients. In the study done by Misiriya KJ et al,[40] the STEMI was seen in 56%, while NSTEMI and other ECG abnormalities were seen in 44% of patients. The disparity of data may be due to difference in geographical location and population.

Only 21(14%) patients reported within one hour of complaints, 63(42%) patients reported after between 1 and 6 hours, while 51(34%) patients reported after 6 hours. In the study done by Venkatesan VCK et al,[43] decreased pain, ignorance about AMI, symptom perception, perceived seriousness and inadequate family & other social support were the factors found to delay in reporting of the patients for management. Being a rural setup, the delay could be due to ignorance about AMI, while at the same time, availability of a tertiary care center reduced the delay.

There was no correlation found in the time of institution of fibrinolytic therapy and clinical outcome of the patients. The sample size for estimation of correlation was only 135, as 15 patients were not available for their clinical outcome. Being a short term student project, the sample size was too small to determine the correlation. Studies done by Zubaid M et al[44] and

Abba AA et al[45] observed better clinical outcome in patients who reported early as compared to those who reported later.

Shortcomings of the study were the retrospective study design and small sample size.

Conclusion

Delay in hospitalization of patient of AMI is common. There is a rising trend of AMI seen in the younger age group leading to pre mature death and mortality. AMI was commonly observed in males of middle age group, addiction of tobacco, history of hypertension and diabetes and ECG changes of ST segment elevation. There was no correlation found between the time of institution of fibrinolytic therapy

and immediate clinical outcome of the patients. Further studies are required to establish the reasons behind delay in hospitalization of patients.

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Conflict of Interest: None.

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