In Hospital Outcomes of Patients with ST Segment Elevation Myocardial Infarction, Late for Thrombolysis
Najeeb Ullah¹, Mehroze Sajjad², Azmat Ehsan Qureshi¹, Ali Ammar²

ABSTRACT
Background: Myocardial infarction (MI) especially with ST segment elevation MI (STEMI) is a highly morbid and fatal entity and can result in various electrophysiological and mechanical complications during in hospital stay.
Objective: To determine the in hospital outcomes of patients with ST segment elevation myocardial infarction, late for thrombolysis.
Material and methods: This descriptive cases series was conducted at Rehmatul Lil Alameen Institute of Cardiology, PESSI, Lahore during 01-06-2018 to 31-12-2018. The cases of both genders with age 30 years or more, having ST elevation MI who were late for thrombolysis were included. The patients were looked for various outcomes like cardiogenic shock, left ventricular thrombus, heart block, death or discharge from the hospital.
Results: In this study out of 105 cases, 74 (70.5%) males and 31 (29.5%) females. The mean age was 58.40 ± 11.19 years and mean duration of hospital stay was 6.77 ± 3.34 days. LV clot was seen in 7 (6.67%) of the cases, cardiogenic shock in 23 (21.9%) and complete heart block in 4 (3.81%) of the cases. Out of 105 cases, 9 (8.57%) died while rest were discharged. Regarding different types of MI, death was seen in 5 (8.1%) cases in AWMI, 4 (10%) in IWMI and none in LWMI out of their respective groups with p= 0.81.
Conclusion: STEMI is a highly morbid entity in cases those are late from thrombolytic and cardiogenic shock is the most common complication observed.
Key words: ST segment elevation, Myocardial infarction, Left ventricular thrombus, Cardiogenic shock.

INTRODUCTION
Acute coronary syndrome is one of the leading causes of cardiovascular associated death and disability. It can be divided broadly into myocardial infarction (MI) and angina pectoris depending upon the duration of chest pain and Electrocardiogram (ECG) changes. It can further be sub-classified into ST segment elevation MI (STEMI) and NSTEMI.¹ ²

There are multiple predisposing risk factors that can lead to a higher incidence of ischemic heart disease and include diabetes mellitus, hypertension, family history of IHD, smoking, dyslipidaemia, hyperuricemia and have a varying degree of association with disease entity and ultimately to the outcome. Early intervention in the form of pain relief, oxygenation and revascularization is the key to success.³ ⁴

In the developed countries early percutaneous coronary intervention (PCI) or primary PCI is being practiced in contrast to thrombolytic therapies which are still being practiced in the developing countries like Pakistan. Yet there are number of cases that report late to the window period which has shown to reveal good efficacy in cases of acute MI. The late presentation is multifactorial i.e. lack of development of proper referral system, lack of facilities at various centres, lack of knowledge about disease, late detection of the disease, poor educational and socioeconomic factors and also the slow transportation systems are the major contributing factors for late presentation and hence late for thrombolysis.⁵ ⁶

Early perfusion can avoid various dreadful complications as infarction and fibrosis are irreversible processes if left untreated and sequels can be devastating. There are multiple complications that can arise from acute MI with or without thrombolysis; though the number is higher in cases that lack reperfusion therapy in the form of PCI or thrombolysis. The major complications include heart failure, cardiogenic shock, heart blocks, arrhythmias, ventricular rupture, left ventricular thrombus (LVT) and even death in cases who do not receive the early recanalization therapy.⁷ ⁸ That is why this study was planned as sensitizing concern to see the complications in cases who were late to thrombolytic therapies, so that it can raise the awareness with provided data to report early and undergo required management.

¹ University College of Medicine, The University of Lahore
² Rehmatul Lil Alameen Institute of cardiology, PESSI, Lahore

Correspondence: Dr. Najeeb Ullah,
Assistant Professor of Cardiology,
University College of Medicine, The University of Lahore

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MATERIALS AND METHODS

This was a descriptive cases series, which was conducted at Rehmatul Lil Alameen Institute of Cardiology, PESSI, Lahore during 01-06-2018 to 31-12-2018. The cases of both genders with age 30 years or more were having ST elevation MI who were late for thrombolysis (more than 12 hours of onset of symptoms) were included. The diagnosis of STEMI was made on the basis of chest pain lasting for more than 30 minutes, with new ST elevation at the J point in at least two contiguous leads of = 2mm in men or = 1.5mm in women in leads V2-V3 and/or = 1mm in other contiguous chest leads or limb leads according to the American Heart Association guidelines. The history of co morbid conditions like diabetes mellitus (DM), Hypertension (HTN), smoking and family history of premature coronary artery disease (CAD) was also taken. All the patients underwent echocardiography to look for hypoechoic area to label left ventricular thrombus (LVT), ejection fraction (EF) and cardiogenic shock was labelled on the basis of persistent hypotension and need of ionotropic support and ECG was done daily to look for any arrhythmia or heart block where the latter was labelled when there was complete asynchrony between atrial and ventricular rhythm. At the end the patients were looked for death or discharge from the hospital. Sample size

Sample size was calculated as 105 by keeping the confidence level equal to 95% and the margin of error equal to 9.3% and the anticipated prevalence of left ventricular thrombosis in cases not receiving thrombolysis as 62.06%.

Statistical Analysis

SPSS version 23.0 was used for data analysis and interpretation. Mean and SD were used for quantitative variables and frequency and percentage for qualitative variables. Post stratification chi square test was applied and p value =0.05 was considered as significant.

RESULTS

In this study there were total 105 cases admitted. There were 74 (70.5%) males and 31 (29.5%) females (Table 1). The mean age of the subjects was 58.40 ± 11.19 years and mean duration of hospital stay was 6.77 ± 3.34 days as in table 1. There were 34.3% cases with DM, 45.7% had HTN, 47.6% were smokers and 18.1% had family history of premature (CAD). Left ventricular thrombus was seen in 7 (6.67%) of the cases, cardiogenic shock in 23 (21.9%) and complete heart block in 4 (3.81%) of the cases. Out of 105 cases, 9 (8.57%) died while rest were discharged as in figure 1. Regarding different types of MI, death was seen in 5 (8.1%) cases in Anterior wall MI (AWMI), 4 (10%) in Inferior wall MI (IWMI) and none in Lateral wall MI (LWMI) out of their respective groups with p= 0.81 as shown in table 2.

<table>
<thead>
<tr>
<th>Study variables</th>
<th>Number</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Male</td>
<td>74</td>
<td>70.5%</td>
</tr>
<tr>
<td>Female</td>
<td>31</td>
<td>29.5%</td>
</tr>
<tr>
<td>DM</td>
<td>36</td>
<td>34.3%</td>
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<tr>
<td>HTN</td>
<td>48</td>
<td>45.7%</td>
</tr>
<tr>
<td>Smoker</td>
<td>50</td>
<td>47.6%</td>
</tr>
<tr>
<td>Family h/o CAD</td>
<td>19</td>
<td>18.1%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Study variables</th>
<th>Mean ± SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>58.40 ± 11.19</td>
<td>34-90</td>
</tr>
<tr>
<td>Duration of hospital stay</td>
<td>6.77 ± 3.34</td>
<td>3-16</td>
</tr>
<tr>
<td>Mean Ejection fraction</td>
<td>38.72 ± 8.66</td>
<td>20-60</td>
</tr>
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</table>
Heart failure or cardiogenic shock was one of the most common complications seen along with arrhythmias in cases after acute myocardial infarction and even in cases that had undergone thrombolysis therapy. The overall incidence of cardiogenic shock after acute MI is seen in around 25-30% and the mortality ranges from 1 to 5% of the cases which is similar to the present study. The overall mortality was seen in 8.1% of the cases in the present study, which was higher than the other studies as this study included the cases that were late for thrombolysis and their outcome was worse than the others.\textsuperscript{11-13}

In this study all cases of LV thrombus were seen in sub group of anterior wall MI. This was also seen by the study done by Jiang Y et al, where they found that out of the total cases suffering from acute MI, LVT was seen in all the cases of AWMI and furthermore they described that this event was noted in cases that had extensive AWMI with p value of 0.001.\textsuperscript{14}

According to a study done by Hashmi KA et al there were total 281 cases of acute anterior wall MI and out of these thrombolysis was done in 194 cases and late for thrombolysis were 87 cases. Out of these 87 cases, LVT was seen in 54 (62.06%) of the cases.\textsuperscript{8}

In another study done by Sinha SK et al, in terms of outcome in late presenters, death was seen in 7 (2.2%) of the cases. Cardiogenic shock was observed in 59 (4.9%) of the cases and AV block was observed in 4.5% of the cases overall.\textsuperscript{15}

In the present study complete heart block was observed in overall 4 (3.81%) of the cases and all of these cases suffered from inferior wall MI. These findings were again in line with the results.
of the previous studies. According to a study done by Hashmi KA et al it was seen that complete heart block was seen in 13 (7.3%) of the cases which was slightly higher in their study. The reason was found that they had more cases suffering from IWMI, which was found to be a significant predictor to lead to complete heart block in previous studies.

CONCLUSION
STEMI can be a highly morbid entity in cases those are late for thrombolytic and cardiogenic shock is the most common complication observed. Efforts are needed in all aspects to reduce pre and in-hospital delays in management of STEMI with reperfusion therapy.

REFERENCES