ORIGINAL ARTICLE

Frequency of Thrombolysis and Comparison of Pericardial Effusion in Myocardial Infarction patients with and without Thrombolysis

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ABSTRACT

Aims: To determine the frequency of thrombolysed patients after acute myocardial infarction and to compare the frequency of pericardial effusion in these patients with and without thrombolysis.
Methods: This descriptive case series was conducted in East Medical Ward, Mayo Hospital, Lahore for six months. Sample size of 300 cases was calculated and patients were enrolled through non-probability, purposive sampling technique.Informed consent was taken. Frequency of patients that receive thrombolytic agent was calculated. Then patients were divided into Group I, which received thrombolytic agent (streptokinase) and group II, which did not receive thrombolytic agent.
Results: Mean age was 55.40±10.28 years. There were 211(70.33%) males and 89(29.61%) females. Out of 300 patients, 160(53.3%) had anterior wall myocardial infarction, while 92(30.7%), 24(8%), 12(4%) patients presented with Inferior wall, posterior wall, lateral wall and infero-posterior wall myocardial infarction respectively. Thrombolytic agent was given to 265(88.3%) patients while 35 (11.7%) did not receive thrombolytic agent. Total 36 patients developed significant pericardial effusion, out of which 12 were from thrombolysed group and 24 from non thrombolysed group i.e. p value=0.0
Conclusion: There are less chances to develop pericardial effusion after thrombolysis with streptokinase as compared to patients in whom thrombolysis is not given.
Key words: myocardial Infarction, streptokinase, thrombolysis, pericardial effusion.

INTRODUCTION

Acute Myocardial Infarction (AMI) is defined as chest pain lasting greater that 30 minutes and relevant ECG changes. AMI has a major share in human mortality[1]. Every year nearly one hundred thousand individuals suffer from AMI worldwide. Early (30-day) mortality rate from AMI is 30%, with more than half of these deaths occurring before patient reaches hospital. In hospital mortality rate in these patients is still high up to 30%[1,2]. Pericardial effusion (PE) is presence of abnormal fluid in pericardial cavity[1,2]. There are no definite clinical tools to see the presence of pericardial effusion. It is determined by echocardiography. Mild pericardial effusion is usually asymptomatic but larger pericardial effusion can cause serious hemodynamic instability. It can be fatal if not recognized and treated early[3]. PE is not an uncommon finding in serial echocardiographic evaluation of patients with AMI, especially when infarction is anterior and extensive[3]. Acute pericarditis and pericardial effusion complicating AMI is associated with worse outcome in the form of mortality and morbidity (in the form of longer stay in hospital, decrease functional capacity, and economic burden)[4]. Studies show that PE develops in up to 30% of patients with AMI in acute phase and PE persists up to a month after onset of AMI in 38% of

patients[5]. PE is associated with all types of myocardial infarction (anterior, inferior and lateral). Percentage of patients who get thrombolysis is approximately 82% and those who do not get thrombolysis is 18% presenting with AMI[2].

MATERIALS & METHODS

It was a descriptive case series performed in east medical ward of Mayo Hospital, Lahore for six months. Sample size of 300 cases was calculated with non-probability purposive technique. Patients of 40-80 years of age from either sex with first episode of myocardial infarction were included while patients with traumatic CPR, chronic renal failure, on heamodialysis, pericardial effusion prior to acute myocardial infarction and with collagen vascular diseases were excluded. Informed consent was taken. Frequency of thrombolysed patients was calculated. Then patients were divided into group I, who received thrombolysis and group II, who did not receive thrombolysis. They were followed daily and kept under observation till 4 days after MI. Echocardiography was done by a single physician on presentation (within 24 hours), on day 2 & on day 4. Pericardial effusion was noted (as per operational definition). All findings were put in prepared proforma. The data was entered and analyzed through SPSS version 16. Acute myocardial infarction is defined as typical chest pain lasting more than 30 minutes,

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unrelieved by sublingual nitrates, typical ST segment elevation on standard 12 lead ECG. Acute myocardial infarction is categorized as anterior if maximum ST elevation occurs in leads V1–V4; inferior if occurs in II, III or aVF; lateral if occurs in I,aVL,V5 or V6, with positive Troponin-T (qualitative) and raised cardiac enzymes. Pericardial effusion was determined as presence of separation by fluid between two pericardial layers throughout the cardiac cycle on 2-D echocardiography during first 4 days after MI. Thrombolysis was done in emergency room with streptokinase infusion who presented within 12 hours of onset of chest pain. Quantitative variables like age and pericardial space were presented in form of mean ± S.D. Qualitative variables like gender, patients thrombolysed or not thrombolysed and pericardial effusion were presented in form of frequency and percentage. Chi-square was applied to compare the frequency of PE in both study groups considering P-value$\leq$0.05 as significant.

RESULTS

Mean age of patients was noted as 55.40±10.28years with minimum and maximum age of 40 & 80 years respectively. Out of 300 patients, 211(70.33%) were males and 89(29.61%) were females. Male to female ratio was 2:.4:1. Out of all 160(53.3%) patients had anterior wall MI, 92(30.7%) had Inferior wall MI, 24(8%) had posterior wall MI, 12(4%) had Lateral wall MI and 12(4%) presented with infero-posterior wall MI. Thrombolysis was done in 265(88.3%) patients while in 35(11.7%) patients thrombolysis was not done. 35(11.7%) patients who developed PE at day 0, 47(15.7%) patients developed PE at day two and 70(23.3%) patients developed PE at day four. Among 70 patients who developed pericardial effusion during hospital stay, 46(17.4%) were from group I and 24(68.6%) were from group II. Statistically there is highly significant difference between study groups i.e. p-value=0.0*. Out of 70 patients who developed PE, all patients had mild PE. Out of which 46(17.4%) belonged to group that was thrombolysed and 24 (68.6%) belonged to group that was not thrombolysed. Statistically there is highly significant difference between the study groups i.e. p-value=0.000*

DISCUSSION

Thrombolysis is the breakdown of blood clots by pharmacological means. It is usually practiced after myocardial infarction. Several groups have described the results of regional or local intra-arterial administration of a thrombolytic drug[6-11]. A potential limitation to the use of intra-arterial treatment is the time required to mobilize a team to perform

angiography. PE is not an uncommon complication of MI and up to 1/3rd patients developed PE after MI, increasing the mortality particularly in patients who presented in old ages. Studies have shown that, there is no difference in frequency and severity of pericardial effusion in patients whether thrombolysed or not[12].

Thus to check the effect of thrombolysis on control of post MI complications, we conducted this study. Among all patients most common presentation of MI was observed among males as compared to females. Same pattern of MI type was observed in older studies. Anterior MI is more frequent and so is the PE, reported 16.5%, 14% and 15% with anterior, inferior and Lateral MI, respectively[2,13,14,15,16].

In our study, we observed that thrombolysis was done in 265 (88.3%) patients while 35 (11.7%) patients did not receive thrombolysis. There were 70 (23.3%) patients who developed PE during their hospital stay. We have observed that in acute phase of MI, frequency of PE increased as time passed. We observed PE in 35 (11.7%) cases on day 0 while in 47(15.7%) cases on day 2 and in 70(23.3%) cases on day 4. Hafiz et al., reported almost same pattern. Out of 200 patients presenting with MI, PE was found in 9 (4.5%) patients on day 0, in 25(12.5%) patients on day 2 and in 30 (15%) patients on day 4[2]..

In our study, among these 70 patients who developed PE, 46(17.4%) were from group that was thrombolysed and 24 (68.6%) were from group that was not thrombolysed. Statistically there is highly significant difference between the study groups i.e. p-value=0.000*. All patients who developed PE had mild PE. Out of which 46 (17.4%) belonged to group that was thrombolysed and 24 (68.6%) belonged to group that was not thrombolysed. Statistically there is highly significant difference between the study groups i.e., p-value=0.000*.

Previously, frequency of PE in a study was 32% and 27% as reported by 27% by Ali et al., but Belkin et al., reported 8% because all of their patients were thrombolysed with recombinant tissue plasminogen activator, Hafiz et al., and Ali et al., treated patients with streptokinase, a less thrombin specific[(2)]. The number of patients having PE increases during in-hospital stay as 4.5% of patients had PE at the time of admission but on day four it was 15%, same trend was reported by Toth C et al, (8% on Day 0, 24% on Day 7)[17]..

Ayub M et al., showed in his study that thrombolytic therapy with streptokinase is commonly used in AMI and has markedly reduced morbidity and mortality. However, it can cause various hemorrhagic and immunological complications. They reported a patient who developed diffuse pulmonary hemorrhages and hemorrhagic PE after thrombolytic

therapy with streptokinase for AMI. This was recognized by a drop of hematocrit, pulmonary infiltrates, hemorrhagic PE and hypoxemia[18].

Sugiura et al., documented PE at the time of admission as 9.5% and all patients were treated with primary PCI and were more than 65 years of age, Hafiz et al., reported 32% of PE and 82% of patients were thrombolysed with streptokinase, mean age of 56±18 years, so it can be inferred that primary PCI decreases the occurrence of PE in spite of advanced age group[2,12]. Figuaras J et al concluded that advancing age group is associated with late occurrence of large pericardial effusion and subsequent rising mortality[19].

This is a well-documented fact that presence and progression of PE, increases in-hospital morbidity and mortality[20,21,22,23,24]. The major reasons for in-hospital morbidity in patients of AMI with PE were LV failure (9.5% vs 24.7%) and cardiogenic shock (8% vs 16.7%). Re-infarction, mitral regurgitation and ventricular septal defect (p>0.05), were responsible for longer hospital stay. The lesser rate of complications and hospital stay in our study might be due to the thrombolysis of majority of our patients (82% were thrombolysed)[22,25]. Overall mortality in patients of AMI with PE was 1.5% against 1.3% (mild PE), 32% (large PE), and it has been established that PE is an independent risk factor of mortality in patients of AMI with PE[2,16,26].

CONCLUSION

Pericardial effusion was recorded in one fourth of patients with first acute myocardial infarction. In acute phase of MI, chances of development of pericardial effusion increases as the time passes. But there are less chances to develop pericardial effusion after thrombolysis with streptokinase, as compared to patients in whom thrombolysis is not done.

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