FACTORS RESPONSIBLE FOR LATE PRESENTATION OF PATIENTS WITH ACUTE ST ELEVATION MYOCARDIAL INFARCTION

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ABSTRACT

Objective: To find out various factors responsible for delay in thrombolysis in patients with acute ST elevation myocardial infarction (STEMI).

Methodology: This cross sectional study was conducted in District Head Quarters hospital Timergara, Khyber Pakhtunkhwa. Data was collected from January 2017 to December 2017. All patients admitted to Cardiac Care Unit (CCU) with acute STEMI were enrolled in the study. Sample size of the study was 261. After administering emergency treatment, all patients were interviewed regarding duration of onset of chest pain, hospital arrival time and any factor responsible for delay between onset of chest pain and hospital arrival. Thrombolysis was done and time of thrombolysis was recorded.

Results: Mean age of the patients was 60 ± 8 years (28-90 years). Out of total 261 patients, 176 (66.92 %) were thrombolysed. Misconception of having other disease like gastric problem and misdiagnosis by general physician were most common factors responsible for delay in hospital arrival.

Conclusion: Misconception of having other disease like gastric problem and misdiagnosis by general physician are most common factors responsible for delay in hospital arrival.

Key Words: STEMI, Thrombolysis, Streptokinase, CCU

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INTRODUCTION

In acute STEMI, the time interval between symptoms onset and hospital arrival is one of the most important factors responsible for mortality[1]. Majority of deaths follow STEMI in initial stage. It is estimated that in 40-65% of the cases, death occurs within the first hour, and in 80%, within the first 24 hours[2]. STEMI is associated with higher morbidity and mortality rates. Following myocardial infarction, time matters in management and outcome. Early and effective treatment in the form of reperfusion is associated with less infarct size and better outcome[3,4,5]. Thrombolytic therapy is still most commonly used tool of reperfusion and the best results are obtained if it is administered within one hour of presentation[6]. The delayed administration of thrombolytic therapy is associated with decreased efficacy of treatment and resultant poorer prognosis[7,8,9]. It has been shown that 25 % of patients do not have evidence of myocardial damage if thrombolysed in initial hours. This is known as aborted MI[10,11]. Delay in reperfusion is associated with higher six months mortality in patients with STEMI[12].

There are several factors involved in delayed thrombolytic therapy. Pre hospital factors are delay in contact with emergency medical services (EMS), delay in patient transportation to hospital, misconception of having other problem, like gastric problem. In hospital, delay may be due to delay in initial assessment of the patient, like obtaining ECG, interpretation of ECG, making decision of thrombolysis and delay in drug preparation[13]. Due to delay in arrival to hospital so many patients miss the so called 'golden hour'[14] and it leads to poor outcome. In three large scale studies[15,16,17] it has been found that only 22% - 44% of patients arrive within 2 hours of symptoms to hospital. According to the Augsburg (southern Germany) Myocardial Infarction Registry[18], 40% of patients reach hospital after more than 4 hours of chest pain and 25 - 33% of patients can not arrive earlier than 6 hours of acute myocardial infarction. About 10% - 20% of patients reach hospital after 12 hours of onset of chest pain[19,20].

The china patient-centered evaluative assessment of cardiac events (PEACE) studies[21] were carried out to find causes of pre hospital delay in patients with acute

STEMI. They found that main causes of delay were poor socioeconomic status, lack of recognizing symptoms of myocardial infarction and lack of availability of transport. Similarly, a local study[22] found that advanced age, unmarried status, female sex, poor socioeconomic status, transportation issues, low education level, self treatment, misconception of symptoms and fear of hospital were main causes of hospital delay.

This study was aimed at finding various factors responsible for delay in thrombolysis in patients with acute STEMI. This will produce local data on this important issue and will highlight the important factors responsible for late presentation of patients to hospital and delay in thrombolysis. This will help to sort out the solution for the problem on local as well as national level.

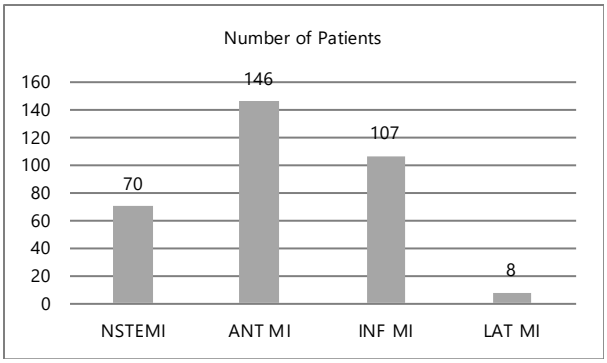
METHODOLOGY

This was cross sectional study conducted in DHQ Hospital Timergara, Dir. Data was collected from January 2017 to December 2017. All patients admitted to CCU of either sex, havig age more than 18 years and diagnosed as acute STEMI were enrolled in the study after taking informed consent from the patient. Patient with LBBB and old myocardial infarction were excluded from the study. Acute STEMI was defined as typical chest pain and ≥1 mm ST elevation in two consecutive leads (STEMI). After administering emergency treatment and stabilization of the patients, all patients were interviewed in detail regarding duration of chest pain, hospital arrival time, and any factor responsible for delay between onset of chest pain and hospital arrival. The time of thrombolysis was recorded. Data was analyzed in SPSS version 20. Numerical variables like age was expressed in mean ± standard deviation. Categorical variables were described in frequency and percentages. Data was expressed in table and charts.

RESULTS

Mean age of the patients was 60 ± 8 years (28-90 years) (table 3). Anterior MI was more common; found in 146 patients (56 %), inferior MI in 107 patients (41 %) and lateral MI in 8 patients (3 %). (Figure 1). Out of total 261 patients, 176 (66.92 %) were thrombolysed as given in table 1. Misconception of having other disease like gastric problem was the most common cause of delay in hospital arrival and consequent failure of thrombolysis. Second important cause of being not thrombolysed due to delay in hospital arrival was misdiagnosis by general physician or other health professional, usually attributing the pain in to gastric problem or musculoskeletal disorders. (Table 2).

Figure 1: Type of myocardial infarction



NSTEMI: Non ST elevation myocardial infarction

ANT MI: Anterior myocardial infarction

INF MI: Inferior myocardial infarction

LAT MI: Lateral myocardial infarction

Table 1: Frequency of thrombolytic therapy

Thrombolytic therapy	Number	Percentage
Streptokinase given	176	66.92%
Streptokinase not given	58	30.08%
Total	261	100%

Table 2: Factors responsible for delay in hospital presentation in acute STEMI

Number	Factors	Number of patients (N=58)	Percentage %
1	Self misconception of having other disease	21	36.2%
2	Misdiagnosis	16	27.5%
3	Poor socioeconomic condition	8	13.7%
4	Unavailability of convince	8	13.7%
5	Prior coronary artery disease	5	8.6%

Table 3: Age and gender difference in hospital presentation after acute STEMI

Age	> 60 years	< 60 years	Total
	40	18	58
Gender	Male	Female	
	23	35	58

DISCUSSION

In our study the most important factor responsible for delay in hospital presentation and failure to receive thrombolysis was misconception of having other illness which accounted for 36 % and misdiagnosis on right time in 27 % of patients.

A study performed by saleh AU[23] et al. showed that 55 % patients were not thrombolysed because of misconception of other disease and 17 % presented late due to misdiagnosis by physician. These findings are in accordence with our study.

Older age is considered as a factor for delay in hospital presentation probably due to atypical presentation of symptoms of ischemia. Many other studies found similar results as shown in our study[15,16]. Female sex is also one of the causes for delay to hospital arrival and thrombolysis as shown in many other studies[19,24]. Our study also showed that non thrombolysed patients were predominantly female. This can be explained by the fact that female usually present with atypical symptoms, face cultural restraints and seeking of treatment on time depends on the presence of a male care giver in home.

Poor socioeconomic status was also found a risk factor in other studies and supports our findings. Patients with pre existing coronary artery disease such as angina, old myocardial infarction or revascularization are usually expected to present earlier but like our study other studies also found that these patients usually present late. This may be probably due to the fact that these patients have recurrent chest pains, relief with sublingual nitroglycerin and confering their myocardial infarction pain to usual angina pains[15,16.25,26].

Several other studies have been conducted to find factors responsible for delay to hospital in acute STEMI. Liaqat Ali et al[27]. found that female gender, diabetes, hypertensiion, visit to general practitioner and distant area are common causes of delay to hospital. Mussi FC et al[28]. and venketachelam CR et al[29]. attributed delay to lack of recognizing symptoms while Sabri F et al[30]. to mode of transport and distance from health care facility.. Another study by Parshanta B et al[31]. found that transport, unrecognized symptoms, self medication, socioeconomic status and education level were main causes of delay.

CONCLUSION

Misconception of having non cardiac chest pain, misdiagnosis by an inexperienced physician and poor socioeconomic and educational status are main causes of delay in hospital arrival in acute STEMI.

LIMITATIONS

There might have been other factors responsible for delay in hospital arrival which we could not document due to small sample size. So well designed, multi center study with large sample size including primary health centers will provide more information.

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CONTRIBUTORS

IU conceived the idea, wrote initial manuscript and supervised every step of the project. RU, ZA and IA helped in acquisition of data, interpretation and statistical analysis, corrections in the manuscript and bibliography. All authors contributed significantly to the published manuscript.