ELECTROCARDIOGRAPHIC SUCCESS OF THROMBOLYSIS WITH STREPTOKINASE ADMINISTRATION IN PATIENTS WITH ACUTE ST ELEVATION MYOCARDIAL INFARCTION ADMITTED IN EMERGENCY DEPARTMENT OF KSHMIR INSTITUTE OF CADIOLOGY, MIRPUR KASHMIR PAKISTAN

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ABSTRACT

ST segment elevation myocardial infarction is one of the major causes of mortality in modern world. Streptokinase although an old modality is still an effective and efficient way to decrease

mortality in such cases especially in poor countries and hospitals where facility of coronary angiogram/ primary percutaneous intervention is not available.

Objective: To determine the Electrocardiographic success of thrombolysis in patients with acute STEMI

Study Design: Prospective observational study.

Place and Duration: Kashmir institute of Cardiology, Mirpur Azad Jammu and Kashmir, 8 months from May 2016 to December 2016.

Patients and Methods: Patients presenting with Acute STEMI in emergency department were included, patients were analyzed via history, clinical examination and ECG findings of Acute STEMI.

Results: 89 patients were observed in emergency department

Conclusion: Success of thrombolysis based on ECG was 55% in our setup which is less than international standards. Based on this study there is a dire need to enhance our pre-hospital emergency services.

Keywords: ST-segment elevation myocardial infarction, Streptokinase, Acute Myocardial Infarction

INTRODUCTION

ST segment elevation myocardial infarction is one of the most serious condition, which can lead to acute mortality; overall rate of death due to acute STEMI has reduced in last 30 years but remained steady in last 10 year [1].

Acute rupture of atherosclerotic plaque is one of the most common causes of STEMI [2]. This decreased mortality is due to development of coronary care units, invasive cardiac monitoring, and modern reperfusion strategies including streptokinase and percutaneous coronary intervention [3].

Electrocardiogram is the most prompt and easiest tool to diagnose ST segment elevation myocardial infarction, ST segment elevation in all contiguous leads in absence of Left bundle branch block of more than 0.1 mv except lead V_2 and V_3 is most effective and easy way to diagnosed this disease [4].

Most effective factor in treating such cases is time factor. Starting the reperfusion therapy within 30 minutes helps to restore the blood flow to the ischemic myocardium. Success of the thrombolysis is based on this time factor, each delay of 30 minutes from onset of MI

increases the relative risk of 1 year mortality by 8% **[4, 5]**.

Success of thrombolysis is determined clinically by resolution of symptoms of MI along with ST segment resolution of more than 70% done at 90 minutes after starting the treatment with streptokinase and also by presence of Accelerated Idioventricular rhythm in several cases **[6]**.

PCI or primary coronary intervention is treatment of choice in ST segment elevation myocardial infarction, but in Pakistan due to lack of such facilities a lot of centers are using streptokinase as primary treatment option in such cases, there are two studies in Pakistan which have tried to validate similar data. This study will help us in evaluating success of streptokinase in acute ST segment elevation MIin our set up **[7, 8]**.

MATERIAL AND METHODS

This was an observational study conducted in emergency and CCU department of Kashmir institute of cardiology, Mirpur Azad Jammu and Kashmir from May 2016 to December 2016 after approval from hospital ethical committee. Patients of both gender ages 20-85 years of age with symptoms of acute myocardial infarction and ST segment elevation on ECG were included. In this study exclusion criterion were ages <20 and >85, BP more than 180/100, previous intracranial hemorrhage, known cerebral vascular lesion, known malignant intracranial neoplasm, suspected aortic dissection, active bleeding, significant close-head or facial trauma in last 3 months, intracranial or intra-spinal surgery within 2 months, ischemic stroke within 3 months except acute ischemic stroke within 4.5 hours **[9]**.

After informed verbal consent patients with acute ST segment elevation MI were admitted in CCU, All those who fulfilled the criterion were included and all those who had an exclusion criterion were excluded from study. After loading with dual antiplatelets, streptokinase was given within 30 minutes of door to needle time. All data of ECG was recorded at baseline and at 90 minutes of streptokinase. ST segment resolution of more than 70% at 90 minutes of starting to streptokinase along with symptoms of acute myocardial infarction resolution was labelled as successful thrombolysis while all those who did not meet this criterion were labelled as failed thrombolysis.

RESULTS

Distribution By Gender

Total of 89 patients were included in study. 83.1% were male and 15.7% were female (**Table 1**). **Distribution By Age**

Age distribution in our study was as following.

Minimum age was 26 years, maximum age was 85 years, mean age was 56 years (**Table 2**). **Distribution By Success Of Thrombolysis**

Successful Thrombolysis is shown in **Table 3**.

Table 1: Distribution By Gender

		Frequency	Percentage
Valid	Male	72	82.8
	Female	14	16.1
	Total	87	100.0

Table 2: Ages

		Frequency	Percentage
Valid	Age 20-39	5	5.6
	Age 40-59	41	46.1
	Age 60-70	38	42.7
	Age more than 80	5	5.6
	Total	89	100.0

Table 3: Successful Thrombolysis

		Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	Successful	49	55.1	55.1	55.1
	Failed Thrombolysis	40	44.9	44.9	100.0
	Total	89	100.0	100.0	

DISCUSSION

Patients with ST elevation myocardial infarction should be given thrombolytic treatment within 30 minutes of door to needle time; success rate of streptokinase is 60-68% in such cases [9]. In our study we divided the ST elevation into 3 groups, one group with extensive Anterior wall MI, second with Anterior wall MI and third group with inferior wall MI.

In our study we had 89 patients with acute MI, 82.1% were male and 16.9% were female. Patient who suffered Extensive anterior wall MI were 25.8%, while with anterior wall MI they are 23.6% and with inferior wall MI number of patients were 50.6%. Isolated lateral and posterior wall MI were not seen in our study; mostly these were present in combination with anterior or inferior wall MI (5%).

Patients with extensive anterior wall MI were 23 in number, 3 were female(13%) and 20 were male(87%) age ranged from 37 years to 85 years. 8 patients (34%) had successful thrombolysis, 15 patients(65%) had failed reperfusion. One patient died due to cardiogenic shock in hospital. Most common factor seen in failed reperfusion was time of presentation all the patients with successful thrombolysis presented within 3 hours. While for failed thrombolysis most common factor other than time factor was presence of Diabetes and age more than 65 years.

Patients with Anterior wall MI were 21 in number, 71.4% males and 28.5% females, 42% had successful thrombolysis while 57% had failed reperfusion.

Patients with IWMI were 45 in number, 88% male patients, 12% female patients. 30 patients 79% had successful thrombolysis, 21% had failed thrombolysis. Age ranged from 26 to 80 years. Most common cause seen in cases of failed thrombolysis were age factor and time factor.

In similar study done by Umer Farooq showed around 80%of success by thrombolysis.

In another study done by Paolo Angelini showed success around 75-80% with streptokinase [13].

In another study by Ali Omraninava in February 2016 performed similar study in Iran, they studied 110 patients, 72% were male and 28% were females, while in our study male patients were 83% while female patients were 16.5%. Their mean age was 59.75(range 36-85 years) while our mean age was 56.61 years with age range from 26-85 years [14].

In another study by Dwivedi SK in January 2000 published in Indian heart journal success of thrombolysis was 59.1% in patients who received streptokinase rapidly within 15 minutes instead of 1 hour infusion, Mean age of their patients was 54 years, 7% women and 93% were men in their study [15].

Overall success of thrombolysis across all type of ST elevation MI was 55%. As compared to an Indian study where success rate was around 59%means that we had almost same result based on region. Our success rate was far less than results of most European countries where average success was more than 60%.Most likely reasons which resulted in this lower success rate is delayed time of presentation and lack of proper pre-hospital emergency, lack of proper evaluation before reaching to a tertiary care Centre [10-12].

CONCLUSION

89 patients with acute ST elevation MI were observed in 8 months, success of thrombolysis based on ECG was 55% in our setup, which is less than international standards. Based on this study there is a dire need to enhance our pre-hospital emergency services.

TypeOfMI

Legend:
- Extensive Anterior Wall MI
- Anterior Wall MI
- Inferior wall MI
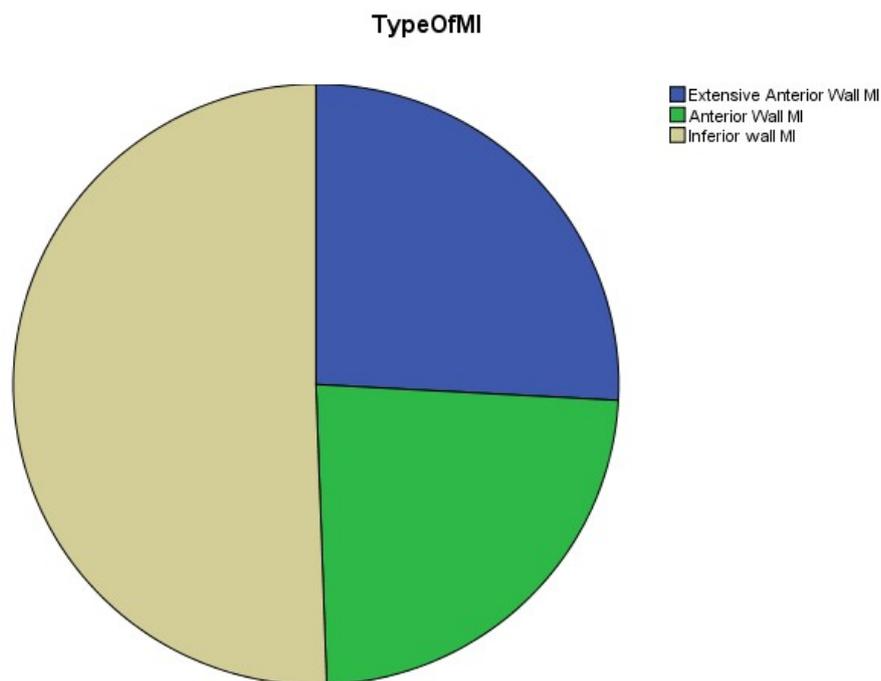
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