

ORIGINAL ARTICLE

Frequency of Successful Resolution of ST T Changes after Thrombolysis with Streptokinase in Patients of Acute ST Segment Elevated Myocardial Infarction

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Objective: To determine the frequency of successful resolution of ST T changes after thrombolysis with streptokinase in patients of acute ST Segment elevated myocardial infarction

Design of the Study: Cross sectional study

Study Settings: The study was conducted at Cardiology Department, Lady Reading Hospital, Peshawar from 22/10/2019 to 22/4/2020.

Material and Methods: Over the course of the investigation, researchers kept tabs on 165 patients. FBC, ECG (cardio fax), and echocardiography (Siemens' Acuson cv-70) are all included in the evaluation and investigations. Every patient had an ECG done 90 minutes following the initiation of SK injection to see if the ST segment abnormalities had gone down.

Results of the Study: 35 patients (20%) were between the ages of 30 and 45, while 130 patients (79%), were between the ages of 46 and 60. The average age was 57, with a standard deviation of 12.11. There were 72% male patients and 28% female participants in the study. Seventy-three percent of patients had successful resolution of ST T alterations, while 27 percent of patients did not.

Conclusion: Our study concludes that the frequency of successful resolution of ST T changes after thrombolysis with streptokinase was 73% in patients of acute ST Segment elevated myocardial infarction

Keywords: successful, resolution of ST T changes, thrombolysis, streptokinase, acute ST segment elevated myocardial infarction

INTRODUCTION

ST-Elevation Myocardial Infarction is an electrical manifestation of the pathophysiological changes that occur when an epicardial coronary artery is occluded (STEMI). By considering consideration biochemical, clinical, pathological and electrographic parameters one can define an AMI "acute myocardial infarction".^{1,2} A ST segment elevation diagnostic test tool In the event of a myocardial infarction, an electrocardiogram (ECG) should be done after the patient is admitted to the hospital. In Pakistan, the most prevalent complication of AMI is heart failure.³ Heart disease is the primary cause of death in the United States, and myocardial infarction is one of its symptoms. Myocardial infarction was found in one-quarter to one-third of the Americans studied in a 2006 study.⁴ Middle-aged Pakistanis may develop coronary artery disease, which can lead to myocardial infarction, at a rate of one in five.⁵

Thrombolysis that fails and causes complications is more common in people who aren't treated quickly.^{6,7} As a result, early thrombolysis is now considered standard practise in the treatment of acute myocardial infarction.⁸ Acute myocardial infarction and unstable angina are both affected by thrombosis. Patients with ST-elevation myocardial infarction and an acute coronary syndrome can benefit from percutaneous intervention, which has a better patency rate of the coronary arteries than medical therapy (STEMI).⁹

An ECG study of ST segment resolution after thrombolytic therapy is a cost-effective method for assessing coronary reperfusion in patients with ST-elevation myocardial infarction.¹⁰ Better prognosis is dependent on successful epicardial vessel thrombolysis, while micro vascular flow has a stronger influence on the outcome. When it comes to assessing prognosis, the ST segment on an ECG is more reliable than a cardiac angiography.^{11,12}

In one study published in JACC 79% of patients were successfully thrombolysed after STEMI.¹⁹ While a study published in BMJ reported 75% successful resolution after ST segment elevation MI.¹⁷ In another study conducted in Sweden 70% of patients were successfully thrombolysed with resolution of ST segment changes in ECG after STEMI.¹³ In another study, ECG changes in 72.22% of patients receiving thrombolysis were

successfully resolved.¹⁴ A number of other studies also reported successful resolution of ST segment elevations with early and prompt treatment therapies.^{15,16,18}

After a comprehensive assessment of the literature, I had the bright notion to carry out this investigation. I found that frequency of successful resolution of ST segment elevation after thrombolytic therapy is different for different population and so far none of the studies are available for our population to show frequency of successful resolution of ST changes after thrombolysis with inj: streptokinase. The results may vary in our population from West because of changes in our life style, diet, habitat which indirectly effects the patterns of CAD. I want to determine the frequency of successful resolution of ST T changes after thrombolysis with streptokinase in patients of acute ST elevated myocardial infarction in our population. This study will help in identifying patients who may benefit from thrombolytic therapy after acute STEMI. Also it may point out those who may not benefit from this therapy and need further intervention. Once results are available it will be shared with local cardiologists and recommendation will be made for thrombolysis after acute STEMI

MATERIAL AND METHODS

Following clearance from the hospital's ethics committee, the study was undertaken. The study was conducted at Cardiology Department, Lady Reading Hospital, Peshawar from 22/10/2019 to 22/4/2020. The study comprised all patients admitted to the ward who met the previously indicated inclusion criteria. All patients were given an explanation of the study's purpose and advantages, and formal consent was acquired.

By using WHO sampling software, the calculated sample size was 165 with 95% confidence interval and 7% margin of error by taking 70% of study population with STEMI was successfully thrombolysed after STEMI.¹⁵ Non probability consecutive sampling.

Acute ST segment raised myocardial infarction was diagnosed in patients between the ages of 30 and 60 who were hospitalised to Lady Reading Hospital's Cardiology Unit. After obtaining a thorough medical history and examining any prior records, the patient underwent a thorough physical examination and a battery of tests to rule out any underlying medical conditions.

Patients with onset of symptoms was >12 hours before hospital arrival, prior intracranial hemorrhage, known malignant intracranial neoplasm, with history of major trauma, surgery, or gastrointestinal hemorrhage within three months before admission, with history of bleeding disorders, cardiac failure and cardiomyopathy, previous ST segment elevated myocardial infarction were excluded from the study.

We began with a thorough history taking and review of prior records, followed by a full physical examination and a battery of tests, including an FBC, an ECG, and an echo (Siemens' Acuson cv-70. ECG was performed for every patient 90mins after start of SK injection to check for successful resolution of ST seg: elevations.

Statistics were examined with SPSS 20.0, the statistical software for social sciences. For continuous variables, the mean and standard deviation were determined. For categorical variables, we calculated the frequencies and percentages. Age, gender, BMI, diabetes, smoking, and hypertension were all taken into account when stratifying the results of the ECG resolution test. Using the chi-square test, a p value 0.05 was determined to be significant following the stratification process.

STUDY RESULTS

In this study, the age distribution of 165 patients was examined, with 35 patients (21 percent) falling within the 30-45-year range and 130 patients (79 percent) falling between the 46-60-year range. The average age was 57, with a standard deviation of 12.11. Among the 165 patients, 119 (72%) were male and 46 (28%) were female, according to a gender distribution analysis. There were 53 patients with BMI 25 Kg/m² and 112 patients with BMI > 25 Kg/m² in the study group of 165 patients. A study of 165 patients found that 65 percent had diabetes and 35 percent did not, with 107 patients (65 percent) having diabetes and 58 patients (35 percent) not having diabetes.

Table 1: Demographics of the study cases

Parameters	Sub-group	Frequency	Percentage
Age	30-45 years	35	21%
	46-60 years	130	79%
Gender	Male	119	72%
	Female	46	28%
Bmi	≤ 25 kg/m ²	53	32%
	> 25 kg/m ²	112	68%
Diabetes	Yes	107	65%
	No	58	35%
Smoking	Yes	38	23%
	No	127	77%
Hypertension	Yes	129	78%
	No	36	22%
Successful resolution of st t changes	Yes	120	73%
	No	45	27%

Table 2: Stratification Of Successful Resolution Of St T Changes With Respect To Age, Gener, Bmi, Diabetes, ,Smoking, Hypertension

parameters	Present	31-45 years	46-60 years	Total	P value
age	Yes	25	95	120	0.8458
	No	10	35	45	
gender	Yes	86	34	120	0.8316
	No	33	12	45	
bmi	Yes	38	82	120	0.8382
	No	15	30	45	
diabetes	Yes	78	42	120	0.9469
	No	29	16	45	
smoking	Yes	28	92	120	0.8799
	No	10	35	45	
hypertension	Yes	94	26	120	0.9383
	No	35	10	45	

The smoking status of 165 patients was examined, and it was shown that 38 patients (23 percent) smoked, whereas 127

patients (77 percent) did not. It was determined that 78% of the people in the study were suffering from hypertension, while just 22% of the people in the group were. Some 165 people were studied and 120 had Successful resolution of ST T changes as indicated in table 1 whereas 45 had Successful resolution of ST T changes as shown in table 2.

Table No. 2 shows the stratification of effective ST T change resolution based on age, gender, BMI, Diabetes, smoking, and hypertension.

DISCUSSION

ST-Elevation Myocardial Infarction is an electrical manifestation of the pathophysiological changes that occur when an epicardial coronary artery is occluded (STEMI).¹ The clinical, biochemical, electrographic, and pathological features of acute myocardial infarction can be used to define it.²

According to our findings, 21% of patients were under the age of 30, while 79% were between the ages of 46 and 60. There were 72% male patients and 28% female participants in the study. Seventy-three percent of patients had successful resolution of ST T alterations, while 27 percent of patients did not. Patients with STEMI were effectively thrombolized in a research published in JACC.¹⁹ It was reported that 75 percent of patients with ST segment elevation MI were successful in their recovery.²⁰

Among 83 STEMI patients, 50.6 percent were men and 49.4 percent were women between the ages of 30 and 83, according to another study by Salmen S et al. STEMI was treated with thrombolysis in 59 patients (71.08%) within 12 hours of the beginning of chest pain and in 24 patients (28.2%) after 12 hours of the onset of chest pain. Among 28 diabetics enrolled in our trial, six (21.43 percent) were entirely resolved as measured by ECG post thrombolysis, nine (32.14 percent) were partially resolved, and 13 (46.43 percent) did not resolve. 37 (67.27 percent) of 55 non-diabetics were entirely resolved, 12 (21.82 percent) were partially resolved, and 6 (10.91 percent) were unsuccessful in their resolution. 26 (42.62 percent) of the 61 hypertensives and 17 (77.27 percent) of the 22 non-hypertensives had complete ECG remission. Post-thrombolysis ECG resolution was unaffected by hyperlipidemia or the location of the infarction in STEMI patients.

It has been reported that out of 2,465 STEMI patients, 66% (n = 1,586) were treated with streptokinase (43%) and other anticoagulants such as reteplase (44%). Study participants ranged in age from 45 to 59, with the vast majority being men (91 percent). The overall median time from the onset of symptoms to presentation and the time from the patient's door to the needle was 165 minutes (95-272 minutes) and 38 minutes (24-60 minutes). Reteplase and tenecteplase were the most commonly used thrombolytic drugs in individuals with higher GRACE risk ratings (P 0.001). At both one-month and one-year intervals, the use of newer thrombolytic medicines was associated with significantly lower mortality (0.8 percent vs. 1.7% vs. 4.2%, respectively) than the use of streptokinase. More than 72.22 percent of patients who received thrombolysis had their ECG abnormalities resolved effectively.²¹

CONCLUSION

Our study concludes that the frequency of successful resolution of ST T changes after thrombolysis with streptokinase was 73% in patients of acute ST Segment elevated myocardial infarction.

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