

Original Article

Evaluation Time as Most Effective Factor in Success of Thrombolysis with Streptokinase in Patients with Acute STEMI During COVID 19 Pandemic

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Time as Most Effective Factor in Success of Thrombolysis with Streptokinase with Acute STEMI During COVID 19 Pandemic

ABSTRACT

Objective: The objective of this study to evaluate time as most effective factor in success of thrombolysis with streptokinase in patients with acute STEMI during covid 19 pandemic.

Study Design: Prospective observational study

Place and Duration of Study: This study was conducted at the Kashmir institute of Cardiology, Mirpur Azad Jammu and Kashmir, from April 2020 to December 2020 for a period of nine months.

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

Results: Total of 110 patients were included in study. 80% (88) patients were male and 20%(22) patients were female. Which shows increase in the number of female patients with acute STEMI In this study we have tried to compare ECG based success criterion with international data and our data back in 2016. During the study we found successful thrombolysis around 45% during covid 19 pandemic.

Conclusion: Time from onset of symptoms of Acute STEMI and start of streptokinase treatment was proven to be most effective method to improve the chances of success of streptokinase treatment and reduce mortality in such patients, as regard to my previous study in 2016 in same institute success of thrombolysis was markedly reduced with streptokinase during the covid 19 pandemic using the same treatment parameters.

Key Words: ST-segment elevation myocardial infarction, Streptokinase, time to streptokinase treatment, Covid-19.

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INTRODUCTION

ST segment elevation myocardial infarction is one of the most serious types of acute coronary syndrome that is related with very high mortality if there is delay in treatment.¹

Decreased mortality in last decade is due to this known factor of delayed treatment causes high mortality has led to formation of ICUs equipped with advanced and

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early care using strategies like emergency percutaneous coronary intervention.²

Rupture of atherosclerotic plaque within coronary arteries resulting in exposure of injured vessel wall to coagulating factors in the blood resulting in thrombus formation is one of the most common causes of STEMI.³ Time is most efficient factor. Starting the streptokinase treatment in less than 30 minutes helps establish the blood flow to the compromised heart muscles. Each Delay of 30 minutes increases the relative risk of 1 year death by approximately 8%^{4,5}.

Success of thrombolysis clinically is evident with resolution of symptoms of MI, more than 70% resolution of ST segment elevation and by runs of slow VT also called idioventricular rhythm.⁶

ECG is a very quick test to establish diagnosis of ST segment elevation myocardial infarction^{7,8}.

STEMI is defined as 4th universal definition; ST elevation of more than 0.25mv in leads V2 and V3 in males less than 40 years, ST elevation of more than 0.20mv in males more than 40 years and ST elevation of more than 0.15mv in females is termed as acute STEMI.⁹

The objective of this study is to determine the time as most effective factor in success of thrombolysis with

streptokinase in patients with acute STEMI during covid 19 pandemic.

MATERIALS AND METHODS

This observational study was conducted in emergency and CCU department of KIC, Mirpur Azad Jammu and Kashmir from April 2020 to December 2020 after approval from hospital ethical committee. Patients of ages 20-85 years with symptoms and ECG changes of acute MI are included in this study. exclusion criterion were ages <20 and >85, 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, recent surgery within 3 months. Informed verbal consent was taken from all patients. First patient was given Asprin 300mg and clopidogrel 300mg along with enoxaparin 1-2mg/kg once and after this streptokinase was administered in next 1 hour. ECG done at baseline and at 90 minutes was checked for ST resolution.

Statistical Analysis: SPSS for Windows version 20 (SPSS, Inc., Chicago, IL, USA) was employed for all statistical analyses.

RESULTS

Total of 110 patients were included in study. 80% (88) patients were male and 20% (22) patients were female.

Table No.1: Distribution by Gender

	Number of patients	Percentage	Number of patients in 2016	percentage of patient in 2016
Male	88	80%	72	82.8%
Female	22	20%	14	16.1%
Total	110	100%	87	100%

Table No.2: Distribution by Age

	No. of patients	%age	Number of patients in 2016 study	%age of patients in 2016 study
Age 20-39 years	10	9.5%	5	5.6%
Age 40-59 years	45	40%	41	46%
Age 60-70 years	45	40%	38	42.7%
Age 70-85 years	10	9%	5	5.6%
Total	110	100%	89	100%

It shows increase in the number of female patients with acute STEMI In this study we have tried to compare ECG based success criterion with international data and our data back in 2016. During the study we found successful thrombolysis around 45% during Covid 19 pandemic.

Table No.3: Parentage by success of thrombolysis

	No. of Patients in this study	%age in this study	Frequency of patient in 2016 study	%age in 2016 study
Successful	50	45%	49	55%
Failed thrombolysis	60	55%	40	45%
Total	110	100%	87	100

DISCUSSION

Since last century streptokinase has proven to be cheap and effective way to treat STEMI¹⁰⁻¹³. In our study we tried to compare time to treatment with streptokinase success in patient with acute STEMI before covid 19 and during covid 19 pandemic.

In this study we have tried to compare ECG based success criterion with international data and our data back in 2016,

In our study in 2016 we had 87 patient with acute MI, 72 were male and 14 were female which makes it a 82.8% male patients and 16.1% female patients. While in this study we had 110 patient out of which 88 or 80% were male and 22 patients or 20% were females. Which shows increase in the number of female patient with acute STEMI.

Successful thrombolysis was seen in 55% of patient with acute STEMI in 2016 study, while recent study during covid 19 pandemic showed less number of successful thrombolsis around 45%.^{14 -17}Percentage of acute STEMI in ages 40-59 years also increased from 40% to 46%. There was also an increase in number of STEMI cases at ages 60-70 years which increase from 38% to 42.7%. while in ages 71 to 85 years number of STEMI had seen a significant drop from 9 to 4.6%.^{11,12}A study by fanaroff and Garcia published in JAMA also showed same results, there was increased number of patients with more ischemic time possibly due to late presentation and had more complications. Age distribution of patient compared to our study in 2016¹⁸⁻²¹ was also changes, there were more number of young males, number of MI increased in ages 20-39 from 5.6% to 9%.

CONCLUSION

Based on above mention facts, our own data comparison along with comparison with international data. It is clear that Covid 19 has increased the burden of acute STEMI and more patient have ended up with more complications and decreased number of successful thrombolysis in acute STEMI patient during Covid 19 pandemic points towards either late

presentation of patients or possible more clotting issues that are known to be related to covid 19 virus despite same protocol for streptokinase.

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Conflict of Interest: The study has no conflict of interest to declare by any author.

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