

ORIGINAL ARTICLE

ST-Segment Resolution on ECG after Streptokinase with Stemi in DiabeticsSAIRA FAYYAZ¹, AZHER MEHMOOD KIANI,² QAZI ABDUL SABOOR³, HUSNAIN BASHIR⁴, RAKESH BAHADUR ADHIKARI⁵, TALHA MAHMUD⁶, ABUBAKER HILAL⁷, WASEEM IBRAHIM⁸¹Consultant Cardiologist, City Care Hospital, Khanewal²Executive Director & Consultant Cardiologist, Medikay Cardiac Center, Islamabad³Professor & Head Department of Cardiology, Shaikh Zayed Medical Complex, Lahore.⁴Registrar, Department of Cardiology, Shaikh Zayed Medical Complex, Lahore.⁵Clinical & Interventional Cardiologist, Shahid Ghalgal National Heart Centre (SGNHC), Kathmandu, Nepal⁶Profession & Head of Pulmonology Deptt. Sheikh Zayed Hospital, Lahore⁷Senior Registrar, Shaikh Zayed Medical Complex, Lahore.⁸Registrar, Department of Cardiology, Shaikh Zayed Medical Complex, Lahore.Correspondence to: Saira Fayyaz, Email: sairafz86@gmail.com, Cell: 03336396983**ABSTRACT****Objective:** observe effectiveness of streptokinase in diabetic cases presenting with ST-segment elevation myocardial infarction**Methodology:** In this descriptive case series we enrolled 200 cases fulfilling inclusion/exclusion criteria from the emergency department of Cardiology, Rawalpindi Institute of Cardiology, Rawalpindi. The inj. Streptokinase 1.5 million units diluted in 100 ml of normal saline administered over 1 hour and efficacy was observed.**Results:** Of 200 diabetic STEMI cases, the effectiveness in terms of ST segment resolution by streptokinase in diabetics presenting with ST-segment elevation myocardial infarction (STEMI) was recorded as 38.5%(n=77).**Conclusion:** The frequency of effectiveness of streptokinase in diabetic cases for resolution of STEMI is encouraging and it can be used as first line therapy.**Keywords:** STEMI, Diabetics, Streptokinase, efficacy**INTRODUCTION**

Coronary artery disease is leading cause of death in world. With age, risk of Myocardial infarction increases progressively.¹ In Pakistan, among ACS (acute coronary syndrome) patients ,fraction of STEMI (ST-elevation myocardial infarction) is 71.1% while non-STEMI in 8.9%.²STEMI is described as new elevation of ST segment at J point of 2mm(0.2mV) or more for men and 1.5mm(0.15mV) or more in women in contiguous leads or 1 mm (0.1 mV) or more in other contiguous limb³ STEMI is one of most expensive and high risk health problem not only in developed but developing countries as well.⁴

Major advances in CVD, particularly ACS treatment had a higher impact on morbidity and mortality in AMI. However, despite these advances, diabetes remains the main risk factor of MI.⁵ It has been shown that in STEMI cases, impaired reperfusion may cause a higher mortality rate.⁶

Thrombolytic agents i.e., streptokinase are the most popular and using agents for the management of acute MI with the availability in most of the countries of the world. Approximately 400,000- 500,000 patients receiving thrombolytic therapy annually worldwide.⁷

In a previous local study ST resolution in Diabetic Patients with ST-Elevation Myocardial Infarction was recorded in 49.1% of the cases.⁸ Another local study recorded these findings in 13.8%,⁹ another local study by Ahmad Hassan conducted at Jinnah Hospital Lahore

recorded these findings in 30%¹⁰ of the cases. Significant variation and Discrepancy was observed in datafor the frequency of ST resolution in diabetic patients with STEMI which makes confusion regarding the use of streptokinase.

METHODOLOGY

We enrolled a total of 200 diagnosed cases of ST elevation myocardial infarction(within 12 hours of chest pain) diagnosed DM at least 1 year ago with age >40yrs of either gender whereas all patients with previous history of myocardial infarction, already under treatment of streptokinase, having previous history of vasculitisor any other contraindications of streptokinase were excluded. Streptokinase was administered with dose of 1.5million units, diluted in 100 milliliter of normal saline, over 1 hour. Efficacy of streptokinase was recorded. SPSS-19 was sued to analyze the data.

RESULTS

Age distribution shows that 58%(n=116) were in range of 41 to 60 yrs while 42%(n=84) were between range of 61 to 80 yrs of age, 44.5%(n=89) were male subjects while 55.5%(n=111) were females.Effectiveness of streptokinase in diabetic cases presenting with (STEMI) was recorded as 38.5%(n=77) while 61.5%(n=123) were not treated effectively. (Table No. 1)

Table 1: Effectiveness of Streptokinase in Diabetic Cases Presenting with St-Segment Elevation Myocardial Infarction (STEMI) (n=200)

Effectiveness	No. of patients(%)	Age(in years)		Gender		Duration of DM (yrs)		Duration of STEMI (hrs)	
		41-60	61-80	Male	Female	1-3	>3	1-6	7-12
Yes	77(38.55%)	47	30	30	47	41	36	39	38
No	123(61.5%)	69	54	59	64	32	91	27	96
P value		0.49		0.21		0.18		<0.005	

DISCUSSION

Coronary artery disease is potential epidemic of mankind. Acute STEMI is one of the most dangerous presentation of ACS in emergency department. Although Primary percutaneous intervention is gold standard treatment for acute STEMI, but due to logistic issues not freely available every where. Among non interventional options, streptokinase is in use since 1958 for STEMI and is still the first choice in many setups of Pakistan with aim to get the occluded artery revascularized. ST-resolution on ECG in patients with STEMI is considered as reliable Noninvasive evidence of revascularization. Among six primary risk factors, diabetes mellitus is growing cause of coronary artery disease. Among patients with STEMI diabetes leads to impaired reperfusion, increased morbidity & mortality.⁶

However, different local studies are showing significantly variation for the frequency of ST resolution in diabetic patients with STEMI which makes confusion regarding the use of streptokinase.

We planned this study to clarify the ambiguity regarding use of streptokinase in diabetic cases and generate a recent data so that we may decide to use this data as guideline while managing diabetic cases with STEMI.

Of 200 diabetic STEMI cases 58%(n=116) were between 41-60 years of age while 42%(n=84) were between 61-80 years of age, mean+sd was calculated as 59.21+8.53 years, 44.5%(n=89) were male while 55.5%(n=111) were females, the effectiveness of streptokinase in diabetic cases presenting with ST-segment elevation myocardial infarction (STEMI) was recorded as 38.5%(n=77).

On comparison with other studies a previous local study ST resolution in Diabetic cases with STEMI was recorded in 49.1% of the cases,⁸ these findings are in agreement with our study. Another local study recorded these findings in 13.8%, which is significantly lower than our study. In their study,⁹ in non-diabetic group, ST segment resolution occurred in 74 (84%) out of 88 patients and in diabetics, 13 (13.8%) out of 94 patients. Diabetes with incorporate ST resolution compared to complete resolution were found to have more in hospital complications such as: recurrent chest pain (71.6% vs 23%, $p < 0.0001$), heart failure (39.5% vs 15.3%, $p = 0.0007$), arrhythmias (59.2% vs 15.3%, $p < 0.0001$), mortality (7.4% vs 0%, $p = 0.0082$). A similar trend was observed in non diabetics: recurrent chest pain (57.1% vs 17.5%, $p < 0.0001$), heart failure (42.8% vs 14.8%, $p = 0.0002$) and arrhythmias (50% vs 12.1%, $p < 0.0001$). Significant interaction was seen between diabetic status and ST segment resolution with respect to clinical outcome (recurrent chest pain $p < 0.0001$, heart failure $p = 0.025$, arrhythmias $p < 0.0001$, and death $p = 0.014$). This significant difference may be due to the reason that the duration of diabetes mellitus is higher in their study or they have very poor control of diabetes mellitus.

Another recorded these findings in 30%¹⁰ of the cases, these findings are close to our study.

Uddin MF and others¹¹ compared diabetic and non-diabetics with regards to thrombolytic effect of streptokinase. Of 187 cases with acute (STEMI), 126 non-

diabetic and 61 were diabetics. In all cases streptokinase was administered. The reduction of elevated ST segment was recorded after ninety minutes. They found 70% cases with ST-resolution in cases who were non-diabetic than diabetic case ($p < 0.001$), failed reperfusion was significantly higher in diabetics (p value < 0.001). They found that diabetes mellitus may alter the result of thrombolytic therapy.

Though, streptokinase is significantly effective in non-diabetics when compared to the diabetic cases but the efficacy in diabetics is not discouraging and may be used as first line therapy in health centers of peripheries. Such cases should be communicated for prioritized treatment like facilitated PCl in tertiary care hospitals

CONCLUSION

- We concluded that the frequency of effectiveness of streptokinase in diabetic cases for resolution of STEMI is not very low and it can be used as first line therapy in setups where primary PCI is not available.

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