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COMPARISON OF IN-HOSPITAL OUTCOME OF PATIENTS OF MYOCARDIAL INFARCTION WITH AND WITHOUT STREPTOKINASE REPERFUSION THERAPY.

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ABSTRACT… Objectives: To compare the in-hospital outcome and complications with and without reperfusion therapy with streptokinase among patients with myocardial infarction was the objective of this study. **Study Design:** Prospective study. **Setting:** Cardiology Department, Divisional Headquarter Teaching, Hospital, Sargodha. **Period:** March 2018 to December 2018. **Material & Methods:** Three hundred (300) patients with acute STEMI of either gender and above 20 years of age, were divided into two groups (180 patients received SK and 120 patients didn't receive SK. Demographic features, history and physical examination were noted. In hospital mortality and complications were recorded and compared between groups by chi-square test. **Results:** There were 76.0% male and 24.0% females with mean age of 55.61±11.35 years. Family history of IHD was present in 28.34% patients and 35.0% patients were smoker. Commonest co-morbidity was hypertension (73.34%), followed by diabetes mellitus (36.67%). In-hospital mortality was 6.6% in SK group and 31.6% in non-SK group (p= <0.001). Overall, in-hospital mortality was 16.67%. LVF was 8.33% and 23.33% (p= <0.001), Mitral regurgitation 1.11% and 2.5% (p=0.848), VT/VF 3.33% and 5.83% (p=0.297), Complete heart block 2.22% and 5.83% (p=0.103), Atrial fibrillation 0.55% and 1.67% (p=0.343), Post MI angina 3.33% and 13.33% (p=0.001), Re-infarction 1.11% and 3.33% (p=0.178), CVA 0.0.55% and 0.0% (p=0.812), Ventral septal defect 0.0% and 3.33% (p=0.029) and Hypotension was 25% and 8.33% (p=0.001)in SK and non SK groups, respectively. **Conclusions:** Reperfusion therapy with streptokinase among patients with myocardial infarction was found effective in terms of significant low in-hospital mortality rate and low complication rate.

Key words: In Hospital Mortality, Streptokinase, Myocardial Infarction.

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INTRODUCTION

Myocardial infarction (MI) is the commonest medical emergency worldwide.[1,2] Globally, it is also most common cause of mortality above the age of 60 years and its rate is increasing day by day.[3,4] Risk of cardiovascular disease increases with advancing age.[5] Important risk factors that are responsible for acute coronary syndrome are hypertension, diabetes and hyperlipidemia.[6]

Acute myocardial infarction being the life threatening condition, demands immediate emergency treatment that includes reperfusion therapy.[7,8] Fibrinolysis remains the choice of treatment for myocardial infarction wherever circumstances for percutaneous coronary intervention are not favorable.[9,10] A well renowned indirect fibrinolytic agent is "streptokinase" (SK).[11] Administration of SK in acute MI lowers the risk of mortality however it is associated with hypotension and hemorrhage.[12]

As Streptokinase is linked to adverse effects, the purpose of this study was to compare the in-hospital outcome with and without reperfusion therapy with streptokinase among patients with myocardial infarction. This study would help in establishing recommendations about the use of streptokinase in acute myocardial infarction.

MATERIAL & METHODS

This prospective study was conducted in the

Cardiology Department, Divisional headquarter teaching, Hospital, Sargodha from March 2018 to December 2018. The study included 300 patients with acute myocardial infarction of either gender and above 20 years of age. Patient with acute myocardial infarction were diagnosed by raised cardiac enzymes and ST elevation on ECG. Patient with non-ST elevation MI, cardiac, hepatic and renal failure and previous arrhythmias were excluded from the study. Patients were divided into two groups.

Group I (SK Group): patients received SK (1500000/U) who reported in less than six hours because of indication to SK (n=180).

Group II (Non-SK group): patient who didn't receive SK because of either contraindication to SK or due to late presentation (n=120).

Demographic features, history and physical examination were noted. All patients were monitored according to CCU protocol. In hospital mortality and complications were recorded and compared between groups by chi square test taking p value ≤0.05 as significant. The data was entered into SPSS version 20, computer program and analyzed accordingly.

RESULTS

Characteristics of patients are shown in Table-I. The male to female ratio was 3.1:1. The most common co-morbidity was hypertension i.e. 73.34%. In-hospital outcome of patients with and without streptokinase is shown in Table-II.

DISCUSSION

This study was conducted to compare the in-hospital outcome and complications with and without reperfusion therapy with streptokinase among patients with myocardial infarction, which included 300 cases.

Variables		No. of Patients (%)
Age (years)	Mean ± SD	55.61±11.35
	Range	25-60
Gender	Male	228 (76.0%)
	Female	72 (24.0%)
Co-morbidities	Diabetes mellitus	110 (36.67%)
	Hypertension	220 (73.34%)
Smoking		105 (35.0%)
Family history of IHD		85 (28.34%)

Table-I. Characteristics of patients (n=300)

Parameters		SK Group (n=180)	Non SK Group (n=120)	Total	P-Value
In-hospital Mortality		12 (6.6%)	38(31.6%)	50(16.67%)	<0.001*
Complications	Left ventricular failure	15(8.33%)	28(23.33%)	43(14.34%)	<0.001*
	Mitral regurgitation	2(1.11%)	3(2.5%)	5(1.67%)	0.848
	VT/VF	6(3.33%)	7(5.83%)	13(4.34%)	0.297
	Complete heart block	4(2.22%)	7(5.83%)	11(3.67%)	0.103
	Atrial fibrillation	1(0.55%)	2(1.67%)	3(1.0%)	0.343
	Post MI angina	6(3.33%)	16(13.33%)	22(7.34%)	0.001*
	Re-infarction	2(1.11%)	4(3.33%)	6(2.0%)	0.178
	CVA	1(0.55%)	0(0.0%)	1(0.34%)	0.812
	Ventral septal defect	0(0.0%)	4(3.33%)	4(1.34%)	0.029*
	Hypotension	45(25%)	10(8.33%)	55(18.34%)	<0.001*

Table-II. In-hospital outcome of patients with and without streptokinase (n=300)
***Significant**

In our study the mean age of the patients was 55.61±11.35 years (Range: 25-60). Similarly, in a study by Taheri L et al[13], mean age of patients was 56.63 ±11.04 years. In another study by Uddin F and Hoque FAK[14], the mean age of patient was 55.79±13.11 years. It shows that coronary heart disease is shifting to very early age in this part of world. This similarity was also observed by Roxana Sadeghi and Nadia Adnani.[15] There was male dominance in our study, i.e. 76.0% male with male to female ratio of 3.1:1. Similar to our study, male dominance was also observed in a study by Taheri L et al[13], i.e. 61.67%. In another study by Uddin F and Hoque FAK[14], 75.0% patients were male.

Family history of ischemic heart disease was present in 28.34% patients, in our study. In a study by Uddin F and Hoque FAK[14], family history of ischemic heart disease was present in 33.2% patients with acute MI. In our study, the most common co-morbidity was hypertension i.e. 73.34%, followed by diabetes mellitus i.e. 36.67%. Similarly, in a study by Taheri L et al[13], commonest co-morbidity was hypertension (14.7%), followed by heart ischemia (11.3%), diabetes (8.7%) and hyperlipidemia (1.0%). However, in a study by Uddin F and Hoque FAK[14], the most common co-morbidity was diabetes mellitus (40.6%) followed by hypertension (37.1%).In our study, 35.0% patients were smoker. However, in a study by Uddin F and HoqueFAK[14], 59.4% patients were smoker.

In-hospital mortality was 6.6% in SK group and 31.6% in non-SK group (p=0.001) in our study. Overall, in-hospital mortality in our study was 16.67%. However, overall higher in-hospital mortality rate i.e. 12.9% (8.7% in SK and 20.5% in non SK group; p=00.2) was observed in a study by Uddin F and Hoque FAK.[14]

In our study, Left ventricular failure rate was 8.33% and 23.33% in SK and non SK groups (p=0.001), respectively and overall left ventricular failure was 14.34%. However, a higher overall left ventricular failure rate i.e. 20.6% (17.9% and 25.4% in SK and non SK group, respectively) was recorded in a study by Uddin F and Hoque FAK.[14]

In our study, Mitral regurgitation was observed in 1.11% and 2.5% patients in SK and non SK groups(p=0.848), respectively and overall frequency of mitral regurgitation was 1.67%. Similarly, in a study by Uddin F and HoqueFAK[14], overall mitral regurgitations was 1.67% (1.11% and 2.5% in SK and non SK group, respectively). In our study, 3.33% and 5.83% patients were reported with VT/VF in SK and non SK groups (p=0.297), respectively and overall frequency of VT/VF was 4.34%. However, higher VF rate was reported in a study by Taheri L et al[13], i.e. 8.7% and 5.3% in SK and non SK groups, respectively. In contrary to our study, overall higher VT/VF rate i.e. 7.6% (6.0% and 10.7% in SK and non SK groups, respectively) was reported in a study by Uddin F and Hoque FAK.[14]

Complete heart block was 2.22% and 5.83% in SK and non SK groups (p=0.103), respectively and overall frequency of Complete heart block was 3.67% in our study. Similarly, in a study by Uddin F and HoqueFAK[14], overall complete heart block was 3.2% (3.2% and 3.3% in SK and non SK groups, respectively). Atrial fibrillation was 0.55% and 1.67% in SK and non SK groups (p=0.343) respectively and overall frequency of atrial fibrillation was 1.0% in our study. In a study by Taheri L et al[13], atrial fibrillation was 2.7% and 2.7% in SK and non SK groups, respectively. However, overall lower atrial fibrillation frequency i.e. 0.3% (0.0% and 0.8% in SK and non SK groups, respectively) was observed in a study by Uddin F and HoqueFAK.[14] Post MI angina was 3.33% and 13.33% in SK and non SK groups (p=0.001), respectively and overall frequency of post MI angina was 7.34% in our study. In a study by Uddin F and HoqueFAK[14], overall frequency of post MI angina was 6.5% (5.0% and 9.0% in SK and non SK groups, respectively). Re-infarction was 1.11% and 3.33% in SK and non SK group (p=0.001), respectively and overall re-infarction was 2.0% in our study. In a study by Uddin F and HoqueFAK[14], overall re-infarction was 0.6% (0.0% and 1.6% in SK and non SK groups, respectively). CVA was 0.55% and 0.0% in SK and non SK group (p=0.812), respectively and overall frequency of CVA was 0.34% in our study. Similarly, in a study by Uddin F and HoqueFAK[14], overall CVA was

0.3% (0.5% and 0.0% in SK and non SK groups, respectively). Ventricular septal defect was 0.0% and 3.33% in SK and non SK group (p=0.029), respectively and overall frequency of ventral septal defect was 1.34% in our study. Similarly, in a study by Uddin F and HoqueFAK[14], overall ventricular septal defects was 1.2% (0.9% and 1.6% in SK and non SK groups, respectively).

Hypotension was 25% and 8.33% in SK and non SK group (p=0.001), respectively and overall frequency of hypotension was 18.34% in our study. Increase incidence of hypotension in SK group was mostly reversed by giving fluids. In a study by Taheri L et al[13], hypotension was 10.7% and 13.3% in SK and non SK group, respectively.

This study has certain limitations. It was a single center study. Moreover, this requires a larger sample size.

CONCLUSION

It is concluded that Reperfusion therapy with streptokinase among patients with myocardial infarction was found effective not only in terms of low in-hospital mortality rate but also low rate of post myocardial infarction complications.

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