



"EVALUATION OF THROMBOLYSIS IN ACUTE ST ELEVATION MYOCARDIAL INFARCTION IN SIR T. HOSPITAL, BHAVNAGAR."

Dr. Falguni Nayi*

3rd year resident, Department of Medicine, Bhavnagar Medical College, Bhavnagar. *Corresponding Author

Dr. Jatin Sharma

3rd year resident, Department of Medicine, Bhavnagar Medical College, Bhavnagar.

Dr. Ila Hadiyel

Associate Professor, Department of Medicine, Bhavnagar Medical College, Bhavnagar.

ABSTRACT

INTRODUCTION: Acute ST elevation myocardial infarction (STEMI) occurs most commonly when thrombus formation causes occlusion of a major coronary vessel. Thrombolytic therapy is a significant advancement in the treatment of STEMI. Clinical trials have established the safety and efficacy of thrombolytic therapy in STEMI when administered within 12 hours of the onset of symptoms; the earlier it is administered, the greater the benefit. **METHODOLOGY:** A Cross-sectional observational study was carried out at Sir T. Hospital, Bhavnagar. 100 Acute STEMI (ST elevation myocardial infarction) patients admitted in ICCU during august 2021 to July 2022 after taking informed written consent were subjected to detailed history and complete physical examination and data collected was noted in a predesigned Performa. **RESULTS:** Among 100 patients, majority of the cases were in age group of 51 to 60 yrs. Male patients are predominantly affected than female patients. **CONCLUSION:** IV Streptokinase thrombolytic therapy in acute STEMI patients within golden hours improved the reperfusion of myocardium and also associated with reduction of adverse events and decreased mortality.

KEYWORDS : Streptokinase, Thrombolytic therapy, Acute ST elevated Myocardial Infarction

INTRODUCTION:

Myocardial infarction is a leading cause of death and morbidity around the world. Each year, more than three million people are estimated to have an acute ST-elevated myocardial infarction, and over four million have a non-ST-elevated myocardial infarction¹. Acute ST elevation myocardial infarction (STEMI) occurs most commonly when thrombus formation causes complete occlusion of a major epicardial coronary vessel. STEMI is the most serious type of acute coronary syndrome, which is a life-threatening, time-sensitive emergency that must be properly diagnosed and treated. In susceptible individuals, a history of chest pain or discomfort lasting 10-20 minutes should raise the possibility of acute STEMI (middle-aged male patients, particularly if they have risk factors for coronary disease) Thrombolytic therapy is a significant advancement in the treatment of STEMI. After carefully excluding contraindications, clinical trials have established the safety and efficacy of thrombolytic therapy in STEMI when administered within 12 hours of the onset of symptoms; the earlier it is administered, the greater the benefit².

Thrombolysis has been used in the treatment of acute ST elevation myocardial infarction (STEMI) for the last 20 years, and it has resulted in significant outcome improvement³. Clinical disadvantages of first-generation thrombolytics included low specificity for fibrin, an increased risk of allergic reactions (particularly with streptokinase), and a short half-life. Newer thrombolytic agents, such as Reteplase and tenecteplase, have been developed with potential advantages such as increased fibrin specificity and resistance to inhibition by plasminogen activators. These laboratory-measured benefits, however, may not translate into measurable clinical benefits^{4,5}. The new thrombolytic drug lanoteplase, for example, was withdrawn from development due to an increased incidence of intracranial hemorrhage. Thrombolytic therapy is not without side effects. Minor bleeding, hypotension, and allergic reactions are common in Streptokinase patients⁶⁻⁸.

AIM & OBJECTIVES:

To evaluate the success rate of thrombolysis in the Acute STEMI patients and to assess the different parameters

influencing the outcomes of thrombolysis in Acute MI.

MATERIAL & METHODS:

A Cross-sectional observational study was carried out at Sir T. Hospital, Bhavnagar. 100 Acute STEMI (ST elevation myocardial infarction) patients admitted in ICCU during august 2021 to July 2022 after taking informed written consent were subjected to detailed history and complete physical examination and data collected was noted in a predesigned Performa.

Inclusion Criteria:

All patients with confirmed diagnosis of Acute STEMI and given thrombolytic therapy in the ICCU in less than 12 hours from onset of chest pain will be included in this study.

Exclusion Criteria:

Presence of Left Bundle Branch Block, Development of pericarditis, History of recent surgery (6weeks), Active bleeding or known hemorrhagic Diathesis.

All patients received injection Streptokinase 1.5 million Units in 100 ml NS over 60 minutes.

- Loading dose (aspirin 300 mg, atorvastatin 80 mg and clopidogrel 300 mg) was given to all patients.
- Heparin, Beta-blockers, ACE inhibitors was given according to ICCU protocols, which was in accordance with ACC / AHA recommendation.

Successful thrombolysis is defined by Clinically – complete subsidence of chest pain and electrocardiographically – more than 50% ST resolution in the leads which showed maximum ST elevation initially.

RESULTS:

In the present study, Majority patients were from age group of 51- 60 years (35%) followed by 41-50 years (32%) patients. It was found that male patients (78%) were predominantly higher than female (22%). The ratio of male: female was 3.54:1. Patients from lower class of socioeconomic status were affected higher (60%) than middle class (36%) and upper class (4%) group respectively. Clinical symptoms were found as chest pain was much developed (95%) in patients followed

by Sweating (74%) and Dyspnea (25%) respectively. It was found that risk factors such as Smoking (75%) was more in number than hypertension (48%) and DM (33%). There is no significant relate with family history (18%). Anterior wall MI was noted higher (56%) in patients than Inferior wall MI (44%) patients. It was found that (39%) of patients were thrombolysed within 3 hours of onset of symptoms followed by (32%) of patients in between 3-6 hours and (29%) in 6-12 hours respectively. After given injection streptokinase to Acute STEMI patients, more than 50% of patients were successfully thrombolysed and 30% of patients had suffered adverse event which include left ventricular failure, bleeding, cardiogenic shock and cardiac arrhythmias while (10%) of patients were expired.

Table 1: Age And Gender Wise Distribution

Age Wise Distribution		Gender Wise Distribution	
Age Group	No. Of Patients	Gender	No. Of Patients
31-40	19	Male	78
41-50	32	Female	22
51-60	35		
61-70	11		
>70	3	Ratio	3.54:1
Total	100	Total	100

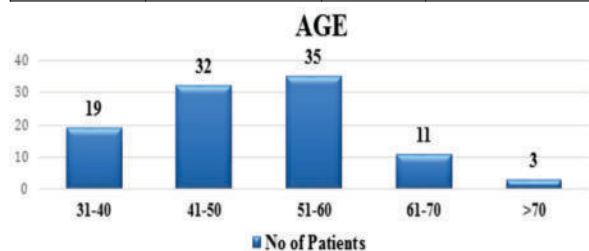


Figure 1: Age Wise Distribution

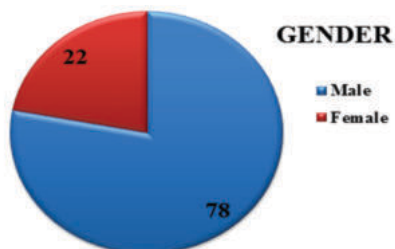


Figure 2: Gender Wise Distribution

Table 2: Clinical Symptoms And Risk Factors Wise Distribution

Clinical Symptoms Wise Distribution		Risk Factors Wise Distribution	
Clinical Symptoms	No. Of Patients	Risk Factors	No. Of Patients
Chest Pain	95	Hypertension	48
Sweating	74	Dm	33
Dyspnea	25	Ihd	9
Syncope	17	Smoking	75
Palpitation	10	Family History	18

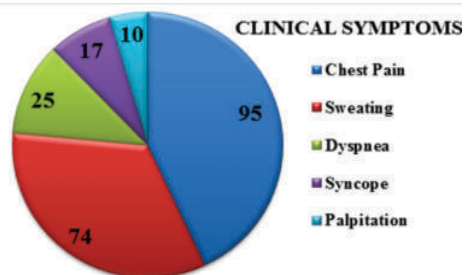


Figure 3: Clinical Symptoms Wise Distribution

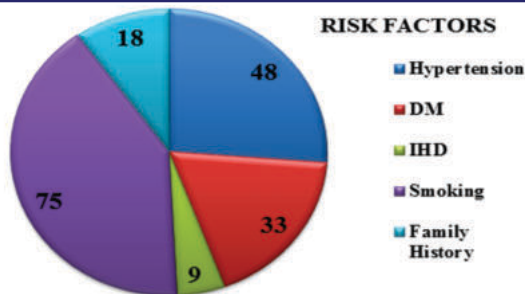


Figure 4: Risk Factors Wise Distribution

Table 3: Type Of Infarction And Outcome Wise Distribution

Type Of Infarction Wise Distribution		Outcome Wise Distribution	
Type of Infarction	No. of Patients	Outcome	No. of Patients
Anterior Wall MI	56	Successful	70
Inferior Wall MI	44	Failure	30
Total	100	Total	100

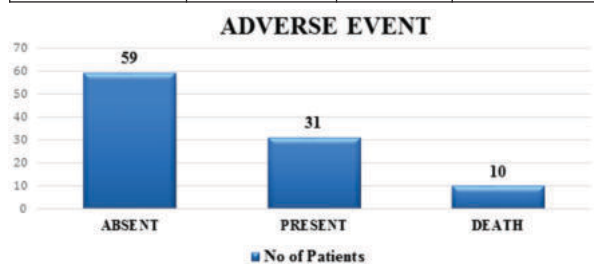


Figure 5: Adverse Event Wise Distribution

Table 10: Comparison Of Successful And Failed Thrombolysis Treatment

	Success treatment(n=70)	Failure treatment(n=30)	P value
Mean Age (yrs)	50.20 ± 10.75	52.50 ± 9.24	0.3099
Gender			0.8338
Male	55 (78.57%)	23 (76.66%)	
Female	15 (21.42%)	7 (23.33%)	
Clinical Symptoms			
Chest pain	67 (95.71%)	28 (93.33%)	0.6163
Sweating	50 (71.42%)	24 (80%)	0.3704
Dyspnea	19 (27.14%)	6 (20%)	0.4498
Syncope	9 (12.85%)	8 (26.66%)	0.0920
Palpitation	5 (7.14%)	3 (10%)	0.6293
Risk Factor			0.5408
Hypertension	24 (34.28%)	9 (30%)	0.6765
DM	7 (10%)	2 (6.66%)	0.5934
IHD	53 (12.85%)	22 (73.33%)	0.8018
Smoking	13 (7.14%)	5 (16.66%)	0.8193
Family history			
Type of Infarction			0.5980
AWMI	38 (54.28%)	18 (60%)	
IWMI	32 (45.71%)	12 (40%)	
TWP			<0.0001
0-3 hrs	36 (51.42%)	3 (10%)	
3-6 hrs	26 (37.14%)	6 (20%)	
6-12 hrs	8 (11.42%)	21 (30%)	
Adverse Event			<0.0001
Yes	53 (75.71%)	6 (20%)	
No	16 (22.85%)	15 (50%)	
Death			<0.0001
	1 (1.42%)	9 (30%)	

DISCUSSION:

Enormous progress has been made in the previous decade for managing acute myocardial infarction. The treatment of

myocardial infarction is now based on scientific principles, validated by large well, controlled randomized clinical trials. One of the well-recognized and effective treatments apart from percutaneous intervention for STEMI is Thrombolysis. The aim of thrombolysis in STEMI is to thrombolyssearly and complete reperfusion of myocardium.

In the present study, Majority patients were from age group of 51- 60 years and male patients (78%) were predominantly affected than female patients (22%), which was comparable to other study such as Madhav R et al⁹, Karthik S et al¹⁰, Lee YY et al¹¹, Salem S et al¹² and Mandal R et al¹³.

Clinical symptoms were found as chest pain was higher as (95%) patients than Sweating (74%) and Dyspnea (25%) which was correspondingly by Karthik S et al¹⁰ and Madhav R et al⁹ studies respectively. it was observed that risk factors such as Smoking (75%) was higher in number than HTN (48%) and DM (33%) in patients but in contrast by Parvathareddy KM et al¹⁴ and Salem S et al¹² found HTN was most common risk factor followed by DM and Smoking respectively. Anterior wall MI was noted higher (56%) in patients than Inferior wall MI (44%) patients which comparable to above study. In the present study, while comparing Successful therapy with Failed thrombolytic therapy, it revealed that time window period, adverse event and death patients were statistically significant in successful group compared to failure group (p <0.0001). The study by Mandal R et al¹³ have found that 75.5% had successful thrombolysis and 24.5% had failed thrombolysis. Further, the patients who died after thrombolysis, 20% had successful thrombolysis and 80% had failed thrombolysis. Moreover, the study by Madhav R et al⁹ have found that Complete ST resolution seen among 40% cases, partial resolution seen among 45.55% and no resolution among 14.44% cases.

CONCLUSION:

IV Streptokinase thrombolytic therapy in acute STEMI patients within golden hours improved the reperfusion of myocardium and also associated with reduction of adverse events and decreased mortality.

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