**Original Research Paper**

**General Medicine**

# A STUDY OF COMPLICATIONS OF THROMBOLYSIS IN MYOCARDIAL INFARCTION

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**ABSTRACT**
**INTRODUCTION:** MI is myocardial cell necrosis due to significant and sustained ischemia caused by obstruction to blood flow due to plaques in the coronary arteries. An early diagnosis and thrombolysis reduces complications and mortality.
**OBJECTIVE:** To study the complications of thrombolysis in MI.
**METHODOLOGY:** Observational prospective study in a tertiary care hospital where 50 pts (divided into two groups, depending upon the time of occurrence of symptoms into <4hrs and >4hrs) following the inclusion criteria were thrombolysed and were followed up.
**RESULTS:** Patients thrombolysed within 4 hrs had better outcome including medical management, lesser arrhythmias and overall mortality.
**CONCLUSION:** Early diagnosis and thrombolysis in MI is important in decreasing the complications and mortality.

**KEYWORDS :** Thrombolysis, Myocardial Infarction.

## INTRODUCTION

MI is defined by the demonstration of myocardial cell necrosis due to significant and sustained ischemia. It is usually an acute manifestation of atherosclerosis-related coronary heart disease. MI results from either coronary heart disease, which implies obstruction to blood flow due to plaques in the coronary arteries or, much less frequently, to other obstructing mechanisms (e.g. spasm of plaque free arteries). The clinical presentation of MI varies from a minor coronary event to life-threatening clinical situations or sudden death. Those who survive the initial event are vulnerable to repeat attacks of MI.

In 1958, Fletcher first reported the use of thrombolytic therapy for the management of AMI [1]. Subsequently several small trials reported the benefit of streptokinase (SK) in the management of patients with AMI [2-6]. Newer agents including tissue plasminogen activators (TPA) such as alteplase, reteplase, tenecteplase (TNK) were developed subsequently. In the present era, thrombolytic therapy and primary percutaneous coronary intervention (PPCI) has revolutionized the way patients with AMI are managed resulting in significant reduction in cardiovascular mortality [7,8]. The objective of both treatment strategies is to provide a rapid, complete, and sustained restoration of blood flow in the infarct-related coronary artery (IRA) [9,10].

With this background we aim to study the complications of early and late throbolysis in MI patients.

## CASE STUDY

**STUDY AREA** –
Department of General Medicine, D Y Patil University School of Medicine & Hospital, Nerul, Navi Mumbai.

## STUDY POPULATION-
In patients who meet the Inclusion and Exclusion Criteria.

## INCLUSION CRITERIA:
1) Patient admitted to Dr D Y Patil hospital with chest pain lasting 20 mins or more with ECG sign compatible with MI
(a) ST elevation of 0.2 MV or greater in one of the precordial leads
(b) 0.1 MV elevation in limb leads or both of the above
2. Patient with 0.2 MV or greatest ST segment Depression in precordial leads compatible with posterior wall infarction

## EXCLUSION CRITERIA:
• Age > 70 yrs

• Previous treatment with streptokinase
• Bypass surgery of the vessels corresponding to the infarct location
• Recent trauma including traumatic resuscitation
• History of GI bleed, Ulcer, Hematuria or CVA within three months
• Pregnancy or menstruation

## SAMPLE SIZE:
By using Convenience sampling the minimum sample size of 50 was arrived at using Convenience Sampling. [14]

## STUDY DESIGN: Observational Prospective study

## STUDY DURATION: 1 year

## METHODOLOGY:
After approval from the Ethics Committee and with written informed consent, a pilot study was conducted. Based on the results of pilot study, sample size was calculated. After taking the detailed history and considering the symptomatology of patients presenting to the department of Medicine. Patients who presented with symptoms (chest pain, palpitations, sweating, dyspnoea, nausea, vomiting) within 4 hrs were labelled as early and those presented after 4 hrs were labelled as late. After admission the patients were undergone following
• Detail clinical history
• Thorough examination
• Electrocardiography
• Cardiac screen

Based upon above data the patients were diagnosed as ST elevation MI. Following standard treatment was given: Oxygen via mask, Analgesic, vasodilators such as sublingual nitroglycerine, with loading dose of aspirin (300mg), clopidogrel (600mg) and atorvastatin (80mg). Patients fulfilling the inclusion criteria were then lysed with any of the thrombolytic agents like streptokinase, tenecteplase, alteplase.

## RESULTS
**Table No. 1: Distribution of patients according to time of Lysis**

| Start time of Thrombolysis | Frequency (N) | Percentage (%) |
|---|---|---|
| Less than 4 | 20 | 40 |

| More than 4 | 30 | 60 |
|---|---|---|
| Total | 50 | 100 |

The above table depicts patients in which thrombolysis started after 4 hrs. more than started within 4 hrs. (30 Vs 20)

**Table No.2: Distribution of patients according to complications (Multiple Response)**

| Outcome | Frequency (N) | Percentage (%) |
|---|---|---|
| Angina | 02 | 04 |
| Cardiac Failure | 03 | 06 |
| Recurrent MI | 03 | 06 |
| Arrhythmias | 06 | 12 |

The above table shows cardiac arrhythmias was maximum in number (12%) followed by cardiac failure (6%), recurrent MI (6%) and angina (4%) in complications.

**Chart No. 1: Distribution of patients according to complications**
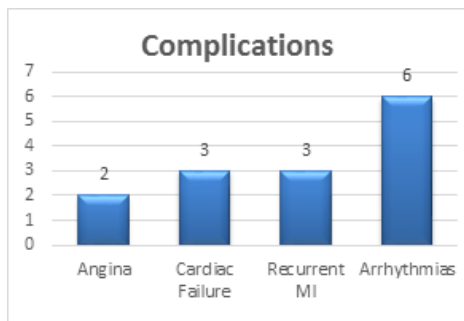


**Table No. 3: Comparison of complications between Early and Late thrombolysis (Multiple Response)**

| Outcome | Early | Late | Total |
|---|---|---|---|
| Angina | 00 | 02 | 02 |
| Cardiac Failure | 00 | 03 | 03 |
| Recurrent MI | 00 | 03 | 03 |
| Arrhythmias | 02 | 04 | 06 |

The above table shows that comparison of complications between early and late thrombolysis which shows that angina, cardiac failure and recurrent MI were observed in late thrombolysis and only arrythmias seen in early thrombolysis patients.

**DISCUSSION**

The present study was prospective observational study in tertiary care hospital. In this, 50 patients fulfilling inclusion and exclusion criteria enrolled for the study. The basic aim of our study was to observe complications of early and late thrombolysis in MI.

In this study out of 50 patients 30 patients were undergone thrombolysis after 4 hrs. i.e. late thrombolysis and 20 patients were undergone thrombolysis before 4 hrs i.e. early thrombolysis.

It was observed that 6 patients had arrhythmia , 3 patients had cardiac failure and recurrent MI each and 2 patients had angina in follow up.

It was observed that complications like arrhythmias, cardiac failure and recurrent MI was lesser in early thrombolysis patients. It concludes that early thrombolysis after onset of MI reduce myocardial damage and thus preserve part of the function of the left ventricle and improve patient survival. Similarly, Maarten L. Slmoons also mentioned that thrombolysis in the first hours after the onset of infarction has less complications and can reduce myocardial damage and thus preserve part of the function of the left ventricle and

improve patient survival. In one other randomized trial [11,12] there was a similar improvement in survival, although left ventricular function and infarct size appeared unaltered [13]. The GISSI trial showed that improvement in survival after thrombolysis was inversely related to the delay to treatment.

In our study we conclude that early thrombolysis within 4 hrs after onset of MI having lesser complications than late thrombolysis.

**CONCLUSION**
*   Early thrombolysis showed less complications as compared to late thrombolysis
*   It was observed that early thrombolysis within 4hrs after onset of symptoms is beneficial.

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