

# Major Causes of Delay in Initiating Thrombolytic Therapy in Patients with Acute ST Elevation Myocardial Infarction; a Survey in a Tertiary Care Government Hospital, NICVD, Karachi, Pakistan.

A U Saleh, A A Shah, S S Ali

## Citation

A U Saleh, A A Shah, S S Ali. *Major Causes of Delay in Initiating Thrombolytic Therapy in Patients with Acute ST Elevation Myocardial Infarction; a Survey in a Tertiary Care Government Hospital, NICVD, Karachi, Pakistan.* . The Internet Journal of Cardiology. 2013 Volume 11 Number 1.

## Abstract

**Introduction:** Outcome of acute ST elevation myocardial infarction (STEMI), specifically size of infarct and mortality is directly related to the time between the onset of symptoms and the commencement of thrombolytic therapy.

**Objective:** To determine the frequency of various causes of delay in initiating Thrombolytic therapy in patients with acute ST-segment Elevation Myocardial Infarction (STEMI).

**Study Design:** This descriptive analytical study consisted of 100 patients diagnosed with acute STEMI and selected for thrombolysis from emergency unit of National Institute of Cardiovascular Diseases (NICVD), Karachi, Pakistan. The patients underwent history & examination, diagnosis confirmed, questionnaire filled and data collected.

**Results:** Frequency of the major causes of delay was found to be due to lack of patient awareness 55% (31% were neglecting their chest pain, 24% thought that their pain was due to some non-cardiac reason), delay in referral from other healthcare centers 45%, transportation 25% (8% had problems in getting conveyance, 17% delayed because of traffic block), misdiagnosis by doctor 13%.

**Conclusions:** Every effort should be made to decrease pain to needle time (PTN) of thrombolysis. We found that lack of patient awareness as the main cause of delay in initiating thrombolysis. The PNT can be reduced by encouraging other healthcare centers to give immediate thrombolytic therapy rather referring patients; increasing public awareness of the disease, immediate consultation in case of chest pain; developing a better system of transportation.

## INTRODUCTION

Time is muscle; delay in initiating thrombolysis after acute STEMI increases both mortality and morbidity of the patient. Multiple land mark trials like GISSI 1, TIMI 2, GUSTO and the National Registry of Myocardial Infarction all showed significantly less mortality with earlier treatment. International standards and guidelines encourage initiation of thrombolysis within 60 min. of onset of typical chest pain and within 30 min. after patient enters a cardiac emergency room<sup>1,9,10,11,12</sup>. Time to start thrombolysis as early as possible is vitally important, so much so that if ideal pain to needle time is not achievable in the hospital then consideration should be given to pre-hospital fibrinolysis<sup>2,7</sup>. We found that the underlying causes for delay in initiation of thrombolysis

in Pakistan, for the majority of patients, were similar to those found in developed industrialized countries<sup>3,4, and 5</sup>. As it is clear, improvement in survival directly depends on the shortest time taken to start thrombolysis after the onset of chest pain<sup>6,7</sup>, every effort should be taken to minimize this pain to needle time. Consequently, it is important to identify all those factors which cause delay, so that subsequently they may be corrected. To achieve this goal, we tried to find out the various causes of delay in patients reaching our hospital.

## Objective:

To find out the frequency of various causes of delay in initiating Thrombolytic therapy in patients with acute ST segment Elevation myocardial infarction.

## PATIENTS AND METHODS

This is a descriptive analytical study, consisted of 100 numbers of patients. Case recruitment done in the Emergency department of National Institute of Cardiovascular Diseases (NICVD), which is the largest, high volume tertiary care public hospital concerning heart diseases placed in the centre of the city, Karachi, Pakistan.

**Study period:** consisted of 6 months (from May 31, 2006 to Dec 1, 2006). **Inclusion criteria:** Patients of both genders, between the age group of 30-90 years, diagnosed as acute ST-segment elevation myocardial infarction. **Exclusion criteria:** Patients who developed STEMI after admission were excluded from the study. Questionnaires were filled out during an interview with patients and included these variables; age, address, gender, risk factors, duration of typical chest pain, pain to needle time, door to needle time, mode of transportation and causes of delayed presentation to hospital like patient ignoring chest pain, assuming chest pain was due to some other problem than cardiac, delay in referring from primary care center, misdiagnosis, traffic block, delay in getting conveyance and others. Data analysis was performed through SPSS version 10. Mean plus minus SD was computed to present age, pain to needle time and door to needle time. Frequency and percentages was computed to present reasons for delay in initiating thrombolytic therapy. No statistical test was applicable for this descriptive study.

### Operational Definitions:

#### **Various Causes For Delay In Initiating Thrombolytic**

**Therapy:** The major causes for delay in initiating thrombolytic therapy can be classified as: 1) *Late arrivals at hospital* i.e. the pre-hospital delay, which is either because of patient ignoring chest pain, assuming typical chest pain a gastric problem, delay in referring from primary care center, misdiagnosis by doctor, traffic block, delay in getting conveyance and others. 2) *Prolonged Door to Needle Time* i.e. the in-hospital delay, where the thrombolytic therapy is given but with delay either because of hospital's administration policies including delay in registration and billing issues or because of untrained paramedical staff.

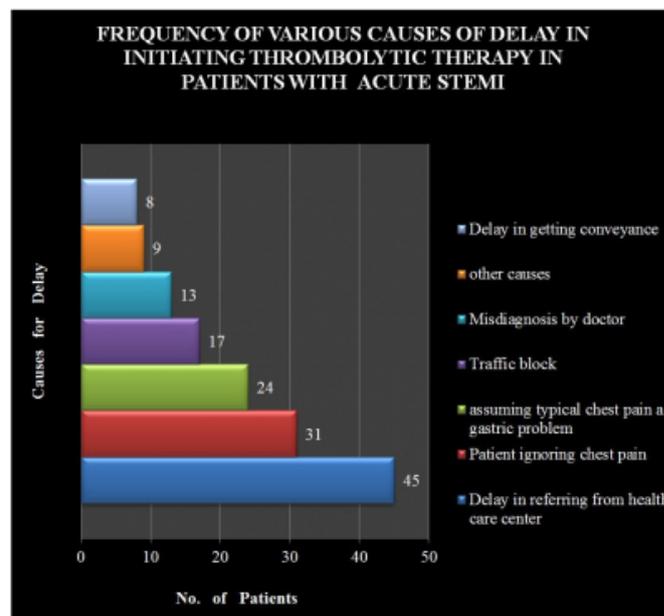
## RESULTS

This study consisted of 100 patients. The age ranges between 30-90 years, mean age was 53yrs. The major reason for the delay in thrombolysis in our study was found to be in pre-hospital phase. About 55% of the late arrivals were due to

the patient's negligence, i.e. ignoring chest pain or confusing it with gastric pain; 58% of delays were related to healthcare system, i.e. misdiagnosis by doctors or referral to other health care centers rather immediate thrombolysis; and other causes (25%) were includes transportation problem, i.e. delay in getting ambulance or other conveyance to hospital or late in traffic block.

### Graph 1

Various causes of delay in initiating thrombolysis



## DISCUSSION

The most common cause for the delay in thrombolysis could be attributed to the fact that most of the healthcare centers do not give thrombolytic therapy even after clear cut evidence of STEMI, but rather refer the patients. Even in some private tertiary care hospitals, where they routinely give thrombolytic therapy, however thrombolytic therapy was withheld due to non-affordability of patients. As even minutes matter, multiple action plans to reduce pain to needle time have been implemented in the West; including, pre-hospital fibrinolysis, nurse initiated fibrinolysis, and others<sup>2&7</sup>. on the contrary, in our setup, even secondary care hospital are reluctant to give thrombolytic therapy and prefer to refer the patients. This results in loss of precious lifesaving time.

The other common cause of late arrival found was patient related. Many patients either ignoring their chest pain or assumed that it was a gastric problem, results in 55% of the cause of late arrival. This huge percentage clearly shows lack of awareness about symptoms of heart attack in our

patients. Even in United States, studies have shown that most heart attack patients wait 2 or more hours after symptoms begin before they seek medical help. To overcome this in September 2001, the NHAAP and the AHA launched a campaign urging patients and providers to “Act in Time to Heart Attack Signs”<sup>8</sup>. The campaign urged both men and women who had heart attack symptoms or observed the signs in others to wait no more than a few minutes, 5 minutes at most, before calling 9-1-1. Campaign materials pointed out that patients can increase their chance of surviving a STEMI by learning the symptoms and filling out a survival plan. The patients received a free brochure about symptoms and recommended actions for survival, in English and in Spanish, as well as a free wallet card that could be filled in with emergency medical information. Similarly, we should launch such Patient Action Plan and to achieve our goal of patient awareness regarding heart attack, we can take help of media (radio, newspaper etc.)

Furthermore, our study shown that 17% of patients were delayed because of traffic jam and 8% delayed due to lack of conveyance to the hospital. Both related to transportation, pointing to the need for a good emergency medical transport system, similar to the one present in western countries. Finally, some of patients were late for thrombolysis because of misdiagnosis by their family physician and treated for some muscular pain, pointing to the need for arranging special workshops for general physicians regarding the diagnosis of chest pain.

This study has clearly pointed out some major causes of delay in initiating therapy. It is hoped that health care policy

makers take notice of these causes and to rectify them.

## **CONCLUSION**

In our study the pain to needle time was unacceptably far outside the ACC/AHA guidelines of 60 minutes and this delay was found to be due to four major factors. In STEMI prompt restoration of flow in the culprit artery after onset of symptoms, is the key determinant of short & long term prognosis. On the basis of that we conclude that following actions should be taken:

- 1) Training program for general physician & family physician about how to manage patients with chest pain.
- 2) Private hospitals should make arrangements for providing thrombolytic therapy to non affording patients.
- 3) The government should ensure good transportation system for the rapid shifting of patients to hospital.
- 4) Public awareness programs should be launched, with the help of media, to widely disseminate information regarding the symptoms of MI. Patients should be encouraged to have low threshold of seeking early medical advice in established cardiac centers for suspected ischemic symptoms.

## **References**

**Author Information**

**Aman Ullah Saleh, MBBS, MCPS, FCPS Cardiology, Consultant Interventional Cardiologist & Head of Department**  
Department of Cardiology, Memon Medical Institute Hospital  
Karachi, Pakistan

**Arshad Ali Shah, MBBS, FCPS Cardiology Cardiologist**  
Civil Hospital  
Karachi, Pakistan

**Syed Saadat Ali, MBBS Senior Medical Officer**  
Department of Cardiology, Memon Medical Institute Hospital  
Karachi, Pakistan