**A PROSPECTIVE OBSERVATIONAL STUDY ON OUTCOMES OF ACUTE MYOCARDIAL INFARCTION PATIENT UNDERGOING THROMBOLYSIS AT TERTIARY CARE HOSPITAL**

INGOLE AKANGKSHA GAJANAN1, PATHAN ADIBA M. MANSOOR2, KELGAONKAR PRAJAKTA NANDKISHOR3.

SHIVLINGESHWAR COLLEGE OF PHARMACY, ALMALA, LATUR, INDIA1,

SHIVLINGESHWAR COLLEGE OF PHARMACY, ALMALA, LATUR, INDIA2,

SHIVLINGESHWAR COLLEGE OF PHARMACY, ALMALA, LATUR, INDIA3.

**Abstract:**

**Background** - Cardiovascular diseases including acute myocardial infarction, heart failure and other related risk factors are on the rise. This heart disease is generating a high burden of coronary heart diseases on health care services and becoming a leading cause of death in developing countries. Health information is an integral part of patients education and ultimately for patient care. Thus understanding information needs of heart patients is seriously important and essential in ensuring quality care, controlling heart diseases and improving self care abilities of heart patients alongside the advanced medication and treatment and strategies. For this purpose we conducted a prospective observational study on outcomes of acute myocardial infarction patients undergoing thrombolysis. **Result** – In this study we observed that 63% male population was affected with AMI. Male population is more prone to MI than female population. Also, 33.33% patients are in between 51-60 years of age group. Also, 42% patients received thrombolytic therapy within 30min to 1hour of administration to hospital and also, the mostly used thrombolytic drug is streptokinase (67%) and also, after receiving the thrombolytic therapy about 24% patients underwent hypotensive condition[cardiogenic shock]. **Conclusion -** In this observational study we found that patients with acute MI undergoing thrombolytic therapy within 1 hours is more effective to reduce further cardiac related complications. We also observed that patients having high levels of cholesterol are at high risk of developing acute myocardial infarction.

**Keywords**: Cardiovascular diseases, myocardial infarction, thrombolysis, thrombolytic therapy, cardiogenic shock.

**INTRODUCTION:**

Myocardial infarction is also known as heart attack in which complete obstruction of blood flow to any portion of myocardium is seen. It may be silent, or go undetected or it could be a disastrous event leading to haemodynamic deterioration and may lead to sudden death of a person. In MI, it is seen that lack of oxygen supply to the myocardium for prolonged period which ultimately leads to the myocardial cell death and eventually then leading to necrosis.

According to WHO, MI is a term used for an event of heart attack which is due to formation of plaques in the interior wall of arteries which results in reduced blood flow to the heart and injuring heart muscles because of lack of oxygen supply. Also, MI is defined by demonstration of myocardial cells necrosis due to significant and sustained ischemia[1].

A major cause of morbidity and mortality in worldwide is seen because of myocardial infarction. More than 3 million people are affected with ST segment elevation myocardial infarction and across 4 million are estimated to have non-ST segment elevation myocardial infarction. The MI cases are now becoming incredibly more common in developing countries. The commonest cause of MI which accounts 70% of fatal events is partial or complete epicardial coronary artery occlusion from plaques. Sudden and precise assessment of risk is important for effective management of patients. Thrombolytic therapy has been a major advance in management of MI. The more prime therapeutic goal in management of MI is early restoration of complete infarct artery perfusion after the occurrence of occlusion in coronary artery.

The prevalence of MI is more in men than women. The major risk factors such as Dyslipidaemia, smoking, psychological stressors, diabetes mellitus, hypertension, obesity, alcohol consumption, Physical inactivity, diet low in fruits were explosively associated with riskof MI.

There are two types of MI, 1) ST segment elevation myocardial infarction and 2) non-ST segment elevation myocardial infarction.

The most common symptoms include tightness in chest, pain in chest, back and jaw, shortness of breath, sweating, nausea, vomiting, anxiety, cough, dizziness etc[7].

For diagnosis of MI ECG leads, cardiac markers are assessed[5].

Classification of drugs in treatment of MI:

* Anti platelet drugs – Aspirin[9]
* Anticoagulants – Heparin
* Glycoprotein llb/llla inhibitor
* Antianginal therapy – Nitro-glycerine
* Beta blockers
* ACE inhibitor
* Statins.

Thrombolytic therapy: In management of AMI thrombolytic therapy plays a very major role[13]. Plasmin is a cleaved product which is formed by dissolving blood clots with the help of thrombolytic drugs. The thrombolytic drugs activate the plasminogen which breaks down the blood clot. That is why; thrombolytic drugs are also called as plasminogen activators or fibrinolytic drugs. Tissue plasminogen activator produces clot lysis through the following sequence:

* + tPA binds to fibrin on the surface of the clot
  + Activates fibrin-bound plasminogen
  + Plasmin is cleaved from the plasminogen associated with the fibrin
  + Fibrin molecules are broken apart by the plasmin and the clot dissolves.

The efficacy of thrombolytic drugs depends on the age of the clot. Aged clots have more fibrin cross-linking and are more compacted. Therefore, older clots are more difficult to dissolve. For treating acute myocardial infarction, the thrombolytic drugs should ideally be given within the first 2 hours of hospital administration. Beyond that time, the efficacy of thrombolytic drugs diminishes, and advanced doses are needed to achieve desired lysis blood clots.

**AIM:**  A PROSPECTIVE OBSERVATIONAL STUDY ON OUTCOMES OF ACUTE MYOCARDIAL INFARCTION PATIENT UNDERGOING THROMBOLYSIS AT TERTIARY CARE HOSPITAL.

**OBJECTIVE:**

* To study recovery rate of patient with acute MI undergoing thrombolysis
* To study gender, age difference which is more likely prone to cardiac related conditions.
* To study the use of thrombolytic therapy.

**METHODOLOGY**

1) STUDY DESIGN: A prospective observational study on outcomes of acute myocardial infarction patient undergoing thrombolysis at tertiary care hospital.

2) LOCATION OF STUDY: Smt. Fulabai Bhausaheb Bansude Multispecialty hospital, Latur.

3) DURATION: 06 Month

4) SAMPLE SIZE: 114

5) SAMPLING TECHNIIQUES:

* Sampling of patient required for our study is done by collecting patient’s case papers from the critical care unit of the hospital. By taking data from their case files and observing their all diagnosis reports like ECG, lab data.
* All information is taken to observe the outcomes of use of thrombolytic therapy in acute myocardial infarction patients.
* Vitals are observed by the monitor present at bed side of the patients as it’s in critical care unit before and after thrombolytic therapy.

6) SAMPLE SELECTION:

A. Inclusion criteria

* Age – patient above 20 yr. old
* Type of disease – patients with cardiac related disease.
* Place - patient admitted in Smt. Fulabai Bhausaheb Bansude Hospital, Latur.

1. Exclusion criteria

* Age - patient below 20 yr. old
* Pregnant women.

7) Data collection procedure:

1) ECG:-We observed that ECG should be performed as soon as possible, preferably within 10-20 min. after the patients arrived in the emergency department. Since the presence or absence of ST elevation determines the preferred management strategy.

ECG early changes,

* Presence of MI
* QRS complex,ST segment ,T waves are changed
* Tall T wave in continuous 2 or more leads.

MI specific changes

* Pathological Q wave present in >2 leads.
* Pathological Q wave indicate cellular necrosis
* ST segment elevation is formed after beginning of infarction in 2-4 hours.

Assessment of risk in patients with MI:

We observed that patients age and gender is an important factor in assessment of risk in patient’s condition having MI. We also observe elevated levels of troponin and CKMB in serum.

**RESULT:**

A. Gender wise distribution of patients:

Table no. 1 – Gender wise distribution of patients

|  |  |  |  |
| --- | --- | --- | --- |
| Sr. No. | Gender | No. Of patients | Percentage |
| 1. | Male | 72 | 63% |
| 2. | Female | 42 | 36.8% |
| Total |  | 114 | 100% |

.

In our observational study, there was total 114patients, in that 72 (63%) male patients was assessed And42 (36.8%) female patients was observed. So this showed that no. Of male patients is more than that of female patients suffering from myocardial Infarction.

1. Age wise distribution of patients:

Table no. 2 – Age wise distribution of patients

|  |  |  |  |
| --- | --- | --- | --- |
| Sr.no | Age group | No. Of patients | Percentage |
| 1. | 21-30 | 00 | 00.00% |
| 2. | 31-40 | 17 | 14.91% |
| 3. | 41-50 | 22 | 19.29% |
| 4. | 51-60 | 38 | 33.33% |
| 5. | 61-70 | 22 | 19.29% |
| 6. | 71-80 | 10 | 8.77% |
| 7. | 81-90 | 05 | 4.38% |
| Total |  | 114 | 100% |

Age is major factor in the disease condition. In this study we observed that age group from 51-60 has more no. Of MI patients that is 38. So, it can be concluded that this age group is more prone towards causing myocardial Infarction.

1. Percentage of thrombolytic therapy/ thrombolytic drugs used :

Table no. 3 percentage of thrombolytic drugs used:

|  |  |  |  |
| --- | --- | --- | --- |
| Sr.no. | Thrombolytic drugs | No. Of patients | Percentage |
| 1. | Streptokinase | 76 | 67% |
| 2. | Reteplase | 33 | 28% |
| 3. | Tenecteplase | 05 | 05% |
| Total |  | 114 | 100% |

In this prospective study we observed that in most of the MI patients thrombolytic drug streptokinase is mostly used. Out of 114 patient for 76 (67%) Patient’s streptokinase is used.

1. Distribution of patients based on time duration of thrombolysis :

Table no. 4 distribution of patients based on time duration of thrombolysis:

|  |  |  |  |
| --- | --- | --- | --- |
| Sr.no. | Time duration of thrombolysis | No. Of patients | Percentage |
| 1. | 30min | 11 | 09.64% |
| 2. | 30min-1hour | 49 | 42.98% |
| 3. | 1hour-1.30hour | 22 | 19.29% |
| 4. | 2hour | 27 | 23.68% |
| 5. | 2hour 30min | 05 | 04.38% |
| 6. | 3hour | 00 | 00.00% |
| Total |  | 114 | 100% |

In this observational study we found that most of patients undergone for thrombolysis within 30min to 1hour. No of patients undergoing thrombolysis within 30min to 1hour are 49 out of 114.

1. Distribution of patients based on change in blood pressure after thrombolysis:

Table no. 5 – distribution of patients based on change in blood pressure after thrombolysis

|  |  |  |  |
| --- | --- | --- | --- |
| Sr.no. | Change in blood pressure | No. Of patients | Percentage |
| 1. | Hypotension | 27 | 24% |
| 2. | Normal | 87 | 76% |
| Total |  | 114 | 100% |

In this study we found that most of the patients undergoing thrombolysis have normal BP (76%) & Rest of them (24%) patients undergo hypotensive condition after thrombolysis.

1. Distribution of patients based on cholesterol levels :

Table no. 6 – distribution based on cholesterol levels

|  |  |  |  |
| --- | --- | --- | --- |
| Sr.no. | Cholesterol level | No. Of patients | Percentage |
| 1. | >200mg/dl | 81 | 71% |
| 2. | <200mg/dl | 33 | 29% |
| Total |  | 114 | 100% |

We observed that 71 % of patients having high cholesterol levels while only 29 % of patients having cholesterol levels less than 200 mg/dl hence we can conclude that patients having high cholesterol levels are at high risk of developing myocardial Infarction.

**DISCUSSION:**

Acute myocardial infarction severely affected the health and Lifestyle of people in developing countries mostly. The AMI patients are seen mostly in nearby geriatrics age group. There are vulnerable groups within the adult’s population as well as geriatric population also. Due to bad lifestyle of people such as eating habits and also laziness, not exercising, long hours of working on computer in seating position increase risk of MI in adult population. Increasing cholesterol levels invites cardiovascular diseases. Also, people having other co morbidities like high cholesterol levels, high BP, high blood sugar levels, high body weight are at peak of cardiovascular diseases.

In this study we want to study the management of AMI with the use of Thrombolytic drugs therapy and result after giving the thrombolytic therapy. To analyse the vitals changes, lab reports and ECG reports after thrombolysis is the aim of this observational study. In this study all 114 patients had undergone thrombolytic therapy. Majority of cases in our study are presenting the use of streptokinase (67%). Out of 114 cases 76 cases treated with streptokinase.

**CONCLUSION:**

By conducting prospective observational study at Smt. Fulabai Bhausaheb Bansude Multispecialty Hospital Latur, we observed that,

1. Patients more than 51yr old are more prone to develop acute myocardial infarction.

2. Streptokinase is main drug commonly used for thrombolysis over the other thrombolytic agents like Reteplase and Tenecteplase.

3. Patients having high levels of cholesterol are at high risk of developing acute myocardial infarction.

4. In this study we also observed that (24%) patients undergoing thrombolysis developed hypotension.

5. Patients with acute myocardial infarction show good response to thrombolytic therapy within 1hr.

**ACKNOWLEDGEMENTS:** Authors would like to acknowledge the hospital staff and all participants for their support during the study.

**REFERENCE:**

1. Mendis S, Thygesen K, Kuulasmaa K, et al. World Health Organization definition of myocardial infarction: 2008-09 revision. Int J Epidemiol. 2011;40(1):139-146. doi:10.1093/ije/dyq165

2. Ort EP. H E A LT H. Published online 2002.

3. Cureus Incidence of Acute Myocardial Infarction in Patients Presenting With Cerebrovascular Accident in a Tertiary Care Centre in Eastern India Article.

4. Acute Myocardial Infarction (MI) - Cardiovascular Disorders - MSD Manual Professional Edition.

5. MI - Secondary Prevention Secondary Prevention in Primary and Secondary Care for Patients Following a Myocardial Infarction [Internet] - PubMed.

6. Dauerman HL, Pinto DS, Ho KKL, et al. Outcome of patients with acute myocardial infarction who are ineligible for primary angioplasty trials. Catheter CardiovascInterv. 2000;49(3):237-243. doi:10.1002/(SICI)1522-726X(200003)49:3<237::AID-CCD1>3.0.CO;2-7

7. Myocardial Infarction Symptoms and Treatments - PubMed.

8. Vitamin and mineral supplements in the primary prevention of cardiovascular disease and cancer An updated systematic evidence review for the U.

9. Aspirin for the Primary Prevention of Cardiovascular Events A Systematic Evidence Review for the U.

10. Bandara R, Medagama A, Munasinghe R, Dinamithra N, Subasinghe A. Management and outcomes of acute ST-segment-elevation myocardial infarction at a tertiary-care hospital in Sri Lanka : an observational study. Published online 2015:1-7.

11. Infarction AM. Complications of Acute Myocardial Infarction. :1-5.

12. Intracranial Hemorrhage Associated With Thrombolytic Therapy for Elderly Patients With Acute Myocardial Infarction \_ Stroke.

13. Thrombolytic therapy: MedlinePlus Medical Encyclopedia. http://www.nlm.nih.gov/medlineplus/ency/article/007089.htm

14. Soumerai SB, McLaughlin TJ, Ross-Degnan D, Christiansen CL, Gurwitz JH. Effectiveness of thrombolytic therapy for acute myocardial infarction in the elderly: Cause for concern in the old-old. Arch Intern Med. 2002;162(5):561-568. doi:10.1001/archinte.162.5.561