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Research article

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A study on prescribing pattern of drugs prescribed in patients of acute myocardial infarction admitted in ICCU at a tertiary care hospital

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ABSTRACT

Background

Studies on prescription pattern have important value in the health set up and eventually provides insight into the efficiency of drug use and results of such research studies can be helpful to set priorities for the rational and effective use of medicines. Acute Myocardial Infarction (MI) is the main Congestive Heart Disease which has high morbidity and mortality and despite having the specific guidelines of treatment various drug therapy is still underused so study on prescription pattern of drugs used in Acute MI will provide us specific knowledge regarding prescription in such patients

Aims and objectives

Study was conducted to study the pattern of prescription and to analyze various group of drugs and specific drugs used in Acute MI.

Material and methods

A prospective, non interventional, single centre, observational study was conducted on 100 acute MI patients admitted in ICCU at G.G Hospital, Jamnagar for the duration of one year and all the demographic details and medication records were noted in case record form for each patient.

Results

Out of 100 patients, 82% patients were males and maximum e.g.45% were of age > 60 years. The percentages of patients who received Antiplatelet Agents, Thrombolytics, Beta Blockers, ACE inhibitors, Calcium Channel Blockers, Antianginal Drugs, Hypolipidaemics, Opioids, and Antacids were 97%, 43%, 22%,78%, 15%, 55%, 84%, 73%, and 81% respectively. Prescription of drugs per encounter was 9.38% with dominance of generic prescription.

Conclusion

Present study provide us with precious insight regarding pattern of drug used in patients of acute MI. Rational drug use with Generic prescription is needed for effective treatment.

Keywords: Acute Myocardial infarction, Prescription pattern, WHO prescription Indicators

INTRODUCTION

Ever since the 1900s, cardiovascular disease (CVD) has been the most important cause of death in the United States and in India also. [1] Acute Myocardial Infarction (AMI) is important type of congestive heart disease. It has been the major cause of death in developing countries like India, regardless of impressive development in their prevention, diagnosis and treatment since thirty years. [2]

The guidelines to treat acute myocardial infarction provide information to do clinical practice that meet the requirements of most people in most conditions. The guidelines give out a link to convert the science of evidence based medicine into clinical work up. Still, utilization of these guidelines has not been consistent. Various studies from the whole world indicate that there is still a remarkable underuse of reperfusion therapy in acute myocardial infarction, and inadequate prescription of statins, antiplatelet drugs, angiotensin converting enzyme (ACE) inhibitors [3] or beta blockers [4].

Therefore this study was designed to study the pattern of prescription of various drugs in 100 patients of acute myocardial infarction admitted in Intensive cardiac care unit.

MATERIALS AND METHODS

Study Design

This was a prospective, non interventional, single centre, observational study. All the observations were recorded in case record form.

Study site

The study was carried out by department of pharmacology in association with department of medicine in Guru Gobind Singh govt. hospital attached with Shri M.P. Shah Govt. medical college on patients with acute myocardial infarction.

Study population

The study was carried out over total 100 patients of ST elevation myocardial infarction admitted in ICCU.

Source of data and data collection

The data was collected from the case paper records and medication records of patient and the details of the 100 patients were noted down and analyzed further under various heads.

Duration of Study

The study was carried out for the period of one year.

Inclusion criteria

Patient with the age of more than 30 years & of either gender diagnosed as acute myocardial infarction evidenced by history, ECG, elevated cardiac specific markers, 2D echocardiography.

Exclusion criteria

- Patients with other major systemic disease.
- Individuals with Rheumatic disease, vasculitis syndrome, inflammatory bowel disease, chronic liver diseases, chronic renal disorders, cancer, sepsis etc.

RESULTS

Distribution of Patients According To Age

In present study there is linear increase in incidence of MI with increasing age. Only 1 % was below 40 years of age, while 45 % patients were above 60 years of age, 17 % were between 40 to 49 years of age and 37 % between 50 to 59 years of age (Figure 1). The total incidence of MI rises with age but there is sharp rise after the age of 60 years.

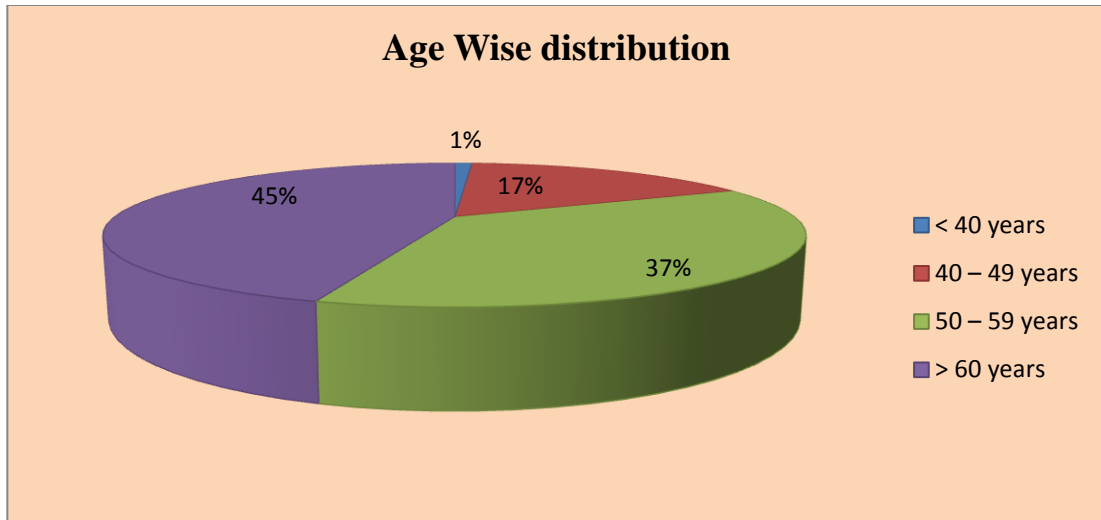


Figure-1 Distribution of 100 acute MI Patients According To Age

Distribution of Patients According To Gender

In our study of total 100 acute MI patients, 82 were males and only 18 were females. Our study results showed very high incidence of MI amongst male gender.

Out of 82 male patients of acute MI, only one patient was less than 40 years of age, 15 were between 40 to 49 yrs of age, 34 were between 50 to 59 years and 32 patients were of more than 60 years of age. From 18 females 2, 3 and 13 patients were in the age group of 40-49 years, 50-59 years and > 60 years respectively (Figure-2).

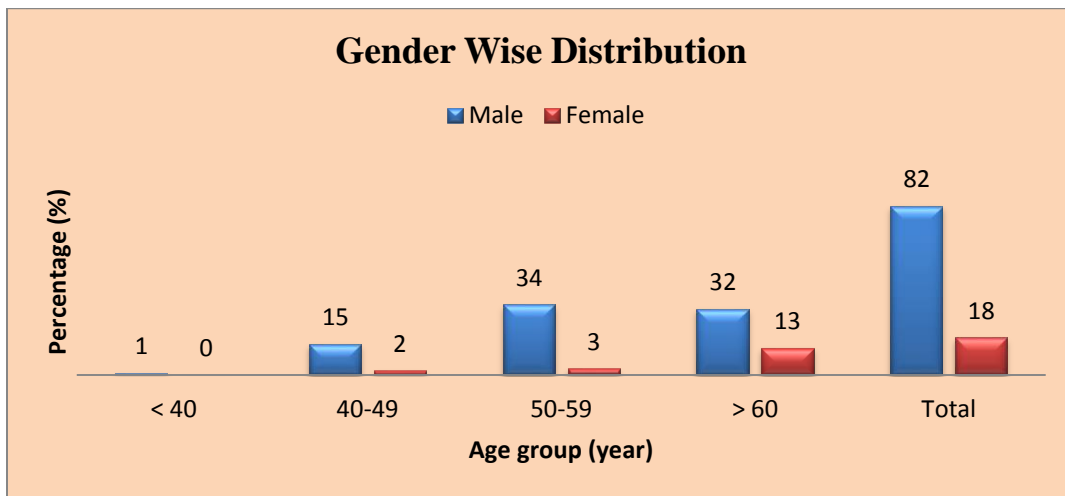


Figure-2 Distribution of Patients according To Gender (in age groups)

Group of Drugs Prescribed In MI

In our study major group of drugs prescribed frequently were Thrombolytics, Antianginal drugs, Antiplatelets, Anticoagulants, Opioids, Statins, Beta

Blockers, Calcium Channel Blockers, Diuretics, ACE inhibitors, Antiemetics, Antacids and some others. (Figure-3)

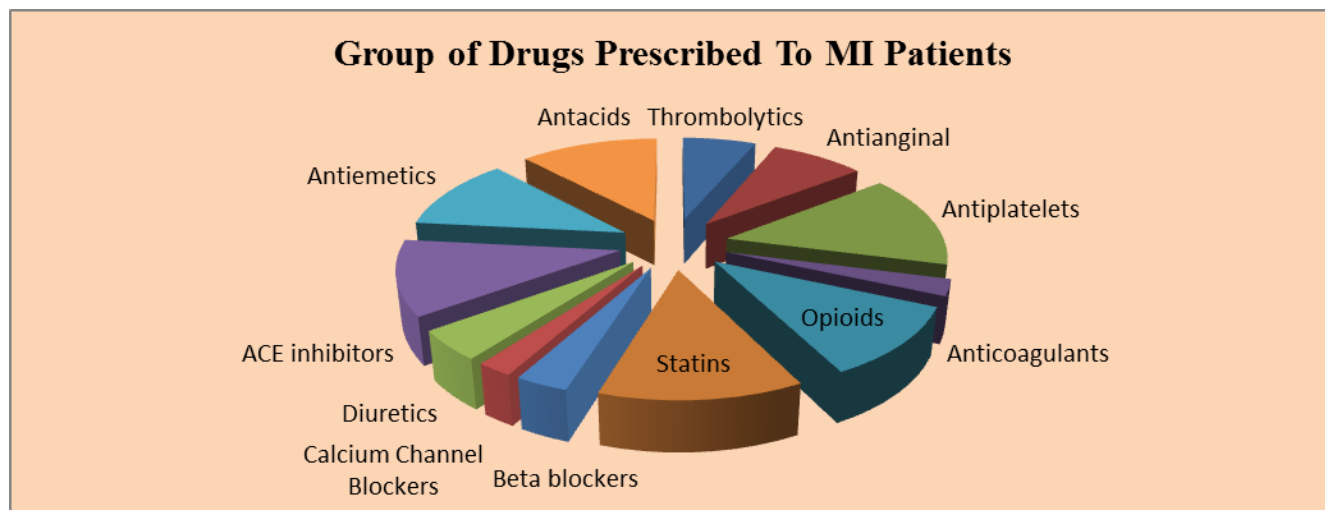


Figure-3 Group of drugs prescribed in Acute MI patients

From these maximum prescribed group of drug was Antiplatelet drugs (97%) followed by Statins (84%) and Antacids (81%). Thrombolytics were prescribed in 43% of patients. Anticoagulant was used in 17%. Antihypertensives e.g. beta blockers, calcium channel blockers and ACE inhibitors were

prescribed in 22%, 15%, 78% of patients respectively.

Analgesics for acute chest pain used were from Opioid group of drug which were prescribed to 73% of patients. (Table-1, Figure-4)

Table – 1: Percentages of of Various Group of Drug Prescribed To Acute MI Patients

Sr no	Group of Drug	No of Patients	Percentages of Patients %
1	Thrombolytics	43	43%
2	Antianginal	55	55%
3	Antiplatelets	97	97%
4	Anticoagulants	17	17%
5	Opioids	73	73%
6	Statins	84	84%
7	Beta blockers	22	22%
8	Calcium Channel Blockers	15	15%
9	Diuretics	31	31%
10	ACE inhibitors	78	78%
11	Antiemetics	76	76%
12	Antacids	81	81%

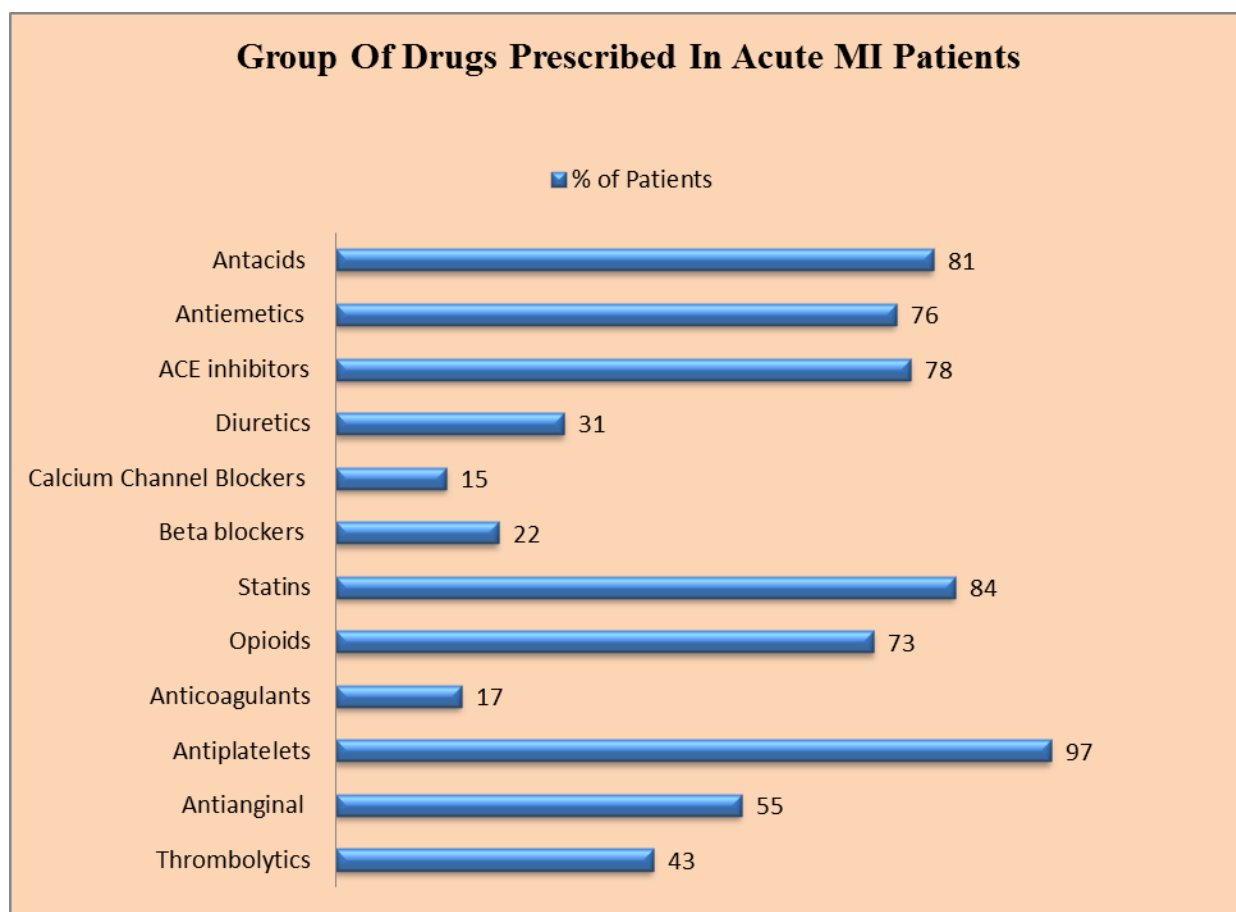


Figure-4: Group of Drugs Prescribed In Acute MI Patients

Individual Drug Prescribed For Treatment of MI

In present study we found that Streptokinase was the only Thromolytic used and Glyceryl Trinitrate was the only nitrate group of Antianginal used for treatment of Acute MI. Antiplatelet drugs used were

Aspirin and Clopidogrel. Both the drugs were used in combination as dual Antiplatelet therapy. Low molecular weight heparin was used as an Anticoagulant therapy. Morphin, Fenatanyl and Tramadol were used as analgesics belonged to opioids. (Details of individual drug therapy Table -2)

Table -2 Percentages of the Patients Received Particular Drugs

Sr no	Group of Drug	Individual drug	No. of patients	Percentage of patients %
1	Thrombolytics	Streptokinase	43	43%
2	Antiangianl	Glyceryl trinitrate	55	55%
3	Antiplatelets	Aspirin	97	97%
		Clopidogrel	97	97%
4	Anticoagulants	Low Molecular weight heparin	17	17%
5	Opioids	Tramadol	10	10%
		Fentanyl	25	25%
		Morphin	38	38%

6	Statins	Atorvastatin	87	87%
		Rosuvastatin	05	05%
7	Beta blockers	Metoprolol	15	15%
		Atenolol	7	7%
8	Calcium Channel Blockers	Amlodipine	12	12%
		Nifedipine	03	03%
9	Diuretics	Furosemide	31	31%
10	ACE inhibitor	Enalapril	78	78%
11	Antiemetics	Ondansatran	76	76%
12	Antacids	Famotodine	06	06%
		Ranitidine	51	51%
		Pantoprazole	24	24%
		Atropine	03	03%
13	Others	Adrenaline	11	11%
		Dopamine	04	04%
		Alprazolam	67	67%
		Lactulose	59	59%

WHO Prescription Pattern Indicators

Total number of drugs prescribed were 938 in 100 patients of Acute MI in ICCU. Average No. Of Drugs

prescribed per encounter were 9.38. The details of prescription pattern Indicators are in Table-3.

Table – 3 WHO Prescription Pattern Indicators

Sr no	Prescription Pattern parameters	Value
1	Average Number of drugs per encounter	9.38
2	Percentage of drugs prescribed by generic name	64%
4	Percentage of encounter with an Injection prescribed	100%
6	Percentage of drugs prescribed from WHO model List of Essential Medicines	72%

DISCUSSION

Acute Myocardial Infarction is a most common cardiovascular emergency seen in medical emergency ward and it has become the leading cause of death due to cardiovascular disease in India.

To examine the use of drugs in a trend of drug utilization and prescription pattern studies has been increased worldwide in different health sectors. Such types of studies are helpful to establish the pattern of prescription and to decide the priorities to avoid the irrational drug use [5].

In our study of 100 acute MI patients maximum number of patients were in the age group of >60 years. This is comparable to the result of study done by Greenland et al [6] in which the mean age obtained was > 60 years. This result shows that incidence of MI increases with increased age.

In the present study, 82% patients were male and 18% were female in present study. This results are similar to the results of study done by Moterrab AL et al [7] and Patel R et al [8] in which the male : female ratio of MI patients was 83:17 and 66.66 : 33.34 respectively.

In all these studies and our present study total number of male patients were much higher than female patients of MI. As obvious from these observations it can be concluded that ischemic heart disease and especially MI is more common in males than in females.

In males the coronary risk is more as compared to premenopausal females. After menopause the coronary risk increases in females. This evident protection in premenopausal females seems to obtain from their relatively higher HDL cholesterol and to some extent from the protective role of Estrogen [9].

Total drugs prescribed were 938 in our study. From these most frequently prescribed drugs were Aspirin and Clopidogrel Antiplatelet agents in 97% patients, which is comparable to other studies done by Avula N et al [10] and Kamnath A et al [11]. Dual Antiplatelet drug Therapy is recommended by The Association of Physician of India.

Streptokinase was the only thrombolytic used in our study. It was prescribed in 43% patients. Enalapril was most commonly prescribed anti hypertensive amongst beta blocker, CCBs and other anti hypertensives. Different statins prescribed in our study were atorvastatin and rosuvastatin comparable with study done by Sreedevi K et al [12].

Furthermore the WHO prescribing indicators in our study were as follows Average Number of drugs per encounter were 9.38. Percentage of drugs prescribed by generic name were 64% and Percentage of drugs prescribed by brand name were 36%. Prescription with generic drug increases rational use of drug and decreases total cost of treatment. 100% encounters were with an Injection prescribed. Percentage of drugs prescribed from WHO model List of Essential Medicines (2017) were 72%. Use of drugs from Essential medicine list

provides rational and effective treatment considering the three significant aspects i.e. cost, safety and efficacy.

CONCLUSION

The present study concluded that maximum Patients were of >60 years of age and with male predominance. Dual Antiplatelet Drug therapy with Aspirin and Clopidogrel was prescribed to maximum patients of MI which is recommended. Use of drugs with generic names and from Essential Medicine list also increases the treatment effectiveness. Majority of patients received all the required drugs which reflects the effective implementation of the treatment guidelines for acute MI patients.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee.

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