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A STUDY ON DRUG USE PATTERN OF MYOCARDIAL INFARCTION

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ABSTRACT

Aim: The main aim of the study was to evaluate the drug use pattern of myocardial infarction in a tertiary care hospital. **Methods:** An observational study enrolled 100 patients who have been diagnosed with MI admitted to the cardiology department in a tertiary care hospital. Data analysis done by using SPSS version 19. **Results:** During the study period (in the year 2020) the incidence of MI was found to be 69%. Most of the patients were advised to take Anti-platelets (96%) followed by Lipid lowering agents (95%), Anticoagulants (59%), Vasodilators (29%), Beta adrenoreceptor blockers (29%), ACE inhibitors (1%), Angiotensin receptor blockers (11%), Calcium channel blockers (6%), Alpha plus beta blocker (4%), Potassium channel openers (15%), HCN channel blockers (16%) and Diuretics (16%). **Conclusion:** The prescribing pattern was found to be rational and effective. The study revealed that Antiplatelets, Lipid lowering agents and Anticoagulants were the most commonly used medications in the treatment of MI patients**.**

KEYWORDS: Myocardial infarction, Prescribing pattern, Anti-platelets, Anticoagulants, Lipid lowering agents.

INTRODUCTION

Cardiovascular diseases are the most common causes of morbidity and mortality worldwide.[1,2] Myocardial Infarction (MI) is the term used for defining the necrosis in the heart muscle due to lack of the oxygen.[3,4] According to the third report by the world health organization (WHO), 12 million people die annually of cardiovascular disease worldwide and it is predicted that until 2020 will reach to 25 million per year.[5] Some disease factors contribute to the risk of MI and they include diabetes mellitus(type1 or 2), high blood pressure, Dyslipidaemia /hypercholesterolemia, particularly high amount of low-density lipoprotein, low amount of high-density lipoprotein, high triglycerides, and obesity.[4,6] Treatment of hypertension and Dyslipidaemia causes reduction in risk of Myocardial infarction.[7] Indians are four time more prone to acute MI as compared to the peoples of other countries due to a combination of genetic and lifestyle factors that promote metabolic dysfunction.[8] The incidence of Myocardial infarction in India is 64.37/1000 people.[9] Men have 3-6 times higher risk of developing MI compared to women, since women develop disease approximately 10 years later. The risk of developing diseases is increased with aging.[10]

Treatment of Myocardial infarction is based on relief of anxiety and pain, rest during healing period and rehabilitation of patient and his family.[11] One of the most successful modern treatments for an AMI is Thrombolytic therapy.[12] The major classes of drugs used in treatment of MI are ACE inhibitors, ARBs, Anticoagulants, Antiplatelets, Beta Blockers, Calcium channel blockers, Cholesterol lowering Medications, Vasodilators And Diuretics.

Prescribing pattern are a reflection of the ability of health professionals to distinguish among the various choices of drugs and determine the ones that will most benefit their patients.[13] Prescription writing is an art and science, as it forwards the message from the physician to the patients. Prescription order is an important harmony among the physician and the patients. It is an order for a scientific medication for a patient at a particular time.[14] It brings in to focus on diagnosis and therapeutic efficiency for the physician with instructions for softening or restoration of the patient's health.[15] The study of prescribing patterns described a part of medical review and seeks to monitor, evaluate if necessary, propose amendments in prescribing and to make medical care rational and cost effective.[16] Apposite drug utilization studies are essential means to review whether drugs are utilized accurately in terms of effectiveness,

security, expediency and financial aspects at all stages in the series of drug use.[17] The analysis of prescription pattern in patients with MI would help in recognizing the

current trend of treating patients with MI having diverse presentation and associated co morbidities.

MATERIALS AND METHODS

A Hospital based Observational prospective study was carried out to assess the prescribing pattern of MI. Relevant cases were collected from cardiology department and medical record department. Total 100 patient's prescriptions were studied and included in final analysis. Data related to drugs prescribed was recorded as the name of the drug (Brand name or generic name), dosage form, and strength, frequency of dosing and duration of treatment. Collected data were recorded in self designed data entry form. Statistical Analysis was done using descriptive statistics. SPSS version 19 was used.

Study Setting: A 300 bedded Tertiary care hospital in Ernakulum.

Study Duration: A 6 months study (October 2019-march 2020).

Sample Size: Not less than 100 patients.

Inclusion Criteria: Patients aged greater than 18 years. Both male and female.

Patients admitted in the cardiology department with MI

Exclusion Criteria: Patients aged less than 18 years
Terminally ill patient
Pregnancy and lactation

RESULTS AND DISCUSSION

The data were collected to evaluate the demography, and drug use pattern of MI.

Demography

Age: The patients were categorised into 5 different age groups ranging from 30 to 80 and patients at the age group 60-70(39%) was mostly affected by MI. The age group 50-60 (33%) also shows high risk for developing MI.

Table 1: Age wise distribution of MI.

Age	No. of patients (N=100)
30-40	1
40-50	14
50-60	33
60-70	39
70-80	13

Gender: Out of the 100 patients 83 were males and 17 were females.

Table 2: Gender wise distribution in MI.

GENDER	No. of prescription (N= 100)
Male	83
Female	17

Table 4: Prescribing pattern in MI.

Risk factors: Out of 100 patients 69% had DM, 58% had HTN, 40% had Dyslipidaemia, 33% were smokers, 26 %were alcoholic, 30% had IHD, 12 % were obese. The presence of risk factors was separately evaluated for male and female sex. And the study revealed that the major risk factors such as DM (67.46%), HTN (54.21%), Dyslipidaemia (38.55%), smoking (39.75%) IHD (31.32%) and Alcoholism (31.32%) were found to be more common among male sex.

Table 3: Gender wise distribution of risk factors.

Risk factor	Male (n=83)	Female(n=17)
DM	56	13
HTN	45	13
Dyslipidaemia	32	8
Smoking	33	0
IHD	26	4
Alcoholism	26	0
Obesity	4	8

Drug use pattern of MI

Table 4 represents the drug categories used during management of MI were Lipid lowering agents, Antiplatelets, Anticoagulants, ACE inhibitors, ARBs, Beta blockers, Alpha+beta blockers, Calcium channel blockers, Vasodilators, Diuretics, Potassium channel openers and HCN channel openers. The study revealed that the Antiplatelets drugs(98%) and Lipid lowering agent (95%) were the most commonly prescribed medications for the treatment of MI.

Category	No. of prescription (N=100)
Lipid lowering agent	**95**
Atorvastatin	12
Rosuvastatin	75
Atorvastatin + Rosuvastatin	8
Antiplatelets	**96**
Aspirin + Ticagrelor	80
Aspirin + Ticagrelor+ Tirofiban	2
Aspirin + Clopidogrel	5
Aspirin +Clopidogrel+ Ticagrelor	6
Aspirin	2
Aspirin + Ticagrelor + Prasugrel	1
Anticoagulants	**59**
Enoxaparin	43
Heparin + Enoxaparin	9
Enoxaparin	7
ACE Inhibitors (Ramipril)	**1**
ARBs	**11**
Telmisartan	7
Valsartan	1
Valsartan + Sacubitril	3
Beta blockers	**29**
Metoprolol	21
Bisopropol	4
Nebivolol	3
Metoprolol + Nebivolol	1
Alpha +beta blockers (Carvedilol)	**4**
CCB (Clinidipine)	**6**
Vasodilators	**29**
Isosorbide dinitrate	14
Nitroglycerine	10
Isosorbide dinitrate+ Nitroglycerin	4
Isosorbide dinitrate + Hydralazine	1
Diuretics	**16**
Torsemide	10
Furosemide + Torsemide	2
Lasilactone	2
Spironolactone	1
Spironolactone + Torsemide	1
Potassium channel opener (Nicorandil)	**15**
HCN channel blocker (Ivabradine)	**16**

Most commonly prescribed Lipid lowering agent was Rosuvastatin (81%) and dual drug therapy with Rosuvastatin+ Atorvastatin (8%) was prescribed minimal. Dual drug therapies were mostly recommended and Aspirin + Ticagrelor (84%) is the most commonly prescribed combination of Antiplatelets. The most commonly prescribed Anticoagulant was Enoxaparin (73%) Dual drug therapy with Heparin+Enoxaparin (15%) was minimal. The most commonly prescribed ARB was Telmisartan (64%).

The most commonly prescribed beta blocker was Metoprolol (72%). The study revealed the use of vasodilator Isosorbide dinitrate (48%) was comparatively high in MI.

Torsemide (62%0 was the Diuretic which is most commonly used and combination therapy with Furosemide+Torsemide (13%) was also used.

DISCUSSION

The observational case control study was conducted in the cardiology department of a tertiary care hospital during a period of 6 months. The study focused on drug use pattern of myocardial infarction. 100 patients were enrolled according to inclusion and exclusion criteria.

Out of the 100 patients selected 83 (83%) patients were male and the remaining 17 (17%) patients were female. Men are generally at greater risk of heart disease. The result was similar to the study conducted by Md. Abdul Muhit et al. for CVD incidence and prescription patterns [(18)]. Cardiovascular diseases may affect any age of the life but the chances of MI increases with increase in age. In this study the maximum numbers of patients were under the age group of 60-70 years (39 %) followed by 50-60 years (33%). If age advances, the risk of damaged and narrowed arteries also increases. It weakens or thickens heart muscles that contributes to ischemic heart disease and thus lead to MI. Extensive diagnosis revealed the prevalence of different clinical conditions and life style factors as risk factor. The risk factors identified during the study were Diabetes mellitus (69%), HTN (58%), Dyslipidaemia (40%), Smoking (33%), Alcohol abuse (26%), IHD (30%) and Obesity (12%). In this study the maximum number of associated diseases reported was Diabetes mellitus (69%). The result was similar to a study conducted by Fatemeh Kiani et al.[19]

Physicians prescribed different therapeutic classes of drugs for MI. Most of the patients were advised to take Anti-platelets (96%) followed by Lipid lowering agents (95%), Anticoagulants (59%), Vasodilators(29%), Beta-adrenoreceptor blockers (29%), ACE inhibitors (1%), Angiotensin receptor blockers (11%), Calcium channel blockers (6%), Alpha plus beta blocker (4%), Diuretics (16%) Potassium channel opener (15%) and HCN channel blockers (16%). Among the lipid lowering agents, Rosuvastatin was given to most of the patients (78%). Most commonly prescribed Antiplatelets were the combination of Aspirin and Ticagrelor, for obtaining synergistic Anti-platelet effect. Enoxaparin was the common Anticoagulant prescribed in MI patients. Potassium channel opener- Nicorandil (16%) and HCN channel blocker -Ivabradine (14%) were also prescribed for few patients. Nitro-glycerin was prescribed in 12% of patients whereas Isosorbide dinitrate was prescribed in 23% of patients. ARBs Telmisartan (7%), Valsartan (4%) and Sacubitril (3%) were also used in the management of MI. Beta blockers (Metoprolol (22%), Bisoprolol (4%) and Nebivolol (6%)), Calcium channel blockers (Clinidipine (5%) and Diuretics (Torsemide 10%) were also used. Furosemide and Lasilactone were given to two patients and Spironolactone was given to a single patient. This result shows close resemblance with the study conducted by Mahesh N. Belhekar etal.[20]

CONCLUSION

Cardiovascular disease is the primary cause of death globally, despite the advanced health care facility. Extensive disparity exists in drug use pattern among CVD patients where rational drug use plays a pivotal role in promoting safety and efficacy. Drug utilization studies in India demonstrate the occurrence of wide spectrum of various cardiovascular drugs used for prophylaxis and therapeutic indication.

Continuous audit would provide insights into current practice and feedback for rationalizing prescribed practices. In the current study prescribing pattern in MI was found to be in accordance with the standard treatment guideline. The major risk factors of MI were DM, HTN, Dyslipidaemia, Smoking, Alcohol abuse, IHD, and Obesity. Effort must be aimed at decreasing lifestyle risks (Smoking, Alcohol abuse) and chronic disease risks (Diabetes, Hypertension and Dyslipidaemia) at both the public health and primary care level to curb this epidemic. Early identification of modifiable risk factors is vital to set the strategy for prevention of the disease. However, special attention must be paid to smoking, particularly in young men.

LIMITATIONS OF THE STUDY

The study was conducted in limited time frame and a few number of samples. The study may be followed up later for detailed assessments with detailed patients demographics and history.

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