A Cross Sectional Observational Assessment of the Prescription Pattern in Ischemic Heart Disease

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Conflict of interest: Nil

Abstract:

Aim: The aim of the present study was to analyze the drug prescribing pattern for treatment of ischemic heart disease.

Methods: This was a cross sectional observational study conducted on ischemic heart disease patients admitted at inpatient department of Medicine in Darbhanga Medical College and Hospital, Laheriasarai, Darbhanga, Bihar, India for 18 months. The study consisted of analysis of drug utilization pattern of prescribed drugs. A total number of 200 patients were enrolled in the study.

Results: IHD was more commonly seen in males (70%) than females (30%). IHD group patients were divided according to age in 7 classes. As per study analysis, IHD was most commonly seen in patients of age group of 61-70 year (60%). The mean age of study group was 64.36 Years. Most of the patients (80%) were having ST segment elevation myocardial infarction (STEMI). Majority of the patients were taking 7-8 drugs in the present study. Drugs prescribed to patients belong to various therapeutic classes ranging from anti-platelets, anticoagulants, anti- anginal, antithrombin, thrombolytic, hypolipidemics. The most commonly prescribed therapeutic class of drugs was anti-platelet (84%) followed by hypolipidemic (82%) and ACE inhibitors drugs (48%). Maximum drugs 70% were prescribed in oral formulations followed by intravenous (23%), subcutaneous (4%) and inhalation (3%).

Conclusion: IHD was more common in males. The most commonly prescribed drug classes in IHD were anti-platelet drugs followed by hypolipidemics, anti-hypertensives, anti-anginal drugs and anticoagulants. Very few drugs were prescribed by generic name. Prescribing generic drugs might reduce the economic burden of the patients.

Keywords: Antiplatelet, Drug utilization, Hypolipidemics, IHD

Introduction

Ischemic heart disease (IHD) is a condition in which there is an inadequate supply of blood and oxygen to a portion of the myocardium, it occurs if there is imbalance between myocardial oxygen supply and demand. The common cause of myocardial ischemia is atherosclerosis of epicardial coronary artery/arteries which

leads to regional reduction in myocardial blood flow and inadequate perfusion of the myocardium supplied by the involved coronary artery. [1] Ischemic heart disease (IHD) is one of the leading causes of mortality and it is also a primary cause of premature mortality and disability in developing countries like India. [2] Non communicable diseases (NCDs) kill 40 million people each year, equivalent to 70% of all deaths globally.

Each year, 17 million people die from a NCD before the age of seventy, and 87 percentages of premature deaths occur in low and middle-income countries. Cardiovascular diseases account for most non-communicable diseases deaths, (17.7 million population yearly) which is followed by cancers (8.8 million), respiratory diseases (3.9 million), and diabetes (1.6 million). [3] Drug utilization pattern studies helps to screen, assess and propose appropriate modifications in prescription practices; this would help to make patient care rational and cost effective. Rational drug prescribing is defined patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements, for an adequate period of time, and at the lowest cost to them and their community. [4]

However, over the last twenty five years, age-standardized IHD mortality has fallen by more than half in high income countries mainly because of life-style changes, but the trend is flat or increasing in some low and middle income countries. [5] It is estimated that sixty percentage of the world's cardiovascular disease burden will occur in the South Asian subcontinent despite only accounting for twenty percentage of the world's population. This may be secondary to a combination of genetic predisposition and environmental factors. [6] The World Health Organization (WHO) and Global Burden of Disease Study also have highlighted increasing trends in years of life lost (YLLs) and disability-adjusted life years (DALYs) from IHD in India. In India, studies have reported increasing IHD prevalence over the last 60 years, from 1% to 9%-10% in urban populations. [7] Striking features of IHD epidemiology in India are high mortality rates, premature CHD, and increasing burden. [8] Among the causes for this rising burden, the upcoming pandemic of obesity and diabetes further enhances the estimates of CV mortality and healthcare costs over the next decades.

Indiscriminate use of drugs in ischemic heart disease patient may lead increased adverse events. Still, very scanty data is available regarding drug utilization pattern in Ischemic heart disease treatment. The aim of the present study was to analyse the drug prescribing pattern for treatment of Ischemic heart disease.

Materials and Methods

This was a cross sectional observational study conducted in department of Pharmacology on ischemic heart disease patients admitted at inpatient department of Medicine in Darbhanga Medical College and Hospital, Laheriasarai, Darbhanga, Bihar, India for 18 months. The study consisted of analysis of drug utilization pattern of prescribed drugs. A total number of 200 patients were enrolled in the study.

Study population

All ischemic heart disease patients admitted in medicine inpatient department were enrolled in the study as per the following inclusion and exclusion criteria.

Inclusion criteria

- All diagnosed cases of in-patients with ischemic heart disease during the study period.

Exclusion criteria

• Patient not willing to consent for the study

• Outpatients Department (OPD) patients

• Patients who were under day care management

Statistical analysis

The statistical analysis was done with the help of Microsoft Excel 2010 software.

Results

Table 1: Demographic details

Gender	N%
Male	140 (70)
Female	60 (30)
Age groups	
20-30 Years	4 (2)
31-40 Years	8 (4)
41-50 Years	24 (12)
51-60 Years	40 (20)
61-70 Years	86 (43)
71-80 Years	34 (17)
>80 Years	4 (2)
Diagnosis of IHD patients	
STEMI	160 (80)
NSTEMI	24 (12)
UA	16 (8)

IHD was more commonly seen in males (70%) than females (30%). IHD group patients were divided according to age in 7 classes. As per study analysis, IHD was most commonly seen in patients of age group of 61-70 year (60%). The mean age of study group was 64.36 Years. Most of the patients (80%) were having ST segment elevation myocardial infarction (STEMI).

Table 2: Number of drugs prescribed per prescription

No. of drugs	No. of prescriptions	Percentage (%)
4	4	2%
5	14	7%
6	20	10%
7	46	23%
8	48	24%
9	32	16%
10	24	12%
11	8	4%
12	2	1%
14	2	1%

Majority of the patients were taking 7-8 drugs in the present study.

Table 3: Percentage of drugs prescribed as per drug class

Drugs	N%
Isosorbid dinitrate	52 (26)
Metoprolol (O)	24 (12)
Furosemide (O)	8 (4)
Aspirin	160 (80)
Amlodipine	20 (10)
Furosemide(P)	44 (22)

Clopidogrel	168 (84)
Atenolol	4 (2)
Atorvastatin	164 (82)
Enalapril	96 (48)
Digoxin	8 (4)
Streptokinase	40 (20)

Drugs prescribed to patients belong to various therapeutic classes ranging from anti-platelets, anticoagulants, anti- anginal, antithrombin, thrombolytic, hypolipidemics. The most commonly prescribed therapeutic class of drugs was anti-platelet (84%) followed by hypolipidemic (82%) and ACE inhibitors drugs (48%). Mostly commonly prescribed drug was clopidogrel (84%) followed by atorvastatin (82%), aspirin (80%), enalapril (48%), asosorbide dinitrate 26%, furosemide (P) 22%, metoprolol 12%, Amlodipine 10%, Furosemide 4%, digoxin 4%, atenolol 2%.

Table 4: Various routes of drug administration WHO core drug use indicators

Various routes of drug administration	N%
Oral	140 (70)
Intravenous	46 (23)
Subcutaneous	8 (4)
Inhalation	6 (3)

Maximum drugs 70% were prescribed in oral formulations followed by intravenous (23%), subcutaneous (4%) and inhalation (3%).

Discussion

Ischemic heart disease (IHD) is the single largest cause of death worldwide. IHD caused over seven million annual deaths in 2008, 2010 and 2012. It represents 12.7% of total global mortality. [5,6,9] Despite the stress on primary prevention, CV risk factors are still poorly. In chronic conditions such as hypertension, ischemic heart disease (IHD) and cardiac failure, the progressive use of multiple drugs is common. Polypharmacy is associated with an increased morbidity with increasing in the costs. Prescribing multiple drugs often leads to inappropriate utilization of drugs, lower adherence to treatment and increase in chances of side effects. The risk factors for ischemic heart disease include dyslipidemia (high apo lipo-protein B / apo lipo-protein A1 ratio), tobacco use, smoking, hypertensive and /or diabetic patients, obese, physical sedentariness, low fruits and vegetable intake, and stress.6 Drugs play important role in promoting health of patients who are seeking treatment for various ailments, however to get these desired effects drugs should be safe and efficacious. Drugs must be utilized judiciously. Drug utilization pattern studies helps to screen, assess and propose appropriate modifications in prescription practices; this would help to make patient care rational and cost effective. Rational drug prescribing is defined patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements, for an adequate period of time, and at the lowest cost to them and their community. [10]

IHD was more commonly seen in males (70%) than females (30%). IHD group patients were divided according to age in 7 classes. As per study analysis, IHD was most commonly seen in patients of age group of 61-70 year (60%). The mean age of study group was 64.36 Years. Most of the patients (80%) were having ST

segment elevation myocardial infarction (STEMI). The result of the present study were in accordance to Nagabushan H. et al, and Sreedevi K et al. [11,12] As per Dawalji S et al [13], 72.94% patients were male and 27.06% were female as per other study by Tamilselvan T et al [14], 69.1% accounts for males and 30.8% accounts for females as per Sreedevi K et al [12], gender-wise distribution showed males 61.5% predominance, whereas, females were 38.5%. [14,15,16] Whereas, similar study by Shankar R et al [15], showed the female (51.94%) predominance over males (48.06%).

Majority of the patients were taking 7-8 drugs in the present study. It was comparable to the average number of drugs prescribed in the studies of Nagabushan H et al. [11] Drugs prescribed to patients belong to various therapeutic classes ranging from anti-platelets, anticoagulants, anti- anginal, antithrombin, thrombolytic, hypolipidemics. The most commonly prescribed therapeutic class of drugs was anti-platelet (84%) followed by hypolipidemic (82%) and ACE inhibitors drugs (48%). Mostly commonly prescribed drug was clopidogrel (84%) followed by atorvastatin (82%), aspirin (80%), enalapril (48%), asosorbide dinitrate 26%, furosemide (P) 22%, metoprolol 12%, Amlodipine 10%, Furosemide 4%, digoxin 4%, atenolol 2%. A prescription could be considered as appropriate if prescribed in the form of generic drugs. This would help in reducing the cost of treatment for the patients. It also helps in decrease prescription writing errors and confusion in dispensing of different brand names which sound alike and/or spell similar. Repeated and persuasive promotion of the propriety products by pharmaceutical companies might be an important factor for the low percentage of generic prescribing. The healthcare professionals are compelled to concede to the insistence of affluent patients demanding innovator drugs for therapy.[16]

The bioavailability differences between generic and brand drugs could adversely affect the therapeutic outcomes and hence it may be also another reason for prescribing by brand names only. [17]

Conclusion

IHD was more common in males. The most commonly prescribed drug classes in IHD were anti-platelet drugs followed by hypolipidemics, anti-hypertensives, anti-anginal drugs and anticoagulants. Very few drugs were prescribed by generic name. Prescribing generic drugs might reduce the economic burden of the patients.

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