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A Retrospective Drug Utilization Study of Antiplatelet Drugs in Patients with Ischemic Heart Disease

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***Abstract*—**Objective: Acute coronary syndrome is a clinical condition encompassing ST segments elevation myocardial infraction, Non ST segment is elevation myocardial infraction and un stable angina is characterized by ruptured coronary plaque, stress and myocardial injury. Angina pectoris is a pressure like pain in the chest that is induced by exertion or stress and relived with in the minute after cessation of effort or using sublingual nitroglycerin. The present research was undertaken to study the drug utilization pattern of antiplatelet drugs for the ischemic heart disease in a tertiary care hospital. Method: The present study is retrospective drug utilization study and study period is 6months. The data is collected from the discharge case sheet of general medicine department from medical department Rajiv Gandhi institute of medical sciences, Kadapa. The tentative sample size fixed was 250 patients. Out of 250 cases 19 cases was excluded because of unrelated data. Results: A total of 250 prescriptions were collected for the study according to the inclusion criteria 233 prescriptions were diagnosed with ischemic heart disease 17 prescriptions were excluded due to unrelated information. out of 233 prescriptions 128 are male (54.9%) and 105 patients are were female (45%). According to the gender distribution, the prevalence of ischemic heart disease in males are 90 (70.31%) and females are 39 (37.1%). In the same way the prevalence of ischemic heart disease along with cerebrovascular disease in males are 39 (29.6%) and females are 66 (62.6%). Conclusion: We found that 94.8% of drug utilization of antiplatelet drugs was achieved in the Rajiv Gandhi institute of medical sciences, Kadapa from 2011-2012.

***Keywords*—**Angina pectoris, aspirin, clopidogrel, myocardial infarction.

I. Introduction

CARDIOVASCULAR DISEASE (CVD) is a number one disease to cause high mortality and morbidity. Among all the CVD diseases ischemic heart disease (IHD) like angina pectoris and myocardial infarction is world major health problem. According to disease statistics in western countries the death rate is 50% before hospitalization and also in India the disease progress is high in the year 2011 (32%) when compare to 1970 (7%) [1], [2].

Coronary artery disease has emerged as an epidemic in India. According to the projections of National Commission and Macroeconomics and Health, Government of India, the total no. of coronary artery disease (CAD) patients in India at the turn of the century was 30 million (5.3% of adult population) which could increase to more than 60 million (7.6%) by the year 2015. The incidence, prevalence, morbidity and mortality from coronary artery disease among Asian Indians have been reported to be higher than among Europeans, Americans, and other Asians, irrespective of whether they live in India or abroad. The treatment for CAD involves the use of various categories of drugs namely antiplatelet drugs, anticoagulants, antianginal drugs, beta-blockers, angiotensin converting enzyme inhibitors (ACEI)/angiotensin II receptor blockers (ARBs), Calcium channel blockers, diuretics, etc. Effective screening, evaluation, and management strategies for CAD are well established in high-income countries, but these strategies have not been fully implemented in India [3]-[5].

To improve the patient outcomes in view of drug prescription and intervention drug utilization evaluation want to be study in the hospital [6]. The World Health Organization (WHO) defines drug utilization research as "the marketing, distribution, prescription and use of drugs in a society, with special emphasis on the resulting medical, social, and economic consequences" [7]. In patients diagnosed with IHD, use of various cardiac acting drugs is more important to treat as first line therapy. The following drugs like inotropes, vasopressors, antihypertensives, antiplatelet agents, lipid lowering agents, and anticoagulants are frequently used in the hospital for the management of IHD [8].

The present study was designed to evaluate the use of antiplatelet drugs for ischemic heart disease patients in teaching hospital.

II. Methodology

A retrospective study was conducted by Department of Pharmacology and Pharmacy Practice in association with Department of General Medicine in a Rajiv Gandhi Institute of Medical Sciences, Kadapa. The study was conducted over a period of 6 months from Dec 2013-May 2014. The databases were collected from the medical record department on daily basis after getting approval from the institutional ethics committee. The data collection format was created and authenticated by giving preference to medications used by the ischemic heart disease patients. Data of patients matching inclusion criteria were recorded.

A. Inclusion Criteria

Discharge records of all patients admitted to RIMS hospital

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between 2011-2013 with a diagnosis of IHD. The case sheets with myocardial infarction, angina pectoris and containing antiplatelet drug in their prescription was included. The other comorbidities such as CVD case sheets that are prescribed with antiplatelet drugs were also included in the study.

B. Exclusion Criteria

The case sheets without the demographic details of the patient were excluded from the study.

C. Sample Size and Collection of Data

Totally 250 samples were recorded. Out of 250 cases 17 cases were excluded because of unrelated data. 233 cases were selected for the study. Each prescription was critically analyzed. The data like age, gender, socio economic status, past medical history, duration of the disease and frequency of visits to the hospital and prescription of antiplatelet drugs.

D. Statistical Analysis

All the data were compiled and subjected to descriptive statistical analysis using mean and standard deviation in Graph pad prism.

III. Results

A total of 250 prescriptions were collected for the study. According to inclusion criteria 233 prescriptions were diagnosed with IHD and other associated co-morbidities such as CVD. 17 prescriptions were excluded due to unrelated information.

Out of 233 prescriptions, 128 patients were male (54.9%) and 105 patients were female (45%). According to gender distribution, the prevalence of IHD in males are (70.31%) and female are (37.1%). In the same way the prevalence of IHD along with CVD in males are (29.6%) and females are (62.6%).

Percentage Distribution Based on Age

The patients were divided into different age groups like 20-40yrs, 40-60yrs, 60-80yrs. From the analyzed prescriptions 24 prescriptions was prescribed between the age group of 20 to 40 years. 90 prescriptions were found to be in the age between 40 to 60 years. 109 prescriptions were in the age group of 60 to 80 years. Mostly the patients between the age group 60-80 were affected. The percentage of patients with IHD along with CVD and IHD alone in the age between 20-40yrs was 3.5%, 7.17% respectively. 18.8% and 21.5% of patients in age group between 40-60yrs, 30% and 18.8% in age between 60-80yrs. The results were presented in Figs. 1 and 2.

Percentage Distribution Based on Drugs Prescribed

The most commonly used drugs for the treatment of IHD in RIMS hospital are represented in Table I and Fig. 3.

Percentage Distribution of Antiplatelet Drugs

The total number of patients prescribed with antiplatelet drugs was 221 and the percentage of prescription is 94.8%. Among them male patients that are prescribed with the antiplatelet drugs were 123 with the percentage of prescription 96% and the female patients were 98 with the percentage prescription 93.3%. Among male and female patients the male patients were more prescribed with the antiplatelet drugs than the female patients. The results were presented in Table II and Fig. 4.

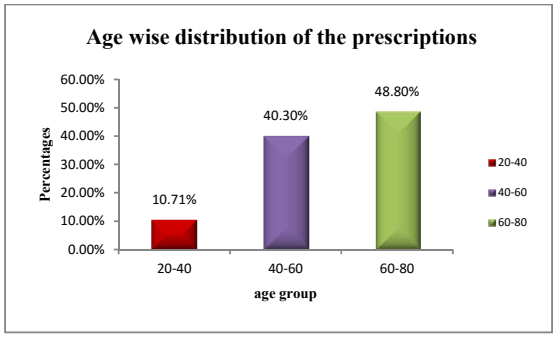

Fig. 1 Percentage distribution of prescriptions based on age group

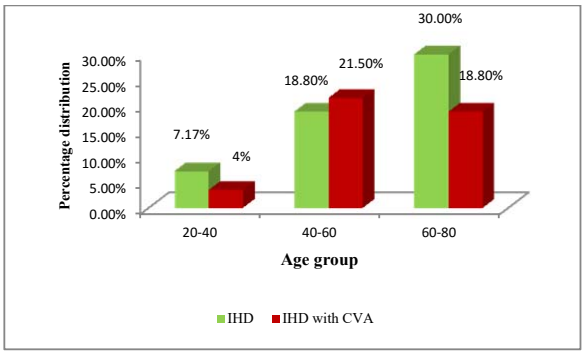

Fig. 2 Percentage distribution of IHD and IHD with CVA based on age

TABLE I
DRUGS THAT ARE COMMONLY USED FOR THE TREATMENT OF ISCHEMIC HEART DISEASE

Drugs	Percentage Distribution
Amlodipine	54.2%
Aspirin	69.7%
Atorvastatin	59.6%
Clopidogrel	63.5%
Furosemide	50.3%

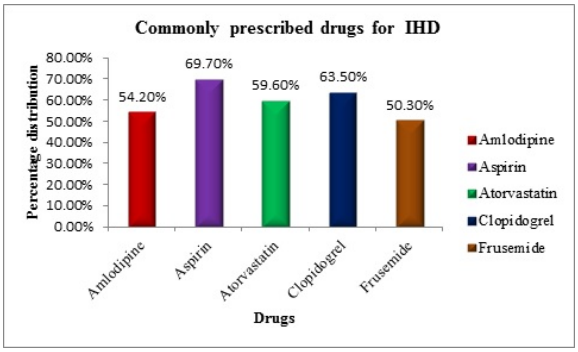

Fig. 3 The most commonly used drugs for the treatment of IHD

TABLE II
PERCENTAGE DISTRIBUTION OF ANTIPLATELETS DRUGS USE BASED ON GENDER

Gender	No of Patients	Percentage distribution
Male	123	96%
Female	98	93.3%

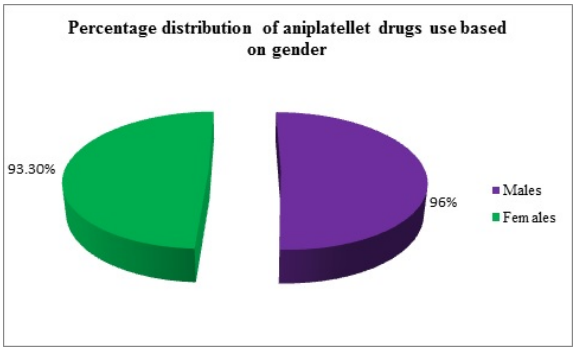

Fig. 4 Use of antiplatelet drug based on gender

Total 124 IHD patients were prescribed with antiplatelet drugs with the percentage distribution of 96.1% and 97 IHD along with CVD patients were prescribed with antiplatelet drugs with percentage distribution of 93.2%. There was significant ($p<0.05$) difference of prescription pattern of antiplatelet drugs founded between IHD alone and IHD with comorbidities in the present study. The results were presented in Table III and Fig. 5.

TABLE III
PERCENTAGE DISTRIBUTION OF ANTIPLATELET DRUG USE IN IHD AND IHD WITH CEREBROVASCULAR DISEASE

Disease	Number of Patients	Percentage	P-Value
IHD	124	96.1%	
IHD with cerebrovascular disease	97	93.2%	<0.05

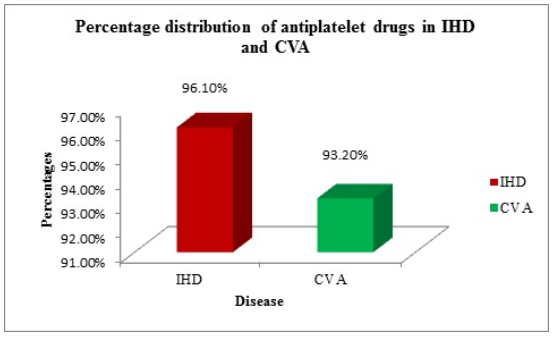

Fig. 5 Percentage distribution of antiplatelet drugs in IHD and CVA

TABLE IV
COMPARISON OF SINGLE AND DOUBLE ANTIPLATELET DRUG BETWEEN MALE & FEMALE

	Single antiplatelet drug	Double antiplatelet drug
Male	44.5%	53.1%
Female	34.2%	59%

The most commonly used antiplatelet drugs in RIMS were Aspirin and Clopidogrel. Among the total prescriptions, the percent of male patients prescribed with single antiplatelet drug was 44.5% and with double antiplatelet drugs was 53.1%. The female patients prescribed with the single antiplatelet drug were 34.2% and with double antiplatelet drug was 59%. The double antiplatelet drugs (both Aspirin and Clopidogrel) are more prescribed than single antiplatelet drug (either Aspirin or Clopidogrel). The results were presented in Table IV.

IV. DISCUSSION

CVDs are the leading non-communicable diseases and also leading cause of death and disability in the world. More people die annually from CVDs than from any other cause. An estimated 17.3 million people died from CVDs in 2008, representing 30% of all global deaths. Of these deaths, an estimated 7.3 million were due to coronary heart disease and 6.2 million were due to stroke. By 2030, almost 23.6 million people will die from CVDs, mainly from heart disease and stroke. These are projected to remain the single leading causes of death [9].

The treatment for CAD involves the use of various categories of drugs namely antiplatelet drugs, anticoagulants, antianginal drugs, beta-blockers, angiotensin converting enzyme inhibitors (ACEI)/angiotensin II receptor blockers (ARBs), Calcium channel blockers, diuretics, etc. Effective screening, evaluation, and management strategies for CAD are well established in high-income countries, but these strategies have not been fully implemented in India [10]. Guidelines based on evidence from randomized controlled trails recommend that aspirin, betaadrenergic blockers, ACEI, and hydroxyl methylglutarate coenzyme A reductase inhibitors (statins) be used in all patients with symptomatic chronic stable angina or asymptomatic survivors of acute myocardial infarction and following percutaneous coronary intervention or coronary bypass surgery for secondary prevention of myocardial infarction, stroke and death [11]-[14]. It has been hypothesized that if used collectively these agents could reduce long term risk of cardiovascular events and mortality by as much as 75% [11]. However, the actual impact depends on the extent to which they are used in practice [15]-[17].

In the present study, it has been observed that mostly two categories of antiplatelet drugs are used in RIMS such as aspirin and clopidogrel. In this study, the frequency of antiplatelet drugs prescription for the IHD was higher to male than that for female.

The prevalence of CVD is higher in India due to chronic manifestation of various diseases across the Indian population [18]. The present study shows that the prevalence of the IHD alone and associated comorbidities such as CVD is more in this area where our study was conducted.

The patients between 60-80 years age group were most affected with IHD and IHD along with CVD when compared to the other age groups. Many study supported that the incidence of CVD is higher in sixth decade of life of human when compare to other age groups [19].

It was observed that the aspirin and clopidogrel was the commonly used drugs for the IHD and IHD along with CVD

in RIMS Kadapa. Drug utilization in IHD associated with Hypertension and Diabetes mellitus shows that Aspirin along with Clopidogrel may offer benefits over either drug used alone [20]. The combination has been in use since 7 years and it was found to reduce the mortality rate of patients with in a year of acute coronary syndrome significantly. In one study, it is reported that Aspirin was prescribed in low dose for treatment and prevention of IHD [21].

In the present study, the female patients were prescribed with double anti platelet drugs (59%) more than the single anti platelet drug (34.2%) and male patients prescribed with double anti platelet drugs (53%) more than the single (44.5%). The other cardio vascular drugs that are used for the treatment of IHD at RIMS were amlodipine, aspirin, atorvastatin, clopidogrel and furosemide.

In critical care the missing of the some of the evidence based anti-platelet therapies were observed. The proper utilization of aspirin and clopidogrel in the present studies in both IHD and IHD along with CVD was observed. The other anti-platelet drugs use was missing in the hospital. We observed that improved clinical condition of the patient with the use of the anti-platelet drugs through the discharge summary of the patient.

The current results of the study showed that proper drug utilization of the anti-platelet drugs in the particular teaching hospital. Among the total prescriptions collected 221 prescriptions were prescribed with anti-platelet either aspirin or clopidogrel. Only 12 prescriptions were not prescribed with anti-platelet drugs. The 94.58% drug utilization of anti-platelet drugs was observed at RIMS, Kadapa and it was supported by the results of other studies in patients with acute coronary syndrome at a tertiary care hospital Kolkata shows 90% drug utilization of antiplatelet drugs and other cardiovascular drugs was observed [22].

V. Conclusion

We found that 94.8% of drug utilization of antiplatelet drugs was achieved in the Rajiv Gandhi Institute of Medical Sciences, Kadapa from 2011-2013. Aspirin and Clopidogrel are the commonly used antiplatelet drugs in the RIMS hospital. Our study provides an idea for conducting drug utilization on antiplatelet drugs in RIMS and future studies are needed for the improvement in more antiplatelet drug use.

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