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DRUG UTILIZATION PATTERN OF HMG-CO-A REDUCTASE INHIBITORS IN A TERITARY CARE TEACHING HOSPITAL

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Abstract

The World Health Organization (WHO) in 1997 defined drug utilization as the marketing, distribution, prescription and use of drugs in a society, with special emphasis on the resulting medical, social and economic consequences. To analyze the prescribing pattern of antihyperlipidemic drugs in a tertiary care hospital. A prospective observational study was conducted in the department of General Medicine OPD & IPD at Karuna Medical College Vilayodi, Chittur, for a period of 6 months A total of 101 prescriptions were collected during this study period. Among these prescriptions, 62.3% (63) patients were males and 37.6 % (38) patients were females. Gender-wise distribution shows that males are prescribed more on statin therapy. In our study, the maximum number of patients on HMG Co-A Reducates therapy was found in the age group 61-70 (53.4%) followed by age group 51-60 (27.7%), 41-50 (15.8%) 30-40 (2.9%). The specialty wise distribution of HMG Co-A reductase was more found in the Cardiology department (51.4%) followed by Neurology department (29.7%), general department (17.8%) and others (0.99%). In our study, the maximum number of HMG CoA reductase prescribed from Atorvastatin generic (94 %) followed by Rosuvastatin (5.9%). Atorvastatin prescribed in our hospital under the brand names of Itor (37.6%), Lipikind (26.7 %), Stator (14.8%), Atorva (6.9%), Biotor (4.9%), Statix (1.9%), Ecospirin AV (1.9%) and Rosuvastatin prescribed only under brand name of Razel gold (5.9%). The study clearly indicates that HMG-CoA reductase inhibitors (statins) were used within locally and internationally accepted dosage ranges.

Keywords: Drug Utilization Pattern, Hyperlipidemics, WHO core drug indicators.

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INTRODUCTION

Drug use is a complex process. In any country a large number of socio-cultural factors contribute to the ways drugs are used [1]. The World Health Organization (WHO) in 1997 defined drug utilization as the marketing, distribution, prescription and use of drugs in a society, with special emphasis on the resulting medical, social and economic consequences [2]. The complexity of drug use means that optimal benefits of drug therapy in patient care may not be achieved because of underuse, overuse or misuse of drugs. Inappropriate drug use may also lead to increased cost of medical care, antimicrobial resistance, adverse effects and patient mortality [3]. Studies on the process of drug utilization focus on the factors related to the prescribing, dispensing, administering, and taking of medication, and its associated events, covering the medical and non-medical determinants of drug utilization, the effects of drug utilization, as well as studies of how drug utilization relates to the effects of drug use, beneficial or adverse [4]. DUE plays a key role in helping the healthcare system to understand, interpret and improve the prescribing, administration and use of medications. The principal aim of DU research is to facilitate rational use of drugs, which implies the prescription of a well documented drug in an optimal dose on the right indication, with correct information and at an affordable price. It also provides insight into the efficacy of drug use i.e. whether a certain drug therapy provides value for money. DU research can thus help to set priorities for the rational allocation of health care budgets [5]. World Health Organization (WHO) has reported that approximately 60% of Indians will be affected by cardiovascular diseases by 2020. Due to obesity and high glycaemic load with insulin resistance, hyper triglyceridaemia is becoming more prevalent in Indian population, which makes India one of the global leaders with burden of diabetes mellitus [6]. Statins (atorvastatin, fluvastatin, pravastatin, rosuvastatin, and simvastatin) competitively inhibit 3-hydroxy-3methylglutaryl coenzyme A (HMG-Co-A) reductase, an enzyme involved in cholesterol synthesis, especially in the liver. Statins are more effective than other lipid-regulating drugs at lowering LDL-cholesterol concentration but they are less effective than the fibrates in reducing triglyceride concentration. However, statins reduce cardiovascular disease events and total mortality irrespective of the initial cholesterol concentration. Statins are the most efficient and better tolerated drug class for the treatment of dyslipidemia. For this reason they should be considered as the first line drugs in the most cases of dyslipidemia [7]. Statins should be considered for all patients, including the elderly, with symptomatic cardiovascular disease such as those with coronary heart disease (including

history of angina or acute myocardial infarction), occlusive arterial disease (including peripheral vascular disease, non-hemorrhagic stroke, or transient ischemic attacks). Statins are also used for the prevention of cardiovascular disease events in asymptomatic individuals who are at increased risk. Statin treatment should also be considered if the total cholesterol concentration to HDL-cholesterol ratio exceeds [5]. Hence, the current study was undertaken to investigate the drug utilization pattern of HMG COA Reductase Inhibitors in a tertiary care teaching hospital.

METHODOLOGY

A prospective observational study was conducted in the department of General Medicine OPD & IPD at Karuna Medical College Vilayodi, Chittur, for a period of 6 months. Approval of the Institutional Ethical committee was obtained prior to commencement of the study. The study based on the inclusion and exclusion criteria were as:

Inclusion criteria:
- Patients diagnosed with cardiovascular diseases.
- Patients in the age group of 30 to 70 years of age.
- Patients willing to participate in the study.

Exclusion criteria:
- Patients who are not diagnosed with cardiac diseases.
- Pregnant women and breastfeeding mothers are excluded.
- Patient not willing to participate.
- Prescriptions containing incomplete information.

Data collection forms were prepared as a tool for collection of data like demographic profile, past medication history, family history, knowledge, attitude and practice about the hyperlipidemia. Some clinical and therapeutic data such as lipid profile levels were extracted from the case file of the patients.

RESULT

A total of 101 prescriptions were collected during this study period. Among these prescriptions, 62.3% (63) patients were males and 37.6 % (38) patients were females [Table1]. The specialty wise distribution of HMG CoA reductase was more found in the Cardiology department (51.4%) followed by Neurology department (29.7%), general medicine department (17.8%) and others (0.99%) [Table 3]. In our study,the maximum number of HMG CoA reductase prescribed from Atorvastatin generic (94 %) followed by Rosuvastatin (5.9%) [Figure 4].

Atoravastatin prescribed in our hospital under the brand names of Itor (37.6%), Lipikind (26.7 %), Stator (14.8%),Atorva (6.9%), Biotor (4.9%) , Statix (1.9%), Ecospirin AV (1.9%) and Rosuvastatin prescribed only under brand name of Razel gold (5.9%).

Table 1: Gender distribution

Gender	No. of Patients (n =101)	Percentage of patients
Male	63	62.3 %
Female	38	37.6 %

Gender-wise distribution shows that males are prescribed more on statin therapy. In our study, the maximum number of patients on HMG CoA Reductase therapy was found in the age group 61-70(53.4%) followed by age group 51-60(27.7%), 41-50 (15.8%)30-40 (2.9%).

Table 2: Age distribution

Age in years	No. of Patients (n=101)	Percentage of patients
30-40	3	2.9 %
41-50	16	15.8 %
51-60	28	27.7 %
61-70	54	53.4 %

Table 3: PRESCRIBING INDICATOR

S. No	Prescribing indicator	Frequency
1	Total number of prescription analyzed	101
2	Total number of drugs used in this study	436
3	The average number of drugs per prescription	4.3
4	Average number of drugs per encounter	2
5	Percentage of drugs prescribed by generic name	18.31%
6	Percentage of drugs with an antihyperlipidemic drug prescribed	17.05%
7	The Percentage of drug with an injection prescribed	6.10%

Table 4: PATIENT CARE INDICATOR

S.no	Patient care indicator	Frequency
1	Average consultation time	13 mins
2	Average dispensing time	10 mins
3	Percentage of drugs actually dispensed	87%
4	Percentage of drugs adequately labeled	100%
5	Patient knowledge of correct dosage	30%

Table 5: Specialty Wise Distribution of Statins

Department	No. of Patients(n=101)	Percentage of Patients
Cardiology	52	51.4 %
Neurology	30	29.7 %
General	18	17.8 %
Others	1	0.99 %

Table 6: Statins prescribed in study population

Statins	No. Patients (n=101)	% of Patients
Atorvastatin	95	94.0 %
Rosuvastatin	6	5.9 %

Table 7: Brand wise distribution of Statins

Brands	No. of Patients(n=101)	Percentage of Patients
Itor (Atorvastatin)	38	37.6 %
Stator	15	14.8 %
Atorva	7	6.9 %
Biotor	5	4.9 %
Statix	2	1.9 %
Lipikind	27	26.7 %
Ecospirin AV (comb)	2	1.9 %
Razel gold (Rosuvastatin)	6	5.9 %

DISCUSSION

Drug utilization research is an essential part of pharmacoepidemiology as it describes the extent, nature and determinants of drug exposure. Nowadays, DUE is used as potential tool in the healthcare system. DUE are powerful exploratory tools to ascertain the role of drugs in the society. It is important to realize that inappropriate use of drugs a potential hazard to the patients and unnecessary drug expense [1,8].

In our study it was found that 62.3% (63) patients were males and 37.6 % (38) patients were females which is similar to other studies which may be due to the contributing risk factors like smoking, alcohol intake, diet high in saturated fat, etc., seen commonly in males in India. The maximum number of patients was found in the age group 61-70(53.4%) which may vary in different studies but mostly in the age group above 60. The department ways classification shows that most of the patients were from the cardiac department followed by neurology, general medicine and others which is in accordance with other studies [9].

In our study, Atorvastatin was mostly prescribed HMG Co-A reductase followed by Rosuvastatin which is accordance with other studies but in some studies Rosuvastatin replaced by Simvastatin [10].

Other studies also shows that Rosuvastatin and Atorvastatin can be more effective in reducing hyperlipidemia compared to other classes of statin drugs and thus further reduce the risk of cardiovascular disease in such patients [11].

In our study,Atorvastatin was prescribed under the brand names Itor, Atorva, Stator, Statix, Biotor, Lipikind, Ecospirin AV and Razel gold for Rosuvastatin but brand names are different in other studies.

CONCLUSION

Importance of drug utilization studies in pharmacoepidemiology has been increasing due to their close association to other areas like- public health, Pharmacovigilance, Pharmacoeconomics and pharmacogenetics. The study clearly indicates that HMG-CoA reductase inhibitors (statins) were used within locally and internationally accepted dosage ranges.

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