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PATTERN OF ANTIHYPERTENSIVE DRUG UTILIZATION IN A TERTIARY CARE HOSPITAL

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ABSTRACT

Drug Utilization research is defined by WHO as "the marketing, distribution, prescription and use of drugs in a society, with special emphasis on the resulting medical, social and economic consequences". The treatment for hypertension involves the use of many new antihypertensive drugs. So this study was done in order to know the current prescribing trend of antihypertensive agents in a tertiary care teaching hospital. The study was carried out from January 2011 to December 2011. Patients above 18 years of age who have been diagnosed with hypertension according to JNC VII classification were included. All the parameters were noted down in the specially structured case Proforma. In a total of 230 prescriptions with essential hypertension the male/female ratio was almost equal. 155 cases were on mono therapy (MT) (67.3%). 20 cases were on multiple drug therapy (MDT) (8.6%). 55 cases were on fixed dose combinations (FDC) (23.9%) A total of 32.5% cases received more than one drug for hypertension. The most commonly prescribed antihypertensive medications were in the order of CCB's (30.43%), ACEI's (30.43%), ARB's (29.13%), β blocker's (23.04%) and lastly the diuretics (19.56%). The drug-prescribing trend of anti-hypertensive agents by physicians at this tertiary care hospital is rational and it is in accordance with JNC guidelines.

KEYWORDS: Hypertension, Drug utilization studies, Prescribing pattern, JNC VII guidelines

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INTRODUCTION

Hypertension (HTN) is one of the major chronic diseases resulting in high morbidity and mortality worldwide. Hypertension is one of the primary reasons for hospital visits in developing countries like India. Prevalence of HTN in India is reported to vary from 4-15% in urban and 2-8% in rural population[1,2]. It is estimated that the worldwide prevalence of hypertension would increase from 26.4% in 2000 to 29.2% in 2025[3]. Hypertension is considered as one of the major risk factors for coronary artery disease, cerebrovascular accidents, chronic renal failure and congestive cardiac failure. Incidence of peripheral vascular diseases is greatly increased in diabetes with hypertension. Retinopathy rates in diabetics were doubled when the systolic blood pressure exceeded 145mm Hg. Nephropathy progresses with increasing levels of arterial pressure. The risk of nephropathy increases three fold in diabetics when there is a family history of hypertension[4,5,6,7,8]. A plethora of new drugs are now available. A number of drugs in various combinations are generally used for effective long-term management. Despite that treatment goals as per JNC VII is not achieved[9,10]. Efforts to effectively improve the extent of control of hypertension should ideally be based on a thorough understanding of the characteristics of patients, the dynamics of the health care system and, most importantly, on the work and function of the primary care physician as the gatekeeper[11]. The new JNC VII guidelines propose lower BP targets, defining patients with BP values of 120–139/80–89 mmHg as pre-hypertensive requiring lifestyle modification. There is growing evidence now that uncontrolled hypertension also occurs in populations with good access to health care[12,13]. Therefore, the role of physician's attitudes and practice patterns like recognition, treatment and management has received increased attention which also contributes to poor control of hypertension[14,15,16]. Drug utilization studies which evaluate and analyze the drug therapy in HTN is essential from time to time to observe the medical, social, economic outcomes of the drug therapy and prescribing attitude of physicians with the aim of rational use of drugs and to minimize the adverse drug reactions (ADRs)which will prove more meaningful. This kind of prescription audit will help in improving the patient health care further. So, the present study was done to assess the current trends of antihypertensive drugs which were being prescribed in the out patient department of general medicine of a tertiary care teaching hospital.

METHODOLOGY

Approval for the study was obtained from the Institutional Human Ethics Committee (IHEC). This descriptive observational study was carried out in collaboration with the Department of General Medicine for a period of 12 months from Jan 2011 to Dec 2011. Patients who attended medicine OPD above the age of 18 years and had been diagnosed with hypertension according to JNC VII classification were included in the study. Hypertensive patients who were advised only lifestyle modification without the use of prescription drugs were excluded. The prescriptions of these patients were reviewed and the details were collected at the time of their visit to the OPD. To evaluate the drug prescribing pattern a proforma was prepared. Except the name all other details were noted down in the specially structured case proforma like demographic data, drugs prescribed by physician, dose, frequency, duration, route, formulation, brand or generic drugs, adverse events due to use of antihypertensive drugs, blood pressure record at three consecutive visits and any Co-morbid conditions.

Statistical analysis

Data were entered in Microsoft excel 2010. Descriptive statistics were applied to the data. SPSS version 17.0 was used for statistical analysis. The results were represented in the form of tables, pie charts and bar diagrams.

RESULTS

Totally 230 patients were diagnosed with hypertension. For each patient the age, gender,

age at which hypertension was diagnosed, grading and severity according to JNC VII Classification were noted. In our study 52.17% males & 47.83% female patients were diagnosed with hypertension and the male female ratio was 1: 1.1. Out of 230 patients, 40 were newly diagnosed with hypertension and were graded according to JNC VII classification. Out of 40 patients, 9 patients were prehypertensive. 25 patients were stage I and 6 patients were in stage II when diagnosed. Out of 40 newly diagnosed patients 9 were pre hypertensive, of which 8 were in fifth decade and 1 in the sixth decade of life. Of all the cases 135 patients, comorbid condition of diabetes mellitus was seen in 50 patients. 30 patients had dyslipidaemia, 20 patients had associated cardio vascular problems, 8 patients had CRF and 5 patients had bronchial asthma. Among all the cases with hypertension 50 patients had habits like alcoholism and smoking. Patients who consumed alcohol were 19 in number. 17 patients had the habit of smoking and 14 patients were smokers and they took alcohol also. Out of 230 patients, 150 patients were on mono therapy (MT) (69.37%). 24 patients were on multiple drug therapy (MDT) (10.43%). 55 patients were on fixed dose combinations (FDC) (23.9%) In monotherapy, 35 patients received Calcium channel blockers (CCB's), the most common being Amlodipine. 32 patients received β-blockers and the commonest was Atenolol. 38 patients received angiotensin converting enzyme inhibitors (ACEIs) the commonest being Enalapril. 48 patients received angiotensin receptor blockers (ARBs) in which Losartan and Telmisartan were commonly used. 2 patients received Torsemide (loop diuretic). A total of 20 patients received MDT. Among those 7 patients received CCB's and ACEI's, 4 patients received β- blockers and ACEI's, another 4 patients received ARB's and β- blocker, 2 patients received CCB and β-Blocker, 2 patients received ARB's and CCB. One patient received ACEI and diuretic. 55 patients received FDC. Among FDC, ACEI + HCTZ were used in 16 patients. ARB's + HCTZ in 13 patients, CCB + HCTZ in 11 patients. 9 patients received β- blocker + CCB. 4 patients received ACEI + CCB. 2 patients received β-blocker + HCTZ.

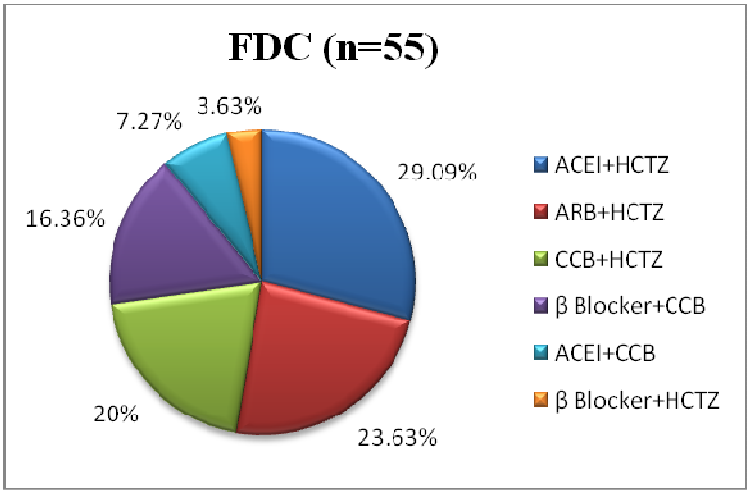

Figure 1
Fixed Dose Combination

In our study 138 patients received once daily treatment(OD) with an antihypertensive and the remaining 92 patients received twice daily treatment(BD). In monotherapy 87 patients received OD and 68 patients received BD treatment. In multiple drug therapy 8 patients received OD and 12 patients received BD. In fixed dose combination 43 patients received OD and 12 patients received BD treatment. Of 230 patients prescriptions with brand name was noted in 158 patients. 72 patients had the drugs prescribed in generic form. In this study the

antihypertensive drugs were prescribed for 15 days in 79 patients. For 71 patients the duration was 20 days, for 38 patients it was for 10 days, for 35 patients it was for 30 days and lastly for 7 patients it was for 25 days. Among 230 patients with hypertension, BP was controlled in 204 patients with the drugs which were initially prescribed to them. In the remaining 26 patients a drug was added on for 16 patients, for 6 patients the dosage of the drug which they were taking was increased and frequency was increased in another 4 patients to attain BP control. Of 230 patients ADR was noted in 42 patients of which dry cough was noted in 18 patients among which 13 were female and 5 were males. 9 patients had ankle oedema as an adverse effect with Amlodipine. 5 patients had electrolyte imbalance, hypotension, muscle pain and cramps with the use of ACEI/HCTZ combination.

Table 1
Number of Cases Showing Adverse Drug Reaction

ADR noted	42
ADR with ACEI	18
ADR with Amlodipine	9
ADR with ACEI/HCTZ	5
Total no of cases	230

DISCUSSION

A prescription-based survey is considered as an effective method to assess and evaluate the prescribing attitude of physicians[24] and dispensing practice of pharmacists. A continuous supervision is therefore required through such kinds of systematic audit that provide feedback from the physician and help to promote rational use of drugs. This prospective observational study was done for a period of 12 months to observe the drug-prescribing trends of anti-hypertensive agents in a tertiary care teaching hospital which indicated that the most commonly prescribed anti-hypertensive were ACEI's and CCB's and the prescribing pattern was rational as per the standard treatment guidelines (JNC VII) in this institution. In our study most of the cases with hypertension were seen in increasing age of life with the peak at sixth decade. Our study findings are similar with that of studies by Pittrow et al[18], Waleed et al[23], Augustine et al[20] and Preethi et al[22] who have said hypertension was seen at increasing age. The overall usage of ACEI's and ARB's has been increasing when compared with the past. Our study findings are similar to those by Pittrow et al[18], Waleed et al[23] and Sandozi et al[21]. This rise could be due to the beneficial effects it has on the heart, reduced adverse effects with these drugs and recent findings suggesting that they are beneficial in diabetics. Monotherapy was found to be higher in our study similar to that of studies by Tiwari et al[19], Waleed et al[23] and Preethi et al[22]. The more number in monotherapy is a good indicator as hypertension was controlled with a single drug in this population. Co-morbid conditions like Diabetes mellitus, dyslipidaemia, cardio vascular problems, CRF and bronchial asthma were seen in our study which is similar to the data obtained from previous studies[18,20,22,23]. The most commonadverse effect is dry cough with ACEI was found to be more in our study which is due to accumulation of bradykinin[24]. This adverse effect being more in female patients needs to be evaluated in a larger group of patients and longer duration of time. The other adverse effects are similar to the ones as mentioned in the literature review [17,24].

CONCLUSION

The present study indicates the current prescribing trend for anti-hypertensive agents and it highlights certain important features in the existing prescribing practice. The pattern of antihypertensive medication in this hospital was rational and the JNC VII guidelines were followed for treatment of hypertension.

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