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Original Research Article

Drug utilization pattern of antihypertensive agents in patients of hypertensive nephropathy in a tertiary care hospital: a cross sectional study

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ABSTRACT

Background: Objective of the study was to determine the drug utilization pattern of antihypertensive agents in patients of hypertensive nephropathy in a tertiary care teaching hospital.
Methods: This was a prospective observational study carried out in Index medical college and Hospital, Indore over a period of three 4 months. A total of 60 patients aged 40-79 years taking treatment for hypertension with associated nephropathy were enrolled in the study. All the relevant data were collected and drug utilization pattern of antihypertensive agents was determined. The study evaluated the percentage of use of multidrug therapy, drugs prescribed from Essential Drug List (EDL) and prescriptions with generic name. The cost of antihypertensive drugs used per day was calculated and linked with socioeconomic status of the patients.
Results: Evaluation of the prescriptions demonstrates that a total of 63.3% males and 36.7% females with mean age of 58.9±11.9 years were enrolled out of which 70% patients were on multidrug therapy while only 30% were on monotherapy. Though only 16.67% patients were prescribed generic drugs but it did not affect the economic condition of the patient as most of enrolled patients belong to upper middle class.
Conclusions: The prescriptions analysed were in accordance to guidelines of JNC-8 (Joint National Committee - 8) and most of the prescriptions were found to be rational and it also shows that management of hypertensive nephropathy needs combination therapy.

Keywords: Drug utilization, Hypertensive, Monotherapy, Prescriptions

INTRODUCTION

Hypertension is a major chronic disease affecting portions of world population and uncontrolled hypertension leads to severe long term consequences such as stroke, heart failure, congestive heart disease (CHD), end stage renal disease (ESRD). It is also associated with chronic renal failure (CRF) and diabetes mellitus (DM). Hypertension is estimated to affect 972 million adults worldwide, with 66% of those affected are from low and middle income countries, including India.[1] The overall burden of hypertension related disease is rapidly rising in the developing world as a consequence of the aging population and increasing urbanization.[2] Hypertensive nephropathy is one of the leading causes of end stage renal disease. Chronic hypertension leads to renal damage known as hypertensive nephropathy or hypertensive nephrosclerosis. It is one of the most frequent causes of end stage renal disease requiring chronic dialysis. The adequate treatment of hypertension according to International Standards would allow decrease in the number of patients with hypertensive nephropathy. Management of hypertensive nephropathy requires both pharmacological and non-pharmacological interventions.

Poor management affects the morbidity and mortality of the patient and on the other hand pharmacological management is associated with many adverse effects like hypotension, GI disturbances, impaired sexual function etc. which adversely affects the quality of life of patients. Drug utilization study is a component of medical audit that monitors and evaluates prescribing practices and recommends necessary modifications to achieve rational drug use and is defined as "marketing, distribution, prescription and use of drugs in a society, with special emphasis on resulting medical, social and economic consequences" Drug utilization research also provides insight into the efficiency of drug use i.e. whether a certain drug therapy provides value for money and the results of such research can be used to help to set priorities for the rational allocation of health care budgets. The ultimate goal of drug utilization research must be to assess whether drug therapies is rational or not. In this regard, a drug utilization study was conducted to determine the drug utilization pattern of antihypertensive agents in patients of hypertensive nephropathy in a tertiary care teaching hospital.

METHODS

This was a prospective observational study conducted in Department of Pharmacology at Index medical college and Hospital, Indore. The study intended to determine the drug prescribing pattern in adult patients diagnosed as hypertensive with its complications attending tertiary care centre. Patients over 40 years of age diagnosed with and treated for hypertension, attending the facility for at least 3 months were included in our study. There are specific "chronic diseases/life style diseases days" at our Hospital where physician consultation is facilitated for diseases such as hypertension, diabetes mellitus and asthma.

Inclusion criteria

- Patients above the 40 years of ager group,
- Patients who could understand and were able to adhere to the dosing and visit schedules

Exclusion criteria

- Patients having any systemic diseases
- Those who were not willing to participate

Informed consent was taken from the patients. Eight different groups of anti-hypertensive drugs were screened namely Angiotensin converting enzyme inhibitors (ACEIs), Angiotensin receptor blockers (ARBs), Calcium channel blockers (CCBs), beta blockers (BBs), α blockers, α agonists, diuretics and Fixed Dose Combinations (FDCs).

RESULTS

During the study period a total of 60 prescriptions were evaluated. All the patients were literate and most of them (76%) belonged to class II (upper middle class) according to modified kuppuswamy scale which has been summarized in Table 1. The mean age was 58.9±11.9 years and is depicted in Table 2. On an average 63% of the prescriptions were of male patients. 40% of the prescriptions were found to be with monotherapy while 60% were with multidrug regimen amongst which a combination of Calcium channel blocker, beta blocker and diuretics was the most commonly prescribed multidrug therapy.

Table 1: Socioeconomic status (Modified Kuppuswamy Scale).

Sr. no	Class	Percentage
1	Class I	4
2	Class II	76
3	Class III	16
4	Class IV	4
5	Class V	0

Table 2: Age and sex wise distribution.

Parameters	40-49	50-59	60-69	70-79
Mean age	44±3.04	55±3.29	66±2.65	70.5±0.71
Veg non-veg	17:12	7:12	7:0	3:2

Amongst the various drugs prescribed in our study group, calcium channel blocker ranked first followed by beta blockers and then diuretics were a good percentage of drugs being prescribed from essential drug list 2011.

The cost of antihypertensive drugs per prescription per day is shown with the help of a Table 3.

Table 3: Cost of antihypertensive drugs per prescription per day.

Drugs	Cost
Monotherapy	Rs. 0.472 to Rs. 16.23
Dual therapy	Rs. 1.972 to Rs. 23.49
Triple Therapy	Rs. 2.672 to Rs. 30.18
Polytherapy	Rs. 5.622 to Rs. 39.88

DISCUSSION

Out of the 60 prescriptions evaluated in our study, 38 (63.3%) were males and 22 (36.7%) were females. Males predominated in the study population which is in agreement with the results of various other studies.[3,4]

The (mean±SD) age of the patients was 58.9±11.9 years with a range between 40 and 79 years. It was higher than that reported in other studies.[4,5] This difference could be because of the reason that we did not include younger patients in our study group. Mostly combination therapy was used in our study when compared with the monotherapy which was in accordance with earlier studies.[6,7] Combinations of anti-hypertensive drugs with

complementary actions may minimize adverse effects and reduce clinical outcomes by improving BP control and organ protection.[7]

Most commonly a combination of 3 drugs was prescribed and amidst various drugs prescribed a CCB (Amlodipine) was the most commonly prescribed drug as it is recommended in older age group and also for chronic use.The most common drug prescribed is comparable to study done by Datta S et al and Almas A et al, although few studies have also shown differing results.[8-11]

We also found that 70% of the drugs were prescribed from Essential drug list 2011 implying that there was no drug procurement problem and though only 16.67% patients were prescribed generic drugs but still these should be prescribed more often so that the patients can get the options of choosing drug according to his economic conditions. Most of the patients in our study group belonged to middle socioeconomic status and the cost of the prescription varied from Rs.0.50 to Rs.40 (approx).

CONCLUSION

Our results of the study demonstrate that the prescriptions were in accordance to JNC VIII guidelines. Calcium channel blockers was the most commonly prescribed drug class followed by Beta Blockers and from the study it can also be said that hypertensive nephropathy needs combination of three or four drugs along with lifestyle modifications for adequate management.

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