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Prescribing Pattern and Potential Drug - Drug Interactions of Hypertension in a Tertiary Care Hospital- A Retrospective Study



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HUMAN

B. Arul*, S.R. Rangabashyam¹, R.Kothai, Alphonsa Kurian, Anu Antony, Bevley Koshy

Department of Pharmacy Practice, Vinayaka Mission College of Pharmacy, Vinayaka Mission University, Salem, Tamil Nadu.

1. Department of General Medicine, VMKV Medical College and Hospitals Salem, Tamilnadu.

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ABSTRACT

The objective of this study was to evaluate prescribing pattern and potential drug-drug interaction in hospitalized patients with hypertension. A retrospective, observational study was carried out at inpatient department of a tertiary care hospital in Salem district, Tamilnadu, India from November 2015 to April 2016. The demographic details, disease and treatment data of 150 patients with hypertension were collected in a specially designed proforma. In hypertension, amlodipine was the most frequently prescribed drug. Monotherapy was used for 50% patients and the remaining 50% patients were prescribed with combination therapy. 62 interactions were noted in 150 prescriptions. The potential drug-drug interactions are frequent in hypertension and hence deserve clinical attention. Implementation of alert guidelines and a computer-based screening would help to recognize and prevent potentially dangerous drug-drug interactions.



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INTRODUCTION

Hypertension is an important public health challenge all across the globe. Raised blood pressure is one of the leading behavioral and physiological risk factor to which about 13% of all global deaths are attributed¹. Most major guidelines recommend that hypertension is diagnosed when a person's systolic blood pressure is ≥ 140 mm Hg or their diastolic blood pressure is ≥ 90 mmHg, or both, on repeated examination. The systolic blood pressure is particularly important and is the basis for diagnosis in most patients. These numbers apply to all adults older than 18 years, although for patients aged 80 or older a systolic blood pressure up to 150 mm Hg is now regarded as acceptable². Lifestyle modification alone is considered appropriate therapy for patients with pre-hypertension. However, lifestyle modifications alone are not considered adequate for patients with hypertension and additional CV risk factors. The choice of initial drug therapy depends on the degree of blood pressure elevation and presence of compelling indications. The goal of treating hypertension is to reduce blood pressure to levels below the numbers used for making the diagnosis. It can be controlled (blood pressure $< 140/90$ mm Hg in most patients) by using either 1, 2, or 3 drugs such as angiotensin-converting enzyme inhibitor or angiotensin receptor blocker/ calcium channel blocker/diuretic in full or maximally tolerated doses. The most widely used two-drug combination, angiotensin-converting enzyme inhibitors plus either calcium channel blockers or diuretics, or angiotensin receptor blockers plus either calcium channel blockers or diuretics, can control blood pressure in about 80% of patients³. The prescribing pattern can greatly have a negative impact on the patient care outcomes if not underpinned by the use of ideal standards and evidence-based medicine⁴. So in this study, an attempt was made to examine the physicians prescribing pattern of hypertensive drugs and its possible effects on the management of hypertension as well to examine potential drug-drug interactions among medications prescribed to hypertensive patients⁵.

MATERIALS AND METHODS

A retrospective observational study was carried out for a period of 6 months from November 2015 to April 2016 in a tertiary care hospital in Salem. Patients admitted to the hospital with hypertension were screened for drug-drug interactions. Patients of either sex, age more than 18 years were included in the study. Patients who are below 18 years of age, women who are pregnant and lactating were excluded from the study. Demographic data, length of hospital

stay, diagnosis, medication chart and follow up details were collected from patient's case record form.

RESULTS AND DISCUSSION

The pattern of drugs prescribed, age and gender distribution, co-morbid conditions and potential drug interactions were assessed. A total of 150 prescriptions were analyzed, among which females were about 45% and males were 55%. The data comply with the research study by Chytra R Rao⁶ in high blood pressure prevalence and significant correlates. Majority of the patients belong to an age group of 41-50 years. Diabetes mellitus (44.2%) was the most common co-morbidity associated with the patients followed by CAD (21.3%) and COPD (12.2%).

The total number of drugs prescribed were 817 in 150 prescriptions and an average number of drugs per prescription 5.44 ± 2.31 . About 79% of drugs were given by oral route. Calcium channel blockers (54%) were the frequently prescribed class of drug followed by ACEI (28%) and diuretics (9%) (Table No:1). Amlodipine (53%) were the most commonly prescribed drug (Figure No:1). A total number of drug interactions noted was 94. Out of 150 prescriptions, 75 cases were prescribed with monotherapy, 66 cases with dual therapy and 9 cases with triple therapy. Most of the interactions were noted in dual therapy. 62 interactions were noted in patients receiving 4-6 drug followed by 27 interactions in patients receiving 7-9 drugs and 15 in patients receiving 1-2 drugs (Table No:2). The more drugs a patient takes greater the likelihood that an adverse drug reaction will occur. This drug interaction can cause partial or complete abolishment of treatment efficacy. From the above study and the overall distribution of the graphs and figures it may be concluded that whenever the polypharmacy is there, it also increases the chance of the drug-drug interactions.

CONCLUSION

The potential drug-drug interactions are frequent in hypertension and some of them deserve clinical attention. Implementation of alert guidelines and a computer-based screening would help to recognize and prevent potentially dangerous drug interactions.

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Table No 1: Most commonly prescribed class of oral antihypertensive drugs

Class	No. of prescription	% of prescription
Calcium Channel Blockers	119	54
ACE Inhibitors	62	28
Diuretics	19	9
Beta Blockers	16	7
Angiotensin II Receptor Antagonist	5	2

Table No 2: Polypharmacy and drug interactions

Sr. No.	No of drugs per prescription	No of prescription	No of interaction	Percentage of interaction
1	1-3	19	12	63.1
2	4-6	93	65	69.8
3	7-9	32	27	84.3
4	10 above	6	5	83.3

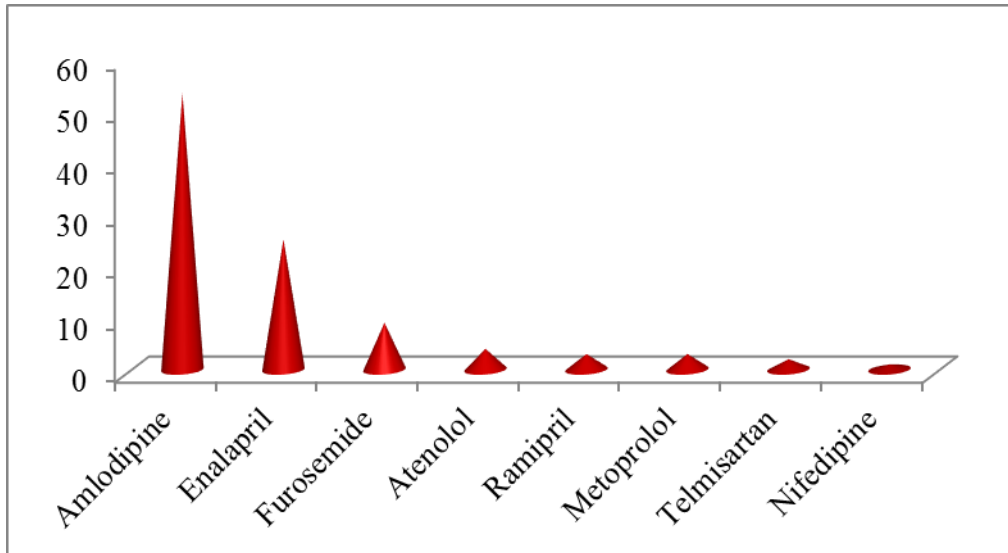


Figure No 1: Most commonly prescribed antihypertensive drug during the study

