



EVALUATION OF PRESCRIPTION PATTERN OF ANTIHYPERTENSIVE DRUGS IN A TERTIARY CARE HOSPITAL

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ABSTRACT

Hypertension is a leading cause for development of several cardiovascular diseases such as atherosclerosis, ischemic heart disease and heart failure. Tremendous improvement has happened in the field of pharmacotherapy of hypertension but still its very much important to investigate the type of therapy prescribed to the hypertensive patients. So this study has been designed to evaluate the prescription pattern of antihypertensive drugs to the patients suffering from blood pressure. The study was carried out to examine the prescription pattern of antihypertensive medications among hypertensive patients in District Hospital Singtam, East Sikkim, Sikkim. The study was conducted on 31 adult hypertensive patients admitted to the inpatient department of male and female general ward. It was carried out on the cases from the November 2021 to the May 2022. Prescriptions were studied for overall drug use details and specific types of antihypertensive drugs. Out of 31 patients, 25 patients received monotherapy and 6 patients received combination therapy. The treatment with Diuretics (31%) was found to be the commonest therapeutic class, followed by Calcium channel blocker (19%), β -blockers (17%), ARBs (15%), ACE inhibitors and antiplatelet drug (8%). The least prescribed therapeutic class was alpha-blockers (2%). Among all the drugs Furosemide (Lasix) which was intravenously administered was mostly prescribed and the least prescribed drug was Lanoxin.

INTRODUCTION

Hypertension is the most frequently diagnosed chronic medical condition where the systolic blood pressure is more than 140 mmHg and diastolic blood pressure is more than 90 mmHg. If untreated, hypertension has serious consequences, including renal disease, myocardial infarction (MI), and cerebrovascular accident etc. It is the most prevalent risk factor for cardiovascular diseases (CVDs). The cardiovascular diseases (CVDs) have been the leading cause of morbidity and mortality in developed and developing countries over the last several decades.^[1]

An adverse drug reaction (ADR) can be defined as 'an unintended or undesired response to a drug which results from the use of given medications at a normal dose during normal use'. Adverse Drug Reactions associated with Anti-hypertensive drugs are very common and can impose a serious health-related problem. Adverse drug reaction has the ability to limit the options of treatment for hypertension. Study about Adverse drug reaction in hypertension treatment is important to be conducted for optimizing patient safety. It is known that mortality risk were significantly increased in hypertension patients, especially in untreated or uncontrolled blood pressure. One of the main causes of uncontrolled blood pressure is

non-compliance. There is poverty of information on incidence of ADR in the hospitalized hypertension patients. It is important to minimize the blood pressure in a reasonable level in order to prevent cardiovascular diseases and organ damage in patients with hypertension. Hypertension patients with cardiovascular diseases or other diseases like Asthma, Diabetes are more likely to possess ADRs. Most anti-hypertensive drugs are capable of producing adverse effect either when used individually or in combination with other drugs even at prescribed doses. Regarding the high outbreak of ADRs in patients with hypertension, we will examine ADRs in hypertension patients, including the identification, analysis, and evaluation in District Singtam Hospital in East Sikkim that has special treatment facilities for hypertension, by correlating the disease complications (multipathology) and polypharmacy. Anti-hypertensive medications are frequently associated with Adverse drug reactions which reduces patient compliance and may hinder Blood Pressure control. To control blood pressure, two or more anti-hypertensive medications requires, however increase in the number of anti-hypertensive medications can lead to even more adverse effects. It is important to remember that most of the Adverse Drug Reactions would subside once the offending agent is discontinued or dosage reduced; however, many can

result in permanent damage.^[1,3] Some examples of ADRs in anti-hypertensive drugs are in some cases anti-hypertensive drugs are not considered as the first line drug treatment in older patients as drugs like beta blockers(ex-Atenolol, Propanolol) assert adverse effects on glucose and lipid metabolism when used alone or in combination with diuretics.^[4] Hypertension may feel dizzy or light-headed if the drug reduces the blood pressure level too much. These are dose related adverse drug reactions. Dose related adverse drug reactions may or may not be serious but they are relatively common. The Older patients on hypertension treatment are more likely to have other diseases like cardiovascular disease or kidney disease and take more than one or two medications and regular use of at least 3-4 medications in this age group is associated with an increased risk of adverse effects like hyperkalemia, hypokalemia, fall injury, and heart failure, etc.^[5]

We studied and examined the incidence of ADRs due to anti-hypertensive medicines at District Hospital Singtam in East Sikkim. The study was conducted from November 2021 to May 2022. This Study conducted on 31 eligible patients who were willing to participate. The informations were collected includes patient information (name, age, sex, address), date of administration & date of discharge, suspected adverse events, suspected medications (name, start date/stop date, dose, route of administration), concomitant disease and other informations including pre-existing medical conditions.

Methodology

The present work was an open, non-comparative, observational study to report the incidence of ADRs due to antihypertensive medicines at District Hospital, Singtam. The study protocol was assessed and approved

by the CMOH of the District Hospital, Singtam, East Sikkim. The study was conducted in patients attending the Medicine inpatient department of District Hospital, Singtam, East Sikkim a 150 bedded hospital of Singtam, East Sikkim, India by patient case files. The information from the case files were extracted in data sheet. The information collected includes patient information (initials, age, sex, height, weight), suspected adverse event (a brief description of the reaction, onset date/stop date of occurrence of events, outcomes of events, treatment received), suspected medication (name, indication, start date/stop date, dose, frequency, route of administration), Medical history (past/present), concomitant medication, relevant test /laboratory data, other relevant histories including pre-existing medical conditions. All hypertensive patients irrespective of age and sex and patients treated with at least one antihypertensive agent were included in the study. Patients who were not treated with antihypertensive agents, all the mentally retarded and unconscious patients (patients depending on other people for medication administration), and drug addicts were excluded from the study. All the data were kept confidential. The study was carried out on the cases from November 2021 to May 2022 by B. Pharm final year students attending the in-patient department. The study was conducted on 31 eligible patients at Hospital who were willing to participate in which 16 were male and 15 were female.^[6]

RESULTS

During the study period, a total of 31 hypertensive patients visited District hospital, Singtam. Among the 31- hypertensive patients 16(51.61%) were males and 15 (48.38%) were females. The graph below depicts the male and female hypertensive patient in our study.

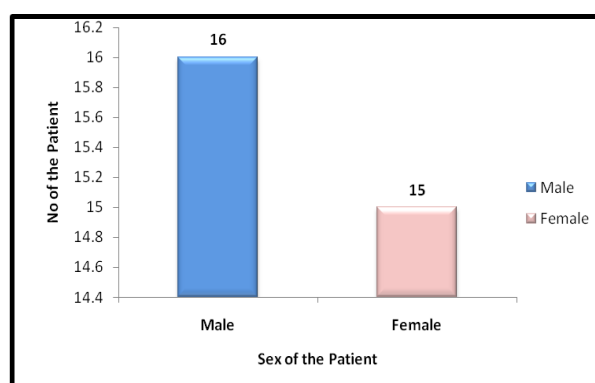


Fig. 1: Sex of the hypertensive patients in the study.

Table 1: Sex of the hypertensive patients in the study.

Sex of the patient	No. of the patients
Male	16
Female	15

It was observed that the patients of age 46-75 were the most prone to hypertension(53.3%) followed by 76-90 (23.3%) ,31-45 (20%) and lowest hypertensive patient

were found in age group 16- 30 and 91 -105 that is 3.3%.The graph below depicts the range of different age group patients at which hypertension was prevalent.

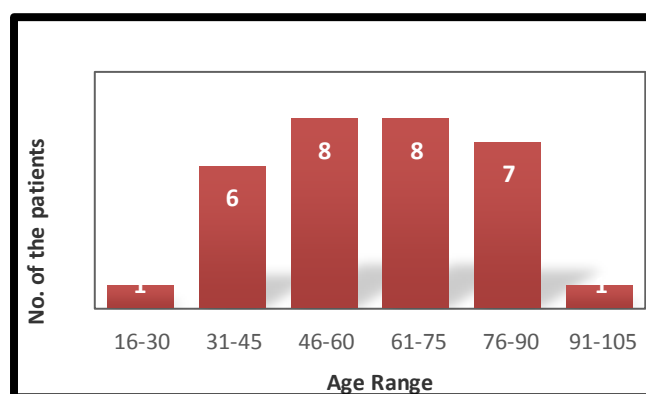


Fig. 2: Age range of the hypertensive patients in the study.

Table 2: Age range of the hypertensive patients in the study.

Age range	No. of the patients
16-30	1
31-45	6
46-60	8
61-75	8
76-90	7
91-105	1

DISCUSSION

Hypertension is a chronic medical condition with increasing prevalence worldwide. However, the cause of this disease remains uncertain in many, grouping them under the tag of primary hypertension. Hypertension, which was considered to be the disease of geriatrics, is now commonly turning up in young adults between the age groups of 20 years and 40 years.^[5]

The aim of the present study was to investigate the prescription pattern of hypertensive patients in District Hospital Singtam. This study was performed for the patients admitted in the in-patient department of District Hospital Singtam from 8th March, 2020 to 26th April, 2022.

This study was conducted in 31 patients who had antihypertensive drugs advised in their prescriptions. We studied their prescriptions to understand the prescriptions pattern of the drugs to control hypertension. In our study, the patients of age 46-75 years were the most prone to hypertension (53.3%) followed by 76-90 years (23.3%), 31-45 years (20%) and lowest hypertensive patient were found in the age group 16-30 years and 91-105 years that is 3.3%. Our study was in accordance with the studies by Sharma A et al, 2017; Ajmery S et al, 2017 ; and Vashishta K, 2018 ; where the hypertensive patients were in the age group of 41 and above. Sub-Saharan African study by Olanrewaju TO et al, 2010; also concluded that hypertension is common in patients over 51 years age.^[7]

Our study results revealed that seven different classes of antihypertensive drugs were prescribed at the study site, which were ACEIs, ARBs, CCBs, BBs, diuretics, and others including alpha-blocker and anti-platelet drugs.

Diuretics were the most commonly prescribed antihypertensive class of drugs i.e. 31% among the total drugs prescribed, either as single drug or in combination. This was followed by Ca²⁺ channel blockers (19%), ACE inhibitors & anti-platelet drugs (8%), ARBs (15%), β -blockers (17%) and alpha blockers (2%). The least prescribed therapeutic drug class was alpha blockers i.e. 2%. Our study was in disagreement with a previous study of Kuchake et al. who has found from their study that diuretics were least prescribed drug in hypertensive patients.

Majority of our study participants were on mono drug therapy. In 31 patients, 25 patients received mono therapy and 6 patients received combination therapy. These results were in agreement with a study conducted in Ajman, UAE, which reported that the majority of the hypertensive patients (63.6%) were on monotherapy. Vashishta K., 2018 ; studied that monotherapy was more common than combination therapy for hypertension, with intensive prescription of CCBs which was in contrast to our results. Our results showed that in monotherapy, Ca²⁺ channel blockers & diuretics were the most preferred agents.

Among the individual antihypertensive drugs, Furosemide was prescribed the most, both in monotherapy and in combination therapy followed by telmisartan and Amlodipine. In severe cases amlodipine + telmisartan was the mostly prescribed combination drug therapy which was in contrast with a previous study of Arora S, Kaur R, Sing TG ; where CCBs, especially amlodipine, followed by angiotensin receptor blocker, telmisartan was the top most prescribed combination therapy.^[8]

CONCLUSION

The study was carried out to examine the prescription pattern of antihypertensive medications among hypertensive patients in District Hospital Singtam. The study was conducted on 31 adult hypertensive patients attending the Medicine inpatient department of District Hospital, Singtam, East Sikkim. It was carried out on the cases from the 7th of November 2021 to the 28th of April 2022. The data were collected from the case files. Prescriptions were studied for overall drug use details and specific types of antihypertensive drugs. Of 31 patients, 25 patients received monotherapy and 6 patients received combination therapy. The treatment with Diuretics (31%) was found to be the commonest therapeutic class, followed by Calcium channel blocker (19%), β -blockers (17%), ARBs (15%), ACE inhibitors and antiplatelet drug (8%). The least prescribed therapeutic class was alpha-blockers (2%). Among all the drugs Furosemide (Lasix) which was intravenously administered was mostly prescribed and the least prescribed drug was Lanoxin.

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