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A Study on Prescribing Patterns of Antihypertensive drugs in Cardiology in-patient Department at a Tertiary health care institution , Assam, India.

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ABSTRACT

To study the prescription patterns of antihypertensive drugs in a tertiary care hospital with special reference to mono and multi-drug regimens. A retrospective, cross sectional analysis of antihypertensive prescriptions was done which included all prescriptions of hypertensive patients admitted in Cardiology inpatient wards of the hospital during the period of January 2016 to June 2016. Patient case records were collected from Medical Records Department of our Hospital and reviewed to extract data on the pattern of antihypertensive drug use. Collected data were analyzed using Microsoft Office Excel Sheets. A total of 140 prescriptions were analyzed. 106 (76%) were male patients and 34(24%) were females. Maximum hypertensives were seen in the age group of 60-69 in both sexes and the least were seen in the age group of 20-29 in males and 30-39 in females. Out of the total patients, 38 patients (27%) received monotherapy and 102 (73%) of them received combination therapy. Calcium channel blockers were the most commonly prescribed monotherapy. Two drug combination received by 50 patients (49%), followed by 3 drugs combinations (44 patients,43%) and 4 drugs combination (8 patients,8%) This study shows that the prescribing practices for antihypertensives are inconsistent with the international guidelines. Most of the patients received combination therapy. Further studies needed for rational drug choice based on economic status, co morbidities, that would give additional information.

Keywords: Antihypertensives, prescribing patterns, mono and multi-drug therapy

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INTRODUCTION

Hypertensive vascular disease is a common entity readily detectable, asymptomatic at times, easily treatable usually and often known to lead to lethal complications if left untreated ¹. World wide prevalence estimates for hypertension may be as much as 1 billion individuals, and approximately 7.1 million deaths per year may be attributable to hypertension and its complications ². According to WHO health statistics 2012, the prevalence of hypertension in India was 23.1% in men and 22.6% in women in equal or more than 25 years age.³ Therefore, management of hypertension is an important step to decrease the morbidity and mortality of cardiovascular disease and to prevent uncontrolled complications. It is well documented that, in addition to lifestyle modifications, convenient antihypertensive drug therapy substantially reduces the risk of hypertension-related morbidity and mortality ⁴. It is generally of two types- Primary hypertension and secondary hypertension. Primary hypertension is of idiopathic meaning (Unknown origin) cause. If the hypertension is due to the underlying cause, it is termed as the secondary hypertension ⁵.

JNC 8(Joint National Committee on prevention, detection, evaluation and treatment of high blood pressure) defines hypertension as a clinical state where the systolic blood pressure is above 139 mmHg and the diastolic blood pressure is above 89 mmHg persistently ⁶. The JNC 7 recommends the use thiazide type diuretics as the first choice when used alone or in combination with drugs from other classes of anti-hypertensive's in uncomplicated essential hypertension. For > 20/10 mm Hg above goal BP, combination of two agents is recommended with one of them is usually being a thiazide diuretic⁷. But in recent JNC 8 guidelines it do not consider diuretics as the first choice rather considers first-line and later-line treatments to be limited to 4 classes of medications: thiazide-type diuretics, calcium channel blockers (CCBs), ACE inhibitors, and ARBs. followed by second- and third-line alternatives included higher doses or combinations of ACE inhibitors, ARBs, thiazide-type diuretics and CCBs ⁸

The purpose of treating hypertension is to prevent complications and to improve patient survival and the selection of the antihypertensives should be based on safety, efficacy and freedom from adverse effects. Accordingly, appropriate drug therapy can ensure immense therapeutic benefit in patients with essential hypertension with least adverse effects ⁶

Therefore, the present study is undertaken to analyse the pattern, extent, rationality and frequency of use of the antihypertensive drugs in a cardiology in-patient department of a tertiary and esteemed health care institution of Assam, North-east India.

MATERIALS AND METHOD

The present study was a retrospective, cross sectional analysis of antihypertensive prescriptions which included all prescriptions of hypertensive patients admitted in Cardiology inpatient wards of the hospital during the period of January 2016 to June 2016. Ethical approval was obtained from the institutional ethical committee prior to study initiation. All hypertensive patients irrespective of age and sex admitted to Cardiology ward and treated with at least one hypertensive drugs were included in the study. Patients with psychiatric illnesses, cancer, pregnant and nursing mothers were excluded. Age, sex, registration number, diagnosis, duration of hospital stay, number of drugs prescribed, route of administration, dose and frequency of drug were collected from the prescription prescribed to the patients.

The collected prescriptions were entered into Microsoft Office Excel sheet according to their age, gender, therapeutic category and prescription.

RESULTS AND DISCUSSION

A total of 140 prescriptions were analysed. 106 (76%) were male patients and 34 (24%) were female. Maximum hypertensives were seen in the age group of 60-69 years both in males and females and the least were seen in the age group of 20-29 years and 30-39 years respectively. (Figure 1)

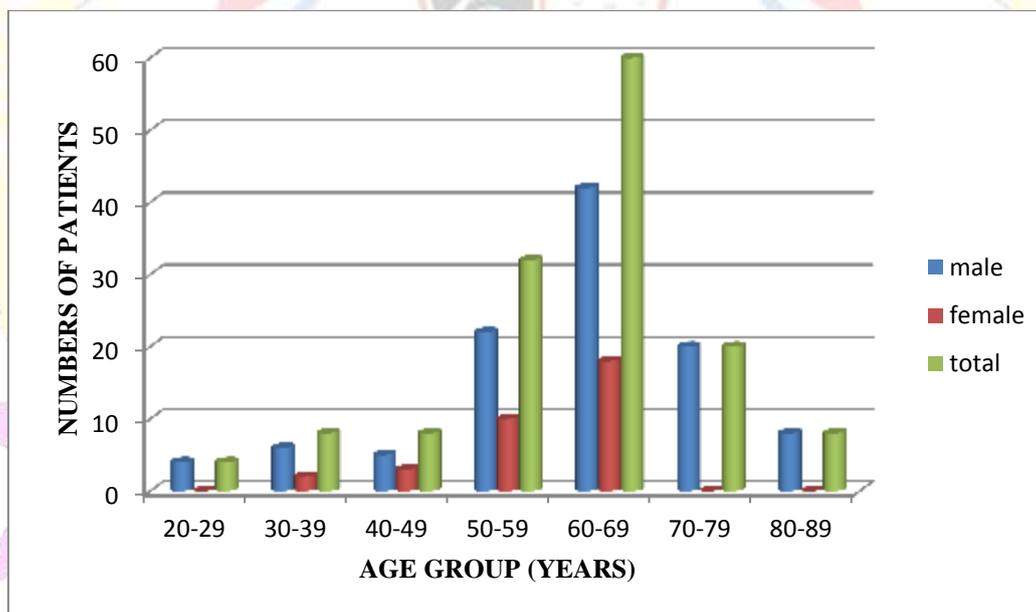


Figure 1: Demographic Characteristics of Hypertensive Patients undergoing Monotherapy and Combination Therapy

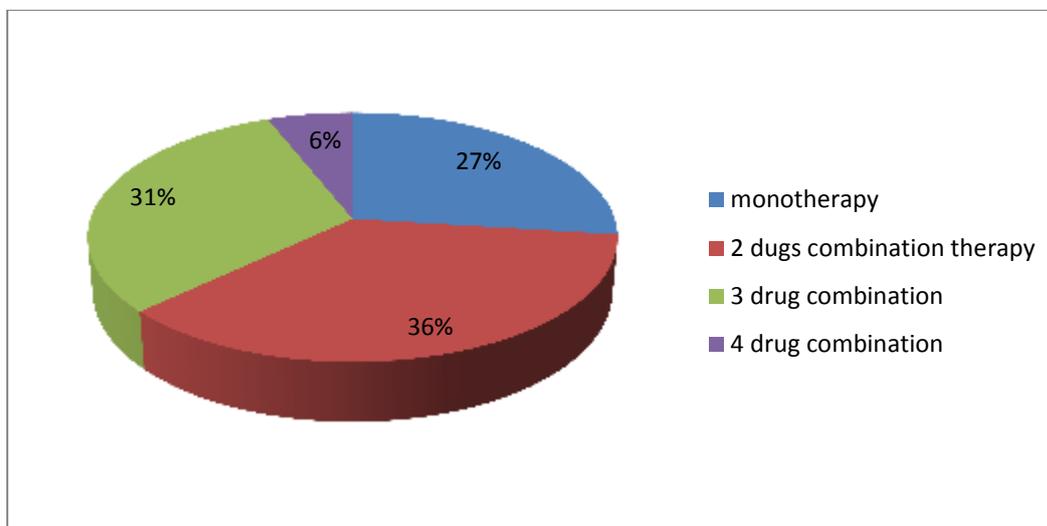


Figure 2: Antihypertensive drug utilization pattern

Out of the total patients, 38 patients (27%) received monotherapy and 102 (73%) of them received combination therapy. Two drug combination received by 50 patients (36%), followed by 3 drugs combinations (44 patients,31%) and 4 drugs combination (8 patients,6%) .(Figure 2)

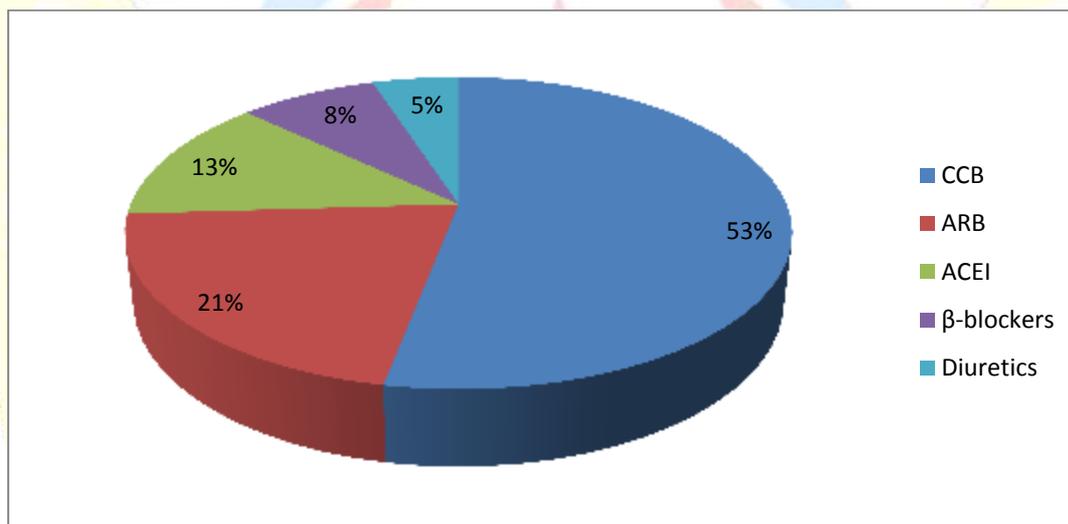


Figure 3: Monotherapy drug utilization pattern

Out of the 38 patients, who received monotherapy, CCB were most commonly prescribed (53%), followed by ARB (21%), ACE inhibitor (13%), β -blockers (8%) and diuretics (5%).

CCB- Calcium channel blocker, ARB- Angiotensin Receptor Blocker, ACEI- Angiotensin converting enzyme inhibitor

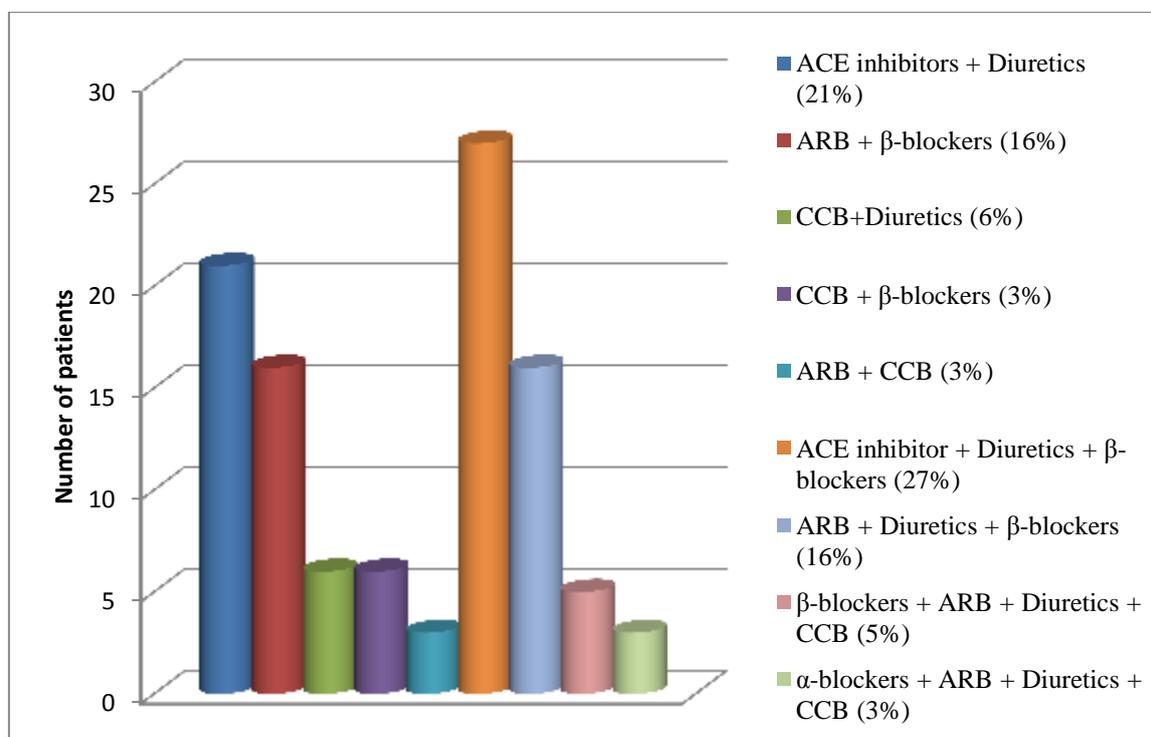


Figure 4: Bar diagram showing number of patients receiving combination therapy

In two drug combination therapy, ACE inhibitors + Diuretics (21%) is the most commonly prescribed, followed by ARB + β-blockers (16%), CCB+Diuretics (6%), CCB + β-blockers (3%) and ARB + CCB (3%)

In three drug combination regime, ACE inhibitor + Diuretics + β-blockers (27%) is the most common followed by ARB + Diuretics + β-blockers (16%)

In four drug combination therapy, β-blockers + ARB + Diuretics + CCB (5%) most commonly prescribed followed by α-blockers + ARB + Diuretics + CCB (3%)

DISCUSSION

Uncontrolled hypertension is associated with high incidence of morbidity and mortality^{9, 10}. Many clinical studies reported a direct correlation between elevated blood pressure and an increased risk of cardiovascular diseases, heart failure, stroke and kidney disease⁹. Such higher incidence rates would be substantially reduced in proportion to blood pressure reduction¹¹. Majority of the population are prone to hypertension in the present trends due to the factors like sedentary life style, habits like alcohol and smoking, mental stress etc¹².

As found in the study, prevalence of hypertension was more in male(76%) compared to females (24%). Further our study shown that maximum hypertensives were seen in the age group of 60-69 both in males females and the least were seen in the age group of 20-29 and 30-39 respectively. Anti-hypertensive therapy shown that combination therapy(73%) was more commonly prescribed than monotherapy (27%). This was due to almost all the patients presenting with co-existing cardiovascular diseases. In patients treated with monotherapy,

Calcium channel blocker are top most prescribed followed by angiotensin receptor blocker and diuretics are the least prescribed. A similar study conducted in Assam showed Calcium channel blocker as the most commonly prescribed monotherapy¹³

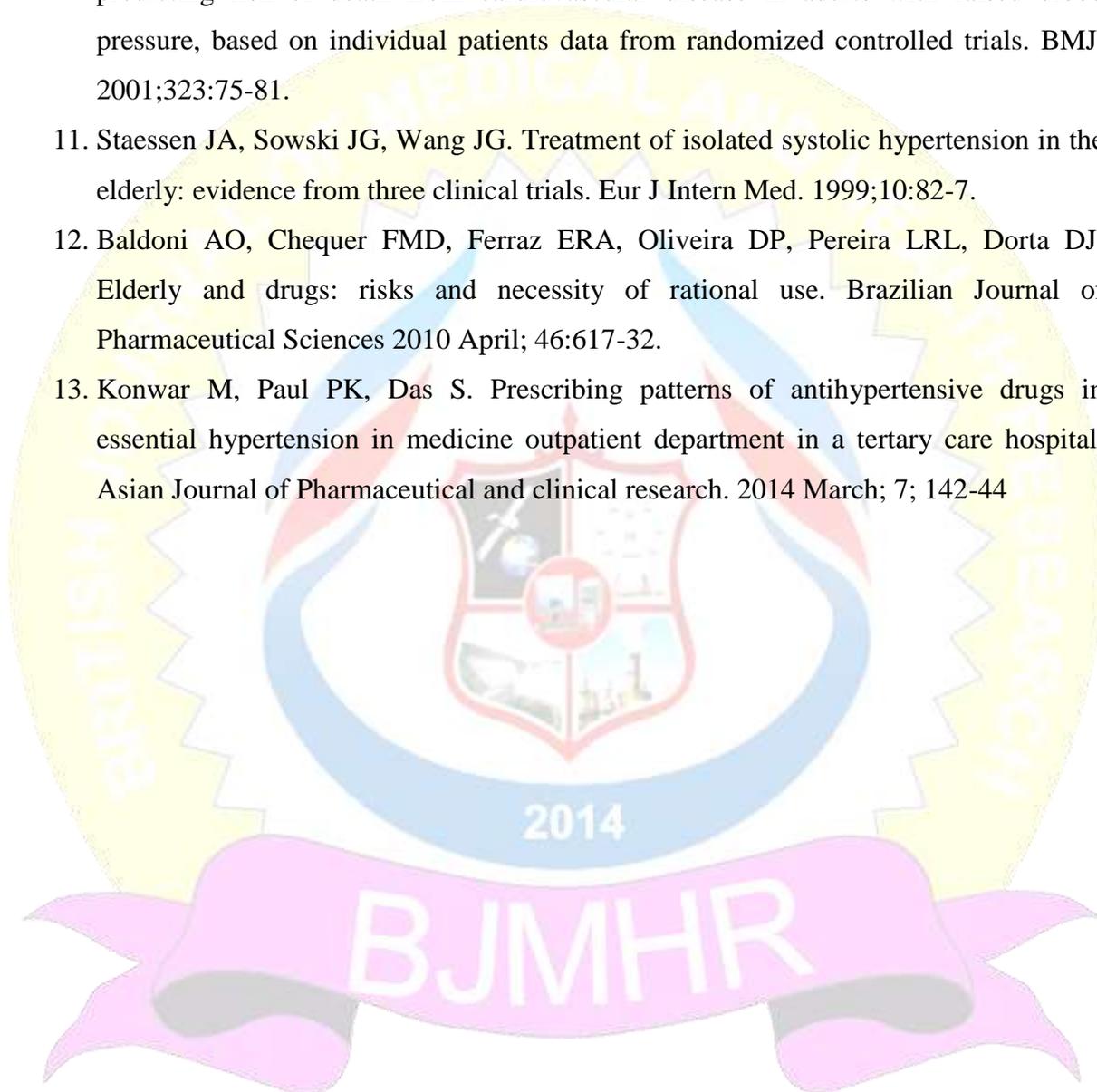
CONCLUSION

Present study represents the current prescribing trend for antihypertensive agents. Calcium channel blockers followed by Angiotensin receptor blocker has been found to be the most commonly prescribed antihypertensive agents. Our study provides only baseline data as done on a small population. So, it can imply the necessity of further large scale studies at regular interval of time to improve the prescribing patterns in hypertension. The treatment of hypertension keeps changing and newer drugs are being added at a rapid pace. Worth mentioning here, most of the international guidelines are made in respect to the western population and Indian population is vast different from the west. Therefore, further studies focused on the rationale for choice of drugs based on demographic data, economic status, associated conditions and complications would give additional insights into prescribing patterns in hypertension in India.

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