Original Article

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A study on prescribing patterns of antihypertensives in geriatric patients

Abstract

Objective: Hypertension is a leading contributor to the global burden of cardiovascular morbidity and mortality. The main objective of the present study was to assess the prescribing patterns for antihypertensives in geriatric patients. **Materials and Methods:** A Prospective observational study was carried out for the period of six months in an out-patient department. Elderly patients who have been diagnosed with hypertension as per JNC-7 guidelines and patients receiving or prescribed with antihypertensive drugs were included. **Results:** A total of 100 prescriptions were analyzed during the six-month study period. 72% of the patients were in the age group of 65-67 years and this was found to be higher in men 69%. During the study period 80% of the patients were Pre-Hypertensive systolic (80-89 mmHg) and Diastolic (120-139 mmHg) followed by Stage-I Hypertension and Stage-II Hypertension. The most common drug classes involved in the study was Calcium Channel Blockers 37% followed by Angiotensin II receptor antagonists 21% and the most commonly prescribed drugs in the study population were Amlodipine 37%, Losartan 11% and Telmisartan 10%. The most common anti-hypertensive fixed dose combination therapy involved in the study was Telmisartan + Hydrochlorothiazide 15% and most common two drug combination therapy involved in the study was Amlodipine + Atenolol 7% followed by Metoprolol + Amlodipine 1%. **Conclusion:** Our study shows that the most commonly prescribed drug classes involved were Calcium Channel Blockers followed by Angiotensin II receptor antagonists and the anti-hypertensive drug combinations among hypertensive patients were considerable and this practice positively impacted on the overall blood pressure control.

Key words: Anti-hypertensives, blood pressure, geriatrics, JNC-7

Access this article online	
Quick Response Code:	Website: www.picronline.org
	DOI: 10.4103/2229-3485.103595

INTRODUCTION

Hypertension is a leading contributor to the global burden of cardiovascular morbidity and mortality. Prevalence of hypertension in India in 2000 was 60.4 million males and 57.8 million females and projected to increase to 107.3 million and 106.2 million respectively in 2025.

Hypertension is vary from 4-15% in urban and 2-8% in rural population.[1] Apart from unhealthy lifestyles, lack of awareness about hypertension, distorted public health systems, physicians treating hypertension also lag behind in treating hypertension according to standard guidelines. Non compliance to antihypertensive therapy is also a reason for uncontrolled hypertension.[2] Elderly patients commonly have multiple pathologies leading to polypharmacy, and altered pharmacokinetics and pharmacodynamics, are prone to adverse drug reactions from inappropriate medication.[3,4] At least high normal blood pressure (below 140/90 mmHg) in elderly patients as mentioned in the Indian Hypertension Guidelines II.[5] The main objective of the present study is to assess the prescribing patterns for antihypertensives in geriatric patients.

MATERIALS AND METHODS

A Prospective observational study was carried out for the period of six months (January 2011- June 2011) in an out-patient department of Rohini Superspeciality Hospital. It is a 300-bedded Hospital situated in the heart of city at Warangal, Andhra Pradesh. Ethical approval was obtained from the institutional and hospital committee prior to study initiation. Elderly patients of age >65 years who have been diagnosed with hypertension as per JNC-7 guidelines and patients receiving or prescribed with antihypertensive drugs were included.[6] Details necessary for evaluation regarding chief complaints of the patients, previous allergies, comorbidities, and others were collected from the patient's clinical records. Certain demographic characteristics were studied and the factors studied were: (a) patient characteristics [gender, age (>65 years), and comorbidities], (b) drug characteristics [list of antihypertensive and number of drugs prescribed] and Blood Pressure. The Sociodemographic status such as educational qualification, occupation, monthly income, and social habits of the patients were collected. All data were collected from data collection form, and to review the current prescribing patterns of Anti-hypertensive drugs in hypertension patients with co-morbidities and without co-morbidities, use of Anti-Hypertensive Drug Monotherapy and combination therapy in patient with hypertension.

RESULTS

A total of 100 patients were consulted during the six-month study period, in an out-patient department at Rohini Superspeciality Hospital. Of these 100 prescriptions, 72% of the patients were in the age group of 65-67 years, followed by 26% in 68-70 years and 2% who were >70 years, and this was found to be higher in men 69% than in women 31%. The numbers of drugs prescribed were in the range of 4-6 per prescription. The Sociodemographic status such as Educational qualification, Occupation, Monthly Income, and Social habits of the patients was summarized in Table 1. Hypertensive patients were classified on the basis of Joint National Committee (JNC-7) was summarized in Table 2.

The most common drug classes involved in the study was Calcium Channel Blockers 37% followed by Angiotensin II receptor antagonists 21%, and other prescribing patterns of Anti-Hypertensive Drug Monotherapy were summarized in Table 3. The most common anti-hypertensive fixed dose combination therapy involved in the study was Telmisartan + Hydrochlorothiazide 15% followed by Olmesartan + Hydrochlorothiazide 3%, Losartan + Hydrochlorothiazide 1% and Ramipril + Hydrochlorothiazide 1%. The most common two drug combination therapy involved in the study was Amlodipine + Atenolol 7% followed by Metoprolol + Amlodipine 1%. Prescribing patterns of antihypertensive were classified into two types like with comorbidities 38%, and without comorbidities 62%. Among these

Table 1: Sociodemographic status of the patients

Sociodemographics	Number and percentage (%)
Educational qualifications	
Literate	76 (76%)
Illiterate	24 (24%)
Occupation	
Employed	57 (57%)
Unemployed	43 (43%)
Monthly Income	
<2000	23 (23%)
2000-5000	16 (16%)
5000-10000	31 (31%)
10000-15000	17 (17%)
>15000	13 (13%)
Social Habits	
Alcoholic	15 (15%)
Smoker	20 (20%)
Both	8 (8%)

Table 2: Classification of hypertensive patients on the basis of JNC-7

Systolic blood pressure	Number and percentage (%)	Diastolic blood pressure	Number and percentage (%)
Pre-Hypertension (80-89 mmHg)	84 (84%)	Pre-Hypertension (120-139 mmHg)	79 (79%)
Stage-I Hypertension (90-99 mmHg)	8 (8%)	Stage-I Hypertension (140-159 mmHg)	13 (13%)
Stage-II Hypertension (≥100 mmHg)	8 (8%)	Stage-II Hypertension (≥160 mmHg)	8 (8%)

comorbidities Cerebrovascular Accident Hemiplegia 21%, Diabetic Mellitus 13%, Diabetic Mellitus + Hemiplegia 4% and the detailed drugs prescribed with comorbid conditions were summarized in Table 4. Among these without comorbidities were divided into two types of drugs prescribed with single drug 39% and combination drug therapy 23%, these results were summarized in Table 5.

Table 3: Prescription pattern of anti-Hypertensive drug monotherapy

Anti-hypertensive monotherapy drugs	Number and percentage (%)
Calcium channel blockers	
Amlodipine	38 (38%)
Angiotensin II receptor antagonists	
Losartan	11 (11%)
Telmesartan	10 (10%)
β – Blockers	
Atenolol	6 (6%)
Metoprolol	5 (5%)
Diuretics	
Hydrochlorothiazide	1 (1%)
Furosemide	1 (1%)

Table 4: Use of anti-hypertensive drugs in hypertension patients with co-morbidities

Co-morbidities	Drugs	Number and percentage (%)
Diabetic mellitus	Losartan	3 (3%)
	Telmesartan	4 (4%)
	Amlodipine	5 (5%)
	Telmesartan + Hydrochlorothiazide	1 (1%)
DM + Hemiplegia	Metoprolol + Amlodipine	1 (1%)
	Amlodipine	1 (1%)
	Amlodipine + Atenolol	1 (1%)
	Telmisartan + Hydrochlorothiazide	1 (1%)
CVA Hemiplegia	Furosemide	1 (1%)
	Telmisartan + Hydrochlorothiazide	1 (1%)
	Losartan	2 (2%)
	Amlodipine + Atenolol	3 (3%)
	Metoprolol + Nifedipine	1 (1%)
	Amlodipine + Enalapril + Hydrochlorothiazide	1 (1%)
	Amlodipine	12 (12%)

DISCUSSION

With increasing economic growth rate, India is not only facing the epidemic of Coronary Artery Disease but also of obesity, diabetes mellitus, and hypertension. Prevalence of hypertension has remained stable or has decreased in developed countries during the past decade; it has dramatically increased in developing countries like India.[6,7] Our finding shows that the prescribing patterns of anti-hypertensive drugs in geriatrics out-patient department during the study period was found to be higher in men 69% than in women 31%. High blood pressure is more common in men then women. The women's were more likely to develop high blood pressure after menopause.[6] The risk of high blood pressure increases with age and in the early middle age.[4,6,8] In the present study 76% of the patients were Literate, 57% were employed, 31% of the patients having the monthly income of 5000-10000 and 20% were smokers and 15% were alcoholic patients. During the study period 80% of the patients were Pre-Hypertensive systolic (80-89 mmHg) and Diastolic (120-139 mmHg) followed by Stage-I Hypertension and Stage-II Hypertension.

The most commonly prescribed drug classes involved in the study was Calcium Channel Blockers 37% followed by Angiotensin II receptor antagonists 21% and the most commonly prescribed drugs in the study population were Amlodipine 37%, Losartan 11% and Telmisartan 10%. These results were compared with Datta S *et al*., and Almas A *et al*., conducted at tertiary care hospital shown that Calcium Channel Blocker- Amlodipine is the most commonly used antihypertensive monotherapy and Neal B *et al*., study results shown that the strong evidence of benefits of calcium antagonists is provided by the overviews of placebo-controlled trials.[9-12] The most common anti-hypertensive fixed dose combination therapy involved in the study was Telmisartan + Hydrochlorothiazide 15% and most common two drug combination therapy involved in the study was Amlodipine + Atenolol 7% followed by Metoprolol + Amlodipine 1% and these findings were not comparable with the studies conducted at tertiary care hospital beta blockers is used as the most common combination therapy.[9,10] Prescribing

Table 5: Use of Anti-hypertensive drugs in hypertension patients with no co-morbidities

Monotherapy drugs	Number and percentage (%)	Combination therapy drugs	Number and percentage (%)
Calcium Channel Blockers		Metoprolol + Amlodipine	1 (1%)
Amlodipine	20 (20%)		
Angiotensin II receptor antagonists		Olmesartan + Hydrochlorothiazide	2 (2%)
Losartan	6 (6%)	Losartan + Hydrochlorothiazide	2 (2%)
Telmesartan	6 (6%)		
β – Blockers		Ramipril + Hydrochlorothiazide	1 (1%)
Atenolol	6 (6%)	Atenolol + Amlodipine	3 (3%)
Diuretics			
Hydrochlorothiazide	1 (1%)	Telmisartan + Hydrochlorothiazide	14 (14%)

patterns of antihypertensive were classified into two types like with comorbidities 38%, and without comorbidities 62%. Among these comorbidities Cerebrovascular Accident Hemiplegia 21%, Diabetic Mellitus 13%, Diabetic Mellitus + Hemiplegia 4%.

CONCLUSION

Our study shows that the most commonly prescribed drug classes involved were Calcium Channel Blockers followed by Angiotensin II receptor antagonists and the anti-hypertensive drug combinations among hypertensive patients were considerable and this practice positively impacted on the overall blood pressure control. In order to promote the rational prescribing drugs and hospital formularies in special committees are useful in reducing the misuse of drugs especially in poly-pharmacy and in the treatment of hypertension.

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How to cite this article: Mohd AH, Mateti UV, Konuru V, Parmar MY, Kunduru BR. A study on prescribing patterns of antihypertensives in geriatric patients. Perspect Clin Res 2012;3:139-42.

Source of Support: Nil. **Conflict of Interest:** None declared.