Section: General Medicine

Original Research Article

EVALUATING PRESCRIBING TRENDS OF ANTIHYPERTENSIVE AGENTS IN GERIATRIC PATIENTS AT TERTIARY CARE HOSPITAL, BANGALORE

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ABSTRACT

Hypertension(HTN) is a chronic condition associated with various complications leading to increase in morbidity and mortality. There are variations noted in hypertension management among different age groups and geriatric population is more prone for adverse events due to the altered pharmacokinetics and pharmacodynamics. Thus our study aimed to study the prescription pattern of antihypertensives among elderly population. Materials and methods: A non-interventional, prospective, observational study of prescription pattern of elderly hypertensive patients conducted in a tertiary care hospital. Results: A total of 220 prescriptions were studied, majority of the prescriptions had more than one drug combination therapy for hypertension. The most common mono therapeutic agent used were Calcium channel blockers (CCBs), most common two drug combination used was CCB + Diuretic, most common 3 drug combination used was CCB + Angiotensin receipt blocker (ARB) + Diuretic and most common four drug combination used was CCB + ARB + Diuretic + Beta blocker. Most common agent used in patients with diabetes along with HTN was ARBs and in patients with ischaemic heart disease (IHD) along with HTN, CCBs were preferred. Conclusion: Our study showed that two drug combination (were most preferred among elderly population and among the mono therapeutic agents CCBs were the most preferred. Diabetes is the most common co morbidity among hypertensives.

Keywords: Antihypertensive Agents, Hypertension, Geriatric Patients

INTRODUCTION

Hypertension is an important public health problem since it is a major risk factor for coronary artery disease, arrhythmias, chronic kidney disease, stroke and retinopathy.[1] Effective treatment of hypertension will help in reducing the risk of stroke, coronary artery disease, congestive cardiac failure and overall mortality. Several factors like age and comorbidities need to be considered while choosing an appropriate antihypertensive drug.[1,2]

This contributes to a considerable socio-economic burden globally. It is pre-dicted that by 2025, the number of people living with high blood pressure will reach 2 billion globally,[3] Various guidelines for the management of hypertension such as Joint National Committee (JNC)-8 guidelines or ASH/ISH guidelines serve as reference standards for clinicians.[3]

Treating hypertension in elderly presents problems as elderly are more sensitive to adverse effects of antihypertensive drugs due to altered pharmacokinetics and pharmacodynamics. Geriatric population have multiple comorbidities which leads to polypharmacy and also suboptimal prescribing can lead to significant morbidity and mortality.[4]

Auditing prescription patterns will help to improve the prescribing among elderly by preventing suboptimal prescribing, avoiding drug interactions thereby help to mitigate the burden of hypertension. In our study we audited prescriptions of hypertensive patients and obtained insights into the prescription patterns in a tertiary care centre.

MATERIALS AND METHODS

This was a non-interventional, prospective, observational study conducted among elderly hypertensives treated at outpatient and inpatient sections of Department of General Medicine in a tertiary care centre.

Inclusion Criteria: Study included elderly patients aged 65 years and above, both genders, with or without comorbidities.

Exclusion Criteria: patients below the age of 65 years and those with secondary hypertension.

The sample size was calculated using the formula $n=4pq/l^2$ and found to be 215. After obtaining approval from the Institutional Ethical Committee, patients were recruited into the study and the required data was collected in a specially designed proforma. The data was subsequently analysed using descriptive statistics and results were expressed as mean ±standard deviation.

RESULTS

Our study recruited 220 elderly patients, of which males were 57.27% (170) and females were 42.72% (50). In our study majority of the study population belonged to the age group of 65-74 years (82.72%) followed by > 75 years (17.27%). In our study 65.77% (149) patients had comorbidities associated with hypertension and 32.27% (71) had only hypertension. Among the comorbid conditions diabetes was the most common 65.77% followed by IHD in 24.16% and 10.06% had both diabetes and IHD. [Table 1]

Among our study population majority 57.27% (126) received polytherapy for the treatment of hypertension and 42.72% (94) received mono therapy. Among the monotherapeutic agents calcium channel blockers were the most prescribed (43.61%) followed by angiotensin receptor blockers (25.53%), angiotensin converting enzyme inhibitors (9.57%) and beta blockers (2.13%). [Figure 2]

Among polytherapy, 2 drug combinations were most commonly prescribed 61.11% followed by 3 drug combinations in 26.29% and 4 drug combinations in 12.69%. The most common 2 drug combination (Fig 5) was CCB + Diuretic (32.66%) and least common was ARB + BB (2.59%). Among the three drug combinations the most common was ARB + CCB + Diuretic and most common 4 drug combination noted was ARB + CCB + Diuretic + BB. [Figure 4]

In patients with comorbidities, ARBs (19.38%) were preferred as mono therapy and combination of ARB + CCB (19.38%) were preferred among diabetics. Among IHD patients CCB (22.22%) were preferred as mono therapy and combination of CCB + BB (11.11%) were preferred. [Figure 4]

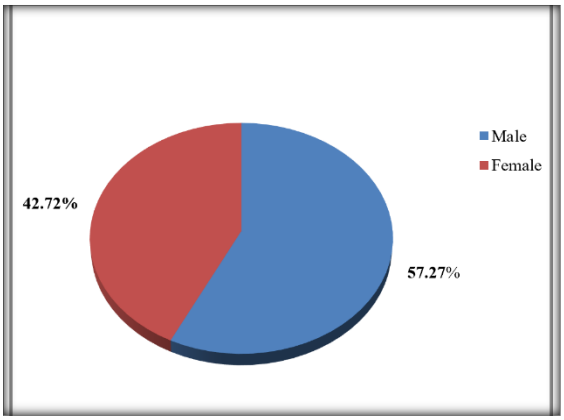

Figure 1: Gender-wise Distribution of Elderly Hypertensive Patients

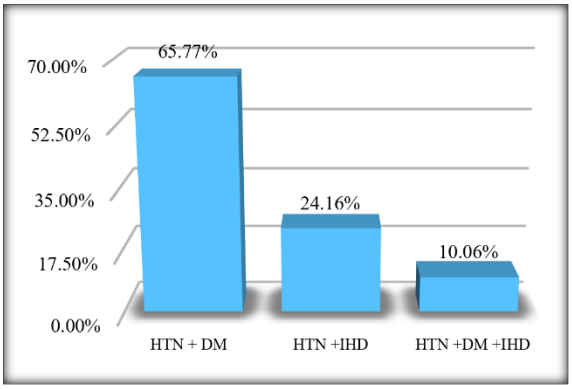

Figure 2: Incidence of Elderly Hypertensive Patients with Co-Morbidities

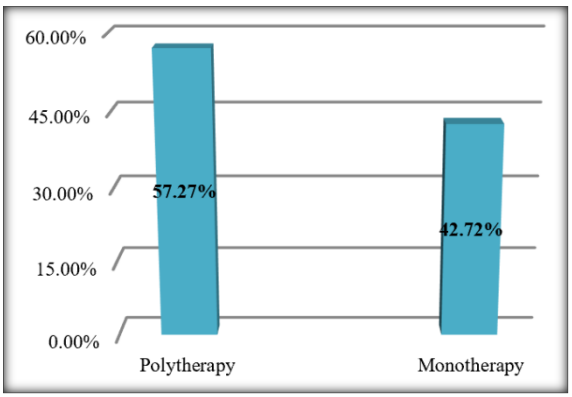

Figure 3: Elderly Hypertensive Patients receiving Polytherapy and Monotherapy

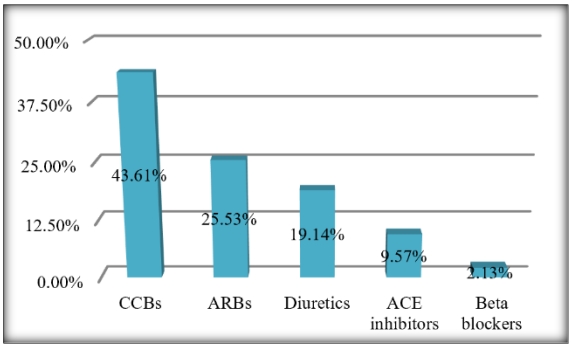

Figure 4: Elderly Hypertensive Patients receiving Monotherapy

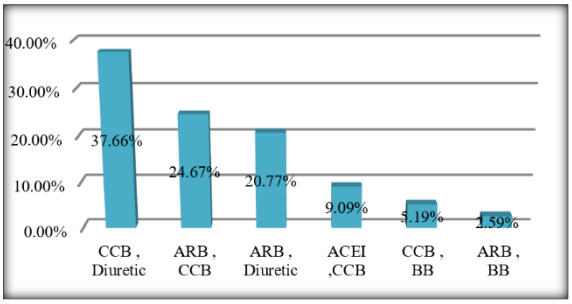

Figure 5: Elderly Hypertensive Patients receiving two drug therapy

Table 1: Age-wise Distribution of Elderly Hypertensive Patients

	Age (in years)	Number	Percentage (%)
Early elderly	65-74	182	82.72%
Late elderly	>75	38	17.27%
Total		220	100%

Table 2: Antihypertensive drugs in Elderly Hypertensive Patients with DM

Drugs Prescribed	Number of Patients	Percentage (%)
ARB	19	19.38%
ARB +CCB	19	19.38%
ARB + Diuretic	16	16.32%
ARB +CCB + Diuretic	15	15.3%
ACEI +CCB + Diuretic	11	11.22%
ACEI + CCB	7	7.14%
CCB + Diuretic	6	6.12%
ACEI	5	5.10%
TOTAL	98	100%

Table 3: Antihypertensive drugs in Elderly Hypertensive Patients with IHD

Drugs Prescribed	Number of Patients	Percentage (%)
CCB	8	22.22%
ARB	5	13.88%
ACEI	4	11.11%
Diuretics	4	11.11%
CCB + BB	4	11.11%
CCB+BB+ Diuretics	4	11.11%
ARB +BB	2	5.55%
BB	2	5.55%
ARB+CCB+ BB	2	5.55%
ACE +CCB + Diuretics	1	2.77%
Total	36	100%

DISCUSSION

Our study showed a male preponderance of hypertension which was similar to studies like Mohd, et al,[5] Prabahar K,[6] Priyanka.C.A, et al,[4] However Kaur et al,[7] differed by showing a higher female to male ratio of patients. The age distribution in our study found a higher number of patients between 65-74 years. Studies like Suman RK et al,[8] Priyanka CA et al,[4] had a similar age distribution.

This shows that hypertension is more prevalent in men and women tend to develop hypertension post menopause. The risk of developing high blood pressure increases with age.[5]

The most common comorbidity associated with hypertension in our study was Diabetes mellitus which was similar to Prabahar K,[6] and Kaur et al,[7] However Mohd et al,[5] found CVA to be the most common comorbidity.

Majority of our study population were on more than one drug therapy for treatment of hypertension. This was similar to Prabahar, K,[6] Gupta R et al,[9] but other studies like Priyanka CA et al,[4] and Ka Keat Lim et al,[10] had found a higher percentage of mono therapy for hypertension. Monotherapy-resistant hypertension is prevalent in the elderly and in most situations this requires combination therapy.[5] The initiation of therapy with more than one drug increases the likelihood of achieving BP goal in a more timely fashion. The use of multidrug combinations often produces greater BP reduction at lower doses of the component agents, resulting in fewer side effects.

The most common mono therapeutic agent was calcium channel blockers were the most prescribed in our study and this was similar to Prabahar K,[6] Billa Gauri et al,[11] Mohd et al,[5] Gupta R et al,[9] Other studies like Priyanka CA et al,[4] Kaur et al,[7]

showed that ARBs and Beta blockers were most commonly used mono therapeutic agents respectively. Choice of antihypertensive drugs is based on many factors and research shows that, good control of blood pressure protects the patient from cardiovascular, as well as microvascular complications, thus decreasing overall mortality.[7]

CCBs have been hypothesized to have a protective effect in frail older hypertensive patients and ACEIs may prevent frailty by increasing muscle mass in lower limbs and muscle strength.[12]

The most common two drug combination in our study was CCB + Diuretic and this differed from most of the studies done on geriatric population. In other similar studies done by Mohd et al,[5] an Reshma. S. R et al,[13] Angiotensin receptor blocker + diuretic were the commonly prescribed 2 drug combination.

Among the diabetic patients most of the patients received ARB as mono therapy and among the IHD patients CCBs were most commonly used which is similar to reports by systematic review by NN Abdelkhader et al.[14]

CONCLUSION

Our study has shown a higher prevalence of hypertension among male elderly population and the most common comorbidity associated with HTN was diabetes. The most preferred therapy was polytherapy with CCB + diuretics being the most preferred agents for managing HTN. Considering the age of the study population it is difficult to have a strict control of hypertension and optimal dosing with appropriate agents will avoid complications. Thus our study has thrown some light into the prescription pattern of antihypertensive drugs among elderly population.

Limitations:

Limitation is the small sample size because of the small sample size the result of the study cannot be generalized.

The study population refers to patients admitted to tertiary care teaching hospital and although hypertension was not the primary diagnosis in most cases, it is hypothesized that antihypertensive drugs were used for optimal control of BP.

The patients compliance to diet and exercise were not considered in our study.

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