



Original Article

Use of antihypertensive agents and its present perspective: an observational retrospective study

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Abstract

Objectives: To evaluate the utilization of antihypertensive agents for the patients of Hypertension and subsequently their health outcome at a Tertiary Care Level Hospital and to observe the relationship among demographic profile of the patients.

Materials and Methods: An observational retrospective study was undertaken collecting total 680 patients' data from patient admission ticket of a Tertiary Care Level Hospital. Mainly drugs used and outcome of the patients were recorded. Of all patients 306 were found to be treated with calcium channel blockers (CCBs), 77 with angiotensin receptor blockers (ARBs), 229 with CCBs plus ARBs, 46 with CCBs plus ARBs and beta blockers and only 22 patients got CCBs, ARBs and diuretics. Data were statistically analysed in respect of demographic profile, drugs used and clinical features of the patients.

Results: Best outcome was observed in patients treated with solely CCBs where in 289 out of 306 patients, hypertension was controlled. 194 out of 229 patients with CCBs and ARBs showed desired outcomes. 41 out of 77 with only ARBs, 29 out of 46 with CCBs, ARBs and beta blockers and 16 out of 22 with CCBs, ARBs and diuretics ended with positive results.

Conclusion: Calcium channel blockers alone and in few cases in combination with angiotensin receptor blocking agents are very effective in controlling hypertension.

Keywords: Hypertension, calcium channel blockers and angiotensin receptor blockers.

Introduction

Hypertension is defined as the presence of a blood pressure (BP) elevation to a level that places patients at increased risk for target organ damage in several vascular beds including the retina, brain, heart, kidneys and large conduit arteries.¹ Normal BP is defined as systolic blood pressure (SBP) < 120 mm Hg and diastolic blood pressure (DBP) < 80 mm Hg. Elevated blood pressure is

defined as SBP of 120-129 mm Hg and DBP of > 80 mm Hg.^{2,3} In stage 1 hypertension, SBP is 130-139 mm Hg and DBP of 80-89 mm Hg.^{2,4} Stage 2 hypertension is characterized by SBP of \geq 140 mm Hg and DBP of \geq 90 mm Hg.^{2,5} Isolated systolic hypertension is defined as an SBP \geq 140 mm Hg and DBP < 90 mm Hg, occurs frequently in elderly. Resistant hypertension is defined as BP is \geq 130/80 mm Hg in hypertensive patients on \geq 3

antihypertensive agents, one of which is a diuretic, or controlled BP on ≥ 4 antihypertensive agents.² Cardiovascular diseases (CVD), which include heart attacks and strokes, are the most common cause of mortality and morbidity across the world and are responsible for one-third of total deaths in India. Uncontrolled blood pressure is one of the main risk factors for CVD. Of the estimated 220 million people in India living with hypertension, only 12% have their blood pressure under control. Hypertension kills more adults than any other cause and is readily preventable and treatable.^{6,8,9} The achievement of optimum blood pressure (BP) as well as overall reduction in cardiovascular (CV) risk can be achieved by combination of a range of interventions such as lifestyle changes (increased physical activity, increased consumption of fruits and vegetables, sodium restriction, weight management, alcohol abstinence and smoking/tobacco cessation), drugs to lower BP (calcium channel blockers (CCBs), diuretics, angiotensin converting enzyme inhibitors (ACEI), angiotensin receptor blockers (ARBs), beta-blockers, *etc.*) and to lower lipids using statins.^{7,10} Considering the said perspective a retrospective observational study on hypertension was undertaken in a tertiary care hospital.

Materials and Methods

An observational open label, data based retrospective study carried out in a tertiary care hospital (Government Medical College) in eastern India. All data were obtained from the hospital records of hypertensive patients treated in this institution. Study materials included patient admission tickets, history sheets and bed head tickets, collected from the record section. Prior to the study, a written consent from the hospital superintendent was obtained and the study protocol was duly approved by the Institutional Ethics Committee. Total 5 month data from June to October, 2023 were noted on case record form. Collected data were analysed in respect of

demographic profile, treatment received by the patients, their clinical features and outcome. Graph Pad InStat3 was applied for statistical analysis.

Results

A total of 680 patients' data were collected in 5 months duration [table 1]]. Main bulk of the patients came from the age group of ≥ 45 years (58.09%) consisting 67.20% males and 32.79% females [table1]. 61.32% patients came from urban area [table 1]. Inflow of patients was maximum in the month of June, 2023 (37.79%) [table 1]. 45% patients were treated with only Calcium Channel Blockers (CCBs), 11.32% patients with only Angiotensin Receptor Blockers (ARBs), 33.68% patients with CCBs and ARBs, 6.76% with CCBs plus ARBs and beta blockers, and 3.24% with diuretics along with CCBs and ARBs [table 2]. Regarding disease categorization, majority of patients (68.68%) were diagnosed with stage 1 hypertension followed by stage 2 hypertension (25.15%), isolated hypertension (5%) and resistant hypertension (1.18) [table 4]. Concerning lifestyle modifications, 44.12% patients engaged in physical activities whereas 18.68% patients underwent weight reduction and 37.21 adopted Dietary Approaches to Stop Hypertension (DASH) [table 3]. Coexistent factors noted were obesity (70.29%), hyperlipidaemia (63.38%), renal insufficiency (4.12%), left ventricular hypertrophy (1.32%), bronchospasm (1.18), and heart failure (0.88%) [table 5]. Hypertension was controlled in majority of patients (94.4%) with a single drug, CCBs. [table 2]. Next best outcome was achieved in patients (84.72%) treated with the combination of CCBs and ARBs. [table 2]. Among 46 patients receiving CCBs, ARBs and beta blockers, 29 (63.04%) subjects showed control of hypertension and 16 (72.73%) out of 22 of them having CCBs, ARBs and diuretics, ended with positive outcomes [table 2].

Table 1: Demographic profile of hypertensive patients (n=680)

Parameters	Patients No. (%)	Parameters	Patients No. (%)
Age (years)		Sex	
18-24	4 (0.59)	Male	457 (67.20)
25-34	90 (13.23)	Female	223 (32.79)
35-44	191 (28.09)	Educational status	
≥45	395 (58.09)	Literate	572 (84.12)
Month wise data		Illiterate	108 (15.88)
June 2023	257 (37.79)	Residence	
July 2023	193 (28.38)	Rural	263 (38.68)
August 2023	123 (18.09)		
September 2023	82 (12.06)	Urban	417 (61.32)
October 2023	25 (3.67)		

Table 2: Drugs received by patients (n=680)

Drugs	Patients no (%) n = 680	Outcome (%)		
		Controlled	Uncontrolled	Death
CCBs	306 (45.00)	289 (94.44)	17 (5.56)	0
ARBs	77 (11.32)	41 (53.25)	36 (46.75)	0
CCBs + ARBs	229 (33.68)	194 (84.72)	35 (15.28)	0
CCBs + ARBs + beta blockers	46 (6.76)	29 (63.04)	17 (36.96)	0
CCBs + ARBs + diuretics	22 (3.24)	16 (72.73)	6 (27.27)	0

Abbreviations: CCBs- Calcium channel blockers, ARBs- Angiotensin receptor blockers
Outcome percentage is calculated considering the particular drug or drugs, patients received

Table 3: Lifestyle modifications done by patients (n=680)

Type of lifestyle modification	Patients no. (%)
Weight reduction	127 (18.68)
Adoption of DASH eating plan	253 (37.21)
Physical activity	300 (44.12)

Abbreviation: DASH- Dietary Approaches to Stop Hypertension

Table 4: Categorization of hypertensive patients (n=680)

Category	Patients no. (%)
Stage 1 hypertension	467 (68.68)
Stage 2 hypertension	171 (25.15)
Isolated hypertension	34 (5.00)
Resistant hypertension	8 (1.18)

Stage 1 hypertension : systolic blood pressure -130 to 139 mm Hg , diastolic blood pressure- 80 to 89 mm Hg, Stage 2 hypertension : systolic blood pressure - ≥ 140 mm Hg , diastolic blood pressure- ≥ 90 mm Hg, Isolated hypertension : systolic blood pressure - ≥ 140 mm Hg , diastolic blood pressure- < 90 mm Hg, Resistant hypertension: blood pressure ≥ 130/80 mm Hg in patients on ≥ 3 antihypertensive drugs, one of which is a diuretic, or controlled blood pressure ≥ 4 antihypertensive agents. ²

Table 5: Coexistent factors (n=680)

Coexistent factors	Patients no. (%)
Heart failure	6 (0.88)
Renal insufficiency	28 (4.12)
Left ventricular failure	9 (1.32)
Hyperlipidaemia	431 (63.38)
Obesity	478 (70.12)
Bronchospasm	8 (1.18)

Discussion

This observational study depicts current trends of antihypertensive prescription among Indian medical practitioners. It is observed that hypertension was controlled in 306 out of 680 patients by solely calcium channel blockers (CCB) without addition of other major drugs. It is obvious that in order to treat hypertension physicians should be rational and up to date about current therapeutics to more emphasize on commonly available and cheaper drugs. CCBs are freely distributed even from Government health sectors. Male subjects were more affected to their female counterpart. Being the active breadwinner men have to toil hard and take too much stress. Other contributing factors such as smoking, alcohol consumption etc are also common in them. Most of the patients restricted sodium in dietary habits and emphasized on physical activities. Along with doctor's advice, increase in literacy and public health awareness programs on social media led to those aforesaid life-style modifications.

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