

PRESCRIBING TREND OF ANTIHYPERTENSIVE DRUGS IN HYPERTENSIVE AND DIABETIC HYPERTENSIVE PATIENTS

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ABSTRACT

Aim: The present study was conducted in order to establish the drug prescribing trend of anti-hypertensive agents in hypertensives and diabetic hypertensives in General Medicine Department of Sri Ramachandra Hospital.

Methods: A prospective study of 1 month duration was conducted at the Sri Ramachandra Hospital, a tertiary care teaching hospital. The prescriptions containing antihypertensives were collected from the patients attending the outpatient department of general medicine. Pregnant women were excluded from the study. The patient's demographics, blood pressure, antihypertensive drugs prescribed, comorbid conditions were entered in a specially designed proforma.

Results: A total of 198 prescriptions were monitored, of which 34 were male and 164 were female. The age group of the patients varies from 50 - 75 years. Among 198 prescriptions, 35 prescriptions were of hypertensives and 163 prescriptions were diabetic hypertensives.

Among hypertensives, 68.57% of patients were treated with anti-hypertensive drug combinations and 31.42% of patients were treated with single anti-hypertensive drug. In monotherapy, calcium channel blockers (amlodipine) were most commonly prescribed (n=9). In combination therapy, a two drug combination consisting of calcium channel blockers (amlodipine) and diuretics (hydrochlorothiazide) were given to the majority of patients (n=10; 41.66%).

Among diabetic hypertensives, 58.28% of patients were treated with anti-hypertensive drug combinations and 41.7% of patients were treated with single anti-hypertensive drug. In monotherapy, angiotensin converting enzyme inhibitors (enalapril) were most commonly prescribed (n=57). In combination therapy, a two drug combination consisting of calcium channel blockers (amlodipine) and angiotensin converting enzyme inhibitors (enalapril) were given to the majority of patients (n=25; 26.3%), followed by a combination of angiotensin converting enzyme inhibitors (enalapril) and diuretics (hydrochlorothiazide) (n=21; 22.1%).

Conclusion: The present study represents the current prescribing trend for anti-hypertensive agents. According to JNC 7 guidelines, for stage 1 hypertension (SBP 140-159 or DBP 90-99 mmHg), thiazide-type diuretics should be prescribed. For stage 2 hypertension (SBP \geq 160 or DBP \geq 100 mmHg), two drug combinations (usually thiazide-type diuretics and angiotensin converting enzyme inhibitors) should be prescribed. In our study, 62.7% of patients in stage 1 hypertension and 68.4% of patients in stage 2 hypertension were prescribed according to this guideline.

Keywords: hypertension, prescription, cholesterolemia, and cardiovascular disease.

INTRODUCTION

Hypertension (HTN) is one of the major chronic diseases resulting in high morbidity and mortality in the world population. Because of the associated morbidity and mortality and the cost to society, hypertension is an important public health challenge. Hypertension is a disease of complex etiology, affecting 972 million people worldwide. Prevalence of HTN in India is reported to vary from 4-15% in urban and 2-8% in rural population. It is estimated that the worldwide prevalence of hypertension would increase from 26.4% in 2000 to 29.2% in 2025¹. Hypertension is an important risk factor for cardiovascular disease and has become a major global burden on public health². Therefore, blood pressure control needs to be considered in conjunction with the control of other concomitant cardiovascular risk factors. The prevalence of hypertension is high and the prescription containing antihypertensive drug is increasing day by day associated with other diseases such as diabetes, hypercholesterolemia, and cardiovascular disease. HTN and Diabetes Mellitus (DM) frequently coexist which increases with age. HTN is about twice as common in patients with DM than in those without (8%)³. As shown by Helsinki's heart study, prevalence of HTN is 30% amongst NIDDM patients⁴. Drug utilization studies which evaluate and analyze the drug therapy in HTN and HTN associated with DM is very essential from time to time to observe the prescribing attitude of physicians with the aim of rational use of drugs and to minimize the adverse drug reactions (ADRs).

Hence the present study was conducted in order to establish the drug prescribing trend of anti-hypertensive agents in hypertensives and diabetic hypertensives in General Medicine Department of Sri Ramachandra Hospital. This kind of medical audit highlights the present prescribing practice of physicians and help in improving the patient health care further.

MATERIALS AND METHODS

This is a prospective study conducted for a period of 1 month in the

Outpatient Department of General Medicine at Sri Ramachandra Hospital, a tertiary care teaching hospital. This study was carried out after getting approval from the Research and Ethics Committee of Sri Ramachandra College of Pharmacy, Sri Ramachandra University. Patients with any stage of hypertension with or without comorbidities were included in the study. Pregnant women were excluded from the study. The prescriptions containing antihypertensives were collected from the patients attending the outpatient department of general medicine. The patient's demographics, blood pressure, antihypertensive drugs prescribed, comorbid conditions were entered in a specially designed proforma.

RESULTS

A total of 198 prescriptions were monitored, of which 34 were male and 164 were female. The age group of the patients vary from 50 - 75 years. Among 198 prescriptions, 35 prescriptions were of hypertensives and 163 prescriptions were diabetic hypertensives.

Among hypertensives, 24 patients were under combination therapy i.e. 68.57% of patients were treated with anti-hypertensive drug combinations and 11 patients were under monotherapy, i.e. 31.42% of patients were treated with single anti-hypertensive drug. In monotherapy, calcium channel blockers (amlodipine) were most commonly prescribed (n=9; 81.8%). In combination therapy, a two drug combination consisting of calcium channel blockers (amlodipine) and diuretics (hydrochlorothiazide) were given to the majority of patients (n=10; 41.66%) and a three drug combination of angiotensin converting enzyme inhibitor (enalapril), calcium channel blockers (amlodipine) and diuretics (hydrochlorothiazide) were given to the majority of patients (n=7; 29.16%).

The percentage and corresponding number of hypertensive patients, who received either monotherapy or combination therapy i.e. two or three drug regimens, is shown in Table 1.

Table 1: Drug Therapy in Hypertensive Patients.

DRUG THERAPY	NO. OF PATIENTS (N=35)		TOTAL
	MALE (4)	FEMALE (31)	
Mono therapy	1 (25%)	10 (32.25%)	11 (31.42%)
Two drug combination	3 (75%)	13 (41.9%)	16 (45.7%)
Three drug combination	0	8 (25.8%)	8 (22.8%)

Among diabetic hypertensives, 95 patients were under combination therapy i.e. 58.28% of patients were treated with anti-hypertensive drug combinations and 68 patients were under monotherapy i.e. 41.7% of patients were treated with single anti-hypertensive drug. In monotherapy, angiotensin converting enzyme inhibitors (enalapril) were most commonly prescribed (n=57; 83.8%). In combination therapy, a two drug combination consisting of calcium channel blockers (amlodipine) and angiotensin converting enzyme inhibitors (enalapril) were given to the majority of patients (n=25; 26.3%), followed by a combination of angiotensin converting enzyme inhibitors (enalapril) and diuretics (hydrochlorothiazide) (n=21; 22.1%) and a three drug combination of angiotensin converting enzyme inhibitor (enalapril), calcium channel blockers (amlodipine) and diuretics (hydrochlorothiazide) were given to the majority of patients (n=34; 35.78%). A four drug combination of angiotensin converting enzyme inhibitor (enalapril), calcium channel blockers (amlodipine), β -blocker (atenolol) and diuretics (hydrochlorothiazide) were given to only two patients (n=2; 2.105%).

The percentage and corresponding number of diabetic hypertensive patients, who received either monotherapy or combination therapy i.e. two or three drug regimens, is shown in Table 2.

Table 2: Drug Therapy in Diabetic Hypertensive Patients

DRUG THERAPY	NO. OF PATIENTS (N=163)		TOTAL
	MALE (30)	FEMALE (133)	
Mono therapy	12 (40%)	52 (39.09%)	64 (39.26%)
Two drug combination	10 (33.3%)	48 (36.02%)	58 (35.58%)
Three drug combination	8 (26.66%)	31 (23.30%)	39 (23.9%)
Four drug combination	0	2 (1.5%)	2 (1.22%)

The overall percentage and corresponding number of antihypertensive combination therapy among male and female patients, is shown in Table 3.

Table 3 : Anti-Hypertensive Combination Therapy Among Male And Female Patients.

COMBINATION THERAPY	NO. OF PATIENTS		TOTAL (119)
	MALE (21)	FEMALE (98)	
Two drug combination			
A+D	3 (14.28%)	20 (20.4%)	23 (19.3%)
C+D	5 (23.8%)	15 (15.3%)	20 (16.8%)
A+C	5 (23.8%)	24 (24.4%)	29 (24.36%)
C+B	0	1 (1.02%)	1 (0.84%)
Three drug combination			
A+C+D	8 (38.09%)	33 (33.6%)	41 (34.45%)
C+B+D	0	1 (1.02%)	1 (0.84%)
A+C	0	1 (1.02%)	1 (0.84%)
C+B	0	1 (1.02%)	1 (0.84%)
Four drug combination			
A+B+C+D	0	2 (2.04%)	2 (1.68%)

Where A= Angiotensin converting enzyme inhibitor , B= β -blocker , C= Calcium channel blocker, D= Diuretics

DISCUSSION

A prescription-based survey is considered to be one of the most effective methods to assess and evaluate the prescribing attitude of physicians⁵. The present study observed that hypertension and diabetic hypertension were more prevalent in females than in males.

Monotherapy and combination therapy were both more used in females at rates of 40.3% and 59.7 % respectively. These results supported the work of Hansson et al that showed blood pressure could be adequately controlled with the help of combination therapy⁶. Furthermore, combination therapy seems to be a rational approach to reduce the cardiovascular mortality⁷.

The present study revealed that calcium channel blockers and angiotensin converting enzyme inhibitors were the drugs of choice for hypertensives and diabetic hypertensives. Diuretics are generally recommended as first-line therapy for treatment of hypertension (JNC VII)⁸. In the present study, overall utilization of diuretics as combination therapy was 83.3% in hypertensive patients and 71.5% in diabetic hypertensive patients. The fixed combination of β -blocker and calcium channel blocker provides efficiency and tolerability in the treatment of arterial hypertension⁹. But in our study, overall only 6 patients (3.03%) were prescribed β -blockers, 0.51% in two drug combination, 1.51% in three drug combination and 1.01% in four drug combination. According to JNC 7 guidelines, for stage 1 hypertension (SBP 140-159 or DBP 90-99 mmHg), thiazide-type diuretics should be prescribed. For stage 2 hypertension (SBP \geq 160 or DBP \geq 100 mmHg), two drug combinations (usually thiazide-type diuretics and angiotensin converting enzyme inhibitors) should be prescribed. In our study, 62.7% of patients in stage 1 hypertension and 68.4% of patients in stage 2 hypertension were prescribed according to this guideline. The dose of the thiazide diuretic (hydrochlorothiazide) is 12.5-50 mg according to the guidelines. In the present study, all the patients who were prescribed with thiazides were given 25mg, which is in accordance with the guidelines.

CONCLUSION

The principal limitation of the study was that it was collected from the outpatient and thus not be representative of prescription patterns across the city. Based on the baseline data and lacunae in the present prescribing practice such as under-utilization of diuretics, an intervention study is warranted to further improve the current prescribing trend in the management of hypertension.

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