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ORIGINAL RESEARCH

Comparison of efficacy of different class of anti-hypertensive drugs prescribed in patients with hypertension

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ABSTRACT

Background: Hypertension is epidemic affecting one billion people and common risk factor of death throughout the world. The present study compared efficacy of different class of anti-hypertensive drugs prescribed in patients with hypertension.

Materials & Methods:84 cases of hypertension of both genders were divided into5 groups on different drugs used for treatment. Group I had calcium channel blockers, group II had beta blockers, group II had ACE inhibitors, group IV had angiotensive receptor blocker and group V had diuretics. Parameters such as risk factors of hypertension, associated comorbidities, assessment of blood pressure at baseline, after 15 days and 1 month was done.

Results: Out of 84 patients, males were 54 and females were 30. Common risk factors were obesity in 24%, hyperlipidaemia in 26%, family history in 14%, smoking in 54% and menopause in 24%. The difference was significant (P< 0.05). Associated co-morbidities were diabetes mellitus in 52, COPD in 14, CAD in 40, hyperthyroidism in 11 and asthma in 5 cases. The difference was significant (P< 0.05). There was significant difference in systolic and diastolic blood pressure recorded at baseline, after 15 days and 1 month in group II and IV (P< 0.05).

Conclusion: Maximum efficacy was seen with calcium channel blocker and common risk factors were obesity, hyperlipidaemia, family history, smoking and menopause.

Key words: Hyperlipidaemia, hypertension, smoking

Introduction

Hypertension is epidemic affecting one billion people and common risk factor of death throughout the world. The prevalence rate of hypertension is increasing rapidly in India, varying from 4 to 15% in urban and 2 to 8% in rural population.[1] Hypertension is divided into two parts that is systolic pressure and diastolic pressure (relaxation time period between beats). Normal blood pressure of the person is 120/80 mmHg and the person whose reading is above 140/90 mmHg is considered as hypertensive.[2]

It is a silent killer as very rarely any symptom can be seen in its early stages until a severe medical crisis takes place like heart attack, stroke, or chronic kidney disease.[3] Since people are unaware of excessive blood pressure, it is only through measurements that detection can

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be done. Although majority of patients with hypertension remain asymptomatic, some people with HTN report headaches, light-headedness, vertigo, altered vision, or fainting episode.[4] According to the Eighth Joint National Committee (JNC 8), first-line therapy for hypertension in the general population should include thiazide diuretic (TD), calcium channel blocker (CCB), angiotensin-converting enzyme inhibitor (ACEI), or angiotensin receptor blocker (ARB) monotherapy.[5] TDs are cheaper than other antihypertensive classes and have great potential for cost-savings when used as first-line therapy in the treatment of hypertension.[6]In this study we compared efficacy of different class of anti-hypertensive drugs prescribed in patients with hypertension.

Materials & Methods

This study comprised of 84 cases of hypertension of both genders. They were selected with their written consent. Ethical clearance was obtained before starting the study.

Data such as name, age, gender etc. was recorded. A thorough physical examination was carried by an expert cardiologist. 5 groups were formed based on different drugs used for treatment. Group I had calcium channel blockers, group II had beta blockers, group II had ACE inhibitors, group IV had angiotensive receptor blocker and group V had diuretics. Parameters such as risk factors of hypertension, associated comorbidities, assessment of blood pressure at baseline, after 15 days and 1 month was done. Results of the study was assessed statistically. P value less than 0.05 was considered significant.

Results

Table I Distribution of patients

Total- 84		
Gender	**Male**	**Female**
Number	54	30

Table I shows that out of 84 patients, males were 54 and females were 30.

Graph IRisk factors of hypertension

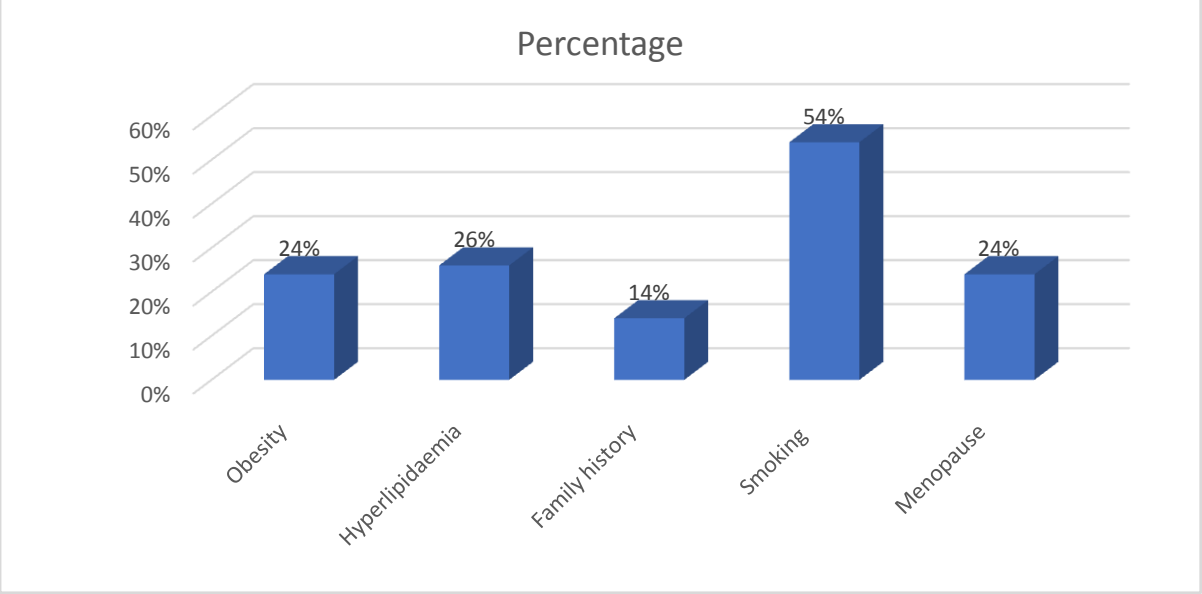

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Table II Risk factors of hypertension

Risk factors	Percentage	P value
Obesity	24%	0.05
Hyperlipidaemia	26%	
Family history	14%	
Smoking	54%	
Menopause	24%	

Table II, graph I shows that common risk factors were obesity in 24%, hyperlipidaemia in 26%, family history in 14%, smoking in 54% and menopause in 24%. The difference was significant (P< 0.05).

Table III Associated Co-morbidities

Associated Co-morbidities	Number	P value
Diabetes mellitus	52	0.01
COPD	14	
CAD	40	
Hyperthyroidism	11	
Asthma	5	

Table III, graph II shows that associated co-morbidities were diabetes mellitus in 52, COPD in 14, CAD in 40, hyperthyroidism in 11 and asthma in 5 cases. The difference was significant (P< 0.05).

Graph IIAssociated Co-morbidities

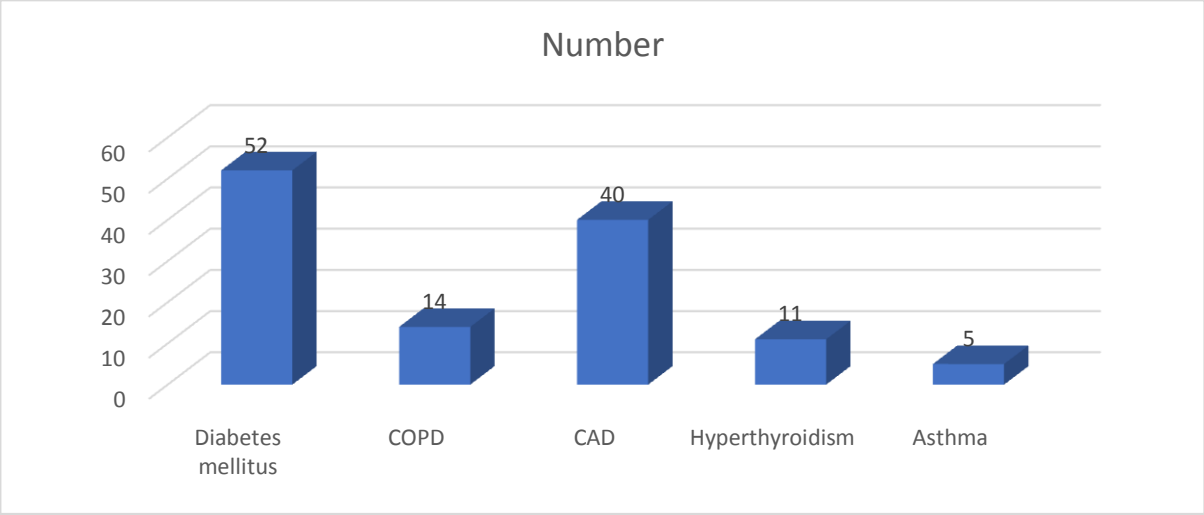

Table IV Assessment of blood group

Groups	Baseline	15 days	1 month	P value
Group I	160.5/100.2	146.4/92.4	140.2/78.4	0.01
Group II	156.4/102.4	150.2/100.2	148.4/98.2	0.05
Group III	160.2/98.4	156.8/96.4	150.2/94.2	0.90
Group IV	154.4/94.2	150.4/92.2	148.2/90.4	0.04
Group V	170.2/92.2	168.2/90.2	166.8/90.0	0.15

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Table IV shows that there was significant difference in systolic and diastolic blood pressure recorded at baseline, after 15 days and 1 month in group I, group II and IV (P< 0.05).

Discussion

Hypertension is a major public health problem due to its high prevalence all around the globe.[7] Around 7.5 million deaths or 12.8% of the total of all annual deaths worldwide occur due to high blood pressure. It is predicted to be increased to 1.56 billion adults with hypertension in 2025.[8] Raised blood pressure is a major risk factor for chronic heart disease, stroke, and coronary heart disease. Elevated BP is positively correlated to the risk of stroke and coronary heart disease.[9] Other than coronary heart disease and stroke, its complications include heart failure, peripheral vascular disease, renal impairment, retinal haemorrhage, and visual impairment.[10] In this study we compared efficacy of different class of anti-hypertensive drugs prescribed in patients with hypertension.

We found that out of 84 patients, males were 54 and females were 30. Common risk factors were obesity in 24%, hyperlipidaemia in 26%, family history in 14%, smoking in 54% and menopause in 24%. Suthar et al[11]compared the safety and efficacy of different class of anti-hypertensive drugs prescribed in 150 newly diagnosed hypertensive patients. The mean age of patients 55 years in which both genders were equally exposed. Diabetes Mellitus was major associated condition and patients above 50 years were at high risk for hypertension. Patients receiving ARBs showed significant control in blood pressure (p=0.03) as monotherapy when compared with other Anti-hypertensive drugs. In FDCs, Losartan + Hydrochlorothiazide (p=0.03, 0.005), Telmisartan + Metoprolol Succinate (p=0.00002, 0.005) and Losartan + Amlodipine (p=0.03, 0.0003) proved significance. Reported adverse effects were recorded at the time of treatment as safety parameter.

We found that associated co-morbidities were diabetes mellitus in 52, COPD in 14, CAD in 40, hyperthyroidism in 11 and asthma in 5 cases. Singh et al[12] included 640 study subjects aged 25–64 years was used. The prevalence of hypertension was 32.9% (male: 40.9%, female: 26.0%). Mean systolic and diastolic BP were 124.25 ± 15.05 mmHg and 83.45 ± 9.49 mmHg, respectively. Higher odds of being hypertensive were found in male subjects, eldest age group, married subjects, subjects of upper socioeconomic status, illiterate subjects, and retired subjects. Tobacco and alcohol consumption, overweight, obesity, and abdominal obesity were also associated with hypertension. Out of the total hypertensive 211 subjects, only 81 (38.4%) were aware about their hypertension status; out of those, 57 (70.4%) were seeking treatment and 20 (35.08%) had their blood pressure adequately controlled. Conclusion. Around one-third of the subjects were hypertensive and half of the study subjects were prehypertensive in this area. The awareness, treatment, and control of high blood pressure were also very low.

We observed there was significant difference in systolic and diastolic blood pressure recorded at baseline, after 15 days and 1 month in group II and IV. Machado et al[13] in their study a total of 565, 009 patients started monotherapy with ACEIs (43.6%), CCBs (23.6%), TDs (18.8%), or ARBs (14.0%). Patients who took TDs had a higher risk for either drug addition or discontinuation than patients who took ACEIs (hazard ratio [HR], 0.69 vs HR, 0.81 [95% CI, 0.80–0.81]), ARBs vs HR, 0.66 and CCBs. Conversely, patients who took TDs experienced a lower risk of clinical events compared with patients who took ACEIs, ARBs and CCBs. Gress TW et al study found that the subjects who are already taking diabetic medications are more likely to have high blood pressure than those without any co-morbidities present.

Israili ZH et al[14] reported that ARBs are relatively safe, efficacious and superior Anti-hypertensive drug recommended for blood pressure control. ARBs have unique

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renoprotective property and are first line anti- hypertensive agents in patients with impaired fasting glucose.

Conclusion

Authors found thatmaximum efficacy was seen with calcium channel blocker and common risk factors were obesity, hyperlipidaemia, family history, smoking and menopause.

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