

Original Research Article

A hospital based cross sectional study on clinical, laboratory and complications profile of patients with hypertension

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ABSTRACT

Background: Hypertension is a major risk factor for critical diseases like coronary heart disease, stroke, kidney disease etc. Hence adequate control of blood pressure is of utmost importance to prevent these complications. Objectives of the study was to study the clinical, laboratory and complication profile of patients with hypertension

Methods: A hospital based cross sectional study was carried out among 30 known cases of hypertension. Investigations/measurements like Blood pressure, body mass index, lipid profile, fasting blood sugar were done for all cases.

Results: Majority belonged to age group of >60 years (56.7%). Males were more (70%) than females (30%). About 60% had hypertension for >5 years. Only 26.7% were normal weight and remaining were either overweight or obese. The 56.7% admitted that they consumed alcohol. The 76.7% were non-smokers and only 10% were tobacco chewers. The 63.3% had family history of hypertension. Diabetes was the most common co morbidity associated with hypertension in 16.7% of the cases. The 10% each had coronary heart disease, and kidney disease. Mean levels of total cholesterol was 163.93; mean level of triglyceride was 159.53; mean level of HDL was 44.4; mean level of LDL was 84.76; mean level of Fasting blood sugar was 110.66; mean Systolic blood pressure was 134.66 and mean diastolic blood pressure was 86. Majority i.e., 90% were taking treatment for hypertension regularly while only 10% were not taking it regularly

Conclusions: Hypertensives were elderly and males were more affected with hypertension than females. Majority were hypertensives for more than five years. Diabetes was the most common co morbidity. Blood pressure was under control as majority were taking treatment regularly

Keywords: Hypertension, Complications, Risk factors, Lipid profile, Incidence

INTRODUCTION

Worldwide there is an increasing trend seen for diseases likes hypertension which comes under a group called cardiovascular diseases (CVDs). It was estimated that about one billion people lived with hypertension in the year 2000; and this number is expected to become 1.5 billion by the year 2025. This is due to the fact that life expectancy is increasing all over the world including developing countries and as blood pressure increases with age and in older age it is more prevalent as there is rigidity

of the blood vessels creating more resistance to the blood flow. Hence these numbers are due to the ageing of the population as well as other risk factors like increased salt consumption, increase in the use of tobacco including smoking and a lot other risk factors related with the hypertension.¹

There are many risk factors of hypertension as it is a multifactorial disease. Apart from genetic factors, other risk factors are increasing age, abnormal lipid profile of an individual, overweight and obesity, presence of diabetes,

increase in the intake of the salt, heavy alcohol consumption etc. In addition to these factors, high fat diet also contributes as an important risk factor for hypertension.²

Presence of hypertension along with the presence of dyslipidemia is the strongest risk factors for coronary heart disease and stroke. This duo and deadly combination are responsible for more than 80% of mortality in the developing countries.³ Hypertension and dyslipidemia affect the endothelium of the blood vessels. Once the endothelium of the blood vessels is affected to a great degree; the process of atherosclerosis starts. Once the process of atherosclerosis starts the person is at the greatest risk of developing CVDs. Thus, abnormal lipid profile can be viewed as an important risk factor not only for CVDs but also for hypertension.⁴

If the blood pressure is not controlled, it can lead to a variety of complications. Uncontrolled hypertension can cause at the first place the coronary heart disease, myocardial infarction. Stroke can be caused by the uncontrolled blood pressure. In some cases, the uncontrolled blood pressure can lead to the occurrence of the hypertensive encephalopathy. Kidney disease of acute and/or chronic nature can also be attributed to the uncontrolled blood pressure in most of the cases of the hypertension. Peripheral artery disease can also be attributed to the uncontrolled blood pressure in some of the cases of the hypertension. Atrial fibrillation can also be attributed to the uncontrolled blood pressure in cases of the hypertension. Aortic aneurysm can also be attributed to the uncontrolled blood pressure in the cases of the hypertension. Long standing hypertension is an important cause of mortality.^{5,6}

Thus, we know from this knowledge that once a person develops hypertension, he has to be careful right from the first day. He should follow the diet and exercise advice apart from taking medications regularly as per the prescribed by the physician. He should be aware of the complications of the hypertension both acute and chronic. Accordingly, he should prepare himself or herself for regular screening of the complications. This will help for early diagnosis of any complications and prompt treatment of any of these complications. Hence present study was carried out to study the clinical, laboratory and lipid profile of patients with known hypertension at a tertiary care center and also to help they understand the nature of the condition and the complications associated with it and make them aware with the importance of regular screening.

METHODS

It was a hospital based cross sectional study. Present study was carried out over a period of six months from October 2020 to March 2021. This study was done at the department of general medicine of a tertiary care hospital among patients attending the outpatient department of the

general medicine clinics. During the study period, as per the inclusion and exclusion criteria, it was possible to enrol the 30 cases of known hypertension. Convenient sampling technique was used to select these 30 cases.

Adults of age more than 30 years of age of either gender, known cases of hypertension under treatment, free from bed ridden conditions, able to interact and understand the study questionnaire and able to give the blood samples were included in the present study. Adults of age less than 30 years of age, newly diagnosed cases of hypertension, not willing to participate in the present study, associated bed ridden conditions were excluded from the present study.

Before the study was initiated, institution ethics committee permission was taken after submitting the protocol of the present study to the scientific committee first, their approval and then submitting the same to the institution ethics committee. The participants were identified based on the above-mentioned inclusion and exclusion criteria, they were explained the nature of the present study and then they were asked their willingness, if they were willing then their written informed consent was taken for the present study.

The data was entered in the pre designed, pre tested, semi structured study questionnaire which was devised especially for the present study based on the extensive review of literature. Baseline details like age, sex, duration of hypertension was noted down. Risk factors of hypertension like body weight, alcohol consumption, smoking, tobacco chewing was recorded. Height and weight were measured as per the standard protocol and standardized equipment. Blood pressure was measured in the sitting position after the patient was relaxed and keeping the blood pressure apparatus at the level of the heart. Blood pressure measurement followed the standard techniques described. Patients were asked to come next day with overnight fasting of 8-10 hours for the measurement of lipid profile and fasting blood sugar which also followed the standard techniques and standardized equipment as per the standard guidelines.

The data was entered in the Microsoft Excel worksheet and analysed using proportions.

RESULTS

Table 1 shows distribution of study subjects as per socio-demographic characteristics. Majority of study the subjects belonged to the age group of more than 60 years i.e., 56.7% and only 20% were seen in the age group of 32-49 years. Males were more (70%) than females (30%). About 60% of the cases had hypertension for the more than five years.

Table 2 shows distribution of study subjects as per risk factors of hypertension. Only 26.7% were normal weight and remaining were either overweight or obese. The 56.7%

admitted that they consumed alcohol. The 76.7% were non-smokers and only 10% were tobacco chewers. The 63.3% had family history of hypertension.

Table 1: Distribution of study subjects as per socio-demographic characteristics.

Socio-demographic characteristics		Number	Percentage (%)
Age (mean=62.83) (years)	32-49	6	20
	50-59	7	23.3
	≥60	17	56.7
Sex	Male	21	70
	Female	9	30
Duration of hypertension (mean=11.86) (years)	0-5	12	40
	>5	18	60

Table 2: Distribution of study subjects as per risk factors of hypertension.

Risk factors		Number	Percentage (%)
Body weight	Normal weight	8	26.7
	Overweight	10	33.3
	Obesity	12	40
Alcohol consumption	Yes	17	56.7
	No	13	43.3
Smoking	Yes	7	23.3
	No	23	76.7
Tobacco chewing	Yes	3	10
	No	27	90
Family history of hypertension	Yes	19	63.3
	No	11	36.7

Table 3: Distribution of study subjects as per complications/co morbidities of hypertension present.

Complications of hypertension		Number	Percentage (%)
Diabetes	Yes	5	16.7
	No	25	83.3
Coronary heart disease	Yes	3	10
	No	27	90
Stroke	Yes	5	16.7
	No	25	83.3
Kidney disease	Yes	3	10
	No	27	90

Table 3 shows distribution of study subjects as per complications/co morbidities of hypertension present. Diabetes was the most common co morbidity associated with hypertension in 16.7% of the cases. 10% each had coronary heart disease, and kidney disease.

Table 4: Distribution of study subjects as per lipid profile, blood pressure and fasting blood sugar.

Variables	Mean	Standard deviation
Total cholesterol	163.93	21.41
Triglycerides	159.53	45.73
HDL	44.4	8.95
LDL	84.76	24.21
Fasting blood sugar	110.66	31.3
Systolic blood pressure	134.66	11.66
Diastolic blood pressure	86	7.7

Table 4 shows distribution of study subjects as per lipid profile, blood pressure and fasting blood sugar. Mean levels of total cholesterol was 163.93; mean level of triglyceride was 159.53; mean level of HDL was 44.4; mean level of LDL was 84.76; mean level of fasting blood sugar was 110.66; mean systolic blood pressure was 134.66 and mean diastolic blood pressure was 86

Table 5: Distribution of study subjects as per taking treatment regularly.

Taking treatment regularly	Number	Percentage (%)
Yes	27	90
No	3	10
Total	25	100

Table 5 shows distribution of study subjects as per taking treatment regularly. Majority i.e., 90% were taking treatment for hypertension regularly while only 10% were not taking it regularly

DISCUSSION

Majority of the study subjects belonged to the age group of more than 60 years i.e., 56.7% and only 20% were seen in the age group of 32-49 years. Males were more (70%) than females (30%). About 60% of the cases had hypertension for more than five years. Only 26.7% were normal weight and remaining were either overweight or obese. The 56.7% admitted that they consumed alcohol. The 76.7% were non-smokers and only 10% were tobacco chewers. 63.3% had Family history of hypertension. Diabetes was the most common co morbidity associated with hypertension in 16.7% of the cases. The 10% each had coronary heart disease, and kidney disease. Mean levels of total cholesterol was 163.93; mean level of triglyceride was 159.53; mean level of HDL was 44.4; mean level of LDL was 84.76; mean level of Fasting blood sugar was 110.66; mean systolic blood pressure was 134.66 and mean Diastolic blood pressure was 86. Majority i.e., 90% were taking treatment for hypertension regularly while only 10% were not taking it regularly

Gebrie et al included 100 cases of known hypertension in their cross-sectional study.⁷ They noted that the average levels of the parameters of the lipid profile were above the cut off recommended as normal. The prevalence of abnormal LDL was 54%. The prevalence of abnormal total cholesterol was 52% and the prevalence of abnormal HDL was 11%. They also noted that total cholesterol was significantly more in those who had higher waist circumference.

Choudhury et al compared 234 known hypertensives with 75 cases without hypertension.⁸ The systolic blood pressure was significantly more in cases compared to the controls. The diastolic blood pressure was significantly more in cases compared to the controls. The lipid profile values like total cholesterol, triglycerides and low-density lipoproteins were significantly more in cases compared to the controls. The lipid profile values like high density lipoproteins were significantly less in cases compared to the controls. Body mass index, waist circumference and age were found to be significantly associated in the cases but not in the controls.

Sarwar et al carried out a case control study with 100 known hypertensives as cases and 100 cases without hypertension as controls.⁹ The lipid profile values like total cholesterol, triglycerides and low-density lipoproteins were significantly more in cases compared to the controls. The lipid profile values like high density lipoproteins were significantly less in cases compared to the controls. The blood pressure both the systolic as well as diastolic was found to be inversely correlated with high density lipoproteins.

Lepira et al compared 100 known hypertensives with 100 cases without hypertension.¹⁰ They found that the body mass index was significantly more in cases compared to the controls. The waist hip ratio was significantly more in cases compared to the controls. The plasma glucose was significantly more in cases compared to the controls. The serum uric acid was significantly more in cases compared to the controls. The creatinine was significantly more in cases compared to the controls. The lipid profile values like total cholesterol, triglycerides and low-density lipoproteins were significantly more in cases compared to the controls. The lipid profile values like high density lipoproteins were significantly less in cases compared to the controls.

Barrios et al studied 2024 cases in which 31.7% were females and the mean age was 66.8 years.¹¹ They found that the incidence of renal function impairment was 32.9% when the glomerular filtration rate method was used and the incidence of renal function impairment was 24.6% when the serum creatinine method was used. Thus, they found two groups; one with renal function impairment and the other without it in these 2024 cases. When they compared these two groups, they found that the renal function impairment group cases had higher average age and the rate of other complications was also more in them.

Salagre et al carried out a prospective observational study over a period of one year among 120 patients with blood pressure of >180/120 mm Hg.¹² They found that the incidence of hypertensive urgency was 51.6% whereas the incidence of hypertensive emergency was seen in 48.33% of the cases. Most of them presented with headache and giddiness. Hypertensive emergency cases had significantly a greater number of complications compared to the hypertensive urgency cases. Similarly, blood pressure was also found out to be significantly more in hypertensive emergency cases had compared to the hypertensive urgency cases. Hypertensive emergency was more common in males, alcoholics, cases with dyslipidaemia and diabetics compared to the hypertensive urgency cases.

Limitations

The present study had limited sample size and hence the results of the study should be interpreted with caution, but when compared to other studies with large sample size, the results are comparable. It was also a single center study which limits the overall generalizability. The treatment history was obtained and may have recall bias or some patients may not have disclosed affecting the results. We tried to overcome this limitation by asking the patients to produce their treatment cards, but some were unable to produce it and also some gave very recent as they lost their very old records.

CONCLUSION

From the present study we conclude that hypertension was common in elderly and males. Also, the duration of the hypertension was more than five years. Obesity, overweight, obesity, alcohol, family history of hypertension and diabetes were common risk factors recorded in the present study. Thus, it tells that if all these factors were already taken care of, that would have helped to prevent hypertension in these groups of patients. Coronary heart disease and kidney disease were common complications of hypertension seen in the present study, showing the importance of hypertension control.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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