

Determine the Prevalence and Types of Hyperlipidemia among Hypertensive People

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ABSTRACT

Background: The elderly population is growing, and hypertension is frequent in this age group. Among addition, cardiovascular and cerebrovascular disorders associated with hypertension are more prevalent in the elderly. The typical cause of isolated systolic hypertension in elderly adults is the atherosclerosis-induced stiffness of the aorta and major arteries. According to postmortem examinations conducted on human coronary arteries and aortas from around the world, atherosclerosis is more widespread and severe in hypertensive individuals than in normotensive individuals.

Aims & Objectives: To determine the prevalence and forms of hyperlipidaemia in hypertensive people.

Materials & Methods: The proposed study would be conducted on OPD/IPD patients at Santosh Hospital by the Department of Medicine at Santosh Medical College, Santosh University, Ghaziabad. One year will pass between January 2014 and January 2015 for the length of the study. This is a case-control investigation. There were 100 volunteers between the ages of 31 and 60 who were both male and female and of the same age and gender.

Results: This study finds that 9% of instances are in their fifth decade, with 8% of male cases and 1% of female cases, 5% of cases are in their fourth decade, with 4% of male cases and 4% of female cases, and 8% of cases are in their third decade, with 3% of male cases and 5% of female cases.

Conclusion: Serum lipid profile was discovered to be a useful marker for cardiovascular disease screening in hypertensive persons, and early detection of cardiovascular illness can reduce cardiovascular morbidity and mortality. In addition, total cholesterol, HDL-C, LDL-C, and BMI were abnormal in my study of hypertensive individuals, although triglycerides and VLDL-C did not differ significantly with hypertension.

Keywords: hyperlipidaemi, cerebrovascular disease, hypertensive, atheromatous plaques

1. INTRODUCTION

The geriatric population is on the rise, and hypertension is particularly prevalent in this age group. Among addition, cardiovascular and cerebrovascular diseases related with high blood pressure are more prevalent in the elderly. The atherosclerosis-induced stiffness of the aorta

and major arteries is a typical cause of isolated systolic hypertension in elderly patients. [2-5] Atherosclerosis is more broad and severe in hypertension individuals than in normotensive individuals, according to postmortem investigations conducted on human coronary arteries and aortas from throughout the world. The prevalence of coronary artery disease in urban individuals has increased dramatically from 3.5% in the 1960s to 11% in the 1990s, and it is anticipated to increase further in the future. Adult hypertension is defined as systolic pressure of 140 mmHg or greater and/or diastolic pressure of 90 mmHg or greater. [6]

It is the most prevalent risk factor for cardiovascular disease, increasing the risk of stroke, myocardial infarction, heart failure, and renal failure.⁷ In India, cardiovascular illnesses would be the leading cause of death and disability by 2020, according to the 2003 World Health Report. ⁸ In 2020, coronary heart disease is expected to claim the lives of 2.6 million Indians, or 54.1% of all cardiovascular disease deaths. ⁹ The likelihood of hypertensive individuals to acquire target organ damage is significantly influenced by coexisting risk factors such as age, sex, smoking, obesity, diabetes, dyslipidemia, and others in addition to blood pressure. Among these parameters, lipoproteins are essential to the atherosclerotic process and have a significant impact on the effect of hypertension on the development of target organ damage and, consequently, on cardiovascular morbidity and death. [8-10]

Dyslipidemia and hypertension are the most prevalent coronary artery disease risk factors.[11] Individuals with a combination of these risk factors have an elevated risk of coronary artery disease. It is observed that lipid levels increase when blood pressure rises. [12] Detecting risk factors early, prior to the catastrophic and life-threatening effects of severe atherosclerosis, is a huge concern for both the general population and the practising physician.

The study of distinct fractions of lipoprotein as risk factors for coronary artery disease and hypertension has only been possible with the advent of lipoprotein fractionation techniques. However, cholesterol was implicated as an etiological factor for atherosclerosis when it was discovered in atheromatous plaques at the turn of the century. LDL and VLDL are atherogenic, but HDL is protective against coronary artery disease and hypertension, as demonstrated by numerous international research. The concentrations of serum lipids and lipoproteins are frequently utilised to identify individuals who may have substantial atherosclerotic disease. [13]

Lipoproteins deliver hydrophobic lipids (mainly triglycerides, cholesterol, and fat-soluble vitamins) to and from tissues via bodily fluids (plasma, interstitial fluid, and lymph). Lipoproteins are crucial for the absorption of dietary cholesterol, long chain fatty acids, and fat-soluble vitamins, the transfer of triglycerides, cholesterol, and fat-soluble vitamins from the liver to peripheral tissues, and the transport of cholesterol from peripheral tissues to the liver. Lipoproteins are composed of a core of hydrophobic lipids (triglycerides and cholesteryl esters) surrounded by hydrophilic lipids (phospholipids, cholesterol) and proteins that interact with bodily fluids. [22] Triglycerides and cholesteryl esters, the two most prevalent neutral lipids carried in the blood, are insoluble in water. [14-16] Therefore, amphipathic molecules must cover them to aid this action. By attaching to a particular enzyme or transport protein on the cell membrane, the apoprotein directs the lipoprotein to its site of metabolism. [23]

2. METHODS & MATERIALS

The proposed study would be undertaken at the Department of Medicine, Santosh Medical College, Santosh University, Ghaziabad, on Santosh Hospital OPD/IPD patients. From

January 2014 to January 2015, the duration of the study will be one year. The following is a case-control study. There were 100 male and female participants between the ages of 31 and 60 who were of the same age and gender. The case group will consist of 75 hypertensive individuals, whereas the control group will consist of 25 healthy patients.

Using the SPSS application, each parameter was analysed. Analysis of variance (ANOVA) was utilised to compare all of the parameters. The p value was calculated after comparing cases and controls using the Chi-square test and the t-test for independent samples. All data are shown as standard deviation from the mean (SEM).

3. RESULTS

At Santosh Medical College and Hospital, Ghaziabad, Uttar Pradesh, a Case-Control study was undertaken with 75 patients as cases and 25 as controls to determine the prevalence of dyslipidemia in hypertension patients.

Table1: Demographic, clinical and Biochemical profile of the hypertensive and normotensive patients

	Hypertensive	Normotensive	p-value
Age (Years)	49.5±7.7	46.8±9.0	P=.150
BMI (Kg/m ²)	26.0±1.73	22.3±1.73	P=.000
SBP (mmHg)	161.3±6.69	119.5±4.01	P=.001
DBP (mmHg)	93.09±7.83	78.08±4.48	P=.001
TC (mg/dl)	189.6±55.0	153.7±34.1	P=.003
HDL (mg/dl)	45.0±6.7	48.0±5.83	P=.000
LDL (mg/dl)	104.8±40.6	91.6±17.1	P=.000
TG (mg/dl)	102.8±43.1	85.9±34.9	P=.080
VLDL (mg/dl)	20.3±8.1	16.5±5.4	P=.029

Table 2: Age & Gender Distribution of the Normotensive Patients

This study shows that 9% of the cases are in their 5th decade of life that consists of 8% male and 1% female, 5% of cases are in their 4th decade which comprises of 4% male and 4% female and 8% of the cases are in the 3rd decade which has 3% male and 5% male.

Age	Female	Male	Total
31-40	5	3	8
41-50	4	4	5
51-60	1	8	9
Total	10 (40%)	15 (60%)	25 (100%)

Table 3: BMI and Lipid profile of Hypertensive and Normotensive Patients

Variables	Male (n)=44	Female (n)=31	p-value	Result
BMI (Kg/m ²)	26.03±1.8	25.8±1.6	0.63	Not significant
Total Cholesterol (mg/dl)	178.6±51.8	205.3±56.3	0.037	Significant
Triglyceride (mg/dl)	98.6±43.4	108.6±42.6	0.330	Not Significant
HDL- Cholesterol (mg/dl)	45.6±6.6	44.0±6.8	0.316	Not Significant
LDL- Cholesterol (mg/dl)	96.0±36.8	117.4±42.8	0.23	Not Significant
VLDL- Cholesterol(mg/dl)	19.18±7.3	22.0±8.9	0.127	Not Significant

Significant at $p < 0.05$ level

4. DISCUSSION

There was a correlation between hypertension and normotensive participants' total cholesterol levels. Significantly, hypertension participants had a higher total cholesterol (189.655) than normotensive subjects (153.734.1) ($p=0.003$). Our findings were consistent with Srinivas Pai K, Sanjay Bhagoji et al study⁸⁶, which shown a favourable correlation between hypertension and total cholesterol. [17-19] They demonstrated that hypertension patients had greater total cholesterol levels than healthy adults. Gulab Kanwar, Neelam Jain, and others found a positive connection between hypertension and total cholesterol. 19 In their respective studies, Arindam Sur, Trikey BN, et al.¹⁸ and Umar G Adamu, George A Okku, et al.⁸⁵ reached the same conclusion.

We also compared LDL-C levels and mean blood pressure in this study. When the LDL-C levels of hypertensive and normotensive patients were compared, there was a positive correlation between the LDL cholesterol and hypertension. The outcome was comparable to that of a study by Golnoosh Ghooshchi, Mahdi Masoomian, et al., which demonstrated elevated LDL-C levels in hypertension participants compared to normotensive subjects. 87 M S Saha, N K Sana, et al. likewise concluded that hypertension and LDL cholesterol are positively correlated. 88 Arindam Sur, Trikey BN, et al.,¹⁸ N. Brixi Gormat, F. Benmaansour, et al.,⁸⁹ and others have reached the same conclusion based on their research. In accordance with previous studies by M.S. Saha, N.K. Sana et al.⁸⁸, the present study found that the prevalence of hypertension increases with age in all age groups. The majority of patients of both sexes were between 50 and 60 years of age, and the percentage dropped sharply below these ages [20-22]. N. Brixi Gormat, F. Benmaansour, and others⁸⁹ drew the same conclusion from their work.

In this study, the total cholesterol levels of females were shown to be statistically significantly higher than those of males ($p=0.037$). In a statistically significant study conducted by Ali Akbar Tavasoli, Masoumeh Sadeghi, et al.¹², total cholesterol was shown to be statistically significantly higher in females than in males.

In this study, no significant correlation was found between the triglyceride levels of hypertensive patients and normotensive patients, which is consistent with the study conducted by Umar G Adamu, George A Okku et al.⁸⁵ but contradictory to the study conducted by Raksha Goyal, Nandini Sarwate et al.⁸⁴, which concluded that hypertensive patients had significantly higher triglyceride levels than normotensive patients.

In contrast to the study conducted by Gulab Kanwar, Neelam Jain et al.19, which reported that VLDL-C levels were considerably greater in hypertension patients than in normotensive individuals, no significant link was detected between VLDL-C and mean blood pressure in the present investigation.

Thus, our study demonstrates that hypertension patients are more likely to have dyslipidemia, and total cholesterol, HDL-C, and LDL-C were shown to be abnormal compared to triglycerides and VLDL-C.

5. CONCLUSION

This study suggests that the prevalence of dyslipidemia is quickly increasing in both emerging and developed countries. Together, hypertension and hyperlipidemia are more common than would be anticipated by chance. Hyperlipidemia may increase the risk of hypertension, and lipid-lowering therapy may improve blood pressure and endothelial dysfunction. Hypertension and dyslipidemia are the two most major cardiovascular disease risk factors, and as such, they can serve as vital markers for cardiovascular morbidity and mortality. The blood lipid profile of hypertensive individuals differed significantly from that of normotensive patients.[18-20] The serum lipid profile did not differ significantly between hypertensive males and females. Twenty to thirty percent of 75 hypertensive patients showed an abnormal blood lipid profile.

Thus, it was discovered that serum lipid profile can serve as an important marker for cardiovascular disease screening in hypertensive patients and that early detection of cardiovascular disease can reduce cardiovascular morbidity and mortality. In addition, total cholesterol, HDL-C, LDL-C, and BMI were found to be abnormal in hypertensive people in my study, although triglycerides and VLDL-C did not substantially differ with hypertension.

6. REFERENCES

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