

This Study Objective Is To Examine the Abnormal Lipid Profile (TC, TG, HDL, LDL, and VLDL) of Hypertension Patients and Healthy Individuals

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ABSTRACT

Background: Given that essential hypertension is generally asymptomatic and undiagnosed, it has been appropriately termed the silent killer. Every organ can be damaged by uncontrolled hypertension. Hyperlipidemia and hypertension are the most prominent risk factors for coronary artery disease (CAD). Those with a combination of risk factors are particularly prone to coronary artery disease.

Aims & Objective: Compared the aberrant lipid profile (TC, TG, HDL, LDL, VLDL) of hypertension patients to that of healthy individuals.

Methods & Materials: The proposed research would be done at the Department of Medicine, Santosh Medical College, Santosh University, Ghaziabad, on patients attending the Santosh Hospital Medicine OPD/IPD. 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.

Results: This survey reveals that 38% of individuals are in their fifth decade of life, 19% are male and 19% are female, 23% are in their fourth decade, 15% are male and 8% are female, and 14% are in their third decade, 9% are male and 5% are female.

Conclusion: Serum lipid profile can serve as an important marker for cardiovascular disease screening in hypertensive persons, and early diagnosis 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.

Keywords: Cardiovascular , Dyslipidemia, metabolic , abnormality , gastrointestinal mucosa

1. INTRODUCTION

Hypertension continues to be one of the most frequent disorders treated by physicians and a global health concern. This condition's mechanics and clinical characteristics have been better elucidated by ongoing research, which has also increased the number of available therapy choices. Although high blood pressure is an independent risk factor for severe clinical events,

it typically occurs as part of a syndrome characterised by cardiovascular, neuroendocrine, and metabolic abnormalities. [1,2]

Because it is typically asymptomatic and undiscovered, essential hypertension has been properly dubbed the silent killer. Uncontrolled hypertension can harm every organ in the body. [3] Dyslipidemia and hypertension are the most prevalent coronary artery disease risk factors (CAD). Those with a mix of risk factors are especially susceptible to coronary artery disease. Subjects with hypertension typically have greater cholesterol levels than those with normal blood pressure. [4] It is the most prevalent cardiovascular disease and the major cause of morbidity and mortality in the industrialised world, as well as a growing problem in emerging nations. [5-7]

Although no specific dyslipidemia pattern has been consistently reported among hypertensive individuals, numerous studies have demonstrated that total cholesterol, triglycerides, and virtually all fractions of lipoproteins tend to be abnormal in hypertensive patients more frequently than in the general population.[14,15] Recent research has conclusively proven that atherosclerosis and left ventricular hypertrophy are significant variables that contribute to hypertension and myocardial infarction. [16,17]In both developed and developing countries, hypertension has emerged as a major contributor to the global disease burden.18 Hypertension and dyslipidemia are strongly correlated. They make people more susceptible to developing coronary heart disease. [19]

With the exception of minute quantities of things such as vitamins and minerals, the body's primary food sources are carbs, lipids, and proteins. They are often incapable of absorption through the gastrointestinal mucosa in their native forms and, as a result, are ineffective as nutrients without prior digestion. The presence of hypothyroidism should be ruled out by evaluating serum TSH levels. Patients with hyperlipidemia, particularly hypertriglyceridemia, who consume alcohol should be urged to reduce their consumption. Low HDL-C levels are connected with a sedentary lifestyle, obesity, and smoking, and patients should be advised about these issues.

Once secondary explanations for the increased lipoprotein levels have been ruled out, attempts should be made to diagnosis the fundamental lipid problem, as the underlying aetiology influences the risk of developing CHD, the responsiveness to medication therapy, and the care of other family members. [8-11] Frequently, the right diagnosis involves a comprehensive family medical history and, in certain instances, lipid studies on family members. [12]

Hypertension and high cholesterol

Cardiovascular disorders are on the rise globally.[16] This growth is raising significant concern in emerging nations such as India. Hypertension and dyslipidemia are the two leading cardiovascular disease risk factors. Within the range of 15 to 31%, they coexist. Both risk factors have an unfavourable effect on the vascular endothelium, resulting in accelerated atherosclerosis and cardiovascular disease. Dyslipidemia is a key modifiable cardiovascular disease (CVD) risk factors. [17] In addition, it has been found as an independent risk factor for hypertension important.[18,19] Dyslipidemia is more prevalent among untreated hypertension patients. [20,21] According to studies, hypertension patients tend to have aberrant levels of total cholesterol (TC), triglycerides (TG), and all fractions of lipoproteins compared to the general population. [22-25] Hypertension and lipid abnormalities act in concert to accelerate the development of atherosclerosis and cardiovascular disease.

2. MATERIALS AND METHODS

The proposed research would be conducted at the Department of Medicine, Santosh Medical College, Santosh University, Ghaziabad, on patients attending the Santosh Hospital Medicine OPD/IPD. From January 2014 to January 2015, the study will be done over the course of one year. This is a case-control analysis. There were 100 age- and gender-matched male and female participants between 31 and 60 years old. 75 hypertension people will comprise the case group, whereas 25 healthy subjects will comprise the control group.

All parameters were examined using SPSS programme. To compare all of the parameters, analysis of variance (ANOVA) was employed. Cases and controls were compared using the Chi-square test and the t-test for independent samples, and the p value was computed. All data are provided as the Standard Mean of the means.

3. RESULTS

A Case Control study was conducted with 75 patients as cases and 25 patients as control to see the prevalence of dyslipidemia in hypertensive patients, which took place at Santosh Medical College and Hospital, Ghaziabad, Uttar Pradesh.

Table 1: 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 Hypertensive Patients

This study shows that 38% of the cases are in their 5th decade of life that consists of 19% male and 19% female, 23% of cases are in their 4th decade which comprises of 15% male and 8% female and 14% of the cases are in the 3rd decade which has 9% male and 5% female.

Age	Female	Male	Total
31-40	5	9	14
41-50	8	15	23
51-60	19	19	38

Total	32 (42.6%)	43 (57.4%)	75 (100%)
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4. DISCUSSION

The prevalence of cardiovascular disease (CVD) is increasing globally, and it remains the most prevalent condition treated by physicians. In emerging nations such as India, the escalation of the burden is a serious issue and problem. It is well-established that hypertension and dyslipidemia are the two most important cardiovascular disease risk factors. [20-21] Multiple epidemiological research have demonstrated that the prevalence of hypertension and dyslipidemia co-occurrence ranges from 15 to 31%. Coexistence of the two risk factors has a greater than additive negative effect on the arterial endothelium, resulting in accelerated atherosclerosis, which is associated with cardiovascular disease and bad outcomes. [22]

This study was undertaken to identify the abnormality of the lipid profile (TC, TG, HDL, LDL, VLDL) in hypertension patients and healthy participants, as well as to determine the incidence and kinds of hyperlipidemia in hypertensive subjects. It is a case-control study with 75 patients and control subjects [13-14].

Patients were evaluated using a comprehensive history, a thorough physical examination (blood pressure measurement), and laboratory tests. To rule out secondary hypertension, laboratory tests included lipid profile (TC, TG, HDL, LDL, VLDL), fasting blood glucose, post prandial glucose levels, Serum TSH level, blood urea, Serum creatinine, ECG, and chest x-ray.

Our investigation demonstrated a statistically significant rise in BMI between cases (26.01.73) and controls (22.31.73), with a p-value of 0.000. Charles U. Osuji, Emeka G. Omejua, et al., who analysed cross-sectional data and determined that hypertension people were much heavier than normotensive subjects and had a significantly greater lipid profile, concur with our findings. [18] Raksha Goyal and Nandini Sarwate also analysed cross-sectional data and reached the conclusion that hypertension patients had a higher BMI than normotensive patients with a significantly abnormal lipid profile.

Therefore, this study demonstrates a substantial link between mean blood pressure and total cholesterol, HDL-C, and LDL-C, but not between triglycerides and VLDL-C. According to research conducted by Gulab Kanwar, Neelam Jain, et al.,¹⁹ Arindam Sur, Trikey BN, et al.,¹⁸ N. Brixi Gormat, F. Benmaansour, et al.⁸⁹ total cholesterol and LDL-C were higher in hypertensive individuals than in normotensive patients. [20-23] In hypertension individuals, HDL-C levels were lower than in normotensive patients.

In this study, there was no significant correlation between triglyceride levels of hypertensive patients and normotensive patients, which is consistent with the study conducted by Umar G Adamu, George A Okku et al [24] but in contrast to the study conducted by Raksha Goyal, Nandini Sarwate et al⁸⁴, which concluded that triglyceride levels were significantly higher in hypertensive patients than in normotensive patients.

5. CONCLUSION

This study finds that the prevalence of dyslipidemia is rising rapidly in both developing and industrialised nations. Together, hypertension and hyperlipidemia occur more frequently than expected by chance. Hyperlipidemia may predispose to hypertension, and lipid-lowering therapies may have a favourable effect on blood pressure and endothelial dysfunction.

Hypertension and dyslipidemia are the two most important risk factors for cardiovascular disease, and as such, they can serve as essential markers for cardiovascular morbidity and death. The blood lipid profile of hypertension patients was considerably altered compared to normotensive patients.,2. There was no significant difference between hypertensive males and females in serum lipid profile.,3. Only 20-31% of 75 hypertensive patients had an altered serum lipid profile.

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

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