Original Article

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Assessment of Serum Lipid Profile in Patients with Hypertension

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Abstract

Background: Hypertension had a global burden on 26.4% of the adult population in 2000, and projections reveal a rise to 29.2 per cent by 2025. Given its high prevalence and associated risks of progression to cardio-vascular disease (CVD) and stroke, early diagnosis becomes crucial. The present study was undertaken for assessing serum lipid profile in patients with hypertensive patients. **Subjects and Methods:** A total of 50 patients with confirmed diagnosis of essential hypertension were enrolled. Another set of 50 age and gender matched subjects were taken as healthy controls. Complete demographic and clinical details of all the subjects were obtained. Blood samples were obtained from all the subjects and were sent to laboratory where autoanalyzer were used for assessment of serum lipid profile. All the results were recorded in Microsoft excel sheet and were analyzed by SPSS software. **Results:** Mean Triglycerides among the patients of the essential hypertension group and control group was 1.36 and 1.15 respectively (p- value < 0.05). Mean total cholesterol levels among the patients of the essential hypertension group and control group was 4.96 and 4.05 respectively (p- value < 0.05). **Conclusion:** Serum lipid profile is significantly deranged in essential hypertension patients.

Keywords: Essential hypertension, Lipid profile.

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Introduction

Hypertension had a global burden on 26.4% of the adult population in 2000, and projections reveal a rise to 29.2 per cent by 2025. In India, the rising burden of hypertension is evident from an increase in prevalence from 5% to 20–40% in the past three decades, which is indeed alarming. The etiology of 90% of the cases of hypertension remains unclear and is termed as essential hypertension (EH). Given its high prevalence and associated risks of progression to cardio-vascular disease (CVD) and stroke, early diagnosis becomes crucial.[1–3]

Despite the presence of easy and reliable blood pressure evaluation methods (using manual or automated sphygmomanometer), screening of hypertension is usually ignored because of the late appearance of symptoms. Moreover, EH pathophysiology is not merely restricted to elevated blood pressure. Factors such as lifestyle, environmental influences, and disturbances in vascular structure play an important role in EH. The genetic relationship has been largely explored; however, the perturbations in metabolic and biochemical pathways in EH remain less explored.[4–6] Dyslipidemia is more common in untreated hypertensives than normotensives, and lipid levels increase as BP increases. Though no specific pattern of dyslipidemia has been consistently reported among hypertensive individuals, many studies have shown that total cholesterol (TC), triglycerides (TG), and virtually all fractions of lipoproteins tend to be more frequently abnormal among hypertensive patients than in the general population.[4,5] Hence; the present study was undertaken for assessing serum lipid profile in patients with hypertensive patients.

Subjects and Methods

The present study was undertaken for assessing serum lipid profile in patients with hypertensive patients. A total of 50 patients with confirmed diagnosis of essential hypertension were enrolled. Another set of 50 age and gender matched subjects were taken as healthy controls. Complete demographic and clinical details of all the subjects were obtained. Blood samples were obtained from all the subjects and were sent to laboratory where autoanalyzer were used for assessment of serum lipid profile. All the results were recorded in Microsoft excel sheet and were analyzed by SPSS software. Chi-square test and student t test were used for evaluation of level of sig-

nificance.

Results

A total of 50 essential hypertensive patients and 50 healthy controls were enrolled. Mean age of the hypertensive patients and controls was 43.8 years and 46.1 years respectively. Among the patients of the hypertensive group, 32 were males while the remaining 18 were females. Among the patients of the control group, 27 were males while the remaining 23 were females. Mean Triglycerides among the patients of the essential hypertension group and control group was 1.36 and 1.15 respectively (p- value < 0.05). Mean total cholesterol levels among the patients of the essential hypertension group and control group was 4.96 and 4.05 respectively (p- value < 0.05).

Table 1: Age-wise distribution of patients

Age (years)	Essential hypertension	Control group
Mean	43.8	46.1
SD	5.6	7.8

Table 2: Gender-wise distribution of patients

Gender	Essential hypertension	Control group
Males	32	27
Females	18	23
Total	50	50

Table 3: Comparison of Lipid profile

Lipid profile	Essential hypertension	Control group	p- value
TG	1.36	1.15	0.00*
HDL-C	1.29	1.25	0.15
TC	4.96	4.05	0.00*

*: Significant

Discussion

Hypertension and dyslipidemia are major risk factors for cardiovascular disease (CVD) and account for more than 80% of deaths and disability in low- and middle-income countries. The prevalence of hypertension is projected to increase globally, especially in the developing countries. In recent years, rapid urbanization, increased life expectancy, unhealthy diet, and lifestyle changes have led to an increased rate of CVD in Southeast Asia, including Bangladesh.[3] It is widely accepted that CVD is associated with hypertension and increased blood levels of low-density lipoprotein (LDL), total cholesterol (TC), and triglycerides (TG). In contrast, a low level of high density lipoprotein (HDL) is a risk factor for mortality from CVD. Epidemiological studies have established a strong association between hypertension and coronary artery disease.[6–9] Hence; the present study was undertaken for assessing serum lipid profile in patients with hypertensive patients.

A total of 50 essential hypertensive patients and 50 healthy controls were enrolled. Mean age of the hypertensive patients and controls was 43.8 years and 46.1 years respectively. Among the patients of the hypertensive group, 32 were males while the remaining 18 were females. Among the patients of the control group, 27 were males while the remaining 23 were females. Osuji CU et al examined the serum lipid patterns of newly diagnosed hypertensive patients attending a tertiary healthcare centre. 126 males and 124 females were in each of the two groups. Mean age was comparable in both groups. Hypertensives had significantly higher mean systolic blood pressure, diastolic blood pressure, body mass index, waist circumference, waist-hip ratio, and fasting blood sugar than the controls. The mean TC, TG, and LDL-C were significantly higher among the hypertensives. The mean HDL-C was comparable; P = 0.8. Among the hypertensive subjects, there was statistically significant positive correlation between BMI and TC; LDL-C and TG; WC and TG; FBS and TC; LDL-C and TG. HDL-C showed a statistically significant inverse correlation with WHR in hypertensives. Their study showed that lipid abnormalities are highly prevalent among newly diagnosed hypertensives.[10]

In the present study, Mean Triglycerides among the patients of the essential hypertension group and control group was 1.36 and 1.15 respectively (p- value < 0.05). Mean total cholesterol levels among the patients of the essential hypertension group and control group was 4.96 and 4.05 respectively (p- value < 0.05). Choudhury KN et al determined the association between serum lipid profiles in hypertensive patients with normotensive control subjects. A cross-sectional study was carried out among 234 participants including 159 hypertensive patients and 75 normotensive controls from January to December 2012 in the National Centre for Control of Rheumatic Fever and Heart Disease in Dhaka, Bangladesh. Data were collected on sociodemographic factors, anthropometric measurements, blood pressure, and lipid profile including total cholesterol (TC), triglyceride (TG), low density lipoprotein (LDL), and high density lipoprotein (HDL). The mean (± standard deviation) systolic blood pressure and diastolic blood pressure of the participants were 137.94±9.58 and 94.42±8.81, respectively, which were higher in the hypertensive patients (P<0.001). The serum levels of TC, TG, and LDL were higher while HDL levels were

lower in hypertensive subjects compared to normotensives, which was statistically significant (P<0.001). Age, waist circumference, and body mass index showed significant association with hypertensive patients (P<0.001) but not with normotensives. The logistic regression analysis showed that hypertensive patients had 1.1 times higher TC and TG, 1.2 times higher LDL, and 1.1 times lower HDL than normotensives, which was statistically significant (P<0.05). Hypertensive patients in Bangladesh have a close association with dyslipidemia and need measurement of blood pressure and lipid profile at regular intervals to prevent cardiovascular disease, stroke, and other comorbidities.[11]

Conclusion

From the above results, the authors concluded that serum lipid profile is significantly deranged in essential hypertension patients.

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