

Assessment of Lipid Profile & Serum Total Protein in Patients with Hypertension

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Introduction

Hypertension is represented by applying different adjustments in the structure and capacity of the cell layer.¹ 25% of the adult population all over the world affected by increased blood pressure and it is spread in developed as well as developing countries. The incidence of hypertension in Pakistan that is 33%.² Essential hypertension is one of the main factor which causes the pathological change of different vital organs, disturbance in lipid profile, serum electrolytes, serum creatinine, serum total proteins are the main alarming indicators that there is the pathology of different organs has been started. Dyslipidemia with hypertension also altered the PH and cytosolic calcium, so

ABSTRACT

Background: Hypertension is the leading reason of pathological damage of multiple organs of human body especially heart, kidney, eyes etc. Lipid profile, Blood urea, Serum creatinine, Serum total proteins, Electrolytes, HbA1c etc are must be regularly checked in the patients of hypertension, because these parameters give proper clue for the pathophysiological functions of organs which will be affected by hypertension.

Objective: To evaluate the difference between the lipid profile and serum total proteins between the normotensive and hypertensive persons of the same age.

Study Design: Case control study.

Place and Duration: October 2014- November 2015, at the Department of Biochemistry LUMHS Jamshoro

Methodology: This study was carried out at Biochemistry Department of LUMHS Jamshoro. All the patients were divided in two groups, 30 cases selected for each group, one were Control and other were Cases (hypertensive group). Lipid profile was done by photometric kit method and serum total protein was done by biuret kit method on microlab 300.

Results: Serum Cholesterol & LDL were significantly high, HDL and Serum Total Protein significantly reduced in Hypertensive group, p-value 0.001.

Conclusion: We concluded that lipid profile abnormalities and serum total protein abnormalities significantly associated with hypertension

Key Words: Lipid profile, Serum Total Proteins, Hypertension

membrane transport system disturbed.³ Such alteration of lipid profile taking part in the pathogenesis of cardiovascular system. The persons with essential hypertension have unlimited glumness of cell layer Na(+)- K(+)- ATPase and Ca(2+)- ATPase which work out consumption of Ca²⁺ in plasma and Ca²⁺ heavy load in cytosol which can also reflect a fundamental irregularity in essential hypertension.^{4,5} It has been observed that in overweight persons sodium imprisonment presented pulse down to the perfect diverge and reduced proteinuria. UT-A urea transporter protein in coronary heart used to be located extended within uremia, hypertension, and heart failure.⁶ It has been observed that

use of carbamoyl-phosphate synthetase (a catalyst of urea cycle) may additionally add to the accessibility of experiences for a mixture of nitric oxide.⁷ The portent of nitric oxide is arginine, a urea cycle center of the street and it has been estimated that low centralization of arginine would collaborator with hypertension.⁷ The purpose of this study is to see the relationship of lipid profile & serum total proteins in the patients of hypertension with the normotensive group.

Methodology

The present case-control study was conducted from October 2014 to November 2015 at the Department of Biochemistry LUMHS Jamshoro, included 30 diagnosed hypertensive males since last three years and 30 control (who have not any history of raised blood pressure) with an age ranges 40-50 years. Hypertensive patients with cirrhosis of the liver, renal problem, alcoholic, diabetic, electrolyte imbalance disorder were excluded.

Hypertensive patients were selected from the medical OPD LUMHS Jamshoro. 3ml of the blood sample has been drawn in 12 hours fasting position from each subject under aseptic condition. Blood samples were centrifuged at 3000 rpm for 10 minutes, then serum collected in polyethylene covered cap bottles were stored at -20 °c until serum were analyzed. Sampling was done on convenience nonprobability sample technique. Lipid profile and serum Protein were analyzed on Micro lab 300 using kit method. Lipid profile was determined by inoline photometric kit method while serum total proteins were detected by Biuret method. The current blood pressure was recorded from each subject by sphygmomanometer. The data was analyzed by using Student 't' test. P value was considered as significant at $p < 0.05$.

Results

The current study included 60 subjects in which 30 were diagnosed cases of hypertension and 30 were control subjects. The systolic and diastolic was observed highly significant ($p < 0.001$) in cases group as compared to control group. Serum Cholesterol and LDL are significantly ($p < 0.05$) increased in hypertensive patients, and Serum HDL and Serum Total Proteins are significantly reduced in hypertensive patients (Table I). The graph No: 01 shows Blood pressure difference between two groups, graph no:02 shows Lipid profile variation between two groups and graph no: 03 shows Serum total protein variation between groups under study.

VARIABLES	CASES (n=30)	CONTROL (n=30)
Diastolic B.P (mmHg)	105 ± 15*	80 ± 5
Systolic B.P (mmHg)	170 ± 10*	120 ± 5
Serum Cholesterol (mg/dl)	195 ± 6.2**	152.4 ± 5.2
HDL (mg/dl)	39.2 ± 1.9	65.1 ± 2.1*
LDL (mg/dl)	121.8 ± 4.1*	95.7 ± 2.3
Serum Total Proteins (g/dl)	6.51 ± 0.15	6.91 ± 0.08*

(* $p < 0.05$, ** $p < 0.001$)

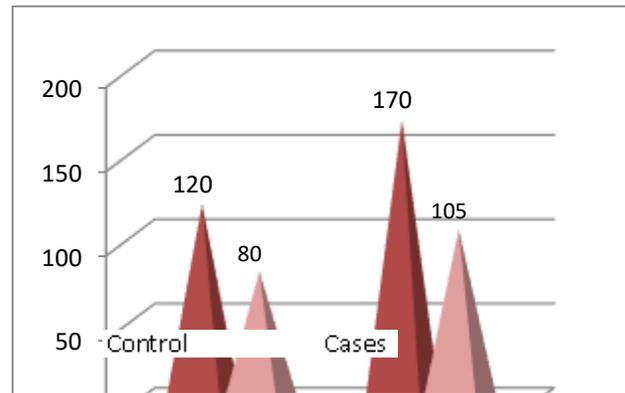


Figure 1 Blood pressure comparison between cases and controls

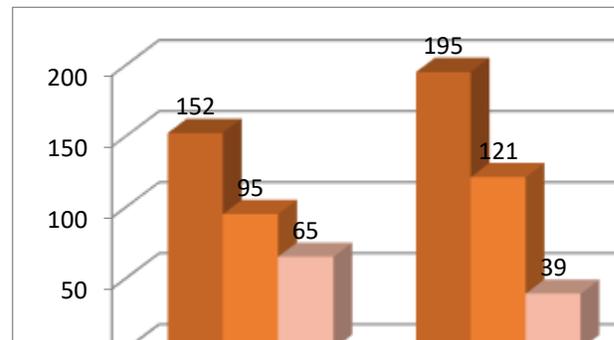


Figure 2: Lipid profile comparison between cases and controls

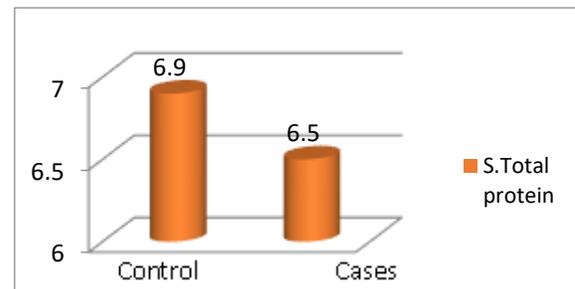


Figure 3: Serum total protein comparison between cases and controls

Discussion

Elevated blood pressure is most common event issue all over the world in developed nations as properly creating countries.² Disturbance of Lipid profile and serum whole proteins are the main indicator of damage of two primary organs like heart and kidney.⁹ The renin-angiotensin framework is an indispensable factor of the associated system that direct hemodynamics, water, and electrolyte parity. In many cells incitement of angiotensin II receptors lead to hydrolysis of phosphatidylinositol^{4,5} biphosphated with era of inositol tri-phosphate and diacylglycerol as 2nd messenger.¹⁰ One of the midways of urea cycle arginine, which is the antecedent of nitric oxide, is recognized not an imperative phase in hypertension.⁷ Serum proteins was diminished non-essentially in hypertensive subjects and may be optional to intense protein misfortune due to the fact of kidney harm.¹¹ We additionally decided urinary protein and determined that the stage was genuinely multiplied in sufferers when contrasted with traditional subjects as has been accounted for in any other study. They likewise said that sodium problem diminished proteinuria. Our study correlates also with the following different studies;

In the studies of Lige song et al¹² & Anuradha K et al¹³ also concluded that Serum Cholesterol & LDL significantly increased & HDL reduced in the patient of hypertension.

In the study of Yamakado M et al¹⁴ also reported a significant correlation between lipid profile & serum total proteins in hypertensive patients.

Premi HK et al¹⁵ reported that the protein urea significantly in hypertension so it definitely reduces the serum total protein levels in hypertensive patients.

It is consequently reasoned that close to lipid profile, there is a section of particles like calcium and magnesium as well as of protein in hypertension. More research is required on a widespread range of sufferers to characterize the part of these parameters.

Conclusion

We concluded that lipid profile silently disturbed in the patients of hypertension and it will cause many cardiac problems as long duration of hypertension and also an imbalance of serum protein is one of the alarming indications that pathology in the kidneys has been started. So that regular investigate above parameters are necessary to reduce morbidity and mortality.

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