Research Article

Estimation of Lipid Profile and Kidney Function Test in Hypertensive Patients in Thi-Qar Province/ Iraq.

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ABSTRACT
The current research was intended to relate the atherogenic index, urea, creatinine for hypertensive & non hypertensive cases and lipid profiles as well. The research study was directed at Al-Hussein Teaching Hospital in Thi-Qar Biochemistry Laboratory in College of Sciences, University of Thi-Qar, Iraq. Total 85 subjects were incorporated in this study with 50 control subjects and 35 hypertensive patients. Serum lipid profile comprising triglyceride, VLDL, antherogenic index, LDL, urea, creatinine and HDL were estimated for both groups.The results indicated the considerably higher levels of very low density lipoproteins, atherogenic index, low density lipoprotein, creatinine, triglycerides, urea and total cholesterol in patients than that of control group. Whereas, high density lipoproteins level was found to be low in patient group comparing to control. The outcome acquired from our present study concluded that a positive association of serum lipid profile particularly triglycerides, LDL and total cholesterol levels to hypertension. These advanced lipid levels might be because of stress, alcohol consumption, physical inactivity, high consumption of dietary fat and increased age.Thus, an appropriate valuation of lipid profile in all hypertensive cases is essential to halt additional intensification and coronary artery disease risks. Hence, the serum creatinine and urea level could be utilized for diabetic, hypertensive nephropathic cases and renal disease.

Keywords: Lipid profile, Creatinine, hypertensive, urea.

INTRODUCTION

An estimation presented that numerous individuals and about 60 million persons in only US are suffering from the hypertension [1]. Being prominent source of death in world, hypertension also acts as treatable risk aspect of cardiac failure, aortic dissection, myocardial infarction, stroke, end stage renal disease, peripheral vascular disease and atrial fibrillation [1]. Hypertension is stated to be DBP level greater than 90mmHg and SBP level higher than 140mmHg. The systemic vascular resistance, arterial compliance and cardiac output irregularity categorizes the hypertension and the adult population affected is almost about of 25% [2]. Similarly, the risk factors of coronary artery disease (CAD) are considered to be the hypertension and dyslipidemia [3]. And the individuals having amalgamation of these two factors are mainly at greater risk of CAD. The serum lipids levels are observed to be higher in hypertensive persons as compared to the normotensive individuals [4]. There is a need to keenly inspect the serum lipid profile levels for its variations, however, only limited research has been recognized for hyperlipidemia in relation to hypertension [5]. Furthermore, reduced function of insulin [6], salt congestion, cardiac output, peripheral resistance, and sympathetic tone are the causes accountable for hypertension [7]. The precise diagnosis, measurement of risk and implementation of therapy for improved clinical conclusions is only possible with biochemical markers. As a substitute of the discomforting urine analysis, serum examination is preferred using renal markers like creatinine and urea [4]. Detection of

decreased renal function and measurement of blood creatinine phosphate is carried out through creatinine tests. More importantly, urea & creatinine are deliberated as upright indicator for normal kidney functions. Though, the proliferation in both of these indicate the kidney dysfunction [7]. For the evaluation of renal functions, the most communal and extensively recognized parameter is serum creatinine [5, 7]. Our work intended the comparison of hypertensive & non-hypertensive persons for serum lipid profile levels including creatinine and urea estimation.

Materials and Methods

Our research was directed at College of sciences Biochemistry Laboratory, University of Thi-Qar, Iraq as well as at Al-Hussein Teaching Hospital, Thi-Qar. It was comprised of total 85 subjects with fifty (50) healthy persons (Controls) and thirty five (35) hypertensive patients. A 5 mL amount of blood sample was extracted from each contributor in disposable empty tubes. Then these were allowed to coagulate at room temperature followed by the 10 minutes centrifugation at 3000 r.p.m. Then these serum samples were parted & stored at -20°C till the assay period. Allan and Dawsom method was followed for the serum total cholesterol (TC) estimation [8]. All the used reagents were delivered by Biolabo and France. While, the measurements of triglycerides were performed conferring the Tietz *et al*

way [9], likewise, Low density lipoprotein (LDL) & very low density lipoprotein (VLDL) were assessed using Friedwald *et al* technique[11], high density lipoproteins (HDL) were estimated by Lopes-Virella method [10] and both of creatinine and urea were evaluated following the methodology of [12].

Results and Discussion

The present study's results indicated a substantial upsurge (P ≤0.05) in the serum concentrations of triglycerides (TG), antherogenic index (ATI), very low density lipoprotein (VLDL), total cholesterol (TC) and low density lipoproteins (LDL) of group 2 as compared to the group 1. However, a considerable decline (P ≤0.05) in the group '2' HDL serum concentration was also observed in contrast to the group '1' concentrations (Table 1). Thus the outcomes presented the group (2) creatinine and serum urea concentration rise (P ≤0.05) while estimating it with group (1) (Table 2).Moreover, the logistic regression test for calculated variables specified a noteworthy difference amongst the serum triglycerides level of both control and case group. The LDL and total cholesterol level's variance appeared to drop their importance because of the incorporation of demographic & other variables in the investigation. It can also be understood that freshly diagnosed hypertensive patients had a well acknowledged greater amount of disparaging lipids such as cholesterol and LDL. Additionally, a relatedness among the hypertension and hyperlipidemia has already been inveterate. The comorbid aspect which escalate the morbidity of hypertension is hyperlipidemia. Thus, the shared modifications of these aliments are more likely to diminishillness between patients.It was presented that statins for hypercholesterolemia treatment might be potent to prevent the cerebrovascular and coronary actions in hypertensive sufferers [13]. Furthermore, high sugar levels in blood cause impairment to the millions of nephrons which results in incompetence of kidneys for electrolytic homeostasis as well as fluid maintenance. As the glomerulus filters the creatinine and accordingly creatinine in serum is deliberated as secondary measure for filtration of glomerulus. Therefore, the reduction of the glomerular filtration rate cause an increase in the urea and serum creatinine concentration in plasma. This upsurge designates the kidney disease progression and consequently, serum creatinine show better prognostic capacity than urea for prediction of adverse conclusions [14]. In the crucial hypertension, a higher creatinine serum level represents a late symbol for renal damage. But an elevated creatinine level also foretells the meager prognosis for hypertension patients [15].

Table 1: Controls and hypertension patients' atherogenic index and serum lipid profile

Groups	No	TC(mg/dL)	TG(mg/dL)	HDL(mg/dL)	VLDL	LDL	ATI
Control	50	170.26±11.24 b	126.67±15.53 b	44.94±3.97 a	25.33±3.10 b	96.24±15.79 b	2.16±0.45 b
Patients	35	232.00±32.69 a	246.40±62.71 a	41.03±4.50 b	49.28±12.54 a	138.99±31.38 a	3.39±0.98 a
LSD		10.71	31.78	3.38	6.30	12.89	0.46

The every individual value signifies the Mean ±SD value whereas, considerably different non-identical superscript including (a, b, c,.etc.) were deliberated (P ≤ 0.05).

Table 2: Creatinine and Serum urea of hypertension patients & their controls

Groups	No	Urea(mg/dL)	Creatinine(mg/dL)
Control	50	24.71±4.41 b	0.75±0.07b
Patients	35	47.95±4.08a	1.57±0.19a
LSD		3.01	0.11

Each value symbolizes the Mean ±SD value along with considerably different (P ≤ 0.05) non-indistinguishable superscript (a, b, or c,… etc.) measured.

Conclusion

The acquired outcomes of current study determined a positive association between the hypertension and serum lipid profile particularly triglycerides, LDL cholesterol levels and total cholesterol. There is a possibility that stress, alcohol consumption, increased age, high ingestion of dietary fats, and physical inactivity contribute to the lipids higher levels. The coronary arterial diseases' risks and further

intensification could be stopped if lipid profile is timely assessed in all hypertensive occurrences. Hence, creatinine levels and serum urea could be

utilized for hypertensive nephropathic as well as for diabetic and renal disease incidences.

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