

Serum Lipid Profile Of Hypertensive Patients In Hyderabad, Pakistan

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Abstract: A prospective study was conducted in the Hyderabad, Pakistan to investigate the serum lipid profile & the level of total cholesterol (TC), Triglyceride (TG), HDL-cholesterol and LDL-cholesterol of hypertensive patients and compares them with levels of control subjects. The results revealed that serum total cholesterol, triglyceride and LDL-cholesterol were significantly markedly raised ($p < 0.005$) whereas the level of HDL-cholesterol was significantly lower ($p < 0.005$) in hypertensive patients as compared to control subjects. No significant changes of serum lipid profile were found between male and female hypertensive patients, but in control subjects, markedly higher levels of serum lipid profile was observed in male compared to that of female. It was concluded that hypercholesterolemia, hypertriglyceridemia and low density lipoprotein are the main lipid abnormalities on the incidence of hypertension in the study area.

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1. Introduction

Hypertension is the most common of the cardio-vascular diseases which is the leading cause of morbidity and mortality in the industrial world as well as becoming an increasing common disease in the developing countries (WHO, 1978). Hypertension in adults is arbitrarily defined as systolic pressure to or greater than 150 mm Hg and or/ or diastolic pressure equal to or greater than 90 mm Hg (WHO, 1978). The most important risk factors for the development of hypertension are increased salt intake, obesity, cigarette smoking, and elevated serum level, lack of physical exercise, genetic factors and stress and strain (Williams and Braun Wald 1987). The blood lipids and lipoproteins are closely associated with hypertension. The serum lipid level of hypertensive patients is usually higher and can be lowered either by dietary restriction or by hypolipidemic agents (Lipid Research Clinics Program 1984 and Burke et al. 1991). Hypertension is a risk factor for the development of atherosclerosis. There is increasing evidence that atherosclerosis should be viewed fundamentally as an inflammatory disease. Atherogenic stimuli such as hyperlipidemia appear to activate the inflammatory response by causing expression of mononuclear leukocyte recruiting mechanisms. Hypertension not only is a well-established cardiovascular risk factor but also increases the risk of atherosclerosis. Both of hypertension and dyslipidemia are independent risk factors for the development of atherosclerosis [Janjigian YY, McDonnell K, Kris MG, Shen R, Sima CS, Rizvi NA, et al.2008] the changes in serum lipid profile level on hypertensive patients should be

actively investigated. The findings of this study may help to understand the effect of renin-angiotensin system in the regulation of blood pressure. The aim and objectives of the present case-control study were to find out the relationship between serum lipids levels of the hypertensive patients with controls in the study in Hyderabad, Pakistan.

STATISTICAL ANALYSIS

All values are expressed as mean \pm SE. For comparison in patient's.

2. Material and Methods

A total number of fifty newly hypertensive patients who have not commenced medication were selected A total numbers of 50 human subjects of age ranging from 30-70 years were included in this study. Out of the 50 subjects, volunteers (10 Males and 10 females) were selected as control (group1). The remaining 30 subjects (20 Males and 10 Females) were grouped as hypertensive (group 2 .Serum total cholesterol levels was determined by enzymatic (CHOD-PAP) colorimetric method (Allain et al.1974) and triglyceride by enzymatic (GPO-PAP) method of (Jacobs and Van demark (1960). HDL-cholesterol and LDL-cholesterol were estimated using precipitant (Gordon and Gordon 1977) and Friedewald formula (Friedewald 1972). Venous fasting blood samples were drawn from all the subjects and analysed for TC, HDLC and TG by enzymatic colorimetric method [Trinder P et al. 1988] above all parameters under investigation were determined in the serum of patients and controls using commercially available reagent kits. All values

were expressed as mean \pm S.E. Intravenous blood (10mL) samples from fifty patients and healthy subjects were collected and made to clot before serum was separated by centrifuging. Each metal the serum samples were analyzed using a Hitachi atomic absorption spectrophotometer (Tokyo, Japan). Cholesterol, triglycerides, HDL and LDL were determined using a kit method on Microlab 300.

3. Results

In the present study, maximum numbers of patients of both sexes were between 30-70 years of age and the percentage had declined sharply below these ages (Table 1). The age distribution of hypertensive patients No. Age Group (years) Male (%) Female (%) The age and sex distribution presented in Table 1 revealed that most of the cases belonged to old age group. There was no significant difference ($P>0.05$) in the means of serum lipid levels in males and females hypertensive patients while there was a significant increase in the levels of serum lipid in males than in female normotensive subjects (Table 2 and 3).

Table 1: Age and sex distribution in hypertensive subjects Age Group (Years) Males (%) Females (%)

Age Group (Years)	Males (%)	Females (%)
30 < 40	5	2
41-50	15	6
61-70	20	2
Total n = 50	40	10

Table 2: Serum lipid profile (mmol/l) of hypertensive patients

Group	TC	LDL	TG	HDL
Hypertensive n = 50	6.0 \pm 2.0	4.0 \pm 1.5	3.50 \pm 1.6	0.90 \pm 0.10
P - Value	$P<0.05$	$P>0.05$	$P<0.05$	$P<0.05$

Table 3. Show Serum lipid profile (mmol/l) of male and female

Group	TC	HDL	LDL	TG
Males n = 40	3.66 \pm 2.11	2.50 \pm 0.55	0.83 \pm 0.43	1.65 \pm 1.25
Females n = 10	3.00 \pm 2.18	2.12 \pm 0.15	0.62 \pm 0.34	1. \pm 0.82
P - Value	$P<0.05$	$P<0.05$	$P<0.05$	$P<0.05$

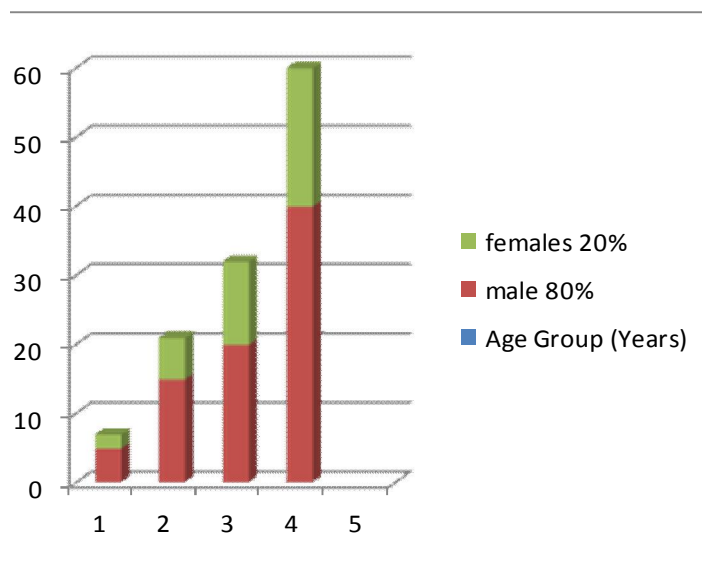


Fig 1. Gender analysis

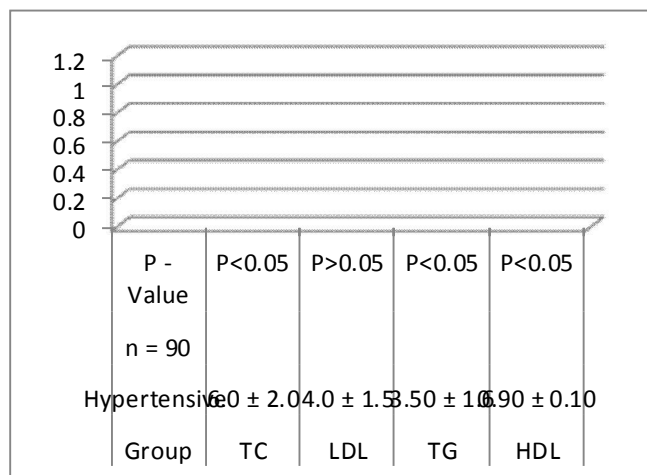


Fig 2 Serum lipid profile (mmol/l) of hypertensive patients

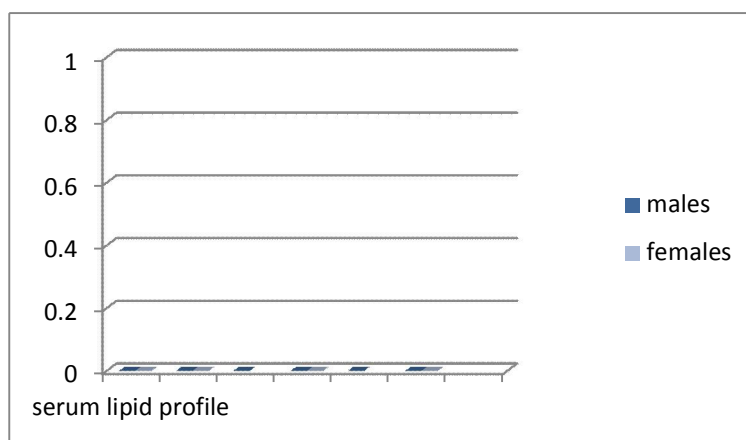


Fig 3. Show Serum lipid profile (mmol/l) of male and female

4. Discussions

The results of our study revealed that the men value of serum cholesterol, triglyceride and LDL-cholesterol was significantly higher and significantly lower HDL-Cholesterol level was found in hypertensive patients than those of the control group. The findings of increased total cholesterol in patients with hypertension are slightly higher than the study of Shahadat et al. (1999). study where they observed that only females have hypertriglyceridemia. Serum HDL-cholesterol level in hypertensive patients was found to be lower than the findings of Shahadat et al. (1999) at home and of the past (Castilli et al. 1977, Wilson et al. 1980, Person et al. 1979 and Miller et al. 1977) The Framingham Offspring Study (Wilson et al. 1980) and also with the co-operative phenotyping study (Castilli et al. 1977) in U S A, who demonstrated a

positive correlation between the level of LDL-cholesterol and coronary risk. In our study, no significant difference of serum lipid profile between male and female hypertensive patients was found but total cholesterol, triglyceride and LDL-cholesterol were significantly higher in male than female controls whereas HDL-cholesterol was vice-versa. Based on the results obtained from the present study, we concluded that serum cholesterol; triglyceride and LDL-cholesterol levels are positively correlated with hypertensive patients whereas HDL-cholesterol has no significant changes with hypertension. The higher level of serum TC, TG and LDL-cholesterol in the study population may be due to genetic factors and increased consumption of dietary animal fat, lack of physical exercise, metabolic disorders like diabetes Mellitus and hypothyroidism, severe stress, increased age, sex as

well as alcohol and tobacco consumption may also be the contributory factors for this phenomenon.

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