



A STUDY ON THE LIPID PROFILE OF HYPERTENSIVE PATIENTS IN MANGALORE

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ABSTRACT:

Background and objectives: Hypertension and abnormalities of lipid profile often co-exist. Several well conducted epidemiological studies have demonstrated that cholesterol levels are significantly higher in hypertensive patients than in age, sex and body mass index matched normotensive patients. Hence this study is undertaken to study the demographic profile of hypertensive patient (sex, age group) & Comparison of lipid levels between hypertensive and healthy subjects. **Methodology:** Present study was conducted in Kasturba Medical College and Hospital, Mangalore on 50 hypertensives and 50 normal subjects aged (30-80 yrs.). Lipid profile was estimated for Total cholesterol (CHOD-PAP Method), HDL Cholesterol (second-generation enzymatic colorimetric method), Triglycerides (GPO-PAD method), LDL-C-[Total cholesterol – (HDL-C+VLDL-C) &VLDL-Cholesterol (VLDL –C). Z – MANN WHITNEY TEST was used for statistical analysis. **Results:** All the lipid fractions TC, TGL, LDL-C, VLDL, TC/HDL-C ratio were higher in the hypertensive patients than those in the healthy controls. The study included 50 cases of essential hypertension of which 16 (32%) were females and 34 (68%) were males between the age groups of 30 – 80 years. In the present study no significant difference was found in the different age groups and no difference was seen between males and females too.

Interpretation and conclusion: In the present study group age range was from 30-80 years and mean age was 55 years. Higher numbers of patients of hypertension were seen between age group 50-60 years contributing to 36% of the cases studied. This study was focused only on comparison of lipid profile. The other factors like type of diet, obesity, diabetes, smoking, alcohol consumption, age, sex & ischaemic heart disease may be contributed to the observed results.

Keywords: Hypertension, Diabetes, hyperlipidemia, Triglycerides, VLDL



INTRODUCTION:

“Hypertension” continues to be one of the most common diseases treated by physicians. Ongoing research has better defined the mechanisms and clinical characteristics for this condition and enlarged the score of therapeutic options. It is increasingly clear that high blood pressure although an independent risk factor for adverse clinical events frequently exists as a part of a syndrome of cardiovascular neuroendocrine and metabolic abnormality^{1,2}

A systolic blood pressure of 160mmHg now puts patients into the moderate hypertension category, which was recently published in Systolic Hypertension in Elderly Program (SHEP) report, as well as Swedish Trial in Old Patients with hypertension (STOP) trial in Europe, and the Medical Research Council (MRC) trial in Britain provoked these powerful recommendation (JNC VII report).

The blood pressure however, is not the only determinant of cardiovascular damage and the propensity of hypertensive patients to develop target organ damage is markedly influenced by coexisting risk factors such as age, sex, smoking, obesity, diabetes, dyslipidemia and others. Among these factors lipoproteins are fundamental to the atherosclerotic process and greatly affect the impact of hypertension on development of target organ damage and therefore on cardiovascular morbidity and mortality.

MATERIALS AND METHODS:

The present study was conducted in the department of Biochemistry, Kasturba Medical College and Hospital, Mangalore on 50 hypertensive and 50 normal subjects aged (30-80 yrs.).



Patients who diagnosed as cases of essential hypertension based on history and on Anti-hypertensive Medication were included. Patient with history of concurrent DM, IHD and h/o Alcoholism, Smoking were included in the study. Subjects were on medication and without any complication. Exclusion criteria; following groups were excluded from the study - Patients with complication of HTN, renal failure, familial dys epidemic, thyroid disorder& patients on lipid lowering drugs.

History was taken from all subjects regarding age, sex, weight, food habits life style, history of HTN and associated medical disorders based on a questionnaire. The subjects were explained the purpose and nature of the study being carried out. Only subjects who gave their informed consent were selected.

5 ml venous blood was collected in a vacutainer from each patient who was fasting overnight (12 – 14 hr). The samples were immediately dispatched to the Biochemistry Lab and the estimation was done using Hitachi 917 auto analyzer for lipid profile. (Total cholesterol, Triglycerides, LDL- Cholesterol, HDL-Cholesterol, VLDL-Cholesterol & Ratio of total cholesterol to HDL –cholesterol) Relevant statistical methods were applied, to see the significance of difference in mean values and to see the correlation between groups. Z – MANN WHITNEY TEST was used for statistical analysis.



RESULTS AND DISCUSSION:

Table.No.1: Frequency distribution table for hypertensive patients.

		Frequency	Percentage
SEX	Male	34	68.0
	Female	16	32.0
DIET	Non-veg	41	82.0
	Veg	9	18.0
DIABETESMELLITUS	Present	18	36.0
	Absent	32	64.0
SMOKING	Present	15	30.0
	Absent	35	70.0
ALCOHOL	Present	20	40.0
	Absent	30	60.0
OBESITY	Present	28	56.0
	Absent	22	44.0
ISCHAEMIC DISEASE	Present	5	10.0
	Absent	45	90.0



Table.No.2. Comparison of lipid profile between hypertensive and non-hypertensive subjects.

	GROU	N	Mea	Std.	Z
TC	Case	50	230.220	42.7757	4.0640
	Contro	50	197.680	26.2199	p<0.001 vhs
TG	Case	50	199.300	88.0251	2.8470
	Contro	50	153.820	72.8489	p=.004 hs
LDL	Case	50	146.860	33.2541	4.3410
	Contro	50	118.580	27.0389	p<0.001 vhs
HD	Case	50	43.900	9.7797	1.3800
	Contro	50	46.400	8.9397	p=.168 ns
VLDL	Case	50	39.272	17.6651	2.6830
	Contro	50	30.556	14.5336	p=.007 hs
TC/HDL	Case	50	5.313	1.2552	4.0470
	Contro	50	4.352	.8857	p<0.001 vhs

vhs=Very highly significant., hs= Highly significant, ns= Not significant.

Refer Table.No.1. With regard to the diet 41 (82%) patient were found to be non-vegetarians and 9(18%) were vegetarians. 18 (36%) of the patient had concurrent DM while (64%) were non-diabetics.5 (10%) patients among the 50 had a history of IHD while 28 (56%) were found to be obese. Lifestyle study showed that 15 Patients (30%) were smokers and 20 (40%) was alcoholics.

Refer Table.No.2. There was a very high statistical significant difference ($P<0.001$) in the mean levels of TC, LDL and TC/HDL in hypertensive and non-hypertensive subjects.



There was also a highly significant difference in the levels of TG ($P = .004$) and VLDL ($P = .007$) between the 2 groups compared. There was no statistical significant difference in the HDL level between the 2 groups was observed.

The present study has shown that all the lipid fractions TC, TGL, LDL-C, VLDL, TC/HDL-C ratio were higher in the hypertensive than those in the healthy controls, which is in accordance with most of the previous reports by various workers. In the present study all the lipid fractions were elevated except HDL-C, which was normal in most of the cases. The increase in TC, LDL and TC/HDL ratio was statistically very highly significant in hypertensive subjects compared to healthy controls while the increased level of TG & LDL was highly significant in hypertensive subjects.

Castilli W.P, Anderson K.A (1986) had supported that blood pressure and serum cholesterol are correlated with 'r' factor of 0.12 suggesting that those with higher blood pressure values tend to have higher serum cholesterol in Framingham heart study. Coronary heart disease developed with great consistency in patients with a ratio of total cholesterol to HDL-C of more than 4.5. Half of the women and more than half of the men who presented with hypertension were already having abnormal lipid profile.³

Bonna K.H, Thelle D.S (1991) have supported that in both sexes total and non HDL-C level increased significantly with increasing systolic or diastolic blood pressure. The association between blood pressure and total cholesterol level increased with age in women but decreased with age in men. Smoking, physical activity and alcohol consumption had little influence on the association between blood pressure and serum lipids.⁴



Chen Y-DI *et al* (1991) in their study found that mildly hypertensive patients appears to have faster catabolic rate of Apo-AI/ HDL and lower HDL-C concentration.⁵

Rost P.H., Devis B.R., *et al* (1996) in the Systolic Hypertension in the Elderly Program (SHEP) supported the concept that plasma cholesterol, LDL-C and ratios of TC/HDL-C & LDL-C/HDL-C were significantly higher in CAD men and women.⁶

Manninen V, *et al* (1992) in the Helsinki heart study and Misra K.P. *et al* (1980) found that LDL-C/HDL-C ration, had more prognostic value than LDL-C and HDL-C alone and hypertriglyceridemia was a strong indicator of short term CAD risk especially when LDL-C / HDL-C ratio was also high.⁷

The Framingham study revealed that HDL-C level was a major potent lipid risk factor having an inverse association with the incidence of CHD both in men and women; the proposed hypothesis that HDL facilitates the uptake of cholesterol form peripheral tissue and helps in its transport to liver for degradation and excretion. However lower the HDL level, higher the LDL levels and TC/HDL ratio are more predictive of coronary heart disease⁸.

CONCLUSION:

All the lipid fractions TC, TGL, LDL-C, VLDL, TC/HDL-C ratio were higher in the hypertensive than those in the healthy controls. The study included 50 cases of essential hypertension of which 16 (32%) were females and 34 (68%) were males between the age groups of 30 – 80 years. In the present study no significant difference was found in the different age groups and no difference was seen between males and females too.



In the present study group age range was from 30-80 years and mean age was 55 years. Higher numbers of patients of hypertension were seen between age group 50-60 years contributing to 36% of the cases studied. This study was focused only on comparison of lipid profile. The other factors like type of diet, obesity, diabetes, smoking, alcohol consumption, age, sex & ischaemic heart disease may be contributed to the observed results. So a detailed study about the pathogenesis of Hyperlipidemia & association of the above mentioned factors is must.

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