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FREQUENCY OF HYPERLIPIDEMIA IN PATIENTS OF HYPERTENSION IN CHANDKA MEDICAL COLLEGE HOSPITAL LARKANA

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ABSTRACT

Objective: To determine the frequency of hyperlipidemia in hypertensive patients.
Study design: Cross sectional study
Setting: Outpatient departments (OPDs) of Medicine and Cardiology of Chandka Medical College Hospital, Larkana.
Material and Method: Newly diagnosed hypertensive patients of age 15 to 75, of either sex were enrolled. Eligible patients were subjected for lipid profile ((Serum Triglyceride and Cholesterol).
Results: A total of 246 patients were enrolled in this study. Male were 158 (64.2%) and female were 88 (35.8%), with male to female ratio 1.8:1. Enrolled participants were age of 16 to 75 years, with the mean age of 45.9±14.3 years.
Of 246 patients, 191 (77.6%) had body mass index of >25 with mean BMI of 28.9±4.6. Out of 246 patients, 63 (25.6%) had family history of hyperlipidemia and 95 (38.6%) had family history of hypertension. The frequency of hyperlipidemia in hypertensive patients was 47 (19.1%) with mean serum cholesterol of 197.7±42 and mean serum triglycerides of 160.4±30. Stratified analysis showed that hyperlipidaemia is more common in patients with family history of hyperlipidaemia and was statistically significant (P-<0.001).
Conclusions: It was concluded from this study that hyperlipidemia was more common in patients with hypertension.

Key words: Hyperlipidemia, Hypertension, Family History of Hyperlipidemia.

INTRODUCTION

Hypertension is considered to be a risk factor for coronary heart disease, stroke, congestive heart failure, end-stage renal disease and peripheral vascular disease[1]. Recent 'Global Burden of Hypertension' data showed that more than quarter of the world's adults population (nearly 1 billion) had hypertension in 2000 and this is expected to increase by about 60% (1.56 billion) in 2025; the population burden being greater in developing countries[2]. According to the National Health Survey of Pakistan (NHSP) the prevalence rate of hypertension is 18% in the Pakistani population of >15 years of age, with a prevalence rate of hypertension of 16.2% and 21.6% in rural and urban population respectively[3]. The National Health Survey of Pakistan (NHSP) also showed that among all hypertensive patients in Pakistan>70% are unaware of their disease. In Pakistan the percentage of controlled hypertension is very low. According to the National Health Survey of Pakistan, 5.5 million men and 5.3 million women suffer from hypertension and only less than 3% have controlled hypertension[3].
High blood pressure or hypertension is defined in an adult human as a sustained blood pressure greater than or equal to 140 mmHg systolic pressure or greater than or equal

to 90 mmHg diastolic pressure[4]. Elevation of blood pressure has positive correlation with Body Mass Index (BMI), life style, family history of hypertension, cardiovascular diseases and diabetes[5,6].

Dyslipidemia, endothelial dysfunction, and hypertension are frequently coexisting conditions even in the absence of documented atherosclerotic lesions[7]. The blood level of HDL-C in contrast bears an inverse relationship to the risk of atherosclerosis and coronary heart disease that is higher the level, smaller the risk. Different plasma lipids vary significantly in various population groups due to difference in geographical, cultural, economical, social conditions, dietary habits and genetic makeup. Age and gender differences also affect serum lipids considerably. Hypercholesterolemia is not a disease but a metabolic derangement that can be secondary to many diseases and can contribute to many forms of disease, most notably cardiovascular diseases[3,8].

In urban adult populations of Asia prevalence of hypertension varies between 15% and 35%. In rural populations, the prevalence is two to three times lower than in urban subjects[9]. With the average population prevalence of concomitant hypertension and dyslipidemia estimated at 18% of men and 20% of women aged 20 years or older[10]. The shortcomings of medical intervention result in an enormous burden of morbidity and mortality as well as extensive utilization of costly health care resources[11]. Therefore, innovative strategies designed to simultaneously lower blood pressure and lipid levels in patients at high cardiovascular risk are warranted[12].

The National Action Plan for Non-Communicable Disease Prevention, Control and Health Promotion in Pakistan (NAP-NCD) incorporates prevention and control of cardiovascular diseases (CVD) as part of a comprehensive and integrated non-communicable disease (NCD) prevention effort. It promotes screening for increased blood pressure at the population level and screening for dyslipidemia. The program points out the need to conduct clinical end-point trials in the native Pakistani setting to define cost-effective therapeutic strategies for primary and secondary prevention of CVDs[13].

This study provided the magnitude of hyperlipidemia in patients of hypertension. Thus by meticulous control of hypertension and hyperlipidemia, the mortality and morbidity can be decreased, by early detection of hyperlipidemia in patients of hypertension we can decrease the burden of cardiovascular diseases (CVDs) as well as stroke with preventive measures (regular exercise, stop smoking, avoidance of alcohol, weight reduction and decrease fatty diet) and treatment.

MATERIAL & METHODS

This cross-sectional study was carried at outpatients department (OPDs) of Medicine and Cardiology Chandka Medical College Hospital (CMCH) Larkana, over a period of one year from 1stth February 2011 31st January 2012. After approval of ethical committee, and obtaining informed written consent, all patients who were first time labeled for hypertension, of age 15 to 75 years and of either sex were included. Patients were labeled as suffering from hypertension when Systolic B.P greater than 140 mm Hg and diastolic B.P greater than 90 mm of Hg, measured on three occasions, according to European Society of Hypertension (ESH) and European Society of Cardiology (ESC).

Those patients were exclude from study who were above the age

TABLE 1:
SALIENT FEATURES OF 246 STUDY POPULATION OF HYPERTENSION

Gender	Male= 158 (64.2%)	Female= 88 (35.8%)	Male to Female Ratio (1.8:1)
Age Group, with Number and Percentage of Patients			
G1 (16 – 25 years)	21	8.54 %	Mean age; 45.9 + 14.3 Years
G2 (26 – 35 years)	45	18.29 %	
G3 (36 – 45 years)	54	21.95 %	
G4 (46 – 55 years)	51	20.73 %	
G5 (56 – 65 years)	56	22.76 %	
G6 (66 – 75 years)	19	7.72 %	
Body Mass Index (BMI)			
<25	55	22.36 %	Mean BMI (28.9 + 4.6)
>25	191	77.72 %	
Presents of Hyperlipidemia With Number and Percentage of Patients			
Yes	47	19.11 %	Mean Serum Cholesterol (197 + 72) mg/dl
No	199	80.89 %	Mean serum Triglyceride (160 + 30) mg/dl
Family History of Hyperlipidemia With Number and Percentage of Patients			
Yes	63	25.60 %	
No	183	74.40 %	

TABLE 2:
STRATIFICATION OF HYPERLIPIDAEMIA IN ENROLLED PARTICIPANTS BY AGE

Hyperlipidemia	Age		Total
	d"45 Years	>45 Years	
Yes	27 (22.5%)	20 (15.9%)	47
No	93 (77.5%)	106 (84.1%)	199
Total	120	126	246

P-Value: 0.12

TABLE 3:
STRATIFICATION OF HYPERLIPIDEMIA IN ENROLLED PARTICIPANTS BY SEX

Hyperlipidemia	Sex		Total
	Male	Female	
Yes	29 (18.4%)	18 (20.5%)	47
No	129 (81.6%)	70 (79.5%)	199
TOTAL	158	88	246

P-Value: 0.40

TABLE 4:
STRATIFICATION OF HYPERLIPIDEMIA IN ENROLLED PARTICIPANTS BY BMI

Hyperlipidemia	BMI		Total
	<25	≥25	
Yes	10 (18.2%)	37 (19.4%)	47
No	45 (81.8%)	154 (80.6%)	199
TOTAL	55	191	246

P-Value: 0.50

TABLE 5:
STRATIFICATION OF HYPERLIPIDEMIA IN ENROLLED PARTICIPANTS BY FAMILY HISTORY OF HYPELIPIDEMIA

Hyperlipidemia	Family History Of Hyperlipidemia		Total
	Yes	No	
Yes	24 (38.1%)	23 (12.6%)	47
No	39 (61.9%)	160 (87.4%)	199
TOTAL	55	191	246

P-Value: <0.001

of 75 years and have previous history of anti-hyperlipidemic therapy, and cases of metabolic syndrome, diabetes mellitus, chronic renal failure, nephrotic syndrome, coronary artery disease, myocardial infarction, cerebrovascular accident, pulmonary artery disease and alcoholics.

Then all enrolled patients were subjected for investigation, Fasting (8hrs-12hrs) blood samples were taken, coded and sent to pathology laboratory of Chandka Medical College Hospital, Larkana by researcher himself for determination of lipid profile (Serum Triglyceride and serum Cholestrol). Patients labeled as hyperlipidemic if total serum LDL cholesterol was greater than 240 mg/dl, and triglycerides (at a time of admission) level greater than 200 IU/dl.

DATA ANALYSIS

The data collected was entered and analyzed using SPSS software

version 18.0. Numeric response variables as age, serum Triglyceride and serum Cholesterol was presented quantitative by mean ± SD (Standard Deviation). Categorical response variable as gender, and presence or absence of hyperlipidemia, was presented in frequencies and percentages for data presentation. Confounding variables like age, gender, BMI, family history of HTN and family history of hyperlipidemia were controlled during data analysis by stratification.

RESULTS

A total of 246 patients were enrolled in this study. Male were 158 (64.2%) and female were 88 (35.8%), with male to female ratio 1.8:1. Enrolled participants were age of 16 to 75 years, with the mean age of 45.9±14.3 years. Table 1:

Of 246 patients, 191 (77.6%) had body mass index of >25 with mean BMI of 28.9±4.6. Out of 246 patients, 63 (25.6%) had family history of hyperlipidemia. The frequency of hyperlipidemia in hypertensive patients was 47 (19.1%) with mean serum cholesterol of 197.7±42 and mean serum triglycerides of 160.4±30. table 1.

Stratified analysis showed that hyperlipidaemia was found 27 (22.5%) in less than 45 years of age, and 20 (15.9%) in more than 45 years of age. Table 2. Among all male and female hyperlipidemia was in 29 and 18 patients, accounting 18.4% and 20.5% respectively. Hyperlipidemia was present in 37 patients who were having BMI more than 25 out of 47. Table 3. Hyperlipidemia was observed in 24 (38.1%) patients with family history of hyperlipidaemia, and was statistically significant (P-<0.001). Tables 5.

DISCUSSION

The NAP-NCD attempts to bridge the gap between academic researchers and policymakers and administrators engaged in planning evidence-based strategies for bringing about an improvement in health outcomes.

Several research dimensions have been flagged as priority areas as part of this Action Plan. These research areas emphasize the need to move away from the sole focus on risk factor and etiologic research toward surveillance and health systems and policy research to facilitate assessment of the effectiveness of current policies, disease trends, and future health needs.

It is well established that high blood pressure and high lipid level in blood is associated with premature cardiovascular morbidity and mortality[1]. Among the numerous risk factors associated with coronary artery disease (CAD), hypertension plays a major role given its high frequency and its physiopathogenesis[2]. The prevalence of hypertension in the community is determined principally by age and ethnicity[1]. In a study the risk of all complications of CAD was shown to be doubled in the presence of hypertension.[14] Moreover hypertension is a major risk factor of undiagnosed symptomatic or asymptomatic myocardial infarction. The risk of sudden death, heart failure and all-cause mortality is increased in hypertensive patients.[15] Numerous other risk factors for CHD, such as dyslipidemia, insulin resistance, diabetes, obesity, lack of physical activity and certain genetic mutations are observed in hypertensive patients more than normotensive ones and various risk factors of CAD are present simultaneously in hypertensive patients.[16] The prevalence of hypertension in general population in our country is more than 12%.[17]

The objective of this study was to determine the frequency of hyperlipidemia in hypertensive patients.

In our study the mean age of enrolled participants was45.9±14.3 years. However the mean age of the hypertensive patients was 53.7±12.9 years in a study by Ahmed N. et al.[3] Mean BMI of the hypertensive patients in his study was 28.9±4.6 while the study done by Ezeanyika LUS et al showed that BMI of the hypertensive patients in their study was 24.75±3.94.[18]

In our study mean serum cholesterol was 197.7 ± 42 and mean serum triglycerides 160.4±30. Similarly Ahmed N. et al reported mean serum cholesterol and triglyceride levels were 191.4±16.9 mg/dl and 167.9±19.2 mg/dl.[3] Burchfielet al reported mean serum cholesterol 189±3.3 mg/dL, and mean serum triglyceride 147±8.9 mg/dL.[19]

Of 246 patients, the frequency of hyperlipidemia in hypertensive patients was 47 (19.1%) with mean serum cholesterol of 197.7±42 and mean serum triglycerides of 160.4±30. Stratified analysis showed that hyperlipidaemia is more common in patients with family history of hyperlipidaemia and was statistically significant (P-<0.001). However Ahmed N. et al reported higher frequency of hyperlipidemia.[3] In this study high BMI is associated with hyperlipidaemia. High level of serum cholesterol was present in 27.9% of hypertensive which was much lower than found by Shaikh MA his colleagues.[20] The frequency of hyperlipidaemia is higher comparing to our study because they defined high serum cholesterol in their hypertensive patients if the serum cholesterol level was >180 mg/dL. Sattar RA and his colleagues found hypertriglyceridemia in 22% of the patients.[21] This difference was because of different defined level of hypertriglyceridemia, as they defined hypertriglyceridemia in their patients if the serumtriglyceride levels was >250 mg/dL similar to our study. This study was subjected to a couple of limitations; first, this was a hospital based study not representative of population; second, in this study there was no comparative group.

CONCLUSION

It is concluded from this study that:

- There is high frequency of hypercholesterolemia and hypertriglyceridemia with the hypertensive patients.
- Family history of hyperlipidemia has higher proportion of hyperlipidemia.

It is important to investigate BMI and hyperlipidemia in hypertensive patients in community based studies and these should be appropriately treated to prevent further complications.

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