ORIGINAL RESEARCH ARTICLE

Study of Prevalence of Dyslipidemia in Newly Diagnosed Essential Hypertension

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A B S T R A C T

Introduction: Dyslipidemia is an important independent modifiable risk factor for cardiovascular disease. Dyslipedemia does not cause symptoms by itself, the symptoms exihibited are the symptoms of the organ or system affected by atherosclerosis. Studies have reported that high cholesterol is present in general and hypertensive population. Study objectives were to study the prevalence of dyslipidemia in newly diagnosed essential hypertension.

Material and methods: Newly diagnosed essential hypertensive, whose BP>140/90 mmHg and aged >40 years were included as cases. Age and sex matched normotensive control were included as controls. Routine investigations and Lipid profile was done in all cases and controls.

Results: In this study, 50 hypertensive patients were taken as cases and 50 normotensive as controls. The mean systolic BP in the cases was 159±11.98 mmHg and in the controls was 116±8.43 mmHg. Out of 50 cases, 20 (40%) patients were dyslipidemic and 30(60%) patients had normal lipid profile. Out of the 50 controls only 12 (24%) had dyslipidemia. Among hypertensive, Serum cholesterol was raised in 5 patients while in controls, only 1 had raised serum cholesterol (p=0.0919). Hypertriglyceridemia was noted in 12 patients in hypertensive and among 7 normotensive (p=0.2031). Raised LDL was found in 4 patients with hypertension and 2 normotensive persons (p=0.3994). HDL was found low in 9 hypertensive and 2 normotensive (p=0.0252).

Conclusion: Prevalence of dyslipidemia was higher in patients with essential hypertension than normotensives. Raised serum cholesterol, serum triglyceride and LDL was found in higher frequency in hypertensive than normotensive. Hypertriglyceridimia was the most common lipid abnormality in our study population.The prevalence of dyslipidemia is very high in India, and needs urgent lifestyle intervention strategies to prevent and manage this important cardiovascular risk factor.

Key words: Hypertension, Dyslipedemia

INTRODUCTION

Hypertension is one of the leading causes of the global burden of disease. The likelihood of hypertension increases with age and among individuals of age 60, the prevalence is 65.4%.[1] Both environmental and genetic factors may contribute to regional and racial variations in blood pressure and hypertension prevalence.[1] Hypertension doubles the risk of cardiovascular diseases, including coronary heart disease (CHD), congestive heart failure (CHF), ischemic and hemorrhagic stroke, renal failure, and peripheral arterial disease.[1]

Hypertension leads to adverse events in the brain, heart, and kidneys through two related mechanisms, both of which involve the effect of increased pressure on the arteries. The first is the effect on the structure and function of the heart and arteries, and the second is the acceleration of the development of atherosclerosis. The former is directly the result of the blood pressure, whereas the latter requires an interaction with other risk factors for cardiovascular disease, most importantly cholesterol. Dyslipidemia is an important independent modifiable risk factor for cardiovascular disease. Hyperlipidemia does not cause symptoms by itself,the symptoms exihibited are the symptoms of the organ or system affected by atherosclerosis.[2] Recent studies have reported that high cholesterol is present in 25-30% of urban and 15-20% rural subjects.[3] So we performed this study to find the prevalence of dyslipidemia in newly diagnosed hypertension cases.

Study objectives were to study the prevalence of dyslipidemia in newly diagnosed essential hypertension.

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MATERIAL AND METHODS

This study was conducted at Department of Medicine, MLN Medical College. A total of 50 patients and 50 controls were included in the study.

Case Selection: - Newly diagnosed essential hypertensive, whose BP>140/90 mmHg and aged >40 years were included as cases.

Control Selection: - Age and sex matched normotensive control were included as controls

Exclusion Criteria: Patients with Known Hypertension, Diabetes mellitus**,** Renal impairment, End organ damage eg: Cerebro Vascular Accident/Myocardial Infarction

Methods: The patients of more than 40 years of age whose BP were more than 140/90 mmHg for the first time in their life with proper method of blood pressure measurement on at least two occasions were considered as hypertensive. To label them as essential hypertensive secondary causes of hypertension were ruled out by proper and detailed history, thorough physical examination, appropriate laboratory investigations.

Investigations: Liver Function Test, Kidney Function Test, Serum Lipid profile (S.Triglyceride/ Total Cholesterol/ HDL-CH/ LDL-CH/ VLDL-CH)**,** Fasting blood sugar, Complete blood count, Electrocardiogram, Chest X ray, Fundus examination, CRP was measured in all the patients.

RESULTS

The present observational case control study was conducted on 100 persons out of which 50 were cases and 50 were controls.

Age (In years)	Case (n=50)	Control (n=50)
40-50	27	25
51-60	15	20
61-70	7	3
≥71	1	2
Mean age ±sd	51.9±8.82	52.42±8.14, p-value (0.76)

Table-1: Age distribution of the study population

Parameters	Hypertensive cases (n=50)	Normotensive controls (n=50)	P value
Age (yrs)(mean±SD)	51.9±8.82	52.42±8.14	0.76
Males	29 (58%)	27 (54%)	0.1623
Females	21(42%)	23 (46%)	
SBP (mmHg) (mean±SD)	159±11.98	116±8.43	0.0001
DBP(mmHg) (mean±SD)	94±6.42	76±8.53	0.0001
BMI (kg/m^2) (mean±SD)	23.98±2.08	22.72±1.30	0.0004
Dyslipidemia	20 (40%)	12 (24%)	0.863
S.Cholesterol	163.84±37.27	156.22±26.76	0.2431
S.Triglyceride	140.06±53.01	136.22±18.20	0.6291
LDL	93.94±33.45	98.7± 23.70	0.4136
HDL	49.14±12.46	51.78±6.98	0.1942
VLDL	30.96±12.01	29.58±7.75	0.4964
Hb (gm%) (mean±SD)	11.96±1.52	11.96±1.77	0.999
S.Creatinine (mg/dl) (mean±SD)	0.93±0.26	0.92±0.23	0.84
RBS (mg/dl) (mean±SD)	105.86±18.07	99.06±11.02	0.02

Table-2: Comparison of different parameters between cases and controls

	Cases (n=50)	Controls (n=50)	p value
Dyslipidemia	20	12	0.0864
Normal lipid profile	30	38	

Table-3: Prevalence of dyslipidemia

	Cases	Controls	P value
S.Cholesterol (>200mg/dl)	5	1	0.0919
TG (>150mg/dl)	12	7	0.2031
LDL(>130mg/dl)	4	2	0.3994
HDL(<40mg/dl)	9	2	0.0252
Total Dyslipidemia	20	12	0.0864

Table-4: Dyslipidemia frequency in cases and controls

Out of 50 cases the mean age was 51.9±8.82 year and in control the mean age was 52.42±8.14 year. This data was statistically not significant (p value= 0.76) suggesting both groups were perfectly matched for age (Table 1).

In the cases there were 29 males and 21 females. In the control there were 27 male and 23 female. Among the cases male : female ratio was 1.4 : 1 and in control male : female ratio was 1.2 : 1.

Mean systolic BP in the cases was 159±11.98 mm Hg and in the controls was 116±8.43 mmHg. Mean diastolic BP in the cases was 94±6.42 mmHg and in the controls 76±8.53 mmHg. Difference in the mean systolic as well as diastolic blood pressure in the cases and controls was statistically significant (p value <0.0001) (Table 2).

DISCUSSION

In this study, 50 hypertensive patients were taken as cases, out of which 29 were males and 21 were females. The mean age of study population was 51.9± 8.82 years. Mean age of males among cases was 51.11±8.98 yrs and that of females was 50.33±8.91 yrs. In the controls there were 27 male and 23 female. In the controls mean age of males and females were 51.57±8.05 and 50.76±8.28 years respectively.

Out of 50 hypertensive cases, 13 were found obese (BMI ≥25 kg/m2), so the prevalence of obesity in cases was 26%. Out of 50 normotensive controls only 3 were obese (BMI ≥25 kg/m2), so the prevalence of obesity in controls was 6% (table-3,4).

In this study, it was found that the mean systolic BP in the cases was 159±11.98 mmHg and in the controls was 116±8.43 mmHg. Mean diastolic BP in the cases was 94±6.42 mmHg and in the controls was 76±8.53 mmHg. In a previous study by Feig et al[4] the mean systolic and diastolic BP was 139 mmHg and 83 mmHg respectively in their study patients. Krishnan et al[5] showed the mean systolic and diastolic BP were 123.1 ± 8.6 mmHg and 82.3 ± 5.4 mmHg respectively in their patients. Strasak et al[6] observed in their study that mean systolic blood pressure was 132.0 ± 18.8 mmHg and diastolic blood pressure was 81.6 ± 10.8 mmHg. Mellen et al[7] showed mean systolic blood pressure was 113.8 mmHg and diastolic blood pressure 70.2 mmHg. Similar mean blood pressure was obtained by Perlstein et al.[8] In conclusion with respect to other majority of the studies our patient population had higher blood pressure at presentation.

In this study, out of 50 cases, 20 (40%) patients were dyslipidemic and 30 (60%) patients had normal lipid profile. Out of the 50 controls only 12 (24%) had dyslipidemia (Table 3). Gupta R[3] et al have reported that high cholesterol is present in 25-30% of urban and 15-20% rural subjects which is almost similar to this study. Where as Masanari Kuwabara et al[9] in their study found that 55% of hypertensives and 31% of non hypertensives were dyslipidemic, which was higher than our study. Malhotra P et al[10] found the prevalence of lipid abnormalities 47.6% and 51.4% in rural normotensives and hypertensives and 43.8% and 46.8% in urban normotensives and hypertensives respectively which was very high as compared to our study group. Similarly Joshi SR[11] et al studied the pattern and prevalence of dyslipidemia in a large representative sample of four selected regions in India. Of the subjects studied, 13.9% had hypercholesterolemia, 29.5% had hypertriglyceridemia, 72.3% had low HDL-C, 11.8% had high LDL-C levels and 79% had abnormalities in one of the lipid parameters.

In this study it was found that among hypertensive patients, Serum cholesterol was raised in 5 patients while in controls only 1 has raised serum cholesterol (p=0.0919). Hypertriglyceridemia was noted in 12 patients in hypertensive and among 7 normotensive(p=0.2031). Raised LDL was found in 4 patients with hypertension and 2 normotensive persons (p=0.3994). HDL was found low in 9 hypertensive and 2 normotensive (p=0.0252) (Table 4). Thus it was observed that though the prevalence of dyslipidemia was higher in hypertensive group than normotensive, yet this association was not statistically significant. This difference was not significant for the prevalence of raised serum cholesterol, serum triglyceride, LDL-CH and low HDL.

In previous study Guptha S et al[12] studied levels of cholesterol lipoproteins and prevalence of dyslipidemias in urban Asian Indians and found most prevalent dyslipidemias was borderline high LDL, low HDL and high triglycerides. In our study we found similar pattern of raised mean serum triglyceride and low HDL levels, but in contrast we found a lower mean LDL cholesterol in our study group.

CONCLUSION

Prevalence of dyslipidemia was higher in patients with essential hypertension than normotensives. Raised serum cholesterol, serum triglyceride and LDL was found in higher frequency in hypertensive than normotensive. Hypertriglyceridimia was the most common lipid abnormality in our study population. Mean Serum cholesterol, Triglyceride was higher and mean HDL, LDL was lower in hypertensive patients as compared to normotensive, but this difference was not statistically significant. The prevalence of dyslipidemia is very high in India, which calls for urgent lifestyle intervention strategies to prevent and manage this important cardiovascular risk factor.

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