ORIGINAL ARTICLE

Evaluation of Serum Cholesterol and Triglycerides in Patients with Diabetes, Hypertension and Cerebrovascular Accidents

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ABSTRACT

Aim: To determine the percentage of hypertensive, diabetic and stroke patients having increased level of cholesterol and triglycerides.
Methods: This prospective study was carried out on cases of diabetes mellitus, hypertension and glycemic control from January 2012 to June 2012. A total of 300 cases were included in the study.
Results: Out of 3000 patients 93(31%) patients showed isolated stroke, 114 (38%) showed isolated diabetes mellitus. Isolated hypertension was found in 21(7%), 6(2%) patients showed combined hypertension, CVA and diabetes mellitus. 18(6%) patients exhibited combined hypertension and stroke. 20 (6.7%) patients were having combined diabetes mellitus and hypertension and 7(2.3%) patients exhibited combined diabetes mellitus and stroke.
Keywords: Diabetes mellitus, Hypertension, Cerebrovascular accident.

INTRODUCTION

Cholesterol is a fatty material, which over the years thickens and narrows the arterioles. It is manufactured in the liver and is an essential element of blood. It is present abundantly in egg yolk, butter, cream, animal fat and milk. Hypertensive retinopathy is among the vascular complications of essential hypertension. It is known that the auto-regulation of retinal circulation fails as blood pressure increases beyond a critical limit. However, elevated blood pressure alone does not fully account for the extent of retinopathy[1].

The major risk factors contributing to the excess of cardiovascular diseased caused by diabetes includes hyperglycemia, insulin resistance, dyslipidemia, hypertension and smoking. Dyslipidemia in hypertensive patients is itself known to be a predisposing risk factor, an aggravating or complicating factor[2]. Hypertension and hyperlipidemia not only accelerate atherogenesis but also cause degenerative changes in the walls of large- and medium-sized arteries[3], which accelerate cerebrovascular hemorrhage[4], ischemic heart disease[5], stroke, and cardiac arrest[6,7,8].

Increased serum cholesterol levels have been observed in individuals who suffer from non-haemorrhagic stroke, but not in those who suffer intra cranial or subarachnoid haemorrhage. Serum lipids are thought to interact with the pathogenesis of non-haemorrhagic stroke through a atherosclerosis mechanism.

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PATIENTS AND METHODS

This prospective study was carried out on cases of diabetes mellitus, hypertension and glycemic control from January 2012 to June 2012. A total of 300 cases were included in the study.

RESULTS

Out of 300 patients, 153(51%) were male and 147(49%) were female. As regards dyslipidemia in CVA, Hypertriglyceridemia was present in 18(46%) male and 21(54%) in female patients whereas hypercholesterolemia was seen in 9(60%) male and 6 (40%) in female patients. Dyslipidemia in hypertension patients, hypertriglyceridemia was present in 12(67%) male and 6(33%) in female patients and hypercholesterolemia was seen in 6 (67%) male and 3(43%) in female patients. Dyslipidemia in diabetic patients, hypertri-glyceridemia was present in 15(38%) male and 24(682%) in female patients, hypercholesterolemia was seen in 12(50%) male and 12(50%) in female patients.

Table 1: Triglycerides and cholesterol level in CVA (n=300 with CVA 93)

Age (yrs)	Male	Female
< 40	09	09
41-50	09	09
51-60	24	15
61-70	06	09
>70	03	-
Total	51	42

Table 2: Triglycerides and cholesterol level in patients with hypertension (n=300 with hypertension 42)

Age (yrs)	Male	Female
< 40	09	03
41-50	-	-
51-60	09	06
61-70	03	09
>70	03	-

Table 3: Triglycerides and cholesterol level in patients with diabetes (n=300 with diabetes 114)

Age (yrs)	Male	Female
< 40	039	15
41-50	09	09
51-60	33	27
61-70	09	09
>70	-	-

DISCUSSION

In the present study 114 (38%) patients of the total 300 patients with mean age of 54 years were suffering from isolated diabetes mellitus. Of these 114 patients, 45% were male while 55% were female. In this study 21% of the patients were having increased level of serum cholesterol and 34.2% patients having increased level of triglyceride (>150 mg/dl). When we compare this study with a study, it was found that 24% of the population was smoker and 64% of the patients were having sedentary life style[8].

Another study showed that the effect of flavastatin HMG CoA reductase inhibitor was assessed in 50 patients with dyslipidemia in diabetic belonged to the city of Lahore[9]. In this study the total cholesterol and triglyceride were high. When compare this study with the present one, total cholesterol and triglycerides are quite low in present study. The reason is financial status, difference between people belonging to Lahore.

Hyperglyperidemia is most common lipid abnormality in NIDDM, particularly in diabetics with poor glycemic control[10]. The above observation was also seen in present study. Triglyceride levels were above the desired level in 34.2% patients out of 114 patients, with mean triglyceride level below 150 mg/dl. Hyperclyceridemia is a potent risk factor for macrovascular disease due to reduced synthesis of insulin dependent lipoprotein lipase in liver, resulting in impaired clearance of LDL, cholymicron and VLDLremnants[11]. High triglyceride levels are associated with hypercoagulopathy and decreased fibrinolysis both contributing to coronary heart disease[12]. In addition to metabolic relation to LDL cholesterol modifying its particle into more dense, small and hence more atherogenic form[13].

In the present study 42(14%) patients with mean age of 63 years were suffering from isolated hypertension. Of these 57% were male while 43% had increased level of triglyceride and 22% were having increased serum cholesterol. In these patients 64% were smoker. The similar study showed that 32% of the patients were having hyperglyceridemia and 10% of patients were having both raised triglyceride and cholesterol[14].

In our study more patients had increased level of cholesterol and triglyceride. The exact cause of increased cholesterol and triglyceride in present study is not known. A study carried out reveals that 48% of patients were having hypercholesterolemia[15]. Another study showed that 50% of the patients had dyslipidemia and 39% had hypertriglyceridemia[16].

A study showed the frequent occurrence of high serum lipids in hypertensives which has been termed as familial dyslidemic hypertensive[17]. Hypertrigly-ceridemia was the most prevalent of all the lipid sbnormalities[19].

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