

Cardiovascular Risk Factors for Acute Stroke

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ABSTRACT

Aim: To assess the prevalence of high cholesterol and triglycerides in patients with diabetes mellitus, hypertension and cerebrovascular accident.

Methods: This prospective study was carried out at District Teaching Hospital, Ghazi Khan Medical College, DG Khan from June 2014 to May 2015. A total of 150 cases were included in the study.

Results: Ninety three (62%) patients showed isolated stroke, 57(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.

Conclusion: It is concluded from the study that more patients had increased level of cholesterol and triglyceride. The exact cause of increased cholesterol and triglyceride in present study is not known.

Keywords: Diabetes mellitus, Hypertension, Cerebrovascular accident.

INTRODUCTION

Stroke is the major cause of functional disability and neurological sequelae were present in 90% of stroke patients^{1,2}. Cerebrovascular diseases are also an important cause of cognitive impairment and dementia³. The high frequency of stroke reported in 218 new cases among males and 127 among females^{4,5}.

The major risk factors contributing to the excess of cardiovascular disease 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 factor⁶. Hypertension and hyperlipidemia not only accelerate atherogenesis but also cause degenerative changes in the walls of large- and medium-sized arteries⁷, which accelerate cerebrovascular hemorrhage⁸, ischemic heart disease⁹, stroke and cardiac arrest¹⁰.

Age, gender, ethnicity/race, low birth weight, family history of stroke and genetics/heredity¹¹. In relation to age, in 2006, it was found that 93% of subjects who had suffered a stroke in Spain were older than 64 years of age¹². Age is a continuous risk factor for the occurrence of stroke and dementia, with a two-fold increase in the incidence and prevalence rates for each successive 5 years after age 65 years. On the other hand, men show a higher incidence of cerebral vascular disease than women. With regard

to ethnicity/race, it has been demonstrated that black patients have a higher incidence of stroke vs white patients. Intracranial atherosclerotic disease is more frequent in patients of Asian^{13,14,15}.

PATIENTS AND METHODS

This prospective study was carried out at District Teaching Hospital, Ghazi Khan Medical College, DG Khan from June 2014 to May 2015 and comprised 150 cases.

RESULTS

There were 76(50.7%) males and 74(49.3%) females. 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 patients of hypertension, hypertriglyceridemia was present in 12(67%) male and 6(33%) in female patients and hypercholesterolemia was seen in 6(67%) male and 3(33%) in female patients. Dyslipidemia in diabetic patients, hypertriglyceridemia was present in 15 (38%) male and 24(68%) in female patients, hypercholesterolemia was seen in 12(50%) male and 12(50%) in female patients.

Table 1: Sex distribution (n=150)

Gender	n	%age
Male	76	50.7
Female	74	49.3

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Table 2: Triglycerides and cholesterol level in CVA (n=150 with CVA 48)

Age (years)	Male	Female
< 40	05	05
41-50	04	04
51-60	13	07
61-70	03	05
>70	02	-
Total	27	21

Table-3: Triglycerides and cholesterol level in patients with hypertension (n=150 with hypertension 23)

Age (years)	Male	Female
< 40	04	02
41-50	-	-
51-60	05	03
61-70	02	05
>70	02	-
Total	13	10

Table 4: Triglycerides and cholesterol level in patients with diabetes (n=300 with diabetes 60)

Age (years)	Male	Female
< 40	18	06
41-50	05	03
51-60	14	08
61-70	04	02
>70	-	-
Total	41	19

DISCUSSION

According to World Health Organization report for 2002, total mortalities due to stroke in Pakistan were 78512¹⁶. In the present study 60(36.4%) patients of the total 150 patients with mean age of 54 years were suffering from isolated diabetes mellitus. Of these 60 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 style¹⁷.

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 Lahore¹⁸. 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 and our area.

Hyperglyceridemia is most common lipid abnormality in NIDDM, particularly in diabetics with poor glycemic control¹⁹. The above observation was also seen in present study. Triglyceride levels were above the desired level in 34.2% patients out of 60

patients, with mean triglyceride level below 150 mg/dl. Hyperglyceridemia 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, chylomicron and VLDL remnants²⁰. High triglyceride levels are associated with hypercoagulopathy and decreased fibrinolysis both contributing to coronary heart disease²¹. In addition to metabolic relation to LDL cholesterol modifying its particle into more dense, small and hence more atherogenic form¹⁹.

In the present study 23(15.3%) patients with mean age of 63 years were suffering from isolated hypertension. Of these 57% were male while 43% had increased level of triglyceride. In these patients 32% were smoker. The similar study showed that 16% of the patients were having hyperglyceridemia and 5% of patients were having both raised triglyceride and cholesterol²².

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 hypercholesterolemia²³. Another study showed that 50% of the patients had dyslipidemia and 39% had hypertriglyceridemia²⁴.

CONCLUSION

It is concluded from the study that more patients had increased level of cholesterol and triglyceride. The exact cause of increased cholesterol and triglyceride in present study is not known.

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