

Frequency of Dyslipidemia in Patients Presented with Ischemic Stroke

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ABSTRACT

Aim: To determine the frequency of dyslipidemia in patients presented with ischemic stroke.

Study design: Cross-sectional study.

Place and duration of study: Department of Medicine, Sahara Medical College Narowal in collaboration with Department of Medicine, Govt. Khawaja Muhammad Safdar Medical College Sialkot from 01-01-2020 to 31-12-2020

Methodology: Two hundred patients of both genders with ages between 25-75 years were enrolled. Patient's detailed demographics age, gender and body mass index were recorded after taking written consent. All patients of ischemic stroke were undergone for CT scan brain. Expert opinion about infarction area in brain was taken from qualified neurologist from Gujranwala Medical College, Gujranwala. Patients having fasting lipid profile [serum triglycerides, low density lipoprotein (LDL), very low density lipoprotein (VLDL), and high density lipoproteins (HDL)], blood sugar levels and serum homocystein levels were measured.

Results: One hundred and sixteen (58%) patients were males and 84(42%) were females. Mean age of the patients were 55.74±4.39 years and mean BMI was 27.87±5.14 kg/m². Dyslipidemia was found in 110 (55%) patients and among them increased HDL was found in 46 (23%) patients with mean 152.4±14.5, high total cholesterol was found in 42(21%) with mean 217.6±29.8, LDL in 140 (70%) with mean 29.6±5.6, triglycerides 32 (16%) with mean 204.1± 32.2 and elevated non HDL c (>130mg/dl) in 68 (34%) with mean 170.8±22.3.

Conclusion: Dyslipidemia has a very strong correlation with ischemic stroke and the frequency of dyslipidemia in patients presented with ischemic stroke was very high.

Keywords: Ischemic stroke, Serum triglyceride, Serum cholesterol, Dyslipidemia

INTRODUCTION

Stroke is one of the most frequent cases of emergency care, neurology centres and clinics. It is a medical emergency that can be particularly morbid and dangerous and depends on where the harm happens. It is due either to the blood supplies disruption by a clot (ischemic stroke) or to the blood vessel breakage (hemorrhagic stroke), which is caused by reduced perfusion of the brain cells¹⁻⁴. The occurrence generally is sudden and progressive. Symptoms include an end to cranial nerve activity and paralysis or paresis of the part of the body which is controlled by that infarctive area in the brain. There are various risk factors, including diabetes mellitus, hypertension, smoking, the distortion of lipids, thromboembolism, arrhythmias, etc.⁵⁻¹⁰

The first choice of research is computer tomography (CT), while magnetic resonance imaging (MRIs), in particular ischaemic strokes, may be appropriate in the region of the brain stem. This occurrence is generally irreversible because of the absence of brain tissue regeneration, hence earlier measures to avoid the disease are necessary. The association of dyslipidemias is a separate risk factor that results in ischemic stroke. However, the position of the diseases in the case of hemorrhagic stroke is not clear, and variable outcomes are being taken into consideration to quantify their burden.

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MATERIALS AND METHODS

This cross-sectional study was conducted at Departments of medicine of Sahara medical college Narowal and Govt. Khawaja Muhammad Safdar Medical College Sialkot from 01-01-2020 to 31-12-2020. It comprised of 200 patients. After taking written consent, detailed demographics including age, sex and body mass index were recorded. Patients who had trauma, brain tumors and those did not give written consent were excluded. Patients were aged between 25-75 years with both sexes. All patients of ischemic stroke were undergone for CT scan brain. Patients having fasting lipid profile [serum triglycerides, low density lipoprotein (LDL), very low density lipoprotein (VLDL), and high density lipoproteins (HDL)], blood sugar levels and serum homocystein levels were measured. Standard deviation formula was used to measure numerical data and demographic details were measured in terms of percentages and frequencies. Complete data was analyzed by SPSS 24.0 version.

RESULTS

There were 116(58%) male patients and 84(42%) female patients. Mean age of the patients were 55.74±4.39 years and mean BMI was 27.87±5.14 kg/m². 34(17%) patients were less than 35 years, 126(63%) patients were between 35-60 and the remaining 40(20%) were >60 years of age (Table 1). Dyslipidemia was found in 110(55%) patients and not found in 90 (45%) patients (Table 2). Increased HDL was found in 46 (23%) patients with mean 152.4±14.5,

high total cholesterol was found in 42 (21%) With mean 217.6 ± 29.8 , LDL in 140(70%) with mean 29.6 ± 5.6 , triglycerides 32(16%) with mean 204.1 ± 32.2 and elevated non HDL c ($>130\text{mg/dl}$) in 68 (34%) with mean 170.8 ± 22.3 (Table 3).

Table 1: Demographic information of patients (n=200)

Variable	No.	%
Gender		
Male	116	58.0
Female	84	42.0
Age (years)		
<35	34	17.0
35-60	126	63.0
>65	40	20.0
Mean age (years)	55.74 ± 4.39	
Mean BMI (kg/m^2)	27.87 ± 5.14	

Table 2: Prevalence of dyslipidemia among patients

Dyslipidemia	No.	%
Yes	110	55.0
No	90	45.0

Table 3: Association of lipid profile among patients of ischemic stroke

Lipid profile	No.	%	Mean
HDL ($>130\text{mg/dl}$)	46	23.0	152.4 ± 14.5
TC ($>200\text{mg/dl}$)	42	21.0	217.6 ± 29.8
LDL ($<40\text{mg/dl}$)	140	70.0	29.6 ± 5.6
TG ($>150\text{mg/dl}$)	32	16.0	204.1 ± 32.2
High non HDL c ($>130\text{mg/dl}$)	68	34.0	170.8 ± 22.3

DISCUSSION

Stroke continues to have a significant public health effect. Stroke in frequent is chronic and disables more population instead of lethality. While certain stroke determinants, such as age, gender, race, ethnicity and inheritance, cannot be altered, they are markers of risk. The regulation of major modifiable factors such as lipid levels may therefore reduce disease incidence.¹¹

In the present study, 116(58%) patients were males and 84(42%) were females. Mean age of the patients were 55.74 ± 4.39 years and mean BMI was $27.87 \pm 5.14 \text{ kg/m}^2$. Thirty four (17%) patients were less than 35 years, 126 (63%) patients were between 35-60 and the remaining 40 (20%) were >60 years of age. These results were comparable to the previous studies.¹²⁻¹⁵ Dyslipidemia entails the production of atherosclerosis through the increasing of plasma cholesterol, triglycerides (TG) or both or a degree of lower high-density lipoproteins.¹⁶

The main risk factor for CAD and ischemic strokes is dyslipidemia. It leads to increased plasma triglyceride and LDL-c levels and a decreased concentration of HDL-c, as a significant risk factor for peripheral vascular diseases, stroke, and CAD^{17,18} Serum HDL-c has anti-atherogenic characteristics which enable cholesterol to flow from the peripheral cells into the liver, and thus have a protective effect.¹⁹ We found that high LDL was among 46(23%) patients with mean 152.4 ± 14.5 , high total cholesterol was found in 42 (21%) with mean 217.6 ± 29.8 , LDL in 140(70%) with mean 29.6 ± 5.6 , triglycerides 32(16%) with mean 204.1 ± 32.2 and elevated non HDL c ($>130\text{mg/dl}$) in 68 (34%) with mean 170.8 ± 22.3 .

The dyslipidemia was found among 110 (55%) patients in which majority of patients were males.²⁰ Serum lipid abnormalities are significant risk factors for coronary heart disease and are lately identified as a cerebrovascular disease risk factor. Bain et al. reported in their study that males suffered in ischemical groups 1.73:1 and 1.42:1 in the hemorrhagic group more than female with male²¹.

A study by Khalil et al²² found higher LDL and lipoprotein A in ischemical stroke than other trends of dyslipidemia in patients who were ischemic stroke. They recorded that hypertension was the most frequent (74.3%) risk factor, followed by hyperglycemia (64%), and dyslipidemia (57.1%), the findings regarding dyslipidemia was close to our findings, moreover, they also reported that the prevalence of dyslipidemia in men was 68.4%, substantially higher than in women (43.7%), and according to them, the prevalence of dyslipidemia in the age group >65 (63.2%) was higher than in the age group >65 (53.7%). Of 55 ischemic patients surveyed, 79% were male or 22% were female and our findings were not comparable, according to a local study conducted by Khan et al.²³ They estimated that 32% of ischemic stroke patients had Hypertension (65%), dyslipidemia (32.7%), diabetes mellitus (36.3%) and smoking.

CONCLUSIONS

Dyslipidemia can cause acute ischemic stroke and is a risk factor that can be modified. Males are more prone to have dyslipidemias than those of females. Apart from epigenetic factors, genetics also plays an important role in having dyslipidemias. Epigenetic factors can be best controlled than those of genetic factors by modification of lifestyles and medical treatment. Proper intervention to change an irregular lipid profile can also lead to improved prognosis and to avoid strokes. As suggestion, every six month follow up of lipid profile should be there to keep an eye on the changing pattern of dyslipidemias.

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