A study of lipid profile in non-diabetic patients with cerebrovascular accidents at tertiary health care center

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Ab<u>stract</u> attributable to a focal vascular cause. CVA is divided into Ischemic and Hemorrhagic stroke. Aims and Objectives: To study lipid profile in non-diabetic patients with cerebrovascular accidents at tertiary health care center. Methodology: All non-diabetic patients with features of stroke admitted to tertiary care hospital from December 2013 to December 2015 were taken for the study. Data will be collected by means of case record form. All non-diabetic patients of cerebrovascular accidents were enrolled in this study. All the patients who fulfilled the inclusion criteria were enrolled in this study Lipid profile after 8 hours of fasting, Serum total cholesterol, Serum triglyceride, Serum HDL, Serum LDL, Serum VLDL was done. Result: The maximum number of patients 14 (28%) were found in 50-55 year age group and minimum number of patients 3 (6%) were found in age group 70-75year and the extreme age group patients (>75year) were found to be 5 (10%). Male: female sex distribution out of 50 patients; 33:17 which contributes 66% and 34% whole population. 22% patients were having abnormal STC, 68% of the patients were having abnormal Triglycerides, 64% patients were having abnormal LDL, 60 % of the patients were having abnormal HDL, 68% of the patients were having abnormal VLDL. Conclusion: It can be concluded from our study that the most common type lipid abnormality was abnormal Triglycerides, abnormal VLDL, abnormal LDL in the patients so these parameters should be considered while predicting the risk of stroke in any dyslipidemic patient.

Key Words: Lipid profile, cerebrovascular accidents, abnormal Triglycerides, abnormal VLDL, abnormal LDL.

Background: Cerebrovascular accident (CVA) or stroke is defined as abrupt onset of a neurologic deficit that is

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INTRODUCTION

Cerebrovascular accident (CVA) or stroke is defined as abrupt onset of a neurologic deficit that is attributable to a focal vascular cause. CVA is divided into Ischemic and Hemorrhagic stroke. Cerebral ischemia is caused by a reduction in a blood flow that last longer than several seconds. If the cessation of flow lasts for more than a few minutes, infarction or death of brain tissue results.¹ CVA is third most common cause of death in developed world after Cancer and Ischemic Heart disease and it is the most common cause of physical disability. CVA is a common medical emergency. The incidence is rising steeply in many developing countries because of adoption of less healthy life styles. CVA is third most common cause of death after coronary artery disease and lung disease in developing countries and it is most common cause of morbidity.² CVA is difficult to treat and the treatment is still not effective. Prevention is the best option but ability to forecast the stroke is challenging making the detailed study of risk factors essential. The risk factors include diabetes, hypertension, dyslipidaemia, older age, smoking and other rare causes. There is good evidence that

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modification of risk factor will reduce the risk of CVA. The relation between atherosclerosis and elevated serum lipids is well established and aggressive treatment of dyslipidemia decreases the risk of stroke. Recent studies have shown that distribution of triglycerides and cholesterol within major lipoprotein classes are of importance for the development of atherosclerosis, which is precursor of stroke. Elevated plasma concentration of low density lipoproteins (LDL) and decreased high density lipoproteins (HDL) concentration are associated with an increased risk of atherosclerosis.³ The most common type of stroke is ischemic stroke followed by haemorrhagic stroke and lacunar infarcts and dyslipidaemia is the established risk factor for all types of strokes.⁴

MATERIAL AND METHODS

All non-diabetic patients with features of stroke admitted to tertiary care hospital from December 2013 to December 2015 were taken for the study. Data will be collected by means of case record form. All non-diabetic patients of cerebrovascular accidents were enrolled in this study with informed consent and detailed patient information were included into study while, Patients having diabetes mellitus type 1 or 2 or impaired glucose tolerance (ADA Guidelines 2014 is used for diagnosis of diabetes mellitus. Patients with history of head injury, Patients on drug therapy such as OCP's, steroids, diuretics and anticoagulant drugs, Patients already diagnosed with dyslipidaemia, Patients on lipid lowering agents, Diagnosed case of liver diseases, kidney diseases, pancreatitis, coronary artery disease and thyroid disease, Diagnosed case of malignancy, Patients lost for follow up were excluded from the study. All the patients who fulfilled the inclusion criteria were enrolled in this study Lipid profile after 8 hours of fasting, Serum total cholesterol, Serum triglyceride, Serum HDL, Serum LDL, Serum VLDL was done.

RESULT

Table 1: No of patients in different age group			
Age group	No of patients	Percent (%)	
50-55	14	28	
55-60	9	18	
60-65	11	22	
65-70	8	16	
70-75	3	6	
>=75	5	10	
Total	50	100	

In the present study the maximum number of patients 14 (28%) were found in 50-55 year age group and minimum number of patients 3 (6%) were found in age group 70-75 year and the extreme age group patients (>75 year) were found to be 5 (10%).

	Table 2:	Sex wise distributio	istribution of patients		
	Sex	No of patients	Percent (%)		
Male		33	66		
	Female	17	34		
	Total	50	100		

Stroke in non diabetic patients having male: female sex distribution out of 50 patients; 33:17 which contributes 66% and 34% whole population.

Table 3: Distribution	of the patients	as per the STC	(Sr. Tota
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Cholesterol)				
	Total			
Male female			- IOtal	
Normal	24 (62%)	15 (38%)	39 (78%)	
Abnormal	6 (55%)	5 (45%)	11 (22%)	
Total	30	20	50	

22% patients were having abnormal STC

 Table 4: Distribution of the patients as per the Triglycerides					
	Total				
	Female	TOLAT			
Normal	11 (68%)	5 (32%)	16 (32%)		
Abnormal	19 (56%)	15 (34%)	34 (68%)		
Total	30	20	50		

68% of the patients were having abnormal Triglycerides

 Table 5: Distribution of the patients as per the LDL

	NO. of pa	_	
	Male	Female	Total
Normal	13 (73%)	5 (27%)	18 (36%)
Abnormal	16 (50%)	16 (50%)	32 (64%)
Total	29	21	50

64% patients were having abnormal LDL

Table 6: Distribution of the patients as per the

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	No. of patients (HDL)		τοται
	Male	Female	TOTAL
Normal	14 (70%)	6 (30%)	20 (40%)
Abnormal	16 (54%)	14 (46%)	30 (60%)
Total	30	20	50
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60 % of the patients were having abnormal HDL

Table 7: Distribution of	f the	patients as per the VLDL
	-	

	No. of p		
	(VLDL at onset)		Total
	Male	Female	-
Normal	11 (69%)	5 (31%)	16 (32%)
Abnormal	20 (59%)	14 (41%)	34 (68%)
Total	31	19	50

68% of the patients were having abnormal VLDL

DISCUSSION

Stroke is a serious life threatening condition which continues to be a major public health problem leading to death and severe neurologic disability. Stroke is the rapidly developing loss of brain functions due to a

disturbance in the blood vessels supplying blood to the brain. In developing country study, Stroke constituted about 2.4% of all emergency admissions with cerebral infarction making up 49% of all cases. ⁵ There is a reasonably reliable evidence to suggest that 60-80% of all ischemic strokes can be attributed to these risk factors. ^oThere are well established risk factors for stroke, such as increased blood pressure, increased blood cholesterol, cigarette smoking, carotid stenosis, diabetes mellitus, and valvular atrial fibrillation heart disease. Dyslipidaemia refers to the presence of abnormal levels of lipids or lipoproteins in the blood. Dyslipidaemia is characterized by elevated total cholesterol (TC), elevated low density lipoprotein (LDL), elevated triglycerides (TG), or low high density lipoprotein $(HDL)^7$. Brain synthesized its own cholesterol which is metabolized into 24S- hydroxycholestrol and released into circulation. Dyslipidaemia is a major risk factor for cerebral infarction. The LDL targeting goal can significantly reduce the risk of cerebral infarction.⁸ The relationship between serum cholesterol levels and the risk of stroke is not clear.⁹ AU shaped relation between the level of serum total cholesterol and the risk of stroke of all types has been proposed, derived from an inverse association with hemorrhagic stroke and a direct association with ischemic stroke.¹⁰ Possible differences in the effects of cholesterol at different vascular sites could lead to the complex association between serum cholesterol levels and stroke. The origin of the Internal Carotid Artery is probably the most common site of Atherosclerosis that leads to Transient Ischemic Attack (TIA) or Stroke.¹¹ In our study we have seen that the maximum number of patients 14 (28%) were found in 50-55 year age group and minimum number of patients 3 (6%) were found in age group 70-75year and the extreme age group patients (>75year) were found to be 5 (10%). Male : female sex distribution out of 50 patients; 33:17 which contributes 66% and 34% whole population. 22% patients were having abnormal STC, 68% of the patients were having abnormal Triglycerides, 64% patients were having abnormal LDL, 60 % of the patients were having abnormal HDL, 68% of the patients were having abnormal VLDL. These findings are similar to Ogunrin et al and Festus et al who all found elevated triglyceride the most prevalent pattern in dyslipidemia.^{14,15} In addition, Laloux *et al.* found that high TG is commonly found in patients with ischemic stroke whatever the etiologic subtype.¹²Holme et al. reported that elevated TG and low HDL-c were associated with increased incidence of ischemic stroke in both genders.¹³

CONCLUSION

It can be concluded from our study that the most common type lipid abnormality was abnormal Triglycerides, abnormal VLDL, abnormal LDL in the patients so these parameters should be considered while predicting the risk of stroke in any dyslipidemic patient.

REFERENCES

- 1. Harrison's principles of internal medicine, 19th edition, vol2, cerobrovascular diseases, page no 2559-61.
- Park's textbook of preventive and social medicine, 23rd edition, epidemiology of chronic non communicable diseases, page no 368-71.
- 3. Farid N. R, Anderson. J: Cerebrovascular disease and hypreRlipoproteinemias. Lancet 1, 1398; 1972
- 4. Wolf PA, Kannel WB, Dawber TR. Prospective investigation: the Framingham study and the epidemiology of stroke. Adv Neurol 1978; 19:107-120.
- Ogun SA, Ojini FI, Ogungbo B, Kolapo KO, Danesi MA: Stroke in south west Nigeria. A 10 year review. Stroke 2005, 36:1120–1122.
- 6. Hanky GJ, Spiesser J, Hakimi Z, et al. (2007): Rate, degree, and predictors of recovery from disability following ischemic stroke. Neurol.; 68(19): 1583-7.
- Mohiuddin SM, Pepine CJ, Kelly MT, et al. (2009): Efficacy and safety of ABT-335 (fenofibric acid) in combination with simvastatin in patients with mixed dyslipidemia: a phase 3, randomized, controlled study. American Heart Journal, 157:195-203.
- 8. Xing XY, Li GW, Yao CH, et al. (2009): The association of stroke high plasma low density lipoprotein cholesterol level and metabolic syndrome in chinese adults. Chin J Intern Med; 48(5):388-391.
- Dayton S, Chapman JM, Pearce ML, Popjak GJ. Cholesterol, atherosclerosis, ischemic heart disease, and stroke. Ann Intern Med 1970; 72:97–109.
- Gorelick PB, Mazzone T. Plasma lipids and stroke. J Cardiovasc Risk 1999; 6:217–221.
- Konishi M, Iso H, Komachi J, Shimamoto T, Jacobs DR, Terao A et al. Associations of serum total cholesterol, different types of stroke, and stenosis distribution of cerebral arteries: The Akita Pathology Study. Stroke 1993;24:954-964
- Laloux P, Galanti L, and Jamart J. (2004): Lipids in ischemic stroke subtypes. ActaNeurol Belg.; 104(1):13-9.
- Holme I, Aastveit A H, Hammar N, et al. (2009): Relationships between lipoprotein components and risk of ischaemic and haemorrhagic stroke in the Apolipoprotein Mortality Risk study (AMORIS). J Intern Med; 265: 275–287.
- 14. Ogunrin OA, Unuigbe E: Serum lipids in patients with stroke: a crosssectional case–control study. J Natl Med Assoc 2008, 100(9):986–990.
- Festus OO, Idonije OB and Osadolor HB: Serum Lipid Profile in Nigerian Patients with Ischaemic Cerebrovascular Accident: Current Research Journal of Biological Sciences 5(3): 123-125, 2013

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