



## Study of serum lipid profile in stroke patients admitted in government hospital kakinada

Dr.Venkata Lakshmi bethineedi

*Department of General medicine*

*Rangaraya medical college*

Submitted: 01-02-2023

Accepted: 10-02-2023

### I. INTRODUCTION

A stroke, or cerebrovascular accident, is defined by the abrupt onset of a neurologic deficit that is attributable to a focal vascular cause.

Stroke has become a major global health problem and it is also a major cause of mortality, morbidity and disability in developed and developing world. Stroke is a predisposing factor for epilepsy, falls, depression, etc, and is a leading cause of functional impairments, with 20% of survivors requiring institutional care for at-least 3 months and as many as 30% get disabled permanently. The scientific community is unanimous on the association of blood lipid levels with the risk of cardiovascular disease. Strong association has often been found between high levels of serum cholesterol-especially of low density lipoproteins and the development of atherosclerosis while elevated levels of high density lipoproteins (HDL) cholesterol are understood to play protective role.

Several clinical trials showed an association between high concentrations of serum cholesterol and ischemic stroke. But there are studies and especially some case control studies on the subject which examined cholesterol, assuming it a risk factor, but have produced negative findings. Some prospective studies also have failed to show a direct and strong association between cholesterol levels and stroke. Therefore, the association between abnormal lipid profile and stroke may not be as straight forward as for coronary heart disease. There is an established effect of serum lipid levels on short term mortality

due to strokes. Therefore the present study was planned to determine the difference in lipid profile among ischemic and hemorrhagic stroke patients, compare them and establish some relation to fill up such known gaps. It will also be a useful precedence to take up more of such comparisons and clinical assessments.

### II. METHODS

This one-year observational study involved all the patients with a definite diagnosis of stroke (acute cerebrovascular disease) admitted to the medical ward of government hospital kakinada. Prior permission from the institutional ethical committee was taken. Patients having head injury, transient ischemic attack, brain tumor, subdural hematoma, subarachnoid hemorrhage, patient on hypolipemic drugs, old myocardial infarction, and patients refused for consent were excluded from the study

The patients were classified as having ischemic or hemorrhagic stroke on the basis of CT scan of head (plain and contrast).

5ml of venous sample were collected from anterior cubital vein after 8 hrs of overnight fasting. Samples were centrifuged at 40C for 15 minutes after incubation of 20 minutes for extraction of serum and serum was analyzed for estimation of serum lipid profile including total cholesterol, triglyceride, LDL cholesterol and HDL cholesterol by using fully automatic analyzer. The data was analyzed using SPSS-19 version (SPSS for windows), to ascertain mean, standard deviation and p value. A p value of <0.05 was considered significant.



Normal values of various lipid variables, under given demographic conditions

Lipid profile variables	Normal values	Units
Total cholesterol	125-200	mg/dl
Low density lipoprotein	<100	mg/dl
Triglycerides	<150	mg/dl
Non High density lipoprotein	<130	mg/dl

### III. RESULTS

The study dealt with 100 patients of stroke who were admitted in government hospital kakinada.

Type of stroke	No.of patients
Ischemic stroke	54
Hemorrhagic stroke	46

Age and sex distribution of stroke patients

Age (years)	Male (%)	Female (%)	Total (%)
30-40	05 (05.0)	01 (01.0)	06 (06.0)
41-50	09 (09.0)	05 (05.0)	14 (14.0)



51-60	16 (16.0)	16 (16.0)	32 (32.0)
61	29 (29.0)	19 (19.0)	48 (48.0)
Total	59 (59.0)	41 (41.0)	100 (100.0)

Males were (59.0%) more commonly affected with stroke as compared to females (41.0%). Maximum incidence of stroke was observed in those aged above 60 years (29%)

Outcome (result)	No. of patients (%)
Died	21(21.0)
LAMA	04(04.0)
Discharge with status	
DOPR	10(10.0)
Dependent	43(43.0)
Independent	12(12.0)
Total	100(100.0)

Outcome of stroke patients during hospitalization.

Majority of patients was discharged with status of dependent on others (43%) followed by death (21%). Patient discharged independently and on

personal request was 12% and 10% respectively. Four percent patients left ward against medical advice (LAMA).



Comparison of lipid profile among study patients

Group	No.of patients	Mean±SD			
		TC(mg/dl)	TG(mg/dl)	LDL-C(mg/dl)	Non HDL-C(mg/dl)
Ischemic stroke	54	192.4±41.6	141±43.3	113.2±21.2	126.2±24.2
Hemorrhagic stroke	46	175.2±50.1	122±34.6	96.4±18.8	108.4±20.8

Total number of patients of stroke with normal and abnormal lipid profile.

Lipid profile	No. of patients
Normal lipid values	46
Abnormal	54
Increased total cholesterol	30
Increased LDL -C	35
Increased triglycerides	34
Increased non-HDL	53

Abnormal parameters	Total	Ischemic stroke (%)	Hemorrhagic stroke (%)	'p' value
TC	30	25(83.0%)	05(17.0%)	<0.001

Lipid abnormalities in patients based on type of stroke.



LDL-C	35	30(86.0%)	05(14.0%)	<0.001
TG	34	23(68.0%)	11(32.0%)	<0.01
non HDL-C	53	38(72.0%)	15(28.0%)	<0.01

Total cholesterol was abnormal in 83% of ischemic stroke and 17% of hemorrhagic stroke. LDL cholesterol was abnormal in 86% of ischemic stroke and 14% of hemorrhagic stroke

#### IV. DISCUSSION

Stroke is a clinical syndrome characterized by rapidly developing symptoms and/or signs of focal and at times global (for patients in coma) loss of cerebral functions, with symptoms lasting more than 24 hours or leading to death with no apparent cause other than that of vascular origin. Age is an important risk factor for stroke. The mean age of stroke onset in India is 63 years. Cerebral atherosclerosis with atheroma formation is the basic underlying patho-physiologic mechanism in ischemic stroke. Out of 100 patients 46 had hemorrhagic stroke and 54 had ischemic stroke in present study.

In this study increased total cholesterol was present in 30 patients.

Total cholesterol was abnormal in 83% of ischemic stroke and 17% of hemorrhagic stroke.

Most of the patients were having low HDL (<40) which is a risk factor for stroke. The mean TC and LDL-C levels were significantly much higher in the ischemic stroke patients (192.4±41.6) when compared to patients with haemorrhagic stroke (175.2±50.1). Dyslipidemia is a primary major risk factor for coronary artery disease (CAD) and ischemic stroke. It causes insulin resistance which results in increased levels of plasma triglycerides and low-density lipoprotein cholesterol (LDL-C) and a decreased concentration of HDL-C, as an important risk factor for peripheral vascular disease, stroke, and CAD.

Current guidelines of the American heart association and proposed modifications of the NCEP-III guidelines suggest that all patients at risk for stroke or who have had a cerebral infarction should be treated to a goal LDL level of below 70 mg/dl.

#### V. CONCLUSION

Current study shows lipid abnormalities among stroke patients attending a tertiary care hospital in India. Further large-scale studies are needed in the Indian population to find out the magnitude of this problem of dyslipidemia in patients with ischemic and haemorrhagic stroke. Regular monitor of lipid profile among stroke patients may decrease the risk of atherosclerosis and cardiovascular disease among the stroke patients.

#### REFERENCES

- [1]. Bonita R, Mendis S, Truelsen T, Bogousslavsky J, Toole J, Yatsu F. The global stroke initiative. *Lancet Neurol.* 2004;3:391-3.
- [2]. Powers AC. *Harrison's Principles of Internal medicine, Cerebrovascular Accident.* Maryland. 2012;338:2275-304.
- [3]. 3.
- [4]. Kirshner HS. Medical prevention of stroke. *South Med J.* 2003;96:354-8.
- [5]. Bhalla A, Gupta OP, Gupta SB. Predicting mortality in stroke. *Neurol India.* 2002;50(3):279-81.
- [6]. Banerjee TK, Das SK. Fifty years of stroke researches in India. *Ann Indian Acad Neurol.* 2016;19(1):1-8.