Journal of Cardiovascular Disease Research

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 01, 2023

To study of hyperlipidemia in stroke patients and non-dyslipidemia in stroke patients

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Received Date: 11/11/2022 Acceptance Date: 08/01/2023

Abstract

Background: Stroke is considered as a disease which can be developed by long-lasting exposure to risk factors related to lifestyle. Modification of such risk factors should greatly affect the incidence of stroke and even mortality rates.Different modifiable and non-modifiable risk factors have been recognized for stroke. Non-modifiable risk factors are gender, age, ethnicity, heredity, and race.Modifiable risk factors include, but are not limited to, hypertension, dyslipidemia, diabetes mellitus, atrial fibrillation,smoking, drug abuse, and alcoholic intake **Aim & Objective:** 1.To study of hyperlipidemia in stroke patients and non-dyslipidemia in stroke patients 2. To study the association of hyperlipidemia with stroke 3.To study the proportion of various risk factors of stroke **Methods:** Prospective cross sectional study, Study setting: Medicine Department of tertiary care centre **Study duration:** from …..to……. **Study population:** The study population included all the cases with strokes admitted at a tertiary care center **Sample size:** 130 **Results:** Majority of case belonged in Above 45 years age group 117 (90%) and less than 45 years age group 13 (10%). majority of cases presented with Hyperlipidemia 82 (63.08%) and Non–dyslipidemia was found in 48 cases (36.92%). The proportion of Hyperlipidemia among stroke cases was 63.08% and Non dyslipidemia among stroke cases was 39.24%.When statistical analysis using Chi- square test was done, proportion of Hyperlipidemia was statistical significant in stroke cases ($p < 0.05$). Risk factors of stroke majority of cases was presented with Hyperlipidemia 82 (63.08%) followed by Hypertension 76 (58.46%), (36.92%), cigarette smoking 48 (36.92%), Obesity 45 (34.61%), Diabetes 43 (33.07%), low physical activity 35 (26.92%),Heart disease 32 (24.61%) and alcohol 23 (17.69) **Conclusions:** Hypertension, DM, cardiac diseases,,hyperlipidemia, smoking and family history of HTN and DM are significant risk factors for the incidence of stroke. Association of Hyperlipidemia with stroke was statistically significant. Majority of stroke cases presented with hyperlipidemia as compared with non-dyslipidemia

Keywords: Hyperlipidemia, non- dyslipidemia,HTN,DM, Ischemic stroke, Hemorrhagic stroke

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Introduction

Stroke compose about 50% of all neurological hospital admission. More common in males, between age group 51-60 years and hyeperlipidemia is common underlying cause for this[1-2].WHO defined stroke as rapidly developing clinical signs of focal(global) disturbance of cerebral function lasting more than 24hrs leading to death with no apparent cause other than that of vascular cause.

Harrison defined stroke as a abrupt onset of neurolgic deficit that is attributable to focal vascular cause[3].Elevated level of blood lipids are well documented risk factor for stroke. Hyperlipidemia is second only to hypertension in a list of 10 most common chronic conditions that are seen[3].Stroke is the leading cause of long-term adult disability and the fifth leading cause of death in the US, with approximately 795,000 stroke events in the US each year.[4,5]

The aging of the population, coupled with the reduction in case fatality after stroke, is expected to increase the prevalence of stroke by 3.4 million people between 2012 and 2030.[6,7] While stroke mortality had decreased in the US over the past two decades, recent trends in mortality indicate that these decreases may have leveled off, and that stroke mortality may even be rising again.

Reasons for this remain uncertain, but could reflect the consequences of the obesity epidemic, and associated diabetes. The morbidity associated with stroke remains high, with costs estimated at $34 billion per year for healthcare services, medications and missed days of work.[8]It is likely that estimates of morbidity and cost burden, moreover, based on studies of clinical stroke and using traditional measures such as physical disability and healthcare costs, underestimate the burden of cerebrovascular disease.

It is increasingly appreciated, for example, that subclinical cerebrovascular disease including so-called “silent infarction” identified on brain imaging in up to 28% of the population over age 65.[9] and ischemic white matter disease is associated with memory loss, dementia, gait impairment, and other functional disability. The global burden of stroke is high, with stroke remaining the fourth leading cause of death worldwide, with a particularly large impact in developing nations.[10,11]

At the most basic level, stroke is divided into hemorrhagic and ischemic strokes. The majority (approximately 80%) of strokes are ischemic, although the relative burden of hemorrhagic versus ischemic stroke varies among different populations. Hemorrhagic strokes can be either primarily intraparenchymal or subarachnoid.

Ischemic stroke can be further divided into what have been referred to as etiologic subtypes, or categories thought to represent the causes of the stroke: cardioembolic, atherosclerotic, lacunar, other specific causes and strokes of unknown cause.[12] Risk factors for hemorrhagic and ischemic stroke are similar, but there are some notable differences; there are also differences in risk factors among the etiologic categories of ischemic stroke. Hypertension is a particularly important risk factor for hemorrhagic stroke, though it contributes to atherosclerotic disease that can lead to ischemic stroke as well.

Methodology

Study design: Prospective Cross sectional study.

Study setting: Medicine department of tertiary care centre.

Study duration: from …..to…….

Study population: The study population included all the cases with strokes admitted at a tertiary care center

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 01, 2023

Sample Size: With reference to study by Kamalakannan S et al (2017)[77] Prevalence of stroke was 44%
Formula for sample size = 4* P* Q / L2
Where P = 44%
Q = 100 -44 = 56
L = Allowable error = 20% (Absolute error)
Sample size = 4 * 44 * 56 / 77.44 =127.27
Sample size Rounded to = 130

Method Of Collection of Data:
Ethical Clearance: Ethical clearance was obtained from institutional ethics committee.Informed consent was obtained from study subjects after explaining study procedure in local language. Predesigned and pretested case record form was used as a tool for data collection.All patients fulfilling the inclusion criteria were subjected to detailed history taking regarding symptoms and duration of disease.
Data was collected about sociodemographic chracteristcs of study subjects like age,sex, address, occupation education status and socioeconomic status.Also data regarding past medical history and comorbid conditions like diabetes and hypertension was collected in case record form. A careful and detailed ocular examination as well as clinical examination was undertaken.

Statistical Analysis
Data was entered in windows excel format and presented with the help of frequency and percentage tables. Association among the study groups is assessed with the help of chi-square test using OpenEPI statistical software version 3.01. P value less than 0.05 was taken as significant. Graphical representation is done in MS excel 2010

Observations and Results
The observations and results of the present study are as follows
Table 1: Distribution of cases according to Age

Age in years	**Frequency**	**Percentage**
Less than 45 years	13	10%
Above 45 years	117	90%
Total	**130**	**100**

The above table shows Distribution of cases according to Age. Majority of case belonged in Above 45 years age group 117 (90%) and less than 45 years age group 13 (10%)
Table 2: Proportion of various Modifiable Risk factors of stroke (n=130)

Sr No	**Risk factors of stroke**	**Frequency**	**Percentage**
1	Hypertension	76	58.46%
2	Diabetes	43	33.07%
3	Heart disease	32	24.61%
4	Hyperlipidemia	82	63.08%
5	Alcohol	23	17.69%
6	Cigarette smoking	48	36.92%
7	Obesity	45	34.61%
8	Low physical activity	35	26.92%
	Total		**100**

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The above table shows various Modifiable Risk factors of stroke majority of cases was presented with Hyperlipidemia 82 (63.08%) followed by Hypertension 76 (58.46%), (36.92%),cigarette smoking 48 (36.92%),Obesity 45 (34.61%), Diabetes 43 (33.07%),low physical activity 35 (26.92%),Heart disease 32 (24.61%) and alcohol 23 (17.69)

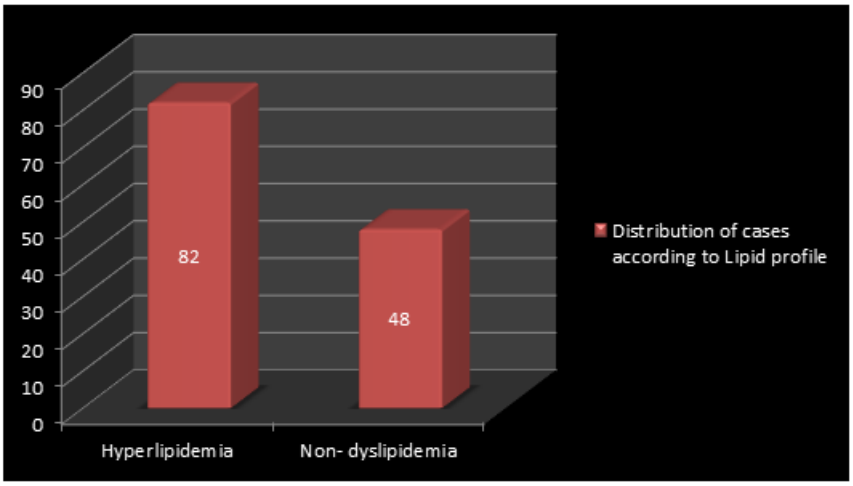

Figure 1: Distribution of cases according to Lipid profile

The above figure 6 shows majority of cases presented with Hyperlipidemia 82 (63.08%) and Non –dyslipidemia was found in 48 cases (36.92%)

Table 3: Association of Hyperlipidemia with stroke

Sr No	Hyperlipidemia	Stroke				Total (%)
		Present	Percentage	Absent	Percentage	
1	Present	82	63.08%	10	7.69%	108 (100)
2	Absent	48	36.92%	25	19.23%	50(100)

Chi- square- 7.1563, df-1, p-0.0074

The proportion of Hyperlipidemia among stroke cases was 63.08% and Non dyslipidemia among stroke cases was 39.24%.

When statistical analysis using Chi- square test was done, proportion of Hyperlipidemia was statistical significant in stroke cases ($p < 0.05$)

Discussion

In this study Majority of case belonged in Above 45 years age group 117 (90%) and less than 45 years age group 13 (10%) similar result found in Hamedani et al (2010)[13] He reported that factor V Leiden was associated with a twofold increased risk of arterial ischemic stroke in patients below 50 years of age. Iyad Ali et al (2019)[97] He revealed that the patients had a mean age of 68.7 years with 78.5% of them aged above 60 years.

In this study various Risk factors of stroke majority of cases was presented with Hyperlipidemia 82 (63.08%) followed by Hypertension 76 (58.46%), (36.92%),cigarette smoking 48 (36.92%),Obesity 45 (34.61%), Diabetes 43 (33.07%),low physical activity 35 (26.92%),Heart disease 32 (24.61%) and alcohol 23 (17.69) similar result found in Tanizaki et al (2000)[14] study.

Similar result found in Iyad Ali et al (2019)[15] studying the co morbidity, 53 (75.7%) patients had hypertension, 34 (49%) patients had diabetes mellitus, and 8 (11%) patients had transient ischemic attack.

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Thirty-six patients (51%) were smokers, the majority of the smokers were males, and 8 (11%) patients were obese with a BMI above 30 kg/m^2 with a mean of 31.6 kg/m^2.
In present study majority of cases presented with Hyperlipidemia 82 (63.08%) and Non – dyslipidemia was found in 48 cases (36.92%) contrast result was found in Go et al (2013)[16] He revealed that the potential role of lipids as stroke risk factor is less clear compared to coronary or peripheral vascular disease; this is mostly attributed to the heterogeneity of stroke (e.g., hemorrhagic stroke, non-atherosclerotic subtypes of ischemic stroke).
similar result found in Iyad Ali et al (2019)[15] Regarding the lipid profile it was found that, 20 patients (28%) had LDL greater than 130 mg/dl, 12 patients (17%) had cholesterol equal or greater than 200 mg/dl, 11 (15.7%) patients had TAG equal or greater than 200 mg/dl, 43 (61.3%) patients had low HDL

Conclusions

- Majority of stroke cases belonged in Above 45 years age group
- Stroke most common in male as compared with female
- Hypertension, DM, cardiac diseases,,hyperlipidemia, smoking and family history of HTN and DM are significant risk factors for the incidence of stroke.
- Association of Hyperlipidemia with stroke was statistically significant
- Majority of stroke cases presented with hyperlipidemia as compared with non-dyslipidemia
- Among 130 study participants most of the stroke patients had age above 45 years.

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