Original Research Article

A Clinical Profile of Stroke in Tertiary Care Centre

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ABSTRACT

Background: Cerebrovascular disease (CVD) is the third leading cause of death after heart disease and cancer in developed countries and is now emerging as the commonest preventable life-threatening neurological problem worldwide. It makes an important contribution to morbidity and mortality in developed as well as developing countries.
Aims: 1.To determine the age, gender distribution, risk factors and pattern of areas of brain affected in stroke patients in tertiary care centre.
Methodology: 50 patients with acute stroke were selected based on inclusion and exclusion criteria. After getting consent from the patient appropriate questionnaire was used to collect the data of patients. Diagnosis of stroke was confirmed by CT or MRI scan of brain.
Results: Totally 50 patients of acute stroke were included in our study, majority of the patients are males 35 (70%), and females are 15(30%). Approximately 36% were in the age group of 51-60 years. In this study ischemic stroke was seen in 45 (90%) of the patients and 5 (10%) had hemorrhagic stroke. Out of 50 patients 23 (46%) had diabetes mellitus and 26 (54%) had hypertension. Heart disease was present only in 16% of the patients. The mean duration of both diabetes and hypertension were 5 years. In this study 38% of the patients had high triglycerides, and 30% had had high VLDL. Anterior circulation stroke was more common 74% than posterior circulation and lacunar stroke.
Conclusion: In this present study stroke was more common in the age group of 51-60 years with male are most commonly affected. Dyslipidemia in the form of high triglycerides and high VLDL levels was the most common risk factor which was followed by hypertension. Most of the patients presented as ischemic stroke. Anterior circulation stroke was more common than posterior circulation stroke.

Keywords: Cerebrovascular accident, Stroke profile

INTRODUCTION

The word "stroke" was first introduced into the medicine by William core in 1689 before this non-traumatic brain injury was called as apoplexy[4]. Stroke or CVA, by WHO definition is a "rapidly developing clinical symptoms and/or signs of focal neurological deficit and at times global loss of cerebral function (coma) lasting longer than 24 hrs or leading to death with no apparent cause other than vascular origin"[5]. TIA(Transient ischemic attack) "defined as symptoms and signs which resolves within 24 hours without evidence of brain infarction on brain imaging"[5]. Stroke is due to cerebral infarction, primary intracerebral haemorrhage (PICH), intraventricular haemorrhage (IVH), and subarachnoid haemorrhage (SAH), it excludes infarction caused by infection, tumour, subdural haemorrhage, and other intracranial haemorrhage. Among all strokes 80% is due to ischemic and remaining 20% being the haemorrhagic stroke. Ischemic stroke is due to decreased blood supply to the focal area of brain due to infarction. Haemorrhagic stroke is the leakage of blood in the closed cavity is due to trauma and hypertension.[6] Stroke is an emerging important health problem in our society. After Acute Myocardial Infarction (MI) and

malignancy, Ischemic stroke is the third major cause of death, causes more hospitalization with disability. With the occurrences of newer therapies, acute ischemic stroke has a higher hope for quick recovery and better outcome. It is the second commonest cause of death and fourth major cause of disability among worldwide[7].Stroke also predisposes to epilepsy, depression and falls[8].It is the leading cause of functional impairments, 15% - 30% of the stroke patients were being permanently disabled[9]. Globally the incidence of stroke due to ischemia is 68% and haemorrhage is 32%[10]. The highest risk is found in East Asia, Central Europe, and Eastern Europe. The prevalence rate of stroke in India is 84-262/1 lakh in rural area and 334-424/1 lakh in urban areas[11]. The present study was done to understand the age, gender distribution, clinical profile, risk factors and vascular territory of brain that involved as per CT & MRI scan brain in a tertiary care centre in Puducherry.

AIMS AND OBJECTIVES
1. To determine the age, gender distribution, risk factors and pattern of areas of brain affected in stroke patients.

Inclusion Criteria
1. All cases of acute cerebrovascular accident patients from 18 to 80 years admitted as inpatients in wards of general medicine department.
2. Diagnosis of CVA confirmed by CT or MRI scan of brain.
3.

Exclusion Criteria;
1. Head trauma
2. Intra-cranial tumours
3. Transient ischemic attack

METHODOLOGY
Study setting: This study was done at tertiary Care hospital at Sri Manakula Vinayagar Medical College and Hospital (SMVMCH), Puducherry, under the department of General Medicine. Our hospital is a tertiary care centre with more than 900 beds offering free consultations. Most of the patients seeking medical care were from Puducherry and Tamilnadu.

Study design: The design employed is a hospital based analytical cross-sectional study.

Study participants: Stroke patients attending Department of General Medicine at SMVMCH Hospital.

Sample size: Sample size was 50 based on a previous study done by Rakesh Kumar Koul et al in Srinagar.

Study procedure
50 patients with acute stroke were selected based on inclusion and exclusion criteria. After getting consent from the patient appropriate questionnaire was used to collect data of patients. Diagnosis of stroke was confirmed by CT or MRI scan of brain plain.

Statistical analysis:
The data obtained from the proforma was entered into Microsoft excel and analyzed using Statistical Package for Social Sciences version 16 (SPSS v16). The continuous variables such as biochemical parameters were summarized as mean and standard deviation while categorical variables such as demographic factors, morbidity profile, stroke profile etc., were summarized as frequency and percentages. All the biochemical parameter values were converted into categorical groups based on standard reference values. The distributions of the demographic, morbidity, biochemical and stroke profiles were displayed as pie and clustered bar charts.

RESULTS

Descriptive statistics

Table 1: Baseline demographic characteristics of the patients (n=50)

Variable	Categories	Number	Percentage
Age category	≤50 years	7	14
	51-60 years	18	36
	61-70 years	15	30
	>70 years	10	20
Gender of the patient	Male	35	70
	Female	15	30

Table 1 shows the distribution of the demographic characteristics of the patients with stroke. Majority of the patients were belonging to the age group of 51-60 years (36%) and were males (70%).

Table 2 shows the distribution of the behavioral risk factor profile of the patients. More than one-third of the patients were smokers (38%) and consuming alcohol (36%).

Table 2: Behavioral risk factor profile of the patients (n=50)

Variable	Categories	Number	Percentage
Smoking status	Yes	19	38%
	No	31	62%
Alcohol consumption	Yes	18	36%
	No	32	64%

Table 3: Morbidity profile of the patients (n=50)

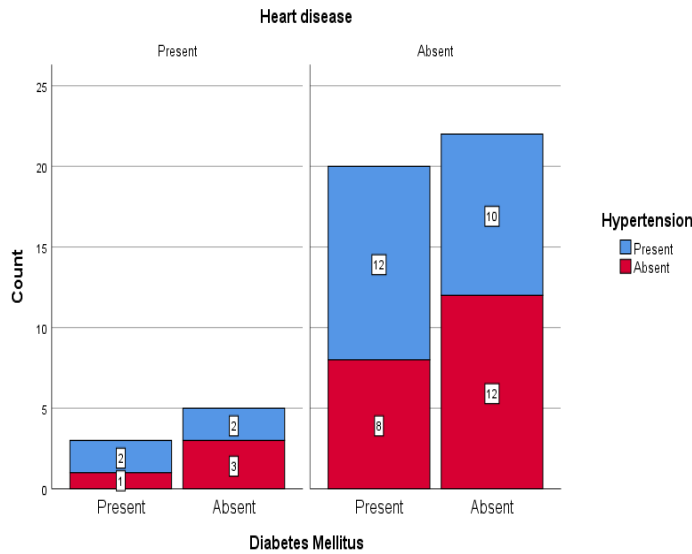| Variable	Categories	Number	Percentage
Diabetes Mellitus	Present	23	46%
	Absent	27	54%
Hypertension	Present	26	52%
	Absent	24	48%
Heart disease	Present	8	16%
	Absent	42	84%

Figure 1: Distribution of comorbidities among the patients (n=50)

Table 3 and Figure 1 show the distribution of the comorbidities among the patients. Nearly half of the patients had diabetes mellitus, 52% had hypertension and 8% had cardiovascular disease.
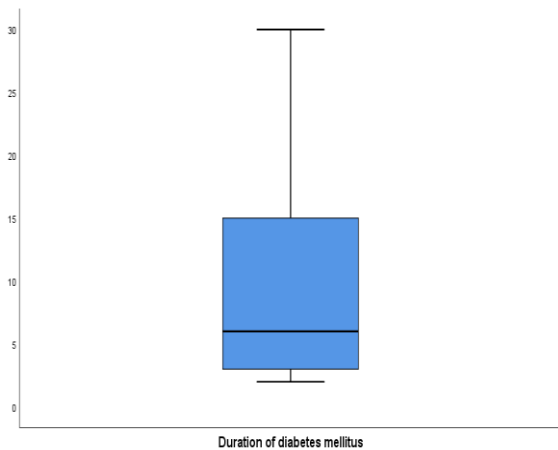

Figure 2: Distribution of the duration of Diabetes mellitus among the patients (n=50)
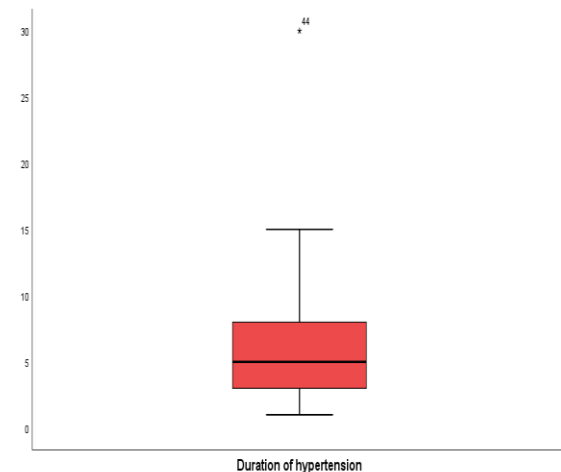

Figure 3: Distribution of the duration of hypertension among the patients (n=50)

Figure 2 and figure 3 shows the distribution of the duration of diabetes mellitus and hypertension respectively among the patients. The median duration of

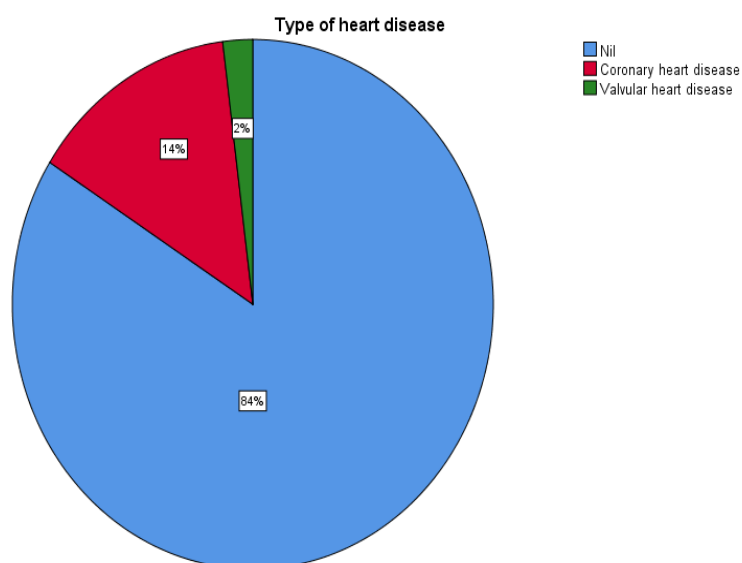both diabetes and hypertension were 5 years, respectively

Figure 4: Distribution of the type of heart disease among the patients (n=50)

Figure 4 shows the distribution of the heart disease type among the stroke patients. About 14% of the patients had coronary heart disease while 2% had valvular heart disease.

Table 5: Lipid profile of the patients (n=50)

Variable	Categories	Number	Percentage
Total cholesterol	Normal	41	82%
	High	9	18%
Total triglyceride	Normal	31	62%
	High	19	38%
LDL cholesterol	Low	13	26%
	Normal	32	64%
	High	5	10%
HDL cholesterol	Low	28	56%
	Normal	15	30%
	High	7	14%
VLDL cholesterol	Low	5	10%
	Normal	30	60%
	High	15	30%

Table 5 and table 6 shows the lipid profile and the distribution of biochemical parameters among the stroke patients. About 18%, 38%, 10%, 14% and 30% patients had high cholesterol, triglycerides, LDL cholesterol, HDL cholesterol and VLDL cholesterol, respectively.

Table 7 shows the distribution of electrographic and 2D echocardiographic profile of the patients with stroke. About 22% and 36% of the patients had abnormal electrographic and 2D echocardiographic findings.

Table 6: Distribution of the lipid profile parameters among the patients (n=50)

	Mean (SD)	Median (IQR)
Total cholesterol	173.68 (49.14)	167 (135-198)
Total triglyceride	152.14 (82.00)	131 (79-197)
LDL cholesterol	97.04 (45.00)	92 (65-122)
HDL cholesterol	48.82 (39.36)	33 (28-45)
VLDL cholesterol	27.69 (12.44)	24 (16-38)

Table 7: Electrocardiographic and 2D Echocardiographic profile of the patients (n=50)

Variable	Categories	Number	Percentage
ECG findings	Normal	39	78%
	Abnormal	11	22%
2D Echo findings	Normal	32	64%
	Abnormal	18	36%

Figure 5 shows the distribution of the Electrocardiographic findings among the stroke patients. About 12% showed coronary artery disease, 6% showed left ventricular hypertrophy and 4% showed right bundle branch block in ECG.

Figure 6 shows the distribution of the 2D echocardiographic findings among the stroke patients. About 10% showed coronary artery disease, 22% showed left ventricular hypertrophy and 4% showed Infective endocarditis in 2D Echo.
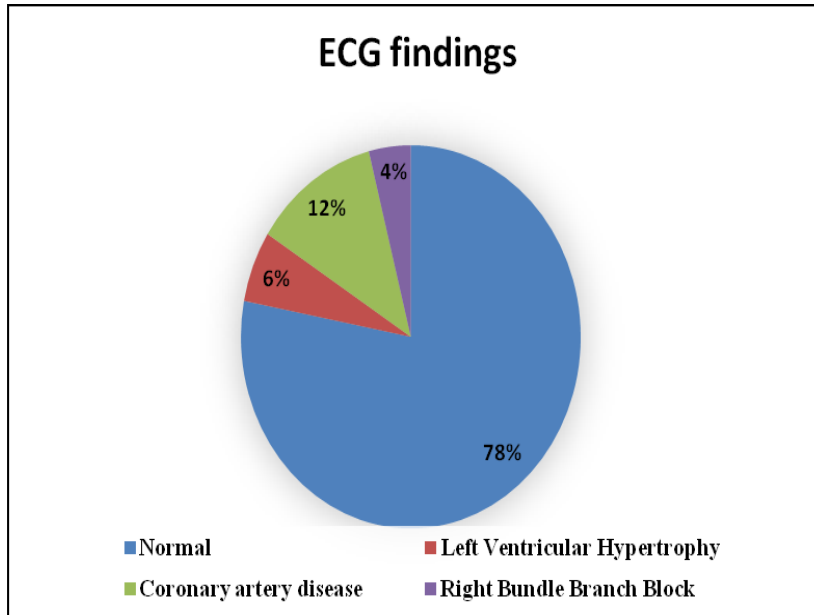
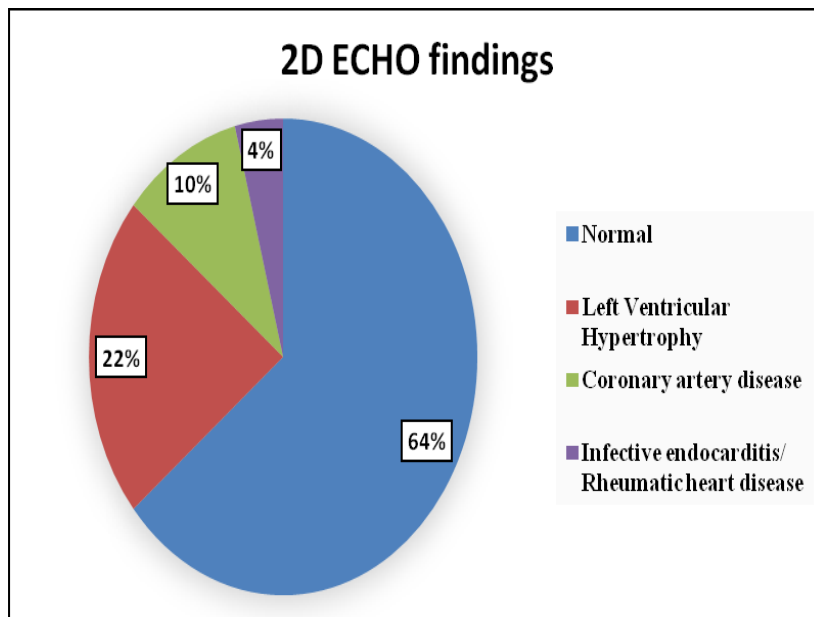**Figure 5: Distribution of the Electrocardiographic findings among the patients (n=50)**

Figure 6: Distribution of the 2D echocardiographic findings among the patients (n=50)

Table 8: Distribution of stroke profile of the patients (n=50)

Variable	Categories	Number	Percentage
Type of stroke	Ischaemic	45	90%
	Haemorrhagic	5	10%
Haemorrhagic transformation	Present	3	6%
	Absent	47	94%
Vessels affected	Anterior circulation	37	74%
	Posterior circulation	3	6%
	Lacunar	10	20%
Side of Hemiplegia	Right	26	52%
	Left	21	42%
	No weakness	3	6%
Carotid stenosis	Normal	15	30%
	Present	3	6%
	Not done	32	64%

Table 8 shows the distribution of stroke profile of the patients. Majority (90%) of the patients had ischaemic type of stroke while only 6% showed haemorrhagic transformation. Anterior circulation vessels were affected in most (74%) of the patients {figure 10} and more than half (52%) presented hemiplegia on the right side. Carotid stenosis was present in 6% of the patients while it was not done in 64% of patients.
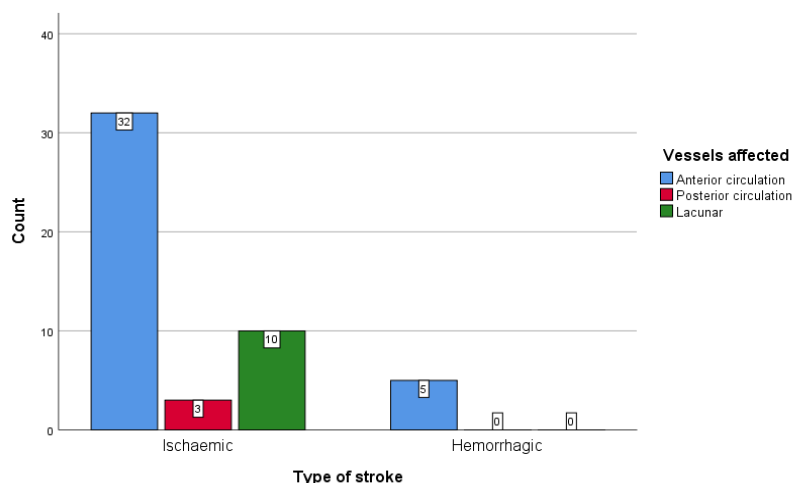

Figure 7: Distribution of the vessels affected with the stroke type among the patients (n=50)

DISCUSSION

The sample size of this study is 50, who are admitted under general medicine and neurology department in Sri Manakula Vinayagar medical college and hospital.

In this study it is observed that majority of the subjects are males 35 (70%), and females are 15(30%), and 36% were in the age group of 51-60 years, 30% between 61-70 years of age group and 20% is more than >70 years, and 14% are age less than 50 years. So, in this study majority of the stroke patients are in the age group of 51-60 years.

Similar study was conducted by Dr. Siddharth Kapoor et al, it was a prospective cohort study in that study 23 stroke patients were selected[6]. In which males were 60.86% and females were 39.14%, majority of the subjects were in the age group of 51-60 years. Another study which was conducted by Hemant Mahur[7] et al in that study males were 59.67% and females were 30.62% which is similar to our study. In our study 38% of the subjects are smokers and 64% are alcoholics. A study done by Elizabeth Mostofsky[8] et al showed that heavy alcohol consumption increases the risk of stroke. In our study, out of 50 subjects 46% had diabetes mellitus and 52% had hypertension. A study of clinical profile of stroke was done by Daad H Akbar[9] et al to determine the pattern and risk factors of stroke in Saudis and non-Saudis population, it showed hypertension is the more common risk factor for both ischemic and hemorrhagic stroke. The mean duration of both diabetes and hypertension is 5 years.

In this study Out of 50 patients, the 8 patients (16%) are diagnosed to have heart disease. About 14% of the patients had coronary artery diseases and 2% have valvular heart disease. In our study ischemic stroke was seen in 45 (90%) of the patients and 5 (10%) were seen in hemorrhagic stroke. A study done by Yee Sien Ng[11] et al the study showed. that the incidence of anterior circulation stroke is twice that of posterior circulation and small vessel stroke which is similar to our study. About 18%, 38%, 10%, 14% and 30% patients had high cholesterol, triglycerides, LDL cholesterol, HDL cholesterol and VLDL cholesterol and about 10% showed coronary artery disease,

22% showed left ventricular hypertrophy and 4% showed Infective endocarditis in 2D Echo. Carotid stenosis was present in 6% of the patients while it was not done in 64% of patients.

CONCLUSION

In this present study stroke was more common in the age group of 51-60 years with male are most commonly affected. Dyslipidemia in the form of high triglycerides and high VLDL levels was the most common risk factor which was followed by hypertension. Most of the patients presented as ischemic stroke. Anterior circulation stroke was more common than posterior circulation and lacunar stroke.

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