

Clinical Profile of Stroke Patients in South Tamil Nadu Tertiary Care Hospital – A Cross-sectional Study

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Abstract

Introduction: There are 15 million people worldwide who suffer a stroke each year. According to the World Health Organization, stroke is the second leading cause of death for people above the age of 60 years, and the fifth leading cause in people aged 15–59 years old.

Aim: This study aims to study the clinical profile of patients presenting with stroke in South Tamil Nadu.

Materials and Methods: The cross-sectional study was conducted in the Department of Medicine at Kanyakumari Government Medical College from September 2018 to June 2019. A total of 140 patients who presented with symptoms of stroke were assessed, for the relative frequency of ischemic and hemorrhagic stroke separately.

Results: The incidence of stroke is maximum in the age group of 51–60 years comprise 34.28% with a mean age of 56 years. Cerebral infarction was more than hemorrhage. Hypertension was among leading risk factors for both types comprise 48.5%. Hemiplegia was the most common presentation followed by speech involvement and facial palsy. In ischemic stroke, the most common site was internal (20.71%) followed by parietal (9.28%). In hemorrhage, the most common site was capsuloganglionic (7.85%) followed by thalamus (5.0%).

Conclusion: Developing countries like India are facing a double burden of communicable and non-communicable diseases. Stroke is one of the leading causes of death and disability in India.

Key words: Hemorrhagic stroke, Hypertension, Ischemic stroke, Tertiary health-care center

INTRODUCTION

Stroke is one of the devastating and disabling diseases which is one of the leading causes of morbidity and mortality that rank the top three causes of death after cardiovascular and cancer.^[1] It is defined as a rapidly developing sign of focal (or global) disturbance of cerebral function with symptoms lasting for ≥ 24 h or leading to death with no apparent cause other than vascular origin.^[2] It is a collection of clinical syndromes resulting from cerebral

ischemia to intracranial hemorrhage. Hypertension, alcoholism, smoking, diabetes mellitus, and dyslipidemia are the most common causes of stroke.^[3]

Stroke is an important and leading cause of morbidity and mortality worldwide. The consequences of stroke can be severe, leading annually to 5 million deaths and being left permanently disabled.^[4] A stroke study conducted in Kolkata^[5] showed a prevalence of 147 cases per 100,000 population and an annual incidence of 36/100,000 in the year 1998–99. At present, the stroke fact sheet of 2012 estimates 84–262/100,000 in rural and 334–424/100,000 in urban areas. In a stroke, the hemorrhagic cause is high in Asian countries due to the high prevalence of hypertension which may have been masked or treated without sufficient control of blood pressure. The estimated percentage of hemorrhagic stroke in the western population is around 10% of all stroke cases, and in India, it is 17.7–32% of all strokes.^[6]

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Aim

This study aims to study the clinical profile of patients presenting with stroke in South Tamil Nadu.

MATERIALS AND METHODS

This cross-sectional study was conducted in the Department of Medicine at Kanyakumari Government Medical College from September 2018 to June 2019. A total of 140 patients who presented with symptoms of stroke were assessed the past year, for the relative frequency of ischemic and hemorrhagic stroke separately. All the patients who presented with the clinical diagnosis of acute stroke were subjected to a detailed clinical history, particularly for alcohol, smoking, hypertension, diabetes, previous stroke, transient ischemic attack, physical examination, serial neurological examination, and computed tomography (CT) magnetic resonance imaging scan of the brain.

Inclusion Criteria

The following criteria were included in the study:

1. All patients above the age of 18 years
2. All the having clinical and CT confirmed diagnosis of stroke.

Exclusion Criteria

The following criteria were excluded from the study:

1. Patients below 18
2. Stroke due to trauma
3. Patients medical records which were not showing CT confirmed diagnosis.

All patients included in the study after getting consent were taken with a detailed history regarding age, sex, occupation, time of occurrence of the event, and comorbid factors such as pre-existing hypertension, diabetes, dyslipidemia, and drug intake including alcohol. The patients were clinically assessed for vital parameters and detailed neurological examination and other systems examination were conducted. Concurrently, the patients were also worked up for complete hemogram, coagulation profile, and basic biochemical parameters including random blood sugar and renal/lipid profiles/electrolyte profile, urine albumin/sugar/deposits, electrocardiogram, chest X-ray, and CT brain, and in needed cases, collagen vascular disease profile was done. All these parameters were collected by detailed history as with patients/relatives/attenders as appropriate in a standard hospital approved pro forma.

RESULTS

In our study, the age range was from 30 to 80 years with a mean age was 56 years. In this study, the youngest patient

was 32 years old and the oldest was 76 years old. The incidence of cerebrovascular accident is maximum in 51–60 years of the age group which comprises 34.28% of total patients and young stroke (age <40 years) comprised 10.71% of all patients [Figure 1].

The male-to-female ratio was 1.6:1. From the observation, it can be concluded that the incidence of stroke is more common in the male sex [Figure 2].

In our study as shown in Table 1, the most common clinical presentation was hemiplegia which was 54.2% followed by

Table 1: Topographic distribution of hemorrhage

Areas involved	Ischemic stroke
	Number of cases (%)
Thalamus	7 (5.0)
Basal ganglia	5 (3.57)
Internal capsule	11 (7.85)
Pons	3 (2.14)
Midbrain	2 (1.42)
Cerebellar	3 (2.14)
Frontal	2 (1.42)
Parietal	3 (2.14)
Temporal	2 (1.42)
Occipital	2 (1.42)

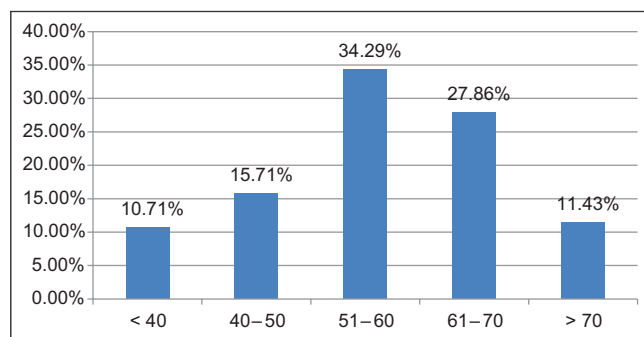


Figure 1: Age-wise distribution of cases

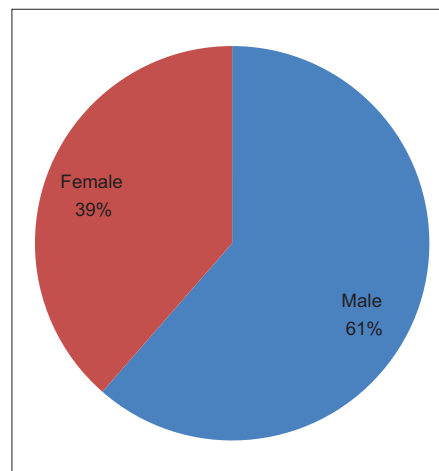


Figure 2: Gender distributions of stroke patients

upper motor neuron facial palsy (16.4), speech involvement (15%), vomiting and headache (10%), unsteadiness of gait (6.4%), giddiness (5%), convulsions (5.7%), and altered sensorium (3.5%) [Figure 3].

In our study, the most common risk factor was hypertension (68 patients) with 48.5%, followed by diabetes mellitus (52 patients) 37.14%, dyslipidemia (36 patients) 25.7%, 44.2% smoker (62 patients), alcohol (58 patients) 41.4%, 4 patients had past H/o of malignancy, and 8 patients were having rheumatic valvular disease.

In our study, 102 patients (72.8%) suffered ischemic stroke and 38 patients (27.1%) suffered a hemorrhagic stroke. Hence, the most common type of stroke is cerebral infarction. Of 102 ischemic stroke patients, 62 (44.2%) were male and 40 (28.6%) were female. Of 38 hemorrhagic stroke patients, 24 (17.1%) were male and 14 were female (10%) [Figures 4 and 5].

In our study, the most common site of infarct was capsuloganglionic (20.71%), followed by parietal (9.28%), cerebellar (8.57%), and frontal lobe (5.71%) as shown in Table 2.

Table 2: Topographic distribution of ischemic stroke

Areas involved	Hemorrhage
	Number of cases (%)
Thalamus	8 (5.71)
Basal ganglia	4 (2.85)
Internal capsule	29 (20.71)
Pons	9 (6.42)
Midbrain	4 (2.85)
Cerebellar	12 (8.57)
Frontal	8 (5.71)
Parietal	13 (9.28)
Temporal	8 (5.71)
Occipital	7 (5.0)

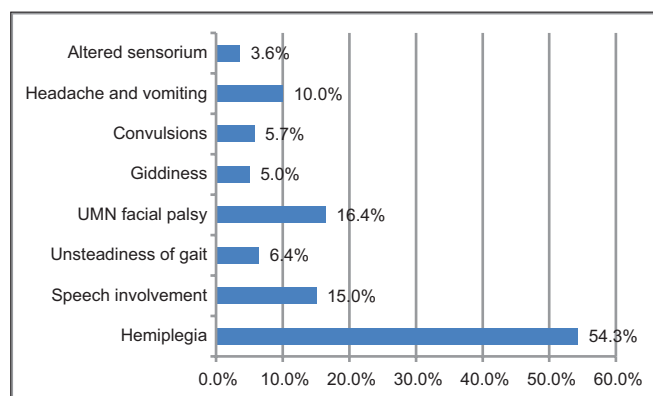


Figure 3: Clinical presentation of stroke patients

In our study, thrombotic stroke mostly involves the middle cerebral artery territory. In our study, the most common site of hemorrhage was capsuloganglionic (7.85%) followed by thalamus (5.0%) as shown in Table 1.

DISCUSSION

The effects of stroke can vary enormously, depending on the area of the brain that has been damaged and the extent of the damage. Clinical features vary from paralysis communication difficulties (problems with speaking, reading, writing, and understanding) with mental processes such as learning, concentration, and memory. Some patients can present with visual disturbances, urinary incontinence, swallowing difficulties and emotional problems, etc. It can take time for the full implications of a stroke to sink in. It has a physiological, economical, and psychological impact on the patients.^[7] Stroke ranks first among all central nervous system diseases both in frequency and gravity. Approximately 20 million people each year suffer from stroke and of these 5 million do not survive.^[8] Older population-based studies in India conducted in Vellore and Rohtak quoted annual incidence of stroke as 13 per lac and 33 per lac persons, respectively.^[9,10] Strokes form nearly 1.5% of all hospital admissions, 4.5% of all medical, and 20% of neurological cases.^[11]

Mehndiratta *et al.* showed a ratio of 1:08 in North India, whereas El Zunni *et al.* demonstrated a similar ratio of 1.2:1

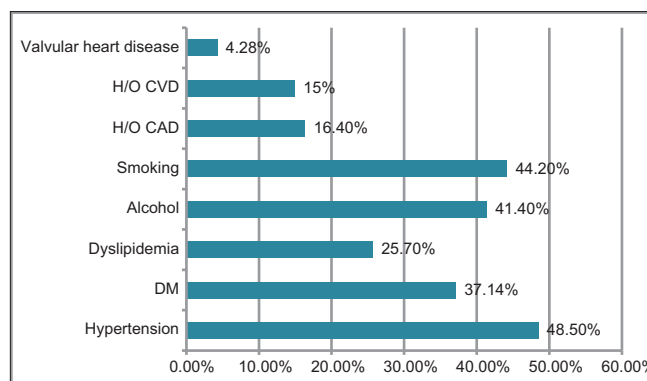


Figure 4: Prevalence of risk factors in stroke patients

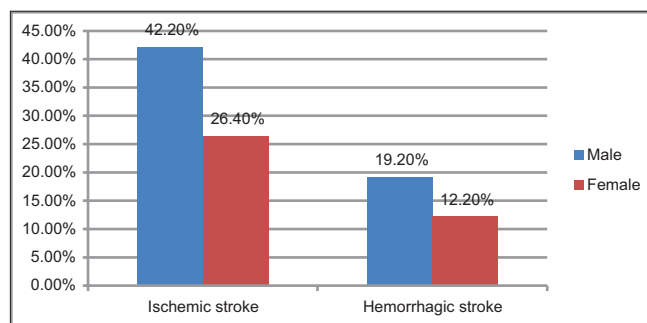


Figure 5: Gender-wise distribution of different types of stroke

in Africa. The mean age of all the patients in our study was 31.92 years, a study in North India by Mehndiratta *et al.* showed a similar mean age of 31.97 years.^[12,13]

Nagaraja *et al.*^[14] had shown an incidence of smoking associated with stroke to be 15%, Dalal^[8] 40%, Bogousslavsky and Pierre^[15] 36.6%, and Alvarez *et al.*^[16] 56.7%. In meta-analysis of 32 separate studies of relation between smoking and stroke analyzed by Shinton and Beevers,^[17] there was a strong association between smoking and incidence of stroke. Our study showed 36%. In the study of Nagaraja *et al.*, the frequency of alcohol consumption was 15%, Alvarez *et al.*^[18] 37.8%, and Dalal^[15] 40%, the present study had 30%. In the study by Nagaraja *et al.*,^[14] the incidence of diabetes was 11%, Dalal^[15] 20%, Grindal *et al.*^[19] 5.2%, El Zunni *et al.*^[13] 14.8%, and Alvarez *et al.*^[18] 10.9%, whereas in our study, it was 24%. In the present study, 16 patients (32%) had hypertension; Dalal^[15] showed an incidence of 46.7%, Alvarez *et al.*^[18] 23%, Nagaraja *et al.*^[14] 22.6%, and Grindal *et al.*^[19] 17.2%.

In the present study, the most common type of stroke was ischemic that is cerebral infarction (68.6%) which correlated with studies done by Aiyar, in which infarction was in 70%, in Eapen *et al.* was 68%, and in Devich and Karoli was 75%. The second most common type of stroke was hemorrhagic (31.4%) which correlated with a study done by Eapen *et al.* was 32%, Aiyar was 26%, and Devich and Karoli was 25%.^[3,20,21]

In the present study, the most common site of hemorrhage was capsuloganglionic (20.71%), followed by parietal (9.28%), cerebellar (8.57%), and frontal lobe (5.71%). A study was done by Eapen *et al.* and Aiyer *et al.* where it has been concluded that in multiple hematoma sites, the most common was thalamic ganglionic region.

CONCLUSION

In India, the incidence of stroke is increasing nowadays. There is a huge burden of stroke with significant regional variations of stroke in our county. The incidence of stroke is maximum in the age group of 51–60 years comprise 34.28%. Young patients who are affected with stroke were 10.71% of patient. Cerebral infarction was more than hemorrhage. Males were more affected than females in ischemic stroke as well as hemorrhagic. Hypertension was among leading risk factors for both types comprise

48.5% of patients followed by diabetes mellitus 37.14% and dyslipidemia 25.7% of patients. Hemiplegia was the most common presentation followed by speech involvement and facial palsy. In ischemic stroke, the most common site was internal (20.71%) followed by parietal (9.28%). In hemorrhage, the most common site was capsuloganglionic (7.85%) followed by thalamus (5.0%). We need holistic approach and more research to fight against this deadly and disabling disease.

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