

Original Research Article

Clinical prevalence of stroke in a tertiary care hospital in Southern India

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ABSTRACT

Background: Stroke is the second most deadly disease in the world next only to ischemic heart disease. The incidence of stroke continues to rise particularly among young individuals. Given the paucity of data and lack of reliable reporting mechanisms, understanding the epidemiology of stroke in India is challenging. This study aims to review the prevalence of stroke in a tertiary care hospital in southern India.

Methods: The study includes all the Stroke patients admitted in Government Rajaji Hospital and Madurai Medical College, Madurai during the period of 01 January 2018 to 31 December 2018.

Results: A total of 1168 patients were taken into study, there were 779 males and 389 females. There were a total of 848 ischaemic stroke patients (72.60%), when compared to 320 haemorrhagic stroke patients 27.39%. Anterior circulation stroke prevalence was higher (88.27%) when compared to posterior circulation stroke. A total 498 patients (42.63%) belonged to the age group of 40 to 60 years.

Conclusions: There is inadequate data regarding the prevalence of stroke in India and decade old data indicates that there is an increasing prevalence. Hence the study reviewed the current prevalence of stroke in a tertiary care centre in southern Tamil Nadu.

Keywords: Cerebrovascular stroke, Cerebrovascular disease, Ischemic stroke, Haemorrhagic stroke

INTRODUCTION

Stroke is one of the leading causes of morbidity and mortality worldwide.¹ It is defined as a rapidly developing sign of focal (or global) disturbance of cerebral function with symptoms lasting for ≥ 24 hours or leading to death with no apparent cause other than vascular origin.² It is a constellation of clinical syndromes ranging from cerebral ischemia to intracranial hemorrhage. Hypertension, alcoholism, smoking, diabetes mellitus, and dyslipidemia are the most common causes of stroke.³ Stroke can lead to catastrophic consequences leading annually to 5 million deaths and being left permanently disabled.⁴ At present, the stroke fact sheet of 2012 estimates 84–262/100,000 in rural and 334–424/100,000 in urban areas. Haemorrhagic stroke has higher prevalence in Asian countries than

worldwide due to the high prevalence of poorly controlled hypertension. 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 This study aims to review the prevalence of stroke in a tertiary care hospital in Southern India.

METHODS

This cross-sectional observational study was conducted in the Department of Neurology at Government Rajaji Hospital, Madurai from 01 January 2018 to 31 December 2018.

A total of 1168 patients who were diagnosed and admitted as stroke patients in medicine and neurology wards of our

hospital were enrolled in the study. The study qualified ethical standards and written and informed consent was obtained from all the patients. Cases diagnosed as stroke were included in the study after ruling out exclusion criteria.

The inclusion criteria for the study being: all patients above the age of 18 years and all the having clinical and CT confirmed diagnosis of stroke.

The following were excluded from the study: patients with age less than 18 years, stroke due to trauma, patients medical records which were not showing CT confirmed diagnosis, and stroke mimics i.e. seizure, intracranial tumor, migraine, metabolic encephalopathy.

All the patients were subjected to a detailed clinical history, including risk factors, previous stroke, transient ischemic attack, physical examination including vital parameter assessment, serial neurological examination, other systems examination, computed tomography (CT) and magnetic resonance imaging (MRI) scan of the brain.

Concurrently, the patients were also worked up for complete hemogram, coagulation profile, and basic biochemical parameters.

Findings of brain CT or MRI scan of the brain performed within one week of the onset of stroke were used for classification of the type of stroke. Cerebral infarction was diagnosed based on typical imaging findings of infarct. Patients with cerebral infarction were further classified into lacunar infarct (defined as infarct measuring from 3 mm upto 2 cm on imaging of the brain) and non-lacunar infarct (defined as infarct measuring >2 cm on imaging of the brain). Intracerebral haemorrhage (ICH) or subarachnoid haemorrhage (SAH) was diagnosed based on clinical and CT scan findings.

Statistical analysis was done using Microsoft Excel spreadsheet, and statistical package for the social sciences (SPSS) version 21.0 software. Results were derived using frequency and percentage, mean and standard deviation.

RESULTS

A total of 1168 patients were diagnosed and admitted as stroke patients in medicine and neurology wards of our hospital. Of the total number of patients there were 779 males (66.69%) when compared to only 389 females (33.30%) (Figure 1).

There were a total of 848 ischemic stroke patients (72.60%), when compared to 320 hemorrhagic stroke patients (27.39 %) (Figure 2).

Strokes within the anterior circulation contributed to 88.27% of cases and strokes within the posterior

circulation contributed just over 137 cases (11.72%) as shown in Figure 3.

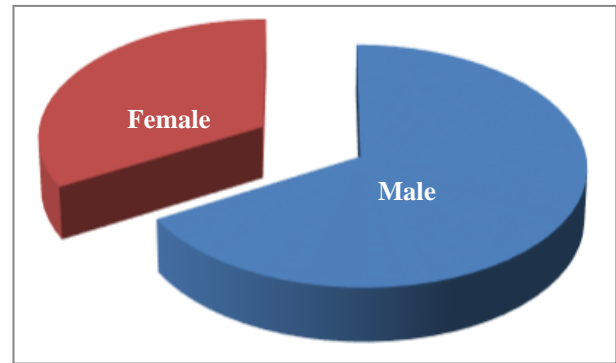


Figure 1: Distribution according to sex.

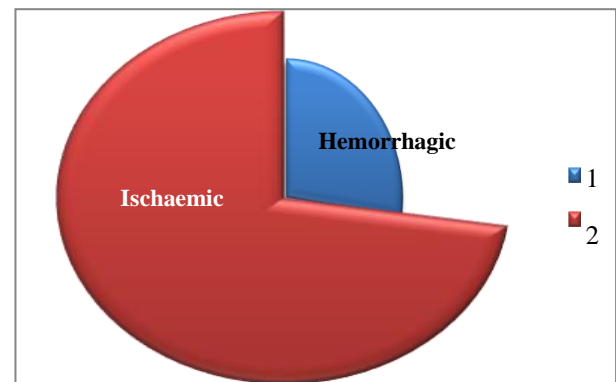


Figure 2: Hemorrhagic versus ischemic stroke distribution.

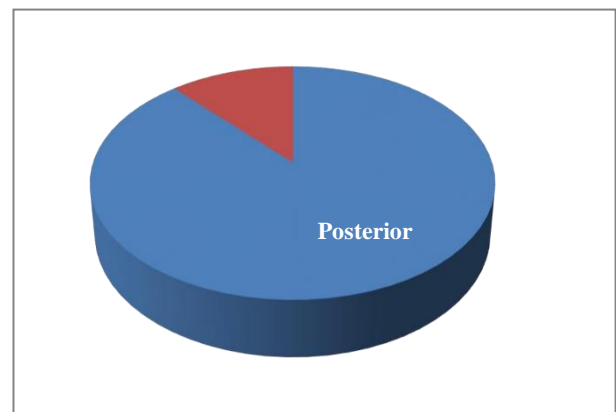


Figure 3: Percentage of anterior versus posterior circulation strokes.

Age wise distribution of the patients revealed that only 101 patients (8.64%) belonged to the age group of less than 40 years. Around 498 patients (42.63%) belonged to the age group of 40 to 60 years. A significant number of patients aged 60 and above formed the rest of the cases (48.71%) as shown in Figure 4.

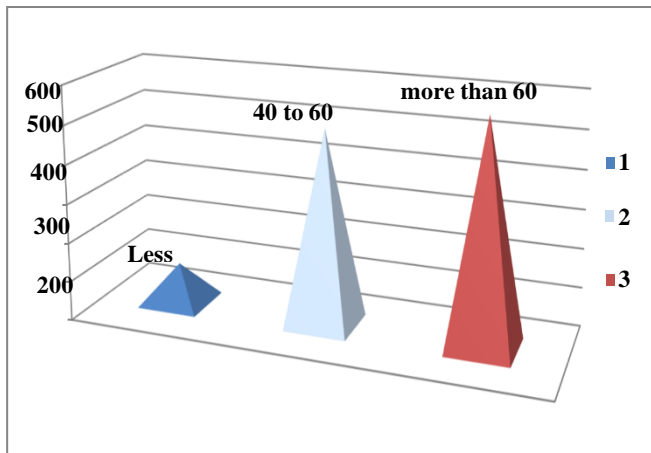


Figure 4: Age wise distribution of stroke patients.

DISCUSSION

The risk of stroke increases with age and the incidence doubles with each decade after 45 years.²³ 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 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

Age wise distribution of the patients revealed that only 8.64% belonged to the age group of less than 40 years, 42.63% belonged to the age group of 40 to 60 years and 48.71% were aged above 60 years in concurrence with the study by Kelly-Hayes and Pandian et al.^{23,24}

In the present study, ischemic stroke patients comprised 848 cases (72.60%) which correlated with previous studies done by Aiyar who reported 70% ischemic stroke cases, 68% according to Eapen et al and 75% according to Devich and Karoli.^{3,20,21} In our study the prevalence of hemorrhagic stroke is 27.39% which correlated with previous studies done by Eapen et al (32%), Aiyar (26%), and Devich and Karoli (25%).

Strokes within the anterior circulation contributed to 88.27% of cases and strokes within the posterior circulation contributed just over 137 cases (11.72%) which is concurrent with the study by Kaur et al.²²

CONCLUSION

Our study shows that the prevalence of stroke is ever increasing and increases with age. The majority of stroke patients belonged to age group of more than 60. Stroke is also a leading cause of morbidity with nearly half of the survivors left with serious disabilities.

Prevalence of ischemic stroke is more than haemorrhagic stroke in this study. Hypertension was among leading risk factors for both types.

In our study there is a significant difference in the prevalence of anterior circulation strokes when compared with the posterior circulation strokes with predominantly 88% of cases being anterior circulation strokes.

Limitations

The study was an observational cross sectional study, thus we were unable to follow up and assess outcome of patients. Since the study was carried out in a single hospital, it may not represent the general population.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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