



ORIGINAL RESEARCH PAPER

Neurology

A STUDY OF STROKE CHARACTERISTICS IN A TERTIARY CARE HOSPITAL – AN OBSERVATIONAL STUDY

KEY WORDS: Stroke, CVA, TIA,

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ABSTRACT

Background: Stroke is a major global public health problem. According to the Global Burden of Diseases (GBD) study in 1990, stroke was the second leading cause of death worldwide. According to the estimates from the GBD study in 2001, over 85 per cent of the global burden of stroke was borne by low- and middle-income countries. 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, Madurai during the period of 01 January 2022 to 31 December 2022. **Results:** A total of 2246 patients were taken into study, there were 1742 males and 504 females. There were a total of 1548 ischaemic stroke patients (69%), when compared to 698 haemorrhagic stroke patients (31%). Anterior circulation stroke prevalence was higher (83%) when compared to posterior circulation stroke. A total 782 patients (34.8%) belonged to the age group of 45 to 60 years. **Conclusions:** This study shows that there is increasing prevalence of stroke in southern India. This study also showed that most of the strokes occur in age group less than 60 years and anterior circulation strokes are more compared to posterior circulation strokes.

INTRODUCTION

Stroke is one of the leading causes of morbidity and mortality worldwide.¹ It is defined as an episode of focal neurologic (brain, retina, spinal cord) dysfunction (even if less than 24 hours in duration) in which the autopsy, computed tomography (CT) brain scan or magnetic resonance imaging (MRI) scan shows features consistent with focal brain infarction or hemorrhage.²

The common risk factors for stroke are hypertension, alcoholism, smoking, diabetes mellitus, and dyslipidemia.³ Stroke can lead to catastrophic consequences leading annually to 5 million deaths and significant morbidity.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 2022 to 31 December 2022.

A total of 2246 patients who were diagnosed and admitted as stroke patients in medicine and neurology wards of our hospital were enrolled in the study. Ethical clearance was obtained for this study and written and informed consent was taken from all the patients who were participated in this study. 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, patient's 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, and 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 2246 patients were diagnosed and admitted as stroke patients in medicine and neurology wards of our hospital. Of the total number of patients there were 1742 males (77.5%) when compared to only 504 females (22.4%). There were a total of 1548 ischemic stroke patients (69%), when compared to 698 hemorrhagic stroke patients (31 %) (Figure 1).

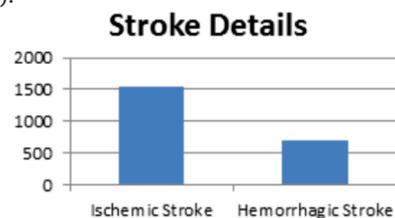


Figure 1: Showing the Prevalence of ischemic stroke and

hemorrhagic stroke in this study

Gender wise males(77.5%) were affected more than females(22.4) in this study and this male predominance was higher in age group less than 60 years.

Strokes within the anterior circulation contributed to 83% of cases and strokes within the posterior circulation contributed 16.6%.

Age wise distribution of the patients revealed that only 540 patients (24%) belonged to the age group of less than 45 years. Around 782 patients (34.8%) belonged to the age group of 45 to 60 years. A significant number of patients aged 60 and above formed the rest of the cases (42%) as shown in Figure 2.

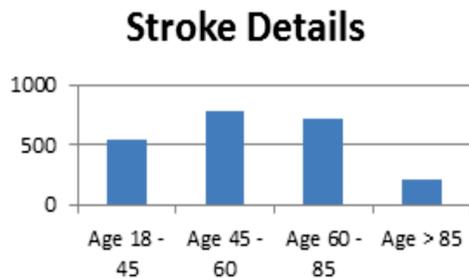


Figure 2 showing the Age wise distribution of stroke in this population

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 1548 cases (69%) 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 31% 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 83% of cases and strokes within the posterior circulation contributed just over 374 cases (16.5%) which is concurrent with the study by Kaur et al.²²

CONCLUSIONS

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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