

Clinical Profile of Stroke-Study Conducted in the Batticaloa Teaching Hospital, Sri Lanka

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Abstract

Stroke as a disease entity has significantly increased the morbidity, incapacity, and mortality in Sri Lanka. In the west, it is the 3rd most common cause of death. In addition to that, it is a disturbing and restricting cerebrovascular disease with a substantial amount of remaining shortage leading on to emotional and financial burden on the family and society. A hospital-based retrospective study was conducted at Teaching Hospital Batticaloa, Sri Lanka from July 1, 2016, to October 31, 2016. During the study period, data were collected from the medical records. Out of 34 patients, 21 (61.8%) were males and 13 (38.2%) were females. The male to female ratio was 1.6:1. Out of 34 patients, 17 (50%) were affected in the left side and 17 (50%) were affected on the right side. The most common risk factor was hypertension with 79.4%, and next to that diabetes mellitus (41.2%), smoking (23.5%), alcohol (20.6%), past history of Stroke (17.6%) and ischaemic heart disease (IHD) (14.7%). Stroke due to infarction is more common than haemorrhage. In this study, both right and left sides were affected equally. In order to prevent this devastating stroke, acknowledgment of risk factors for stroke is prime importance for the health-care workers as well as public.

Keywords

Stroke, Stroke in Sri Lanka, Pattern of Stroke

1. Introduction

Stroke is a devastating and disabling cerebrovascular disease with a significant amount of residual deficit leading on to emotional and financial burden on the family and society. It has been defined as rapidly developing signs of focal (or global) disturbance of cerebral function with symptoms lasting for more than 24 hours or leading to death with no apparent cause other than vascular origin [1].

It is a collection of clinical syndromes resulting from cerebral ischemia to intracranial haemorrhage. In the west, it is the 3rd most common cause of morbidity and mortality. A recent study identified that 7% of medical and 45% of neurological admissions were due to stroke with a fatality rate of 9% at hospital discharge and 20% at 28 days. Hypertension, alcoholism, smoking, and dyslipidaemia are the commonest cause of stroke among the elderly and however smoking, alcoholism, increased BMI, diabetes, and hypertension are significantly associated with strokes among young people.

Cerebro-vascular accidents occur predominantly in the middle and later years of life and the incidence of stroke increases with age. Thus, disability affects many people in their golden years. Ischemic strokes account for 80% - 85% of all strokes worldwide. While Haemorrhagic strokes are due to subarachnoid haemorrhage or intracerebral haemorrhage, they account for 1% - 7% and 7% - 27% respectively of all strokes worldwide [2]. The American Heart Association/American Stroke Association (AHA/ASA) estimated the reduction in stroke, coronary heart disease, and cardiovascular risk by 25% by the year 2010. The reason for the success was multifactorial and included improved prevention and improved care within the first hours of acute stroke [3].

Patients with acute ischemic stroke, regardless of age or stroke severity, in whom treatment can be started within 3 hours of known onset, should be considered for treatment with alteplase. Patients with primary intracerebral haemorrhage who present within 6 hours of onset with a systolic blood pressure above 150 mmHg should be treated urgently using a locally agreed protocol for blood pressure lowering to a systolic blood pressure of 140 mmHg for at least 7 days, unless the Glasgow Coma Scale score is 5 or less, the haematoma is very large, and death is expected, a structural cause for the haematoma is identified, immediate surgery to evacuate the haematoma is planned [4]. We carried out this study to describe the pattern and clinical profile of stroke at the Teaching Hospital Batticaloa, Sri Lanka which will help young physicians to deal with this deadly & disabling disease in future.

2. Material and Methods

This is a hospital-based retrospective study was conducted at Batticaloa Teaching Hospital, Sri Lanka. For this study, four months period of data were collected from July 1, 2016, to October 31, 2016. A diagnosis of stroke was made according to the World Health Organization(WHO) definition, which defined as interruption of the blood supply to the brain, usually because a blood vessel bursts or is blocked by a clot, causing neurological damages in the means of one side weakness, aphasia, and visual impairment which lasted for more than 24 hours.

During this period, we collected all stroke patient's medical records. We excluded those who had the features of transient ischemic attacks (TIAs). Clinical parameters were collected through a standardized, validated questionnaire from the patient's medical records. Furthermore, full blood count, blood glucose, lipid

profile, urea, creatinine, electrolytes and a 12 lead ECG finding also were harvested from the medical records. The patients were categorized as infarctions or haemorrhages based on computer tomography of the brain (CT-brain) findings.

In this study, we included 20-years-old or higher with the evidence of stroke. Patients with space-occupying lesions and cortical sinus venous thrombosis were excluded. Risk factors were defined in the following manner. Hypertension was demarcated as previous blood pressure above 140/90 mm Hg or in the presence of previous specific therapy. Diabetes mellitus was defined as elevated fasting blood glucose above 7 mmol/l or HbA1c > 6.5% or previously on oral hypoglycaemic medication or insulin injection. Dyslipidaemia was defines as total cholesterol above 200 mg/dl, or triglyceride above 150 mg/dl or low density cholesterol above 160 mg/dl .Those who are smoke any number of cigar or cigarettes for more than one year considered as a risk factor. All data were analysed with the help of Statistical Package for Social Science (SPSS-19).

3. Results and Discussion

In the present study, initially, 36 stroke patient's medical records were selected. Two patients were excluded due to inadequate imaging and clinical data. Hence, data from 34 patients were analyzed. Out of 34 patients, 21(61.8%) were males and 13 (38.2%) were females (**Table 1**). The male to female ratio was 1.6:1. The incidence of stroke was soaring in the age group of 60 - 69 years which comprises 35.3% of total patients. Young stroke (age ≤ 50 years) comprised of 11.8%. Out of 34 patients, 17 (50%) were affected in in their left side and 17 (50%) were affected in their right side. In this study 29 (85.3%) were ischemic and 5 (14.7%) were haemorrhagic type of stroke. Most common risk factor was identified as hypertension (79.4%), followed by diabetes (41.2%), smoking (23.5%), alcohol (20.6%), past history of Stroke (17.6%) and IHD (14. 7%) (**Table 1**).

Among 34 stroke patients, we found a male to female ratio of 1.6 to 1 and this male high proportion was observed in many prior studies across the world [5]. However, high prevalence among male was observed to be the highest in Asia, whereas a lower ratio has been noted in Europe [6]. A similar study was conducted in India where strokes were more common among males (58.53%) than females (41.46%) and most common age group was above 60-year-old (58.8%) [7]. Similar trend was seen in a study conducted by Chirayu V *et al* [8]. Precisely, a similar sex ratio of 1.6:1 also has been observed in a study completed by Aiyae et al in India [9]. Thus, men are more likely to have a stroke than women [10]. This may be due to differences in risk factors such as smoking and drinking which are more prevalent among men in SriLanka compared with women [11].

The main findings were the significant occurrence of risk factors in our study. Hypertension was documented in 27 patients (79.4.2%) of the study population. Other risk factors in descending order were diabetes 14 (41.2%), smoking 8 (23.5%), alcohol 7 (20.6%), past history of stroke 6 (17.6%), ischemic heart disease 5 (14.7%) and dyslipidaemia 3 (8.82%). Hypertension was a common risk factor with 32% to 65% of the ischemic stroke. This pattern was seen in a study

Table 1. Clinical profile of stroke.

	Frequency	Percentage
Gender		
Male	21	61.8%
Female	13	38.2%
Total	34	100%
Stroke in relation between age group		
20 - 39	2	5.9%
40 - 49	2	5.9%
50 - 59	10	29.4%
60 - 69	12	35.3%
More than 70	8	23.5%
Total	34	100%
Side of the weakness		
Left	17	50%
Right	17	50%
Total	34	100%
Type of the Stroke Patients		
Ischemic	29	85.3%
Haemorrhagic	05	14.7%
Total	34	100%
Risk factors among stroke		
Hypertension	27	79.4%
Smoking	8	23.5%
Diabetes mellitus	14	41.2%
Dyslipidaemia	3	8.82%
Past history of stroke	6	17.6%
Ischaemic Heart Disease	5	14.7%
Alcohol	7	20.6%

conducted by Divyant R in 2016 [12]. Hypertension as a risk factor was also noted more commonly in Asian studies [6] [13]. However, in this study nearly 80% of population among stroke is hypertension. This percentage is higher than available literature mentioned here.

The second most risk factor in this study was diabetes. The prevalence of diabetes is increasing in Sri Lanka which ranges from 19% to 21%. Around 1.5 million Sri Lankan adults do suffer from diabetes and the number is expected to rise up to 2.1 million by the year 2030. Diabetes mellitus is the leading cause of myocardial infarction, stroke, chronic kidney disease, blindness in adults and

amputations [14]. The prevalence of diabetes varied widely between studies in the Asian literature, ranging from 7.3% to 52.2% [15]. The prevalence of smoking in our study was 23.5% which was lower than that of several Western studies where prevalence ranges from 44% to 47%, but higher than that of previous Asian studies [7] [16] [17].

An abnormal lipid profile is found to be significantly associated with the occurrence of ischemic stroke. The study findings are supported by various studies in the literature in an Asian country. However, in this study, the prevalence of dyslipidaemia was 3 (8.82%). Interestingly similar pattern was observed in India, where a study conducted by Sanjay V, *et al.* [7]. Furthermore, a similar study conducted in north part of the Sri Lanka where prevalence was 15.8% [13] In present study percentage of ischemic heart disease, smoking and alcohol were less or more same as compared to other studies. In this study, most common type of stroke was cerebral infarction (85.3%), and second most common type of stroke was haemorrhagic (14.7%). It correlates with a study conducted by Chirayu V et al, in which infarction was 85.3%. A similar trend was observed in most of the Asian countries [12] [18].

Limitations of the Study

We initially, plan to collect more sample, unfortunately we had a problem with our CT-machine. This technical problem narrowed sample size. As this was the retrospective study, we mainly depend on the patient's medical records.

4. Conclusion

Stroke is still a major problem and the major predisposing factor remains uncontrolled hypertension. Men are more likely to have a stroke than women. Though majority of case (84.9%) were seen in the elderly, stroke in the young carries special importance as they form the most productive age group. Acknowledgement of risk factors for stroke is prime importance for the health care workers as well as public.

Consent for Publication

Consent was obtained from the director, Teaching Hospital Batticaloa for publication of this article.

Availability of Data and Material

All data gathered during this study are included in this published article.

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