Study of Risk Factors of Stroke in Patients Admitted at Kohalpur Teaching Hospital

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ABSTRACT

Background: Stroke is the major public health burden and the second major cause of death worldwide. This disease is common in old age persons, however the disease can also be seen in young persons. Identifying the modifiable risk factors of stroke may have contribution in prevention. Objective: The retrospective study was done to study risk factors of stroke in adult patients. Method and Material: This is a hospital based retrospective study conducted in Department of Medicine, Nepalgunj Medical College and Teaching Hospital, Kohalpur from the period of 1st January 2015 to 30th October 2016. A total of 119 patients were involved in this study. The diagnosis was confirmed using CT scan after taking history and performing clinical examination. Patients were then evaluated for the presence of both non-modifiable as well as modifiable risk factors. The data analysis was done using SPSS 13.0. Results: The mean age of the patient was 59.76±11.22. Among the collected patients, the higher percentage were male in comparison to female. Ischemic Stroke was more common than hemorrhagic stroke in our study. Other conventional risk factors were as follows: Alcohol use 75(63%), cigarette smoking 70(58.8%), hypertension 60(50.4%), diabetes 11(9.2%), previous vascular event 9(7.6%), heart disease 4(3.4%). Conclusions: Ischemic stroke was more common than hemorrhagic stroke; with alcohol use followed by smoking, hypertension and diabetes mellitus being the most common modifiable risk factors. Incidence of stroke increases with the age and the early recognition and management of the risk factors might reduce this major public burden.

Key words: Risk factors, stroke

INTRODUCTION

Stroke is rapidly developing clinical signs of focal (or global) disturbance of cerebral functions, with symptoms lasting 24 hours or longer or leading to death with no apparent cause other than of vascular origin¹. It is responsible for 85% of all deaths in Western countries as well as in low-and middle-income countries². Compared with developed countries, developing countries reportedly have seven fold higher disability adjusted life years. In the South Asian region, the World Health Organisation estimates that nearly 54% of death and 44% of morbidity are due to noncommunicable disease (NCDs)³. Annually, nearly 15 million people worldwide suffer from stroke with five million dying and another five million people becoming permanently disabled, posing a burden to the family, society and economy of the country⁴. An estimated 6.7 million people died due to stroke in 2015. In Nepal, the World Health Organisation estimates that 60% of total deaths are due to noncommunicable disease (NCDs). There has been few studies done in risk factors associated with stroke in Kathmandu, Pokhara and Eastern Nepal. This hospital based study of 119 cases has been undertaken to study the risk factors of stroke subtype in Mid and Far Western region. The study also aims to evaluate and compare the risk factors of stroke from the previous studies.

MATERIAL AND METHOD

The study was conducted at the Department of Medicine, Nepalgunj Medical College and Teaching Hospital, Kohalpur during the period of 1st January 2015 to 30th October 2016. The present study comprised of 119 patients with 68(57.1%) males and 51(42.9%) females. After clinical history, examination and CT/MRI evaluation, the diagnosis of stroke and its subtype was made. Patients with TIA and Subarachnoid Hemorrhage were excluded. The analysis of the collected data were done using SPSS 13.0.

RESULT

We collected 119 number of cases with the diagnosis of cerebrovascular accident. There were 68 number of males and 51 number of females. The mean age was 59.76±11.22. About 63(52.9%) of cases were of Ischemic Stroke and 56 (47.1%) of cases were Hemorrhagic Stroke. Among the modifiable risk factors, alcohol use was seen in 75(63%) and constituted largest risk factor. Smoking was present in 70(58.8%) of patients, followed by Hypertension in 60(50.4%) and Diabetes 11(9.2%) of patients. Other modifiable risk factors like previous vascular events 9(7.6%) and heart disease 4(3.4%) were less common in our study.

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Study of Devkota et al 41.4% and Maskey et al 26.9%. Smoking is a risk factor in our study which is higher in comparison to the study of Pathak et al, which was quite low in comparison to the study done by Naik et al. Smoking was also more common in ischemic stroke as compared to hemorrhagic stroke 56(47.1%) in our study. Ischemic stroke was more common than hemorrhagic stroke in age group 60 years and above. This result is similar to that reported in studies by Naik et al and Devkota et al respectively. The study done by Naik et al showed smoking as the commonest risk factor. It was present in 40.66% of cases in their series.

50.4% of stroke patients were of Hypertension in our study which is lower in comparison to the study of Pathak et al 60%, and Maskey et al 61.2%. However, Devkota et al also showed similar value of 47.2% and 40% by Naik et al. Hypertension is a major risk factor in industrialized countries and was most common in South Asian and Western countries.

Diabetes Mellitus was present in 9.2% of cases in our study. Similar lower figures of 6.6%, 11% and 11.1% have been reported in studies by Naik et al and Devkota et al respectively. Previous vascular event was present in 9(7.6%) of cases in our study. Heart disease was found to be in 3.4% of cases in our study, which was quite low in comparison to the study done by Maskey et al 23% and Devkota et al 12.5%.

CONCLUSION
The mean age of stroke was 59.76±11.22 with ischemic stroke being more common than hemorrhagic stroke. The maximum number of cases occurred in age group 60 years and above. In the younger age group (40-60 years), hemorrhagic stroke predominated. Male are at higher risk of having stroke than female. Out of modifiable risk factors, alcohol use followed by smoking, hypertension and Diabetes was common. Preventing strategies adopted for the modifiable risk factors may have significant role in preventing the upcoming adverse effects.

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### Table I: Age group and types of stroke

| Age Group | Ischemic Stroke | Hemorrhagic Stroke | Total |
|-----------|-----------------|--------------------|-------|
| 20-40     | 2               | 5                  | 8     |
| 40-60     | 22              | 28                 | 50    |
| >60       | 37              | 24                 | 61    |
| Total     | 63              | 56                 | 119   |

### Table II: Age and Sex Distribution

| Sex     | Mean age | Number | Std. Deviation | %    |
|---------|----------|--------|----------------|------|
| Male    | 59.18    | 68     | 11.770         | 57.1%|
| Female  | 60.55    | 51     | 10.513         | 42.9%|
| Total   | 59.76    | 119    | 11.223         | 100.0%|

### Table III: Stroke – Common modifiable risk factors

| Risk Factor | Prevalence |
|-------------|------------|
| Alcohol     | 75(63%)    |
| Smoking     | 70(58.8%)  |
| Hypertension| 60(50.4%)  |
| Previous vascular event | 9(7.6%) |
| Heart disease | 4(3.4%) |
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