

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

Shah SK¹, Shah S², Shah SK³, BK S⁴

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.³ 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)². 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.

1. Dr. Sanjib Kumar Shah
2. Mr. Sunil Shah
3. Dr. Sujeet Kumar Shah
4. Dr. Shyam B.K.

Address for correspondence

Dr. Sanjib Kumar Shah
Department of Medicine
Nepalgunj Medical College & Teaching Hospital
Kohalpur, Banke, Nepal
Email : sanjibkshah@gmail.com

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

Table I: Age group and types of stroke

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 II: Age and Sex Distribution

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%)

Table III: Stroke – Common modifiable risk factors

DISCUSSION

The mean age of stroke in our study was 59.76±11.22, which is nearer to the mean values of age in stroke patients reported by Devkota et al 61 years and Pathak et al 61.7 years respectively^{5,6}. The mean age of stroke reported in Western countries is greater than South Asian countries. The mean age of stroke in India is 63 years and Pakistan is 59 years which is quite lower than USA (68 years) and Italy (71 years)¹¹. Our result showed the similar result as compared to South Asian countries.

The stroke was common in age group 60 years and above which equals with WHO/CDC. Our study showed that stroke was more common in males 68(57.1%) than females 51(42.9%). The findings of our study also show that the male are at higher risk than females.

63(52.9%) Ischemic stroke was more common than hemorrhagic stroke 56(47.1%) in our study. Ischemic stroke was also more common in ischemic stroke in comparison to the hemorrhagic stroke in age group of 60 years and above. However, in age group 40-60, hemorrhagic stroke was more common than ischemic stroke. This result is similar to that mentioned by Shrestha A et al and Devkota et al^{5,9}.

Out of modifiable risk factors, Alcohol use 75(63%) was largest risk factor in our study which is higher in comparison to the study of Devkota et al 41.4% and Maskey et al 26.9%.^{5,7} Smoking

ranked next to hypertension and was present in 58.8% of cases in our study. It was reported in 58.3% and 59.4% of cases by Maskey et al and Devkota et al respectively^{5,7}. The study done by Naik et al showed smoking as the commonest risk factor. It was present in 40.66% of cases in their series⁸.

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%.^{6,7} However, Devkota et al also showed similar value of 47.2% and 40% by Naik et al^{5,8}. 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^{5,8}. 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%.^{7,5}

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.

REFERENCES

1. WHO MONICA Project Investigators. The World Health Organisation MONICA Project (Monitoring trends and determinants in cardiovascular disease). *J Clin Epidemiol* 41, 105-114. 1988.
2. World Health Organisation. Regional framework of NCD.

- Cardiovascular diseases: fact sheet WHO. 2011. Available at <http://www.who.int/mediacentre/factsheets/fs317/en/index.html>.
3. Lopez AD, Mathers CD, Ezzati M, Jamison DT, Murray CJ. Global and regional burden of disease and risk factors 2001; systematic analysis of population health data. *Lancet* 2006;367:1747-57.
 4. World Health Organisation. Global burden of Stroke. 2004. Available at http://www.who.int/cardiovascular_diseases/en/cvd_atlas_15_burden_stroke.pdf.
 5. Devkota KC, Thapamagar SB, Malla SB, Malla S. Retrospective analysis of stroke and its risk factors at Nepal Medical College Teaching Hospital. *Nepal Medical Coll J* 2006;8:269-75.
 6. Pathak V, Kanth R, Pant H. Stroke: a case series study in Nepal Medical College Teaching Hospital. *Nepal Med Coll J* 2006;4:161-6.
 7. Maskey A, Parajuli M, Kohli SC. A Study of Risk Factors of Stroke in Patients Admitted in Manipal Teaching Hospital, Pokhara. *Kathmandu Univ Med J* 2011;36(4):244-7.
 8. Naik M, Rauniyar RK, Sharma UK, Dwivedi S, Karki DB, Samuel JR. Clinicoradiological profile of stroke in eastern Nepal, a computed tomography study. *Kathmandu Univ Med J* 2006;4(2):161-6.
 9. Shrestha A, Shah DB, Koirala SR, Adhikari KR, Sapkota S, Regmi PR. Retrospective analysis of stroke and its risk factors at Bir Hospital. *Post Graduate Medical Journal* 2011;11(2):28.
 10. Dr.K.K.Oli, Dr.J.P. Agrawal. Critical review of Stroke. *Journal of the Institute of Medicine* 2001;23:68-66.
 11. Wasay M, Khatri IA, Kaul S. Stroke in South Asian Countries. *Nat Rev Neurol*. 2014 Mar ;10(3):135-43.