



STROKE AND ITS RISK PROFILE IN WESTERN NEPAL

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ABSTRACT

Stroke is a common cause of morbidity and mortality. In Nepal, there is paucity of data on stroke prevalence and its associated risk factors. This study was carried out to obtain the clinical profile of patients suffering from various stroke subtypes in western Nepal. This is a hospital-based cross-sectional descriptive study which aims to assess the clinical profile of stroke patients admitted at Lumbini Medical College and Teaching Hospital which caters services to rural area of western Nepal. A total number of 224 cases of stroke were included in this study during the period from January 2014 to June 2015 who was admitted in internal medicine ward. Mean age of patients was 62.92 (range from 34 to 84 years) with male and female ratio of 1.64. Amongst strokes, hemorrhagic stroke was more common than ischemic stroke (48.21% vs 42.85%). Subarachnoid hemorrhage was observed in 8.92% of stroke patients. The common manifestations were motor disturbances, altered sensorium, headache and speech abnormality. The common predisposing factors were smoking, hypertension and alcohol consumption. The most common site of both hemorrhagic and ischemic stroke was basal ganglia. Among hemorrhagic strokes, 33.33% of patients had ventricular extension of bleeding. Most commonly involved territory was middle cerebral artery. The burden of stroke and its associated risk factors is high in western part of Nepal. Nationwide campaign for early detection and management of hypertension, diabetes mellitus and for smoking cessation and alcohol abstinence can help reduce the prevalence of stroke.

KEYWORDS: Clinical profile, Risk factors, Stroke.

INTRODUCTION

Stroke ranks second after ischemic heart disease as a cause of death worldwide.^[1] The incidence of stroke varies among countries and increases with age. In western countries, about 80% of strokes are caused by focal cerebral ischemia due to arterial occlusion and the remaining 20% are caused by hemorrhages.^[2] Various risk factors predispose a person to stroke. Major modifiable risk factors include hypertension, smoking, diabetes, dyslipidemia, carotid stenosis, cardiac disease, alcohol consumption and sedentary life style.^[3] But contrary to the western data, hemorrhagic stroke comprises a larger percentage of stroke subtypes in Asian countries like Japan and China probably because of poorly controlled hypertension.^[4] Current treatments for patients with established stroke are relatively ineffective and prevention of modifiable risk factors is the key step to decrease the incidence and mortality of stroke.^[5,6]

This study was carried out to obtain the clinical profile of patients suffering from various stroke subtypes in western Nepal. This is intended to provide the in depth

idea about the prevalence of strokes and its associated risk factors.

MATERIAL AND METHODS

This is a descriptive cross-sectional study. All strokes cases admitted to internal medicine department of Lumbini Medical College and teaching hospital from January 2014 to June 2015 were included. Clinical history, physical examination and computer tomography (CT) of brain findings were noted. All cases with CT scan finding of recent infarction, intraparenchymal hemorrhage and subarachnoid hemorrhage were included. Patients were separated into one of the three categories of hemorrhagic stroke, ischemic stroke and subarachnoid hemorrhage. All the patients were investigated for random blood sugar, fasting lipid profile, electrocardiogram, chest radiography and CT scan of brain. Echocardiography was performed in selected patients in whom cardio-embolism was suspected. Data analysis was performed using the Microsoft Excel 2010 and SPSS windows Version 17 software.

Ethical aspect of the study

The data collected were from routine clinical practices for stroke patients when they are evaluated and managed in emergency department or internal medicine ward. No extra financial burden was added to the patient. No experimental therapy was given to the patient. Approval to conduct the study was obtained from LMCTH.

RESULTS

There was total of 224 strokes cases. Stroke was more common in the middle age and elderly population. Both hemorrhagic and ischemic stroke commonly occurred in age group between 60 to 80 years. The male to female ratio of stroke was 1.64 and both ischemic and

hemorrhagic strokes were more common in males. Amongst strokes types, hemorrhagic stroke was more common than ischemic stroke (48.21% vs 42.85%). Subarachnoid hemorrhage was observed in 8.92% of stroke patients (Figure 1). The common manifestations were motor disturbances, altered sensorium and headache and speech abnormality (Table 3). Common predisposing factors were smoking, hypertension and alcohol consumption (Table 4). The most common site of both hemorrhagic and ischemic stroke was basal ganglia followed by involvement of different lobes (Table 5). Among hemorrhagic strokes, 33.33% of patients had ventricular extension of bleeding. Most common involved site was middle cerebral artery territory.

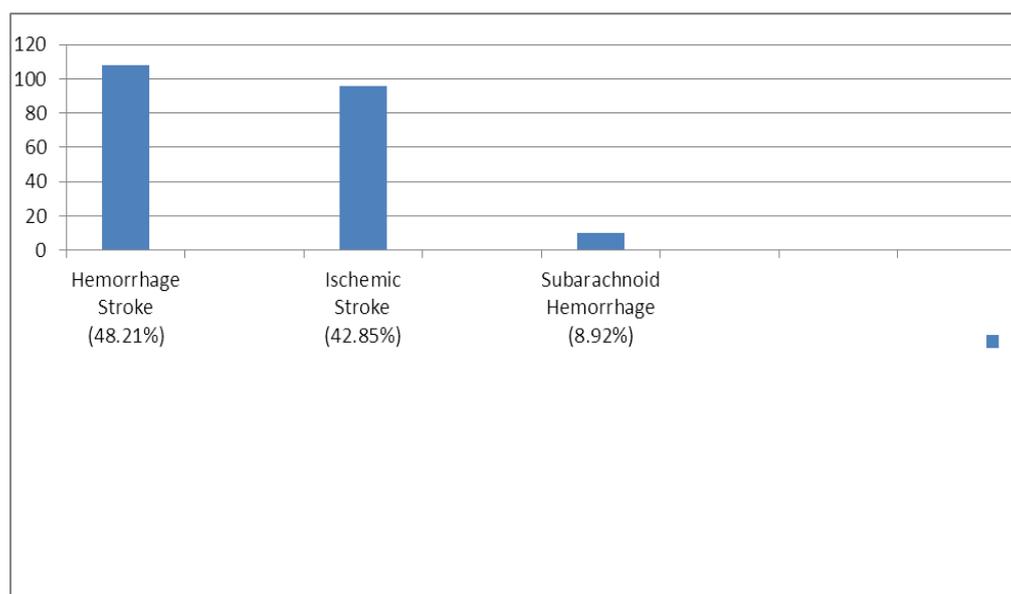


Figure 1: Stroke Subtypes

Table 2: Characteristics of patients with stroke. (N = 224)

Characteristics	Hemorrhagic	Ischemic	SAH
Stroke subtypes	108(48.21%)	96(42.85%)	20(8.92)
Sex distribution	Male : 66 Female : 42	Male : 64 Female : 32	Male : 10 Female : 10
Mean age (years)	64.58	64.27	49.18
Mean SBP(mmHg)	170.94	152.34	158.18
Mean DBP(mmHg)	100.37	91.85	94.54
Mean GCS	13.22	14.25	14.63

*SBP: Systolic blood pressure, DBP: Diastolic blood pressure, GCS: Glasgow coma scale, SAH: Subarachnoid hemorrhage.

Table 3: Clinical manifestations of patients with stroke. (N = 224)

Manifestations	Hemorrhagic(N=108)		Ischemic(N=96)		SAH(N=20)	
	N	%	N	%	N	%
Altered sensorium	88	81.48	64	66.66	16	80
Motor disturbances	108	100	96	100	4	20
Speech disturbances	24	22.22	28	29.16	0	0
Headache	20	18.51	42	43.75	20	100
Convulsion	16	14.81	6	6.2	0	0
Sensory disturbances	12	11.11	8	8.33	0	0
Vertigo	8	7.40	4	4.16	12	60

Ataxia	8	7.40	4	4.16	12	60
Vomiting	18	16.66	16	16.66	8	40

Table 4: Predisposing conditions for stroke. (N=224)

Manifestations	Hemorrhagic(N=108)		Ischemic(N=96)		SAH(N=20)	
	N	%	N	%	N	%
Hypertension	104	96.2	86	89.5	8	40
Smoking	58	53.7	48	50	6	0
Diabetes Mellitus	18	16.6	10	10.4	0	0
Alcohol abuse	36	33.3	18	18.7	6	0
Dyslipidemia	18	16.6	16	16.6	4	20
Atrial Fibrillation	10	9.2	18	18.7	0	0
Rheumatic heart disease	2	1.8	28	29.1	0	0
Ischemic heart disease	8	7.4	10	10.4	2	0

Table 5: Site of lesion in computer tomography (CT) of brain. (N=224)

Distribution	Hemorrhagic		Ischemic	
	N	%	N	%
Basal ganglia	64	59.2	44	45.8
Ventricular extension	36	33.3	-	-
Lobar (Frontal, parietal, Occipital)	20	18.5	24	25
Internal capsule	4	3.7	6	6.2
Cerebellum	6	5.5	2	2.0
Thalamus	4	3.7	2	2.0
Pons	4	3.7		
Para ventricular	-	-	10	10.4
Bilateral basal ganglia (Lacunar)	-	-	14	14.5

DISCUSSION

This study revealed that mean age of occurrence of stroke was 62.92 years and stroke was more common in males than in females. Other studies done in Nepal have shown the similar mean age of occurrence of stroke and males were more commonly affected than females.^[7-9]

This emphasize age as the most important risk factor for all stroke types. Amongst strokes, hemorrhagic were more common than ischemic (48.21% vs 42.85%) in our study in contrary to other various studies done previously which have shown ischemic stroke to be more common than hemorrhagic stroke in Nepal.^[7-10]

The majority of patients included in our study presented with motor disturbances like hemi paresis and upper motor neuron facial palsy, altered sensorium, speech abnormality, headache and vomiting which are similar to that of previous studies done in Nepal.^[7-10]

Amongst modifiable risk factors, hypertension, smoking and alcohol abuse were the major culprit among patients with both hemorrhagic and ischemic subtypes of stroke in our study. Several other studies done in Nepal and India have shown similar findings with hypertension and smoking being the major risk factors.^[7-11] In our study, incidence of both the ischemic and hemorrhagic stroke was more common in hypertensive patients as shown in Framingham study.^[12]

Alcohol consumption was seen in a significant proportion of hemorrhagic than ischemic subtype

patients in our study. Study has shown that relative risk of hemorrhagic stroke increases linearly with increasing alcohol consumption and those consuming more than 60 g/day had the highest relative risk.^[13]

Although diabetic patients are at increased risk for all forms of ischemic stroke and are associated with other risk factors like hypertension and hyperlipidemia.^[3] Diabetes was seen in only 10.4% of ischemic stroke and 16.6% of hemorrhagic stroke patients in our study.

Results for hypercholesterolemia as a stroke risk factor are controversial.^[14] Meta-analysis of randomized trials has found statin therapy to be associated with reduction in the risk of stroke.^[3] Our results showed that the prevalence dyslipidemia was equal for both ischemic and hemorrhagic stroke.

Atrial fibrillation (AF) is a important cardiac risk factor for embolic stroke.^[14] The risk of stroke in the average patient with non- rheumatic AF is approximately 5% a year and patients with valvular atrial fibrillation have 17-fold higher risk of acquiring stroke.^[3] In our study, rheumatic valvular heart disease (RHD) was found in 14 and AF in nine of ischemic stroke patients. In the contrary, RHD was present in one and AF in five patients of hemorrhagic stroke. Associated ischemic heart disease was found in four patients with hemorrhagic and five patients with ischemic stroke.

The most common site of both hemorrhagic and ischemic stroke was basal ganglia (59% vs 45%). In hemorrhagic stroke, 33.3% of patients had ventricular extension of bleeding. Most common involved site was middle cerebral artery followed by posterior cerebral artery territory which is comparable to study done in eastern Nepal by Naik M *et al.*^[9]

The etiologic spectrum of hemorrhage in the young may be wider than in older individuals and includes vascular malformation, hypertension and drug use.^[16] In our study, there were nine cases of stroke in the young, the age of the patients ranged from 25 to 40 years. Infarction was common (seven patients) than hemorrhage (two patients). Out of seven cases of ischemic stroke, four patients had rheumatic valvular heart disease and atrial fibrillation. Both the patients with hemorrhagic stroke were hypertensive and active smoker.

SAH is a form of stroke and comprises 1–7% of all strokes.^[17] Manifestations of SAH include a severe headache with a rapid onset, vomiting, confusion or a lowered level of consciousness and sometimes seizures.^[18] Important risks for SAH include heavy alcohol use, cigarette smoking, hypertension and possibly oral contraception.^[19] In our study, 10 (8.9%) patients had presented with SAH with mean age of 49.8 years. Majority of them presented with headache, altered sensorium and vomiting. Four patients were hypertensive and three had history of smoking and alcohol abuse.

CONCLUSIONS

The burden of stroke and its associated risk factors is high in western part of Nepal. Current treatments for patients with established stroke are relatively ineffective and prevention of modifiable risk factors is the key step to decrease the incidence and mortality of stroke. Every clinician should try to identify and treat the risk factors for stroke as well as promote healthy lifestyle. Nationwide campaign for early detection and management of hypertension, diabetes mellitus and for smoking cessation and alcohol abstinence can help reduce some of these risk factors.

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Conflict of Interest: None.

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