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CLINICAL CHARACTERISTICS AND RISK FACTORS ASSESSMENT OF ISCHEMIC STROKE PATIENTS IN A TERTIARY CARE HOSPITAL IN NEPAL

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ABSTRACT

Introduction: *Stroke is a major global health burden in society causing mortality and disability after ischemic heart disease. It can be prevented by modification of major risk factors like hypertension, smoking, diabetes, alcoholism, dyslipidemia, and atrial fibrillation. This study intended to measure the clinical characteristics and the risk factors associated with ischemic stroke in patients admitted to NAMS Bir Hospital, Kathmandu, Nepal.*

Materials and methods: *This study was a hospital-based cross-sectional observational study conducted at NAMS Bir Hospital from November 2019 to June 2020. Data was collected from all the patients presented with stroke and the data was analyzed with SPSS version 26.*

Results: *Out of the 92 patients presented with stroke, ischemic stroke was seen in 70(76%), and hemorrhagic stroke was seen in 22(24%) of the patients. In the study 39(65%) were Male and 21(35%) were Female with a mean age of 65.57 years ± 14.88 years. Weakness of the limb (87%) and deviation of the angle of the mouth (60%) were the presenting symptoms in most of the cases. Middle cerebral artery territory (51%) was the most common site of lesion involved in ischemic stroke. Hypertension and Smoking were seen in 70% and 61% of cases and were the most common factors associated with ischemic stroke followed by alcohol consumption and dyslipidemia.*

Conclusion: *Ischemic Stroke was more common than hemorrhagic stroke among all the cases admitted to the hospital. It was predominant in older male age groups. Hypertension and Cigarette Smoking were the most common risk factors associated with Ischemic Stroke.*

Keywords: *Hypertension, Ischemic Stroke, Risk Factors, Smoking*

INTRODUCTION

Stroke is a major global health concern with higher morbidity all over the world after ischemic heart disease. It is the second-leading cause of death and the third-leading cause of death and disability combined (as expressed by disability-adjusted life-years lost – DALYs) in the world. [1] About 15 million people around the globe suffer from stroke annually. Among them, around one-third lose their life and two-thirds become disabled, posing a burden to the family, society, and economy of the country.[2]

Ischemic Stroke is more common than hemorrhagic Stroke.[3] Weakness of the limbs is the common presentation of the Ischemic Stroke in the emergency room of the hospital. The common site of lesion of the Ischemic Stroke is the Middle meningeal Artery Territory. It can be prevented by early modification of certain risk factors like hypertension, smoking, alcoholism, dyslipidemia, diabetes mellitus, dyslipidemia, heart disease, atrial fibrillation, and obesity.[4]

The most common modifiable risk factors seen are Hypertension (61.2%), cigarette smoking (59.4%), alcohol use (26.9%), left ventricular hypertrophy (27.5%), atrial fibrillation (23%), elevated triglyceride (23%), diabetes mellitus (9.3%) and elevated total cholesterol in patients admitted in teaching hospital in Pokhara. Multiple risk factors ≥ 2 were seen in 76.5% of the cases with Ischemic stroke.[5]

We intend to know the clinical profile of Ischemic stroke patients and the association of different risk factors in our population and identify those at risk of such cerebrovascular disease in the future for primary prevention and also help in planning preventive strategies.

MATERIALS AND METHODS

This hospital-based cross-sectional observational study was conducted over 6 months from November 2019 to June 2020 AD. The study protocol was approved by the Institutional Review Board (IRB) of the National Academy of Medical Sciences (NAMS) before the start of data collection. Convenient sampling was done and data was collected from all the subjects with the first stroke diagnosed by the development of sudden onset neurological deficit about a vascular territory with a sustained deficit for more than 24 hours with the evidence of stroke on MRI or Non-contrast CT scan confirmed by a Radiologist. A total of 92 patients were enrolled in this study. The study excluded a stroke secondary to infection, structural brain lesions (such as Tumors), and connective tissue disorders.

Data derived from the patients, patients' party and their hospital record were filled in structured Proforma covering the relevant details. Data was entered in the tabulated format. SPSS version 26 was used for data analysis.

RESULTS

A total of 92 patients with Stroke were enrolled in this study out of which 41(59%) were male and 29(41%) were female with an M: F ratio of 1.41:1. Ischemic Stroke (N=70,76%) was more common compared to hemorrhagic stroke (N=22,24%). The mean age of the patients was in the mid-60s. The mean age was 65.57 ± 14.88, in which the mean age of males was 62.21±14.59 whereas the mean age of females was 68.10±15.48.

Table 1. Clinical presentation of the patients with Ischemic Stroke

Presenting Complaints	Frequency	Percentage (%)
Weakness of the limb	54	87.10
Deviation of the angle of the mouth	42	60.00
Slurring of Speech	32	51.61
Drowsy	19	30.65
Headache	12	19.35
Others	6	9.68

Table 2. Site of lesion in Ischemic Stroke

Site of lesion	Number of cases	Percentage (%)
Middle cerebral artery	36	51.43
Lenticulostriate branches	16	22.86
Posterior circulation stroke	6	8.57
Anterior cerebral artery	10	14.29
Anterior Choroidal Artery	2	2.86
Total	70	100.00

Table 3. Irreversible Risk Factors Associated with Ischemic Stroke

Non-Modifiable Risk Factor of Stroke	Number of cases of Ischemic Stroke	Percentage (%)
Age (years)		
<30	3	4
31- 40	11	16
41- 50	18	26
51- 60	12	17
61- 70	15	21
71- 80	11	16
>80		
Sex		
Male	41	59
Female	29	41
Family History of Stroke		
Present	18	26
Absent	52	74

Table 4 Modifiable Risk factors of stroke

Modifiable Risk Factors of Stroke	Number of Cases of Ischemic Stroke	Percentage (%)
Hypertension	49	70
Smoking	43	61
Alcohol Consumption	35	50
Central Obesity	33	47
Dyslipidemia	23	33
Diabetes Mellitus	15	21
Atrial Fibrillation	12	17
Other Heart Diseases	8	11
Drug Abuse	2	3

DISCUSSION

Stroke is a matter of global public health concern leading to significant morbidities and mortalities. It occurs predominantly in older males and the most common risk factors are Hypertension, cigarette smoking, lack of physical activity, diabetes, hyperlipidemia, ischemic heart disease, atrial fibrillation, and long-standing alcohol intake.[6] The prevalence of Ischemic stroke differs from community to community. The minor differences in the prevalence of risk factors are probably related to the different cultural practices, ethnicity, lifestyles, and local disease patterns.[7]

Men have a higher incidence of stroke at younger ages than females but at older ages, it is more predominant

in females.[8] In this study, stroke patient`s age ranged between 27 to 91. It was observed that more than 75% of the patients were in the age group >50 years and the incidence increased with increasing age. The mean age in this study was 65.57 ± 14.88 years which closely resembled the Sridharan et al study done in Trivandrum, India in 2005 which revealed the average age of the stroke patients was 67 years.[7]

The gender distribution of stroke differs from country to country and Prospective hospital-based stroke registries in Germany, China, Iran & India showed a very high preponderance of males for nearly all age groups in Asian countries due to fewer female smokers.[6]

Ischemic Stroke (76%) was more common than hemorrhagic Stroke (24%) in this study. Shaik et al. conducted a survey of the Burden of Stroke in Nepal which showed similar incidence of Ischemic Stroke was more common (63%) than hemorrhagic stroke (37%).[9]

This study shows that the commonest complaints during presenting in the hospital were Weakness of the limbs (87%), deviation of angle of the mouth (60%), slurring of speech (51%), and Drowsiness (31%) followed by others. Similar findings were observed in the study done by Devkota et al. comprising, weakness of limbs (90.3%), slurring of speech (33.3%), and drowsy (29.2%).[10]

The most common vascular territory involved in Ischemic Stroke in this study was the Middle Cerebral Artery (MCA) territory (51%) followed by the Lenticulostriate branch of the Middle Cerebral Artery (23%). Similar results were seen in the study of Ischemic stroke where MCA territory (39.4%) and small vessel stroke (17.2%) were more common.[11]

In this study, we analyzed various modifiable and non-modifiable risk factors. Essential hypertension is one of the common diseases found in our country. In our study hypertension and smoking were associated with 70% and 61% of all ischemic strokes followed by Alcohol Consumption and Obesity. A study done by Oli et al from 1996 to 2000 on 684 patients with stroke showed that 53% of the patients were male and 63% were diagnosed with ischemic stroke. The mean age of patients with ischemic Stroke was 59 years. Hypertension (42%), smoking (28.5), alcoholism (18.4%) and diabetes mellitus were the common risk factors associated with ischemic stroke.[12]

A study done by Devkota et al. in a teaching hospital in Kathmandu from April 2000 to March 2005, found that 68·1% of patients had an ischemic stroke where the majority of stroke sufferers were male (58·3%). The most common risk factors were smoking, hypertension, and alcohol consumption, with the mean age of stroke reported to be 61.7 years.[10]

In the study of Feigin et al. on risk factors for ischemic Stroke in a Russian Community, Smoking was associated with 84.8% and 68.7% in the study done by Sridharan R.[13] A hospital-based study on ischemic strokes in young patients in North India by D Dash showed hypertension as the most common risk factor in 34.4% of the patients. [3]

Diabetes was seen in both of the Stroke subtypes however it was more common in the Ischemic Subtypes (25%) than Hemorrhagic subtypes. Studies done in various groups showed that Diabetes was associated with ischemic Stroke. This Study showed only 5% of the cases of ischemic stroke were associated with atrial fibrillation and no cases were seen with hemorrhagic stroke. A Similar study done by Emmanuel Sangui in 2005 in Senegal, West Africa found that only 14.7% of ischemic strokes were associated with atrial fibrillation however there were no cases of hemorrhagic stroke associated with atrial fibrillation.[14]

Three patients (5%) had a family history of ischemic stroke in our study, this was much lower than Feigin's study which had 18% of the cases related to a family history of Stroke.[15] Obesity was also a significant risk factor in the Ischemic Stroke in this study, which was consistent with Davia Rastenyte's study.[16]

CONCLUSIONS

Male sex and advancing age above 60 were found to be the more prevalent groups of strokes. Ischemic stroke was more common than haemorrhagic stroke. The most common modifiable risk factors for stroke were hypertension, smoking, diabetes, alcohol consumption, dyslipidaemia, and obesity

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