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SOCIO-DEMOGRAPHIC AND CLINICAL PROFILES AND OUTCOMES OF HEMORRHAGIC STROKE PATIENTS- A RETROSPECTIVE STUDY FROM A SUPER SPECIALTY TERTIARY CARE HOSPITAL IN NORTHEAST INDIA

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ABSTRACT

Background: Hemorrhagic stroke is a major health issue in India. Uncontrolled risk factors, lack of public awareness and inadequate healthcare infrastructure has contributed to the rising incidence and prevalence of hemorrhagic stroke in India. This study was designed to exclusively address the hemorrhagic stroke cases from Northeast India. **Methods:** The study included 113 hemorrhagic stroke patients. Baseline characteristics were described in frequencies using descriptive statistics. **Results:** The cohort consisted of 71.7 % (n = 81) males and 28.3 % (n = 32) females with an average age of 61 yrs ± 2.03. Hypertension (67.3 %; n = 76) was the main comorbidity. Common clinical symptom noted was dizziness (41.6 %; n = 47). Only 7.9 % (n = 19) patients were admitted within 3-24 h onset of acute hemorrhagic stroke. About 38.9 % (n = 44) patients showed impaired level of consciousness. In-hospital mortality was 8 % (n = 9). **Conclusions:** Appropriate curative and rehabilitative strategies and awareness regarding the need to adopt primary and secondary preventive measures to reduce the risk of hemorrhagic stroke is indispensable.

INTRODUCTION

Stroke is a major global health problem with serious and chronic complications.[1] Changing socio-demographic, economic, and epidemiological scenarios has remarkably increased the life expectancies of Indian population and consequently increased the number of ageing populations.[2-3] Stroke as such has become the fourth leading cause of mortality and the fifth leading cause of morbidity in India.[4] Hemorrhagic stroke, which is caused by bleeding in the brain often due to a ruptured blood vessel, is a significant health concern in India. Hemorrhagic stroke often have worse outcomes and is associated with severe morbidity and high mortality.[5-6] Usually, there is risk of rapid expansion of hemorrhage that can lead to sudden neurological dysfunction and deterioration of consciousness.[6] Factors contributing to its prevalence include hypertension, tobacco use, alcohol consumption, low hemoglobin, unhealthy diet, and sedentary lifestyle.[7-9] Access to healthcare, particularly in rural areas, also affects prevention and treatment outcomes. Hence, early diagnosis and appropriate treatment of hemorrhagic stroke are of utmost importance for better prognosis and survivality. This study was aimed at understanding the socio-demographic and clinical profiles and treatment outcomes of hemorrhagic stroke patients treated at our hospital.

METHODS

This retrospective study was conducted at a super specialty tertiary care hospital in Northeast India. The study period was from 1st July to 31st December 2022 and consisted of 113 hemorrhagic stroke patients that were admitted at the hospital. Patient information was retrieved from the medical records collected from the medical records department (MRD) of the hospital. Inclusion criterias were all admitted haemorrhagic stroke patients ≥ 18 years (yrs) of age with complete medical records including reports of computerized tomography (CT) or magnetic resonance imaging (MRI) scans. Hemorrhagic stroke patients < 18 yrs of age and with incomplete medical records were excluded from the study. Socio-demographic profile of hemorrhagic stroke patients such as age, gender, residential status, religion, marital status, type of occupation, consumption of alcohol and/or smoking, diet, history of stroke, and risk factors, if any were investigated. Further, clinical profile of the patients included in the study such as initial signs and symptoms, Glasgow Coma Scale (GCS) scores at the time of admission, time of reporting, and length of hospital stay were documented. Outcomes of the patients after treatment were also investigated. The SPSS software version 17 was used for statistical analysis.[13] Categorical variables were expressed as numbers (n) and percentages (%).

RESULTS

The cohort consisted of 71.1 % (n = 81) males and 28.3 % (n = 32) females with an average age of 61 yrs ± 0.231. Maximum hemorrhagic stroke patients were seen in the age group of 45-64 yrs (n = 55; 48.7 %). The proportion of patients from rural areas was high (n = 96; 84.9 %). About 66.4 % (n = 75) patients were Hindus. Majority of the patients were married (n = 110; 97.3 %). There were 27.4 % (n = 31) farmers. Alcohol consumption was seen in 33.6 % (n = 38) patients while tobacco intake was noted in 36.3 % (n = 41) patients. Further, 92.1 % (n = 104) patients followed a non-vegetarian diet. Only 7.9 % (n = 9) patients had a previous history of stroke. In addition, 67.3 % (n = 76) patients had hypertension.

Table I: Socio-demographic Profile Of Hemorrhagic Stroke Patients (n = 113) Included In Our Study

Variables	n (%)
Gender	
Male	81 (71.7)
Female	32 (28.3)
Age	
25-44	8 (7.1)
45-64	55 (48.7)

65-84	46 (40.7)
≥ 85	4 (3.5)
Residence	
Rural	96 (84.9)
Urban	17 (15.1)
Religion	
Hindu	75 (66.4)
Muslim	38 (33.6)
Christian	0 (0)
Marital status	
Single	3 (2.7)
Married	110 (97.3)
Divorced	0 (0)
Widowed	0 (0)
Occupational status	
Homemaker	28 (24.8)
Farmer	31 (27.4)
Government employee	4 (3.5)
Own business	22 (19.5)
Skilled/unskilled manual labor	16 (14.2)
Retired	4 (3.5)
Not specified	8 (7.1)
Lifestyle history	
Alcohol intake	38 (33.6)
Tobacco use	41 (36.3)
Diet	
Vegetarian	9 (7.9)
Non-vegetarian	104 (92.1)
Stroke history	
Family history	0 (0)
Previous history	9 (7.9)
Risk factors	
Hypertension	76 (67.3)
Diabetes	58 (51.3)
Dyslipidaemia	19 (16.8)
Hypothyroidism	4 (3.5)
None	12 (9.1)

At the time of reporting to hospital, dizziness was the clinically common symptom noted among the patients (41.6 %; n = 47). About 2.7 % (n = 3) patients had bowel incontinence and 6.2 % (n = 7) patients had urinary incontinence. Moreover, most patients had GCS scores of 13-15 (58.4 %; n = 66). Time of reporting to hospital was > 24 h in most patients (83.1 %; n = 94) after the onset of stroke. In addition, majority of patients were discharged in < 1 week (86.7 %; n = 98).

Table II: Clinical Profile Of Hemorrhagic Stroke Patients (n = 113) Included In Our Study

Clinical presentations	**n (%)**
Altered sensorium	18 (15.9)
Bowel incontinence	3 (2.7)
Chest pain	2 (1.8)
Deviation of mouth	3 (2.7)
Dizziness	47 (41.6)
Fever	6 (5.3)
Generalized weakness	4 (3.5)
Headache	7 (6.2)
Involuntary jerky movements of limbs	10 (8.8)
Left sided weakness	42 (37.2)
Right sided weakness	36 (31.8)
Restlessness	9 (7.9)
Slurred speech	25 (22.1)
Tingling sensation	7 (6.2)
Unresponsiveness	14 (12.4)
Urinary incontinence	7 (6.2)
Vomiting	10 (8.8)
GCS at the time of admission	
1-8	26 (23)
9-12	21 (18.6)
13-15	66 (58.4)
Time of reporting to hospital	
< 3 h	0 (0)
3-24 h	19 (7.9)
>24 h	94 (83.1)
Length of hospital stay	
< 1 week	98 (86.7)
1 week	2 (1.8)
> 1 week	13 (11.5)

At the time of discharge from the hospital, 78.8 % (n = 89) patients were in the recovering state. Further, clinical conditions remained unchanged for 3.5 % (n = 4) patients. Moreover, 8 % (n = 9) patients died during the course of treatment. Recovery rates were observed in the age categories of 25-44 (100 %; n = 8), 45-64 (87.3 %; n = 48), and 65-84 yrs (71.7 %; n = 33). Death rates were highest in the ≥ 85 yrs category (25 %; n = 1) followed by 65-84 (13 %; n = 6) and 45-64 (3.6 %; n = 2) yrs age categories.

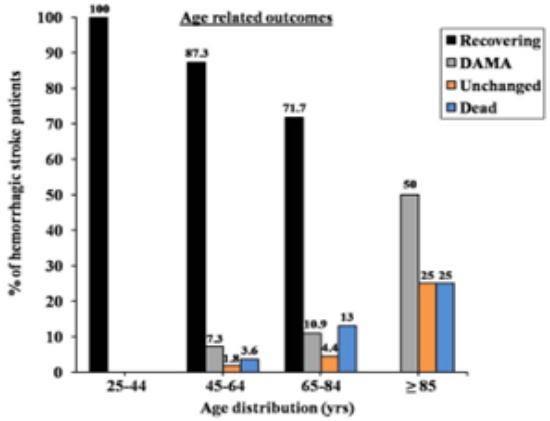

Figure 1: Age related outcomes of the hemorrhagic stroke patients included in the study

DISCUSSION

Stroke is a significant global health concern with hemorrhagic stroke being a common neurological illness prevalent in Northeast India. The mean age of the cohort was low which may be due to uncontrolled common modifiable risk factors and the existence of nontraditional risk factors.[14] Low percentage of females affected with hemorrhagic stroke was observed in this study which could be due to gender biasness or reluctance to seek medical care. Hypertension is one of the significant risk factor for hemorrhagic stroke.[15-18] Chronic high blood pressure can damage blood vessels in the brain causing rupture or leakage leading to hemorrhagic stroke. Managing and controlling blood pressure through medications and lifestyle changes can significantly reduce the risk of hemorrhagic stroke. Diabetes in association with other risk factors such as hypertension and high cholesterol is also known to increase the risk of hemorrhagic stroke.[19-21] Managing diabetes through proper blood sugar control, medications, and lifestyle modifications can help mitigate the risk of hemorrhagic stroke. Alcohol consumption and tobacco usage are both significant risk factors for hemorrhagic stroke not only in elderly populations but in young adults as well.[19-21] Increased consumption of alcohol and tobacco was seen among the hemorrhagic stroke patients of our study. Reducing or eliminating alcohol consumption and tobacco use can significantly lower the risk of experiencing a hemorrhagic stroke. In India, tobacco consumption is most commonly seen among low socio-economic stratum families and persons with lesser education.[22] Our cohort consisted of individuals mostly from rural areas with minimal education or source of income. This may be due to in hospital-based cohorts the type of patients visiting the hospital depends on the location of the hospital. Thus, low socioeconomic background, substandard local hospital facilities, inadequate control of risk factors, and lack

of awareness might be the contributing factors for the high prevalence of hemorrhagic stroke among the rural population from Northeast India. The hemorrhagic stroke patients were presented with sensory and motor symptoms at the time of reporting to hospital with dizziness and left sided hemiparesis being the common clinical manifestations observed. The average clinical presentation was found to be 3. At the time of admission, many patients had GCS scores of 1-8 and 9-12 which indicated significant brain damage. There was not a single patient who reported to the hospital within the window period of 3 h. From this we can conclude that lack of awareness, poor recognition of the early warning symptoms of stroke, and low transportation availability in rural areas could be some of the obstacles for delayed reporting to the hospital. Hospitalization period was < 1 week for most patients which indicated early and prompt treatment interventions by the multidisciplinary team of the hospital. Rehabilitation and medical interventions are necessary to help individuals recover as much function as possible after a hemorrhagic stroke. In the present study, most hemorrhagic stroke patients had no apparent complications at the time of discharge from the hospital. In-hospital mortality was not very high. Also, post-stroke treatment outcomes were mostly dependent on the age of the patients according to our study. The limitations of the study included single centre retrospective study. Collection and retrieval of complete patient information was also very challenging during the study. Also, hospital based studies may lead to discrepancies and thus community-based studies are necessary.

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