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Original article

Clinico-epidemiological profile of stroke patients admitted in a tertiary care Hospital of Assam

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ABSTRACT

Problem considered: Stroke or Cerebrovascular Accident (CVA) is the leading cause of death and disability and is a major problem in most part of the world as reported by WHO.
Aims: To estimate the clinico-epidemiological profile of acute stroke cases admitted in Assam Medical College and Hospital.
Methods: All consecutive cases attending the study site were enrolled and studied with predesigned questionnaires after obtaining ethical clearance for this observational study. Predesigned pretested questionnaire was used to assess socio-demographic profile, behavioural risk factor, health care seeking behaviour, dietary history, clinical examination along with routine blood examination and CT Scan. Statistical analysis was done using rates, ratio, proportion and chi-square test.
Results: Out of 470 cases enrolled the response rate was 96%. Average age was 54.3 ± 13 years with an average monthly income of Rs. 10,831. Majority were literate (76.4%). Majority presented with haemorrhagic cerebro-vascular accidents (CVA) (287, 63.6%), while 164 (36.4%) had ischemic CVA. Significant difference in prevalence of haemorrhagic and ischemic CVA in younger age group ($p = 0.001$), lower socio-economic strata ($p = 0.001$), patient's place of stay during symptom onset ($p = 0.048$) and mode of transportation to hospital ($p = 0.021$) was seen. Clinical signs and symptoms of ischemic and haemorrhagic CVA showed significant difference in symptoms like change in consciousness ($p = 0.000$), weakness in face/limb ($p = 0.022$), dysphagia ($p = 0.042$), headache ($p = 0.006$), diabetes ($p = 0.001$), tobacco consumption ($p = 0.000$) and alcohol consumption ($p = 0.000$). MLR showed significant association of haemorrhagic stroke with high salt consumption and loss of consciousness.
Conclusion: haemorrhagic CVA constitutes a larger percentage of stroke subtypes on this side of the globe effecting poor to lower middle class. Proper strategy to prevent and treat haemorrhagic CVA in this part of the world is the need of the hour.

1. Introduction

Stroke is defined by WHO as "rapidly developing clinical symptoms and signs of focal (at times global) disturbance of cerebral function with symptoms lasting more than 24 hours or leading to death with no apparent cause other than that of vascular origin."[1] Globally, CVA or stroke accounts for about 10% of all deaths, two-thirds of which occur in low income countries.[2] In India, stroke is a leading cause of death and acquired adult disability.[3–6] While exact estimates of the incidence and clinical consequence of stroke in India are unavailable, the epidemiological survey covering 52,577 people reported an estimated standardized prevalence of 545 per 100,000, an annual incidence of 145 per 100,000 and a 1-month case-fatality of 41%, all rates exceeding those in North America and Europe.[7] Accordingly, the social and economic consequences of stroke are proposed to be enormous, particularly when stroke occurs in the main income earner of a household.[8]

Among the stroke subtypes, cerebral ischemia and infarction constitute about 85-90% of the total stroke subtypes in western countries with only about 10–15% patients with cerebral haemorrhage.[9] But contrary to the western population, hemorrhagic CVA constitutes a larger percentage of stroke subtypes on this side of the globe as seen in countries like Japan and China probably because of poorly controlled hypertension.[10]

Despite the obvious importance of stroke in India, our understanding of the epidemiology, natural history and clinical management of stroke remains grossly inadequate.[11] Large scale acute coronary syndromes, where large observational studies have been completed in India (INTERHEART and CREATE-Registry),[12–14]

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there have been no observational studies for stroke in North east region. Dibrugarh District is having 27% tea garden population having high prevalence of cardiovascular risk factor like hypertension, high salt intake and tobacco consumption.[15] The stroke registry of Assam Medical College caters the whole District population as it is the only referral centre for the District. The present study is therefore designed to estimate the clinico epidemiological and practice pattern of acute stroke cases admitted in Assam Medical College and Hospital and to maintain a stroke registry.

2. Methods

Assam Medical College is the only tertiary care hospital in Dibrugarh District of Assam catering a total population of 1.3 million. All consecutive patients with diagnosis of stroke who attended Assam Medical College within 14 days of occurrence of disease during 2013-2015, and who came from the state of Assam were interviewed and were enrolled in the study. Written informed consent was obtained from all participants. Predesigned, pretested schedule including socio-demographic profile, clinical history and examination was recorded. Anthropometric measurement was done in the form of weight, height, waist circumference, hip circumference etc. Dietary assessment was done using food frequency questionnaire. Radiological diagnosis of causes other than stroke, like meningitis, encephalitis, space occupying lesion etc. was excluded. Also metabolic causes of altered sensorium based on clinical or laboratory means were not included in the study. Unconsciousness or loss of consciousness was defined as a condition in which ability to maintain awareness of self and of the environmental stimuli. The institutional ethics committee of Assam Medical College cleared this observational study.

2.1. Sample size calculation

Taking proportion of first-ever stroke captured in Mumbai registry, 89.2%, and 80.2% were ischemic strokes and 17.7% haemorrhagic strokes,[10] with 95% CI for 2 tail distribution the required sample size is 468.

Statistical analysis was done using rates, ratio and proportion and the difference in proportion was assessed by using chi square test and F-test.

3. Results

A total of 450 cases of strokes were enrolled, out of 470 CVA. So the response rate is 96%. The age of the participants ranges from 18-87 years with an average of 54.3 ± 13 years (Fig. 1). Average family size of study participant was six. Average income is Rs. 10831. Majority of the study participants 83 (75.8%) were between 40–69 years and Hindu by religion 135 (96.4%). Majority were literate (76.4%), while 23.6% were illiterate. 47.1% subjects were either unemployed or retired, while 33.6% were self-employed and only 19.3% were employed in any government or private concerns. Majority (55%) were the earning member of the family. Regarding assets; 82.9% owned houses as property, while access to media in the form of phone or mobile was available in 48.6% cases. Most of the study participants (95.7%) were from poor or lower middle class as per socio-economic classification. During occurrence of current event symptoms occurs at home in 88.6% while 7.9% were in workplace and 3.6% were alone at home. Ambulance services were availed by 82.1% of the sufferers for transportation, while 15.7% travelled by privately hired vehicle. In 75.7% cases the patient was first admitted to the Medical College, while in 24.3% cases the patient was referred from other hospital. The first consultation was with a general doctor in 87.9% cases and only 10% could get specialist advices like physician and 2.1% sufferers could not get access to any doctor (Table 1).

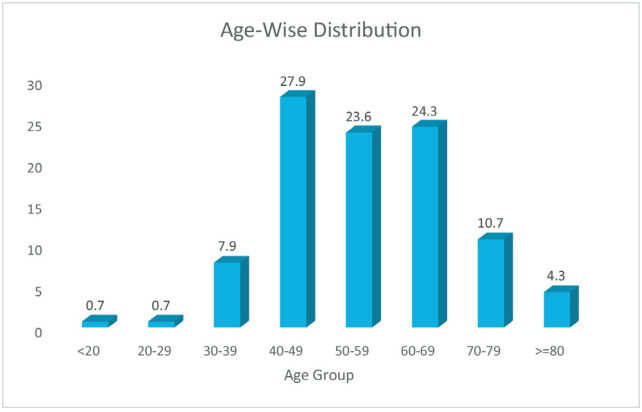

Fig. 1. Age wise distribution of stroke patients.

3.1. Prehospital symptoms

Majority presented with haemorrhagic shock (HS)(287, 63.6%), while 164 (36.4%) had ischemic shock (IS). Stroke was diagnosed as initial diagnosis in 94.7% cases. Stroke diagnosis was made at home in 3(0.7%) cases, while 256(62.2%) cases were diagnosed by first level health care provider and 158(37.1%) were diagnosed in emergency medicine department. Ranking scale 1 week prior to event (n = 140) was '0' in 138 (98.6%) cases, while '1' in 2 (1.4%) cases. Ranking scale at admission was '3' in 17(12.1%) cases and '4' in 55 (39.3%) cases. History of transient ischemic attack (n = 176) was found in 9 (5.1%) cases.

3.2. Symptoms on presentation in hospital

Change in consciousness was present in 257 (77.1%) cases, while 193 (42.9%) had no change of consciousness. Altered speech was present in 138 (30.7%) cases, weakness of face/limb in 294 (65.3%) cases, while dysphagia was present in 5(1.1%). Ocular/visual symptoms was found in 33(7.3%) cases, vertigo/ataxia was evident in 16(3.6%) and sensory symptoms were present in 69 (15.3%) cases. Headache was complained by 149 (33.1%) cases.

3.3. On clinical examination

Mean (±SD) SBP was 168(±29) and DBP was 97 (±14). The mean heart rate (±SD) was 80 (±9) beats/min, while average temperature was 96.6 (±8.0) degree F. Respiratory rate (±SD) was 20.5 (±2.4)/min. Anthropometric examination shows average weight as 54.2 ± 8.9 kg, waist circumference (supine)-69.8 ± 20.1 cm and hip circumference (supine) −70.2 ± 28.2 cm.

3.4. Regarding past medical history

Hypertension was known in 163(36.2%) cases, while 287(63.8%) has either normal blood pressure or unknown status. Fifty two individual (11.6%) were known diabetic, while 3(0.7%) had angina, 1(0.2%) had valvular heart disease, 4(0.9%) had atrial fibrillation and 2(0.4%) had past history of stroke.

3.5. Behavioural risk factor

Majority were current user of tobacco was 235(52.2%), while 84 (18.7%) were former user and 131 (19.1%) had never used tobacco.

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