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A study of clinico-biochemical profile in patients of cerebrovascular accidents

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Abstract
Background: Cerebrovascular accidents (CVA) are reported to be one of the leading causes of morbidity and mortality in adult life. It is the third commonest cases of death after heart disease and cancer of all type. Stroke prevalence in Indian population is 471.58/100000 population.
Aims and Objective: To study clinical presentation, risk factors, neurological presentation, pattern of brain strokes and biochemical profile in CVA patients.
Materials and Methods: Hundred stroke patients (Case group) were studied and compared with 100 age and sex matched healthy subjects (Control group) at JA group of Hospital, Gwalior from February 2016 to August 2017. Detailed information regarding age, sex, stroke history, diabetes mellitus, and hypertension along with lipid profile of each patient was recorded.
Results: Mean age of patients of CVA was 59.75±13.64 years. CVA was more common in males (59%) compared to female (41%). Most common clinical presentation was motor weakness (71%) followed by altered sensorium (11%) and unconsciousness (8%).The ischemic stroke was seen in 70 % patients and the rest had haemorrhagic stroke. Most common risk factor was smoking (26%), previous stroke history (24.28% in ischemic stroke and 23.33% in haemorrhagic patients), presence of diabetes mellitus (29%) and hypertension (54%).
Conclusion: The cerebrovascular accidents cases were having male predominance with Hypertension was the most common risk factor and most common type of stroke was ischemic.

Keywords: stroke history, cerebrovascular accident patients, motor weakness, ischemic stroke

Introduction
World health Organization defines cerebrovascular accidents as a neurological dysfunction with symptoms lasting more than 24 hours or resulting in death before 24 hours and in which after adequate investigations, symptoms are presumed to be of a non-traumatic vascular origin [1].
Cerebrovascular accidents are the 3rd leading cause of death after cerebrovascular disease and all type of cancer's in developed countries [2]. Among the stroke ischemic stroke is the most common, which accounts for 80% of the cases compared to haemorrhagic stroke which accounts for 15% of the stroke cases. Remaining 5% cases comprises of subarachnoid hemorrhage and hypertensive ICH [2].
Indian Community Surveys have reported a prevalence rate for hemiplegia in range of 200 per 1, 00, 000 population. It is responsible for nearly 1.5% of all urban admissions, 4.5 percent of all medical and about 20% of neurological cases [2].
The worldwide incidence of stroke is 179/100000 population. Overall prevalence ratein western countries is 794 per 1, 00, 000 population [3, 4]. Hence present study was planned to study the clinical and biochemical profile including risk factors of patients with stroke.

Materials and Methods
A case control study was done on 100 stroke patients at JA group of Hospital, Gwalior from February 2016 to August 2017.
All cases of either sex having symptoms of stroke and admitted in the Department of Medicine and Neurology, having age ≥15 years were included. Patients with age <15 years and head injury were excluded from the present study.
Each patient underwent a thorough clinical examination to diagnose stroke as per the WHO definition. Detailed information regarding age, sex, smoking irrespective of duration and number of cigarettes smoked per day, diabetes mellitus, hypertension and history of prior stroke was recorded in pre-approved proforma.
To confirm the diagnosis and classify the stroke subtype, CT/MRI was done. Stroke severity was assessed using modified Rankin score.
All the data was analyzed using IBM SPSS ver. 20 software. Data is expressed as percentage if and otherwise explained. Cross tabulation and frequency distribution was used to prepare tables. Two way ANOVA and independent sample t test was used to analyze quantitative data; categorical data was analyzed using Chi square test. Level of significance was assessed at 5% level.

Results
Mean age of study cohort was 59.75±13.64 with male predominance (61%). There were 26% smokers, 29% had diabetes mellitus and 54% had hypertension.
Out of 100 stroke patients, 70% had ischemic stroke whereas 30% had haemorrhagic stroke. Out of 70 ischemic stroke

patients, 17 (24.28%) cases had previous history of stroke whereas among the 30 haemorrhagic stroke patients, 7 (23.33%) had previous history of stroke (p=0.919).

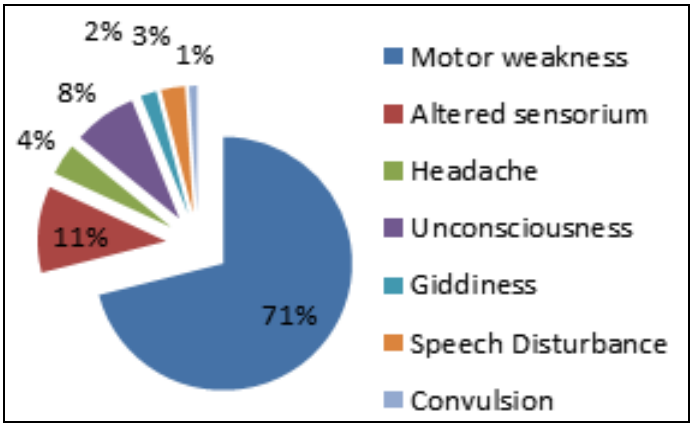

Fig 1: Distribution of clinical presentation in CVA

Mean TC, TG, LDL and HDL among study cohort was 196.72±38.50, 109.76±37.56, 109.55±33.21 and 40.64±6.61 mg/dl respectively.

Discussion

The mean age observed among stroke patients in present study was 59.75±13.64 years which correlates with study done by Maskey *et al*. [5] and Awad SM *et al*. [6] The common age group involved was between 61-70 years which closely correlates with study done by Ukoha Ob *et al*. [7] and Maskey *et al*. [5].

Vaidya *et al*. did a retrospective study and also reported male predominance (59.7%) in patients with stroke [8]. Present study data revealed that incidence of stroke was more common in male population which correlates with study done by Pinhero *et al*. [9] and Eapen *et al*. [10]. Similar to present study Tomar *et al*. studied 100 stroke patients and reported male preponderance (58%) [11].

In present study most common risk factor was hypertension (54%) which correlates with the study done by Eapen *et al*. (40%) [10] and Abdu-Alrhaman Sallam *et al*. (67%) [12]. Vaidya *et al*. also highlighted hypertension (34%) as the most common risk factor for stroke [8]. In present study diabetes mellitus was the second most common risk factor (29%) which is higher than the reports of Maskey *et al*. (9.3%) [5], Gauri *et al*. (9%) [13] and Eapen *et al*. (8%) [10].

Out of 70 ischemic stroke patients, 24.28% cases had previous history of stroke whereas among the 30 haemorrhagic stroke patients, 23.33% had previous history of stroke which correlated with study done by Ukoha Ob *et al*. [7] (16.2%) and by Abdu-Alrhaman Sallam *et al*. (12.2%) [12].

Most common clinical presentation reported by Tomar *et al*. was limb weakness, headache, vomiting and convulsion. Author also highlighted that these symptoms were more common in hemorrhagic stroke [11]. Which is similar to the present study findings, where most common clinical presentation was motor weakness (71%) followed by altered sensorium (11%) and unconsciousness (8%). In the present study, headache was present in only 4% patient which is lower than what is reported by Tomer *et al*. (38%) [11], Mohr *et al*. [14], who reported an incidence of 26%. Foulkes *et al*. reported severe headache in 41% of cases [15]. Convulsions in the present series were present only in 1% of the total patients, which is comparable to study done by of Mohr *et al*. and Foulkes *et al*., who reported frequency of 7% and 9% respectively [14, 15].

In present study most common type of stroke was ischemic (70%) which is in agreement with the study done by Eapen *et al*. (68%) [10] and Devichand *et al*. (75%) [16]. Second most common type of stroke was hemorrhagic (30%) which is in agreement with the study done by Eapen *et al*. (32%) [10], and Devichand *et al*. (25%) [16]. Kumar *et al*. in a similar study on 200 stroke patients revealed that the most common stroke type was ischemic (77%) followed by haemorrhagic (23%) [17] Ischemic stroke was most common in the reports of Tomar *et al*. [11].

Present study had few limitation of being a cross sectional nature and small sample size; a large randomized clinical trial is required to strengthen the present study findings.

Conclusion

Stroke in our county is on rise. The event rises with age with peak between 61-70 years. Most of the stroke patients were male. Ischemic stroke was more compared to hemorrhagic stroke. Hypertension was the most common risk factor followed by diabetes mellitus and smoking. Previous history of stroke was another important risk factor of stroke in present study. Motor weakness and altered sensorium was the common presentation. Headache was less prevalent among stroke patients.

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