

CLINICAL AND RADIOLOGICAL PROFILE OF STROKE IN YOUNG ADULTS: A PROSPECTIVE STUDY

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Abstract

Background: Stroke is an important cause of disability among adults and is one of the leading causes of death worldwide. Several studies have analyzed the risk factors of stroke in young, but considering its impact on the young section of the society, it needs more studies for identification and modification of risk factors. This study aims to identify clinical presentation and radiological profile of patients presented with stroke in young adults. **Materials and Methods:** 80 patients were included in the study. Detailed history taking and clinical examination were done and neurological deficits were identified. Other than routine investigations lumbar puncture for CSF analysis, electrocardiography, lipid profile, homocysteine levels and CT scan were done for all the patients. Other investigations such as echocardiography, Doppler etc were done as clinically indicated. **Result:** The most common cranial nerve affected was the facial nerve in 53.75%, 1.25% of the patients had the oculomotor nerve affected and 3.75% of the study group had other cranial nerve palsies. Hemi paresis, hemiplegia and monoparesis were seen in 60%, 32.5% and 7.5% of the study group respectively. CT scan findings showed 70% of patients having arterial infarction. Cortical venous thrombosis was seen in 10% of patients and intra cerebral hemorrhage was seen in 20%. 80% of all the strokes were ischemic where as only 20% of them had hemorrhage. **Conclusion:** CT scan showed 70% of patients having arterial infarction. Cortical venous thrombosis was seen in 10% of patients and intra cerebral hemorrhage was seen in 20%. Intracerebral hemorrhage was common in hypertensive patients. Dyslipidemia like elevated LDL, total cholesterol, triglycerides and decreased HDL were common. Extensive investigations are necessary in arriving at the etiological diagnosis, so as to prevent recurrence of stroke.

INTRODUCTION

Stroke was defined by World Health Organization criteria as rapidly developing clinical signs of focal, at times; global disturbance of cerebral function lasting for more than 24 hours or leading to death with no apparent cause other than vascular origin.^[1] Stroke is one of the most important causes of high morbidity and mortality all over the world. The diseases of cerebral blood vessels and the related infarcts and haemorrhages, though principally occur in the elderly, the young are not spared.^[1] A higher proportion of younger individuals suffer from stroke among developing countries as compared with developed countries.^[2] Data from India on stroke among the young are mostly limited to ischemic stroke.^[3-5] There is paucity of information on stroke

in young individuals covering important types of stroke.^[6] The aetiology may vary with different age groups, but most of the risk factors are common to all age groups. Although, certain factors are confined to the young. Stroke affecting the young has potentially destructive consequences on the individual, his family and the society in general and adds to the burden of sick to the family and eventually to the nation as a whole.^[7] Several studies have analyzed the risk factors of stroke in young, but considering its impact on the young section of the society, it needs more studies for identification and modification of risk factors. This study aims to identify clinical presentation and radiological profile of patients presented with stroke in young adults.

MATERIALS AND METHODS

Study Design

A Prospective descriptive and clinical study.

Inclusion Criteria

1. Age 15 - 45 years. 2. Patients with abrupt onset of focal or global neurological deficit attributable to vascular. Patients who presented with drop attacks and loss of consciousness due to other causes were excluded. Total 80 patients were included in the study.

Ethical approval was taken from the institutional ethical committee and written informed consent was taken from all the participants.

History includes all symptoms pertaining to stroke in detail with emphasis on all the risk factors attributable to the stroke in young. A detailed clinical examination was done and neurological deficits were identified. Relevant investigations like hemoglobin, total white cell count, erythrocyte sedimentation rate, routine urine analysis, blood glucose, blood urea, serum creatinine, blood VDRL, serum lipid profile, Chest X-ray, CT scan head, lumbar puncture for CSF analysis and electrocardiography were done for all patients, bleeding time, clotting time, test for HIV, and echocardiogram were done for the required patients.

Statistical Analysis

The recorded data was compiled and entered in a spreadsheet computer program (Microsoft Excel 2007) and then exported to data editor page of SPSS version 15 (SPSS Inc., Chicago, Illinois, USA). For all tests, confidence level and level of significance were set at 95% and 5% respectively.

RESULTS

Patients had a various clinical features in our study. 20% of the study population presented with seizures. Decrease in consciousness was seen in 35% of patients. 22.5% of patients had speech abnormalities. The most common cranial nerve affected was the facial nerve in 53.75%, 1.25% of the patients had the oculomotor nerve affected and 3.75% of the study group had other cranial nerve palsies. Motor deficit was seen in all the patients. Hemi paresis, hemiplegia and monoparesis were seen in 60%, 32.5% and 7.5% of the study group respectively. Hemi sensory loss was seen in 5% of the study group. Only 2.5% of the patients had cerebellar deficit.

CT scan findings showed 70% of patients having arterial infarction. Cortical venous thrombosis was seen in 10% of patients and intra cerebral hemorrhage was seen in 20%. 80% of all the strokes were ischemic where as only 20% of them had hemorrhage.

Table 1: Clinical features of stroke

Clinical feature	Number (80)	Percentage (%)
Seizures Absent present	64 16	80 20
Consciousness Normal Decreased	52 28	65 35
Cranial nerve deficit Normal Oculomotor Facial Multiple	33 1 43 3	41.25 1.25 53.75 3.75
Speech Normal Dysphasia Not determined	33 18 29	41.25 22.5 36.25
Sensory Deficit Normal Hemisensory loss	76 4	95 5
Motor Deficits Hemiplegia Hemiparesis Monoplegia	26 48 6	32.5 60 7.5

Table 2: CT scan findings.

CT scan findings	Number (80)	Percentage (%)
Infarct	56	70
Venous thrombosis	8	10
Hemorrhage	16	20

Table 3: Type of stroke

Type of stroke	Number (80)	Percentage (%)
Ischemic	64	80
Hemorrhagic	16	20

DISCUSSION

There is one comparable study from India performed on all subtypes of stroke in young adults⁸

that also found that ischemic stroke was the most common subtype followed by hemorrhagic and embolic. Sex ratio in our study was 1.3:1 (male: female). Mehndiratta MM et al⁶ showed a ratio of

1:08 in north India where as Zunni et al⁹ demonstrated a similar ratio of 1.2:1 in Africa. The mean age of all the patients in our study was 36.58 years, a study in north India by Mehndiratta MM et al,^[6] showed a mean age of 31.97 years. The mean ages of males and females were 37.57 and 35.40 years. Our study had a markedly higher mean age group among men whereas among women it was lower at 35.40 years probably because there was more number of females in the present study who presented with CVT in early age. Similar findings have been reported from Denmark in cases of thromboembolic stroke.^[10] A higher proportion of males was found among cases of ischemic stroke in studies outside India.^[11,12] The proportion of cases is higher in the 31–45 years age group, which is similar to the findings reported by Nayak et al.^[3] In the Bansal et al study,^[13] hemiparesis was observed in 79.2%. Speech difficulty in 30.4%, decreased level of consciousness in 57.2%, seizures 28.6%. These abnormalities concurred with the present study.

Presenting symptoms similar to those in our study have been reported by Chopra and Prabhakar,^[14] and Nayak et al.^[3] Smoking, alcoholism and hypertension have been found to be significantly associated with ischemic stroke,^[3,4,15] and in all subtype strokes from India, which is similar to our finding. Diabetes mellitus is reported to be a risk factor for ischemic stroke from India,^[4] and Switzerland,^[15] Lipska et al,^[4] have reported that diabetes is not a risk factor for stroke when compared with hospital-based controls. Apart from differences in patient profile, there does not seem to be a consistent association between diabetes and stroke in studies conducted in various countries. Hypercholesterolemia and hypertriglyceridemia are known to be associated with stroke in young adults.^[15,16]

The role of elevated homocysteine levels requires further investigation in the Indian setting, although its association was reported from the USA.^[17] A majority of the investigated cases had normal platelets and coagulation parameters, indicating that it is not an important cause of stroke in young adults. A majority of the cases had good outcome and low mortality, which is comparable with other Indian studies.^[3,14]

Being a tertiary care center, the referred patients' profiles may not be representative, creating a bias. Because of paucity of information, this study gives an idea of the sample size required to undertake more detailed studies with bigger sample sizes to explore the associations and risk factors.

CONCLUSION

CT scan showed 70% of patients having arterial infarction. Cortical venous thrombosis was seen in 10% of patients and intra cerebral hemorrhage was seen in 20%. Intracerebral hemorrhage was common in hypertensive patients. Dyslipidemia like elevated LDL, total cholesterol, triglycerides and decreased HDL were common. Extensive investigations are necessary in arriving at the etiological diagnosis, so as to prevent recurrence of stroke.

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