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## Clinical presentation and radiological profile of patients presented with stroke between the ages of 15-45 years

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### Abstract

Cerebrovascular disease is the most common life threatening neurological disease and is a concern in young patients especially in developing countries. This study aims to identify clinical presentation and radiological profile of patients presented with stroke between the ages of 15-45 years. 50 patients (29 males and 21 females) 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. Decreased consciousness 34% [90%CI (22.98-45.02%)], VII<sup>th</sup> cranial nerve involvement 54% [90%CI (42.41-65.59%)] and hemiparesis 60% [90%CI (48.60-71.40%)] were the clinical features seen. CT findings revealed ischemia 70% [90%CI (59.34-80.66%)], hemorrhage 20% [90%CI (10.7-29.3%)] and cortical venous thrombosis 10% [90%CI (3.02-16.98%)].

**Keywords:** Stroke, young adults, ischemic stroke, intra cerebral hemorrhage

### Introduction

Stroke is one of the most important causes of high morbidity and mortality all over the world.

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 <sup>[1]</sup>. The diseases of cerebral blood vessels and the related infarcts and hemorrhages, though principally occur in the elderly, the young are not spared.

Community based surveys from the West and Japan indicate average annual incidence of stroke as 111-180/1,00,000 general population and 9-28/1,00,000 in young people below the age of 45 years. Data from major Indian hospitals show 24 to 35% of stroke in young of all neurological admissions <sup>[2]</sup>.

Although various studies on stroke in young included subjects from second to fourth or fifth decade, in general, stroke in young includes subjects falling under the age group of 15-45 years <sup>[3]</sup>.

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 <sup>[4]</sup>.

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.

### Methodology

**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

cause and persist for more than 24 hours.

**Exclusion Criteria**

1. Head injury

**Method of Collection of Data**

All patients who fulfilled the inclusion and exclusion criteria were included in this study. A Proforma was prepared which included detailed history, clinical examination and requisite investigations available in our hospital.

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.

The results were analyzed to assess the aetiology, risk factors, and the pattern of clinical and radiological profile.

The consent was taken from the patients or attendants who were included in the study, for performing the necessary investigations or procedures.

**Results**

**Table 1:** Clinical features of stroke

Clinical feature	Number (n=50)	%	Confidence interval (90%)
Seizures Absent present	39	78	68.36-87.64
	11	22	12.36-31.64
Consciousness Normal Decreased	33	66	54.98-77.02
	17	34	22.98-45.02
Speech Normal Dysphasia Not determined	21	42	30.52-53.48
	12	24	14.07-33.93
	17	34	22.98-45.02
Cranial nerve deficit Normal Oculomotor Facial Multiple	21	42	30.52-53.48
	1	2	-1.26-5.26
	27	54	42.41-65.59
	1	2	-1.26-5.26
Motor Deficits Hemiplegia Hemiparesis Monoplegia	17	34	22.98-45.02
	30	60	48.6-71.4
	3	6	0.48-11.52
Sensory Deficit Normal Hemisensory loss	47	94	88.48-99.52
	3	6	0.48-11.52
Cerebellar Deficit Absent Present	49	98	94.74-101.26
	1	2	-1.26-5.26

Patients had a various clinical features in our study. 22 [90%CI (12.36-31.64%)] of the study population presented with seizures. Decrease in consciousness was seen in 34% [90%CI (22.98-45.02%)] of patients. 24% [90%CI (14.07-33.93%)] of patients had speech abnormalities. The most common cranial nerve affected was the facial nerve in 54% [90 %CI (42.41-65.59%)], 2% [90%CI (1.26-5.26%)] of the patients had the oculomotor nerve affected and 2% [90%CI

(1.26-5.26%)] 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% [90%CI (48.60-71.40%)], 17% [90%CI (22.98-45.02%)] and 6% [90%CI (0.48-11.52%)] of the study group respectively. Hemi sensory loss was seen in 6% [90%CI (0.48-11.52%)] of the study group. Only 2% [90%CI (1.26-5.26%)] of the patients had cerebellar deficit.

**Table 2:** CT scan findings

CT scan findings	number	%	Confidence interval (90%)
Infarct	35	70	59.34-80.66
Venous thrombosis	5	10	3.02-16.98
Hemorrhage	10	20	10.7-29.3

CT scan findings showed 70% [90%CI (59.34-80.66%)] of patients having arterial infarction. Cortical venous thrombosis was seen in 10% [90%CI (3.02-16.98%)] of

patients and intra cerebral hemorrhage was seen in 20% [90%CI (10.7-29.3%)].

**Table 3:** Type of stroke

Type of stroke	Number	%	Confidence Interval (90%)
Ischemic	40	80	70.7-89.3
Hemorrhagic	10	20	10.7-29.3

80% [90%CI (70.7-89.3%)] of all the strokes were ischemic where as only 20% [90%CI (10.7-29.3%)] of them had hemorrhage.

**Discussion**

Our study was based in south India comprising mainly of a rural population. It should prove useful, then, for the

diagnosis, management and prognosis of young stroke patients in similar areas. Sex ratio in our study was 1.3:1 (male: female). Mehndiratta MM *et al.* [5] showed a ratio of 1:08 in north India where as Zunni *et al.* [6] demonstrated a similar ratio of 1.2:1 in Africa. The mean age of all the patients in our study was 36.58years, a study in north India by Mehndiratta MM *et al.* [5] showed a mean age of 31.97

years. The mean ages of males and females were 30.66 and 33.28 years. Our study had a markedly higher mean age group among men at 38.79 years whereas among women it was lower at 33.9 years probably because there were more number of females in the present study who presented with CVT in early age.

**Table 4:** Comparison of clinical features

Sr. No.	Clinical Feature	Present study	Bansal <i>et al.</i> [7]
1	Seizure	22%	28.6%
2	Consciousness level	34%	57.2%
3	Speech	24%	30.4%
4	Cranial Nerve deficit	58%	-
5	Motor deficit(hemiparesis)	60%	79.2%
6	Sensory deficit	6%	-
7	Cerebellar deficit	2%	-

In the Bansal *et al.* stud [7], 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.

**Table 5:** Comparison of CT findings

CT findings	Present Study	Rajeh SA <i>et al.</i> [8]
Ischemic stroke	70%	76.2%
ICH	20%	23.8%
Cortical Venous Thrombosis	10%	-

## Conclusion

- The most common cranial nerve affected was the facial nerve at 54%. Motor deficit was seen in all. Hemi sensory loss was seen in 6% of the study group. Only 2% of the patients had cerebellar deficit.
- 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%.

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