



## ANALYSIS OF 50 CASES OF STROKE IN YOUNG ADULTS

### KEYWORDS

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**ABSTRACT** Stroke or cerebrovascular accident is the third most leading cause of morbidity next only to coronary artery disease and malignancy worldwide. Prevalence and risk of stroke increases with age and among general population it is considered as a disorder of old age. However stroke is also seen in patients of age less than 40 years and it is labelled as young stroke. Young stroke also has a varying etiology and prognosis in comparison with stroke seen in elderly. The study was conducted to identify the etiology and analyzed various risk factors in young stroke patients.

### INTRODUCTION

Stroke or cerebrovascular accident is the third most leading cause of morbidity next only to coronary artery disease and malignancy worldwide. At least 50 percent of patients admitted with neurological disorders in a tertiary care hospital are generally due to stroke. Prevalence and risk of stroke increases with age and among general population it is considered as a disorder of old age. However stroke is also seen in patients of age less than 40 years and it is labelled as young stroke. Indian studies have shown that about 10-15% of stroke occur in people below the age of 40 years.

The young strokes poses a major socioeconomic challenge in both developed and developing countries. Young stroke also has a varying etiology and prognosis in comparison with stroke seen in elderly. Thus such patients need an extensive and meticulous neuro-rehabilitation programme so that they could lead rest of their life with minimal disability.

### AIM OF THE STUDY

1. To evaluate the risk factors of stroke in young adults.
2. To study the different mode of clinical presentation or types of stroke in young adults.
3. To study the pathogenesis of young stroke with the aid of investigations, treatment outcome and prognosis.
4. Correlative study of the above modalities.

### MATERIALS AND METHODS

The study was conducted in Coimbatore Medical College Hospital during the August 2015 to July 2016. The study includes fifty patients of stroke in patients below the age of 40 years admitted in medical wards and neurology ward. Ethics committee approval was obtained for conducting the study. Informed consent was obtained from all the patients. Patients in the pediatric age group are not included. A carefully elicited history and repeated clinical examinations were used in ascertaining the temporal profile of the disease and the probable area of brain that is affected. A detailed history taking was done for risk factors like smoking, alcohol, systemic hypertension, diabetes mellitus, rheumatic valvular heart disease, tuberculosis and family history of cerebrovascular disease.

A Clinical search for extra-cranial carotid artery narrowing, cardiac disease which can give rise to cerebral embolism, were

made.

### Laboratory evaluation and other investigations:

After detailed history and meticulous neuromedical examination including palpation and auscultation of brachiocephalic and peripheral pulses, the relevance and priority of any laboratory test in acute stroke should be at the clinician's judgement. The value of careful ophthalmoscopic examination of the retina and its vasculature for disease and embolic fragments needs emphasis.

1. Haemological studies like complete hemogram, ESR, bleeding / clotting and prothrombin time to find out conditions like polycythaemia, anaemia, thrombocytopenia and bleeding disorders were undertaken
2. When elevated ESR was present, further test were made to identify the causes like systemic lupus erythematosus, subacute bacterial endocarditis and tuberculous meningitis
3. Estimation of blood sugar and serum lipid profile levels for detecting diabetes and hyperlipidemia which are predisposing cause of atherosclerosis
4. Serological test for syphilis was done in all patients
5. HIV testing was done in all patients
6. Urine examination for albumin and sugar
7. Sr. Homocysteine level was estimated
8. Anti-thrombin III level was estimated
9. ECG for detecting rhythm disorders & underlying cardiac disorder were done
10. CT Scan of brain was done to assess the lesion was infarction or hemorrhage and to locate the site of lesion
11. Two dimensional echocardiography for detecting cardiac source of emboli was done in all patients
12. CSF analysis was used to determine meningeal infection causing stroke
13. Carotid angiography was done only in those patients in whom a vascular malformation, subdural hematoma, intracranial tumor or extracranial vascular disease was suspected
14. MRI Brain/ MR Angiogram / MR Venogram -were done.

### OBSERVATION AND ANALYSIS

#### 1.) AGE DISTRIBUTION

The age distribution among 50 patient show that stroke in young adult are common in above 36 years of age.

**Table-1**

Age (in Years)	No of Cases	Percentage
20 and below	9	18%
21 – 25	6	12%
26 – 30	9	18%
31 – 35	10	20%
36 - 40	16	32%

30% of patients are less than 25 years of age.  
70% of patients are more than 25 years of age.

## 2.) GENDER INCIDENCE OF YOUNG ADULTS WITH STROKE IN 50 PATIENTS

**Table-2**

Gender	No of Cases	Percentage
Male	32	64%
Female	18	36%
Total	50	

It is observed that the incidence of stroke in young adult is higher among male than female population.

## 3.) PREVALENCE OF RISK FACTORS IN 50 YOUNGADULTS WITH STROKE

**Table-3**

Risk Factors	Number of cases	Percentage
Cardiac disease	13	26%
Premature atherosclerosis	7	14%
Hypercoagulable state	7	14%
Cortical vein thrombosis	6	12%
Vascular anomaly [Arterio-venous malformation] (AVM)	4	8%
Hypertensive bleed	3	6%
Tuberculosis of brain	3	6%
Takayasu's arteritis	2	4%
Idiopathic	2	4%
Brain abscess	1	2%
Carotico embolic disease	1	2%
Trauma	1	2%

- Most of the patients (26%) who developed stroke are cardiac patients.
- Premature atherosclerosis is the risk factor for 14% of stroke patients.
- 4 Patients are having recurrent stroke.

## 4.) TYPE OF STROKE (CT SCAN & MRI EVALUATIUN)

**Table-4**

Type of Lesion	Number of cases	Percentage
Infarction	33	66%
Hemorrhage	13	26%
Others	4	8%

Ischemic – Infarction stroke is more common than Hemorrhagic stroke.

## DISCUSSION

- In this study, 50 young adults with stroke were included.
- The incidence in men was 64% compared to 36% in women. This is in agreement with studies conducted by other centers.
- In this study, the peak incidence of stroke was observed in

the age group of 36-40 years which was 32%. It was 20% in the age group of 31-35 years. In a study conducted by P.M.Daal et al, the incidence of stroke was maximum in the age group of 36-40 years which is similar to our study.

- In our study 52% of patients were above the age of 30 years, compared is 48% patients in the above study.

## Analysis of Risk factors: -

### Hypertension:

Hypertension is one of the common risk factors associated with stroke. The incidence of hypertension was 18% in this study. In a study conducted by P.G.A. Sander Cock et al this incidence was 32%.

### Diabetes Mellitus:

Out of 50 patients studied, 2 patients had diabetes mellitus.

### Hyperlipidemia:

7 Patients who had abnormal lipid profile were affected by premature atherosclerosis.

### Transient ischemic attack:

Incidence of TIA was 10% in this study. In the study conducted by L.N. Jones the incidence of TIA was 14%

### Smoking:

In this study, out of 22 male patients, 20 were smokers. The remaining 18 patients were female nonsmokers. It became an important risk factor mainly due to premature atherosclerosis associated with it2.

### Cardiac Source of Emboli:

Cardiac source of emboli was observed in 26% of cases. In the study conducted by P.M.Daal et al, the incidence of cardiac source of emboli was 20%<sup>3</sup>. In our study, 10% of patients had atrial fibrillation(AF). In the oxford shire community stroke community stroke project, the incidence of atrial fibrillation was 17%. Seven patients had rheumatic heart disease, out of which five were in AF. Two patients had congenital heart disease (TOF).

### Alcohol:

In this study, 32% of males were alcoholics, out of them one person had stroke followed by an alcoholic binge. Similar observation of stroke in young men after alcoholic binge, was noted by M.R.Wilkins, M.J.Kendall4. 8% of patients who presented with hemorrhagic stroke had arterio-venous malformation in the cerebral vascular system. 4% of young patients with stroke had Takayasu's arteritis involving carotid & Subclavian artery.

### Cervical arterial Bruit:

Cervical arterial bruit was observed in 2% of cases. In the Dalal et al study, it was observed in 9% of cases3.

### Uncertain Causes:

- Stroke due to undetermined causes was 6% in our study & in oxford shire community study, it was 5%. A definite risk factor was present in 70% of cases in our study but according to other observation it was 80%. More than one risk factors were noted in 30% of cases.
- Serum Homocystein level was raised in 6 patients who had cerebral infarct.
- In our study, out of 50 patients, one had Antithrombin – III deficiency.
- One patient developed metastatic brain abscess originated from congenital disease(TOF)

**Types of Stroke:**

In this study

- Ischemic stroke was present in 66% of cases.
- Hemorrhagic stroke was present in 26% of cases but according to Harvard co-operative stroke registry study the incidence was 15%.
- Cortical vein thrombosis was seen in 12% cases & all the patients observed were female in post-partum period. Similar observation was made by M.E. Yeolker<sup>5</sup>.

According to Dalal et al study<sup>3</sup>, which included 93 cases for a period of 5 years, the incidence of ischemic stroke was 80.6% and hemorrhagic stroke was 12.5% when compared with this study, the incidence of ischemic stroke was 66% and hemorrhagic stroke was 26% in our study.

**CONCLUSION**

1. The incidence of stroke in young adults is more common in the age group between 36-40 years & males are more affected (64%) than females (36%).
2. Cardioembolic stroke is the commonest cause of stroke in young adults. Smoking is the most significant risk factor for stroke in young adults mainly due to the premature atherosclerosis associated with it.
3. Even though mitral value prolapsed is considered as one of the major risk factors for stroke in young adults, in our study, out of 50 young patients who had stroke only 2 had MVP. But even in those cases MVP was not the cause for stroke.
4. TIA is experience by 10% of patients.
5. All the patients who suffered from cortical vein thrombosis are females in puerperal period.
6. Among hypercoagulopathies causing stroke, hyperhomocysteinemia is the commonest followed by antithrombin III deficiency.
7. In about 6% of cases, no cause could be attributed.
8. The predominant mode of presentation of stroke is middle cerebral territory involvement. The commonest pathological type is (ischemic stroke (66%)).
9. In vascular disease, takayasu's arteritis causes 4% of stroke & arteriovenous malformation causes 8% of stroke.

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