



A Hospital Based Study of Stroke in Young from North East Andhra Pradesh

Authors

Dr S.Sreenivas¹, Dr Gadipudi Mounika², Dr Hyma Tati³, Dr Marri Lakshmi Harika⁴

¹Professor, Department of General Medicine

^{2,3,4}Post graduate, Department of General Medicine

King George Hospital, Visakhapatnam, Andhra Pradesh, India

Abstract

Background: *Stroke in young has special significance in developing countries, this is so because some etiologies like cardio-embolic strokes and infections are more common than in developed countries and the affection of economically productive group adds further to the overall disease burden. The nature and etiology of stroke in young adults is different from that in older patients. So, it requires a different diagnostic and therapeutic approach.*

Materials and Methods: *This is a retrospective hospital-based study of stroke in young conducted in the Department of General Medicine, King George Hospital, Visakhapatnam. The study period was 1 year from May 2019 to April 2020 with a sample size of 30. The patients who presented with stroke were admitted, clinically examined, routine investigations were done and CT brain was done. Factors studied were age and sex distribution, patient complaints, risk factors and probable etiology.*

Results: *In the present study, higher incidence was seen in the patients of age group 15-30 years. Slight male preponderance is seen. Alcohol is one of most attributable risk factors for stroke in young. Ischemic stroke was seen in majority of the patients followed by cerebral venous thrombosis. Most of the patients presented with altered sensorium followed by hemiparesis.*

Conclusion: *As the etiologies for stroke in young are different compared to much common stroke in older people, a different diagnostic approach is needed. Life style modifications and curtailing the risk factors can reduce the incidence of stroke in young.*

Keywords: *Stroke in young, Alcohol, Ischemic stroke, Hemorrhagic stroke.*

Introduction

Stroke is defined as an abrupt onset of a neurological deficit that is attributable to a focal vascular cause. Most common symptom of stroke is sudden weakness or numbness of face, arm, or leg most often in one side of the body occurring in 90% of strokes. Other symptoms include

confusion, difficulty in walking, dizziness, severe headache with no known cause, fainting or unconsciousness. The effects of stroke depend on which part of the brain is injured.

Stroke in young adults is uncommon comprising 10 to 15% of all strokes. When discussing epidemiology of the stroke we need to define who

is a young patient. To define an age cut off is challenging and previously published studies commonly defined as young adults as those younger than 45 or 49 years.¹³ Compared to stroke in older adults, stroke in young has a large economic impact by leaving victims disabled before their most productive years.

In recent years, there has been increase in economic and demographic development in developing countries resulting in a shift from diseases caused by poverty towards chronic, non-communicable lifestyle related diseases. This happening in the younger age group adds to the social burden and as such these patients merit special attention in diagnostic, therapeutic and preventive care.² The nature and etiology of stroke in young adults is different from that in older patients and has an influence on diagnostic evaluation and treatment.

Aims and Objectives

1. To identify various etiologies causing stroke in young, so as to direct the diagnostic work up.
2. To identify the reversible risk factors for stroke in young.

Materials and Methods

This is a retrospective hospital-based study of stroke in young conducted in the Department of General Medicine, King George Hospital, Visakhapatnam. The study period was 1 year from May 2019 to April 2020 with a sample size of 30. The patients who presented with stroke were admitted, clinically examined, routine investigations were done and CT brain was done. The following investigations were done for all patients,

1. NCCT brain
2. Blood glucose
3. Serum electrolytes/ Liver function tests / Renal function tests
4. Complete blood picture including platelet count
5. ECG

6. 2D ECHO
7. Carotid doppler
8. Viral markers
9. ESR, CRP
10. Rheumatoid factor

For most patients vascular imaging was done. For selected patients, Cerebrospinal fluid analysis, including CSF for VDRL, anti-nuclear antibody profile, Chest radiography, Mantoux test were done. Factors studied were age and sex distribution, patient complaints, risk factors and probable etiology.

Inclusion Criteria

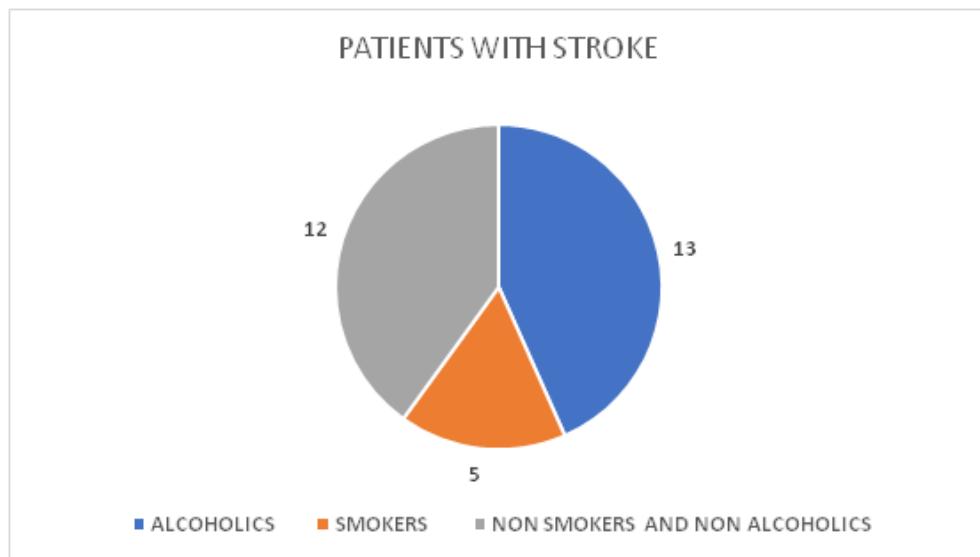
1. All patients who presented with clinical features of stroke and confirmed on imaging belonging to age group of 15-49 years.

Exclusion Criteria

1. Patients with a history of head trauma preceding admission.
2. Secondary cause of intracerebral bleed like tumor.

Results

The study comprised of 30 patients with stroke. Higher incidence of stroke in young was seen in patients between the age group 15-30 years, contributing to 60% and 40% were seen in patients between the age group 31-49 years. Slight male preponderance was seen compared to females with a percentage of 53.3% and 46.7% respectively. Male predominance can be attributed to increase use of alcohol in the younger age groups.



43.3% of the cases were alcoholics and 16.6% were smokers. All the smokers and alcoholics were males. 10% of the cases were hypertensive. Dyslipidemia seen in 2 patients contributing to 6.6%.

Most of the patients presented to the emergency in altered sensorium, contributing to 43.3%,

hemiparesis 30%, headache 13.3% and seizures 10%.

Etiology of stroke is divided into ischemic, hemorrhagic and cerebral venous thrombosis. The results were as follows:

Of the 30 patients 14 had cerebral infarct, 7 had hemorrhage and 9 patients had cerebral venous thrombosis.

Figure 1: Ischemic causes for stroke

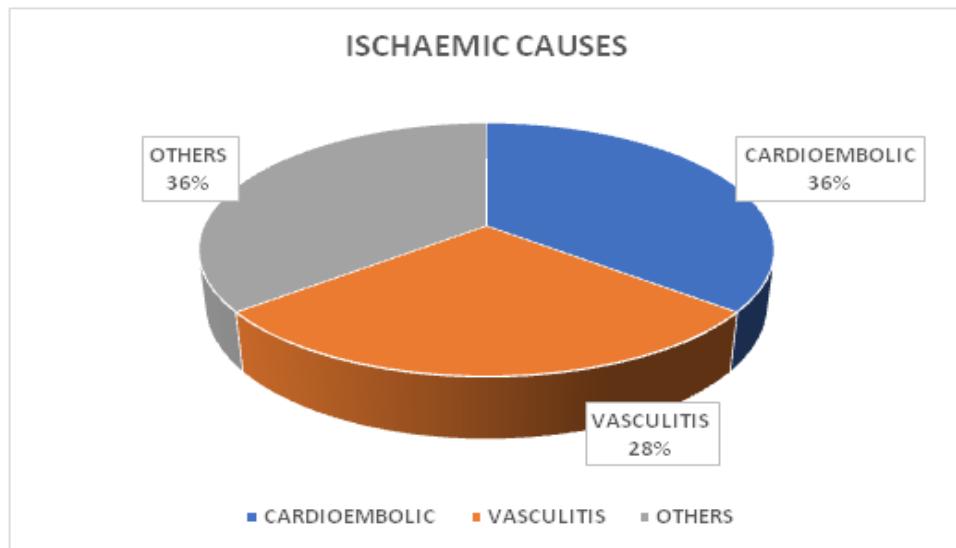
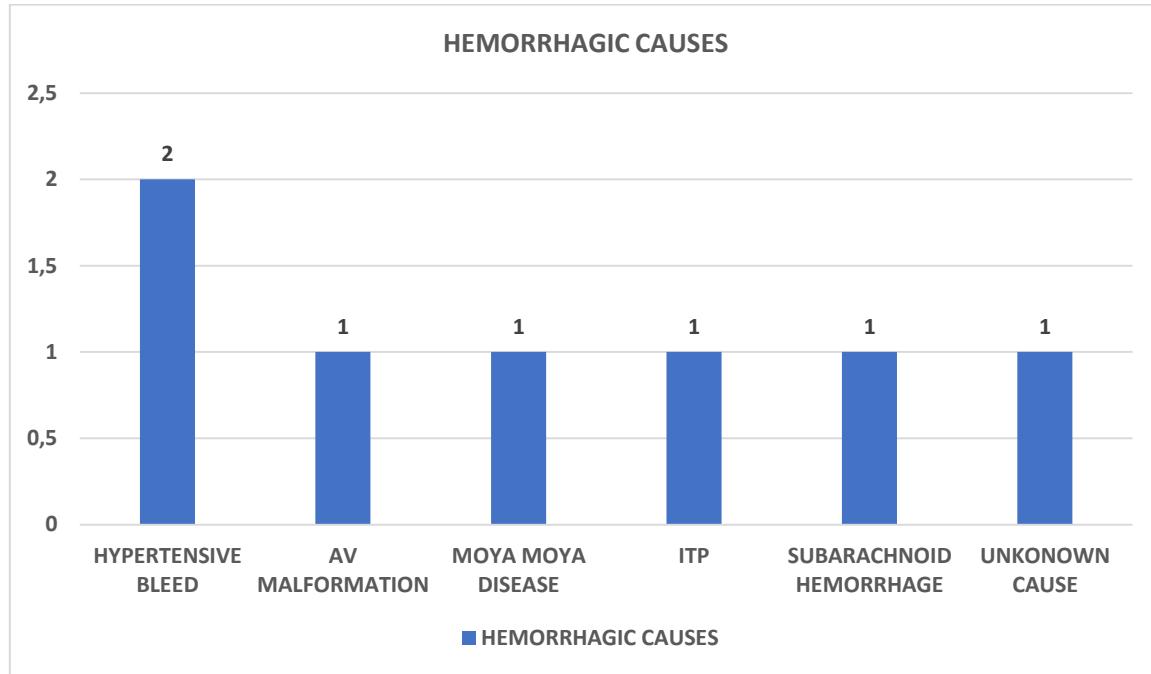


Table 1: Among the cardio embolic causes:

ETIOLOGY	NUMBER OF PATIENTS
Rheumatic heart disease	1
Prosthetic valve	1
Bacterial endocarditis	1
Atrial fibrillation	1
Left atrial myxoma	1

Among the causes for vasculitis: tubercular infection, systemic lupus erythematosus was seen in one patient each and Takayasu arteritis was seen in 2 patients.

Among the other causes for ischemic stroke, atherosclerosis was seen in 2 patients, polycythemia, factor deficiency and viper envenomation were identified in one patient each.

Figure 2: Various causes for hemorrhagic stroke were identified as:

Among the causes for cerebral venous thrombosis, 3 patients were identified to be post-partum, 3 patients were alcoholics, 2 patients had homocysteinemia and in one patient the cause was unknown.

Discussion

In the present study, the incidence of stroke in young was seen on higher side in age group between 15-30 years of age. Where as in a similar study by Nayak SD et al³, the mean age was observed to be 34.7 years. In another study by Dayna Griffiths et al¹, the incidence was high between the age group 34-44 years in contrast to our study. In a study by Merel S et al⁵, the mean age was seen to be 41.8 years. In a research by VV Chandana et al⁷, the majority of the cases were between the age group 36-40 years.

In a study by Nayak SD et al³, male preponderance was seen similar to the present study contributing to 76.2% of the stroke patients. In a similar study by Merel S et al⁵, there was female preponderance in contrast to the present study. In a similar study by VV Chandana et al⁷, there was male preponderance similar to present study.

In this study most of the patients presented in altered sensorium (43.3%). In a similar study by

VV Chandana et al⁷, there was decreased sensorium in 60% and hemiparesis 86%.

In the present study the incidence of ischemic stroke is higher with a percentage of 46.6% followed by 30% cerebrovenous thrombosis and 23.3% hemorrhagic cause. In a similar study by Merel S et al⁵, ischemic stroke contributed to 56.5% followed by 34% due to intracerebral hemorrhage. In other study by VV Chandana et al⁷, infarction contributed to 60%, venous thrombosis 18% and hemorrhagic was 11%. In a similar study by Pawan T et al⁶, on 1377 patients, 1246 were ischemic and 131 were hemorrhagic.

In the present study 5 patients were smokers and 13 were alcoholics. In similar study by VV Chandana et al⁷, 35.5% of ischemic stroke patients were smokers and 36.4% of hemorrhagic stroke patients were smokers. Whereas it was 18.11% and 4.72% in ischemic and hemorrhagic strokes respectively in Mehendiratta et al⁸. In study by Nagaraj et al⁹, showed an incidence of stroke associated with smoking to be 15%.

Conclusion

As the etiologies for stroke in young are different compared to much common stroke in older people, a different diagnostic approach is needed.

Classical vascular risk factors like hypertension, dyslipidemia and smoking were also seen associated with stroke in young. So, by lifestyle modifications and curtailing the risk factors the incidence of stroke can be decreased. From the data we studied cerebral venous thrombosis is one of the leading causes of stroke in young in India, and most cases are seen in post-partum females and those with prior history of excessive alcohol consumption. There is a need for population-based studies of stroke in young which will provide further information on underlying etiology and incidence rates in different populations.

Conflict of Interest: None

Source of Support: None

References

1. Griffiths D, Sturm J. Epidemiology and etiology of young stroke. *Stroke Res Treat.* 2011;2011:209370. doi:10.4061/2011/209370.
2. Tripathi M, Vibha D. Stroke in young in India. *Stroke Res Treat.* 2010;2011: 368629. Published 2010 Dec 16. doi:10.4061/2011/368629.
3. Nayak SD, Nair M, Radhakrishnan K, Sarma PS. Ischaemic stroke in the young adult: clinical features, risk factors and outcome. *Natl Med J India.* 1997;10(3): 107-112.
4. Stroke Research and Treatment Volume 2011, Article ID 209370, 9 pages doi:10.4061/2011/209370
5. Stroke incidence in young adults according to age, subtype, sex, and time trends. Merel S, Ekker, Jamie I, Verhoeven, Ilonca Vaartjes, Koen M, van Nieuwenhuizen, Catharina J.M. Klijn, Frank-Erik de Leeuw. *Neurology* May 2019, 92 (21) e2444-e2454; DOI: 10.1212/WNL.0000000000007533.
6. Incidence of stroke in adults according to age, sex and subtypes in urban Indian population Pawan T Ojhal, Suranjan Basak2*, Vikram Aglave3 and Jayendra Yadav4.
7. V.V. Chandana, N. Kalyani. Clinical profile of stroke among young adults. *International Journal of Contemporary Medical Research* 2017;4(11):2280-2283.
8. Mehndiratta MM, Agarwal P, Sen K, Sharma B. Stroke in young adults.study from a university hospital in North India. *Med Sci Monit* 2004;10(9): CR535-541.
9. Nagaraj D, Murthy SG, Taly AB, Subbakrishna K, Rao BSS. Risk factors for stroke: Relative risk in young and elderly. *Neurology India* 1998; 46:18318.
10. Dalal PM. Strokes in young and elderly: Risk factors and strategies for stroke prevention; *J Assoc Physicians India* 1997; 45: 125 -130.
11. Bogousslavsky J, Pierce P. ischaemic stroke in patients under age 45.Cerebral Ischemia: Treatment and prevention. Barnett H.J.M. et al. *Neurologic clinics* 2000; 10: 113 - 124.
12. Alvarez J, Guiu JM, Somalla J, Molins M, Insa R, Molto JM, et al ischaemic stroke in young adults. Analysis of etiological subgroups. *Acta NeurolScand* 1989; 80: 28- 348.
13. Smajlović D. Strokes in young adults: epidemiology and prevention. *Vasc Health Risk Manag.* 2015;11:157-164. Published 2015 Feb 24. doi:10.2147/VHRM.S53203.