

A retrospective study of risk factors and clinical profile of acute stroke

Sunil Tukaram Kotkunde¹, Nitin Dnyandev Kesarkar^{2*}

¹Assistant Professor, Department of General Medicine, B.K.L. Walavalkar Rural Medical College, Kasarwadi, Chiplun, Maharashtra, INDIA.
Email: drsunil10@Rediffmail.com, dr.nitz@rediffmail.com

Abstract

Background: Stroke is a devastating and disabling cerebrovascular disease with significant amount of residual deficit leading on to economic loss. It has been defined as a rapidly developing signs of focal (or global) disturbance of cerebral function with symptoms lasting for ≥ 24 hours, or leading to death with no apparent cause other than vascular origin. **Materials and methods:** This is a retrospective study of 238 cases managed for stroke in the medical ward of B.K.L. Walavalkar Rural Medical College from January 2018 to December 2018. The case notes of the pts were retrieved from the medical department of the hospital and relevant data extracted and analyzed. We have only CT scan machine in house, for MRI we have to send pts to higher centers. **Results:** The cerebrovascular strokes are more common in males (59.7%) than females (40.3%). Most common age group was 61-70 years (32.8%). Most common clinical feature was hemiplegia (72.6%). Most common risk factor was Hypertension (34%) followed by past h/o cerebrovascular stroke (15%), smoking (14%), dyslipidemia (13%). Most common type of stroke was ischemic (74.6%) and hemorrhagic was 2nd (22.9%). In ischemic stroke most common involved areas were parietal (33.7%), frontal (16.7%). In hemorrhagic stroke most common site was thalamus (24.7%) followed by ventricular (17.5%). **Conclusion:** The cerebrovascular stroke cases were having male predominance with Hypertension was the most common risk factor and most common type of stroke was ischemic.

Key Words: Cerebrovascular stroke, Ischemic stroke, Hemorrhagic stroke

*Address for Correspondence:

Dr Nitin Dnyandev Kesarkar, Assistant Professor, Department of General Medicine, B.K.L. Walavalkar Rural Medical College, Kasarwadi, Chiplun, Maharashtra, INDIA.

Email: dr.nitz@rediffmail.com

Received Date: 05/11/2019 Revised Date: 27/12/2019

Accepted Date: 21/01/2020

DOI: <https://doi.org/10.26611/10211328>

Access this article online

Quick Response Code:



Website:

www.medpulse.in

Accessed Date:
07 February 2020

INTRODUCTION

Stroke is a devastating and disabling cerebrovascular disease with significant amount of residual deficit leading on to economic loss.¹ It has been defined as a rapidly developing signs of focal (or global) disturbance of cerebral function with symptoms lasting for ≥ 24 hours, or leading to death with no apparent cause other than vascular origin. It is a collection of clinical syndromes resulting from cerebral ischemia to

intracranial hemorrhage. In the west, it is the 3rd most common cause of morbidity and mortality.² Some of the recent studies have elucidated the stroke pattern to considerable extent in our country with a prevalence rate of 471.58/100000 population.³ Recent study identified that 7% of medical and 45% of neurological admissions were due to stroke with a fatality rate of 9% at hospital discharge and 20% at 28 days.⁴ Hypertension, alcoholism, smoking and dyslipidemia are commonest cause of stroke among the elderly,³ and smoking, alcoholism, increased BMI, diabetes and hypertension are significantly associated with strokes among young people. Ischemic strokes account for 50%-85% of all strokes worldwide.⁷ Hemorrhagic strokes are due to subarachnoid hemorrhage or intracerebral hemorrhage, they account for 1%-7% and 7%-27% respectively of all strokes worldwide.⁴ The Indian national commission on macro economics and health estimated that the number of strokes will increase from 1081480 in 2000 to 1667372 in 2015.⁵

How to cite this article: Sunil Tukaram Kotkunde, Nitin Dnyandev Kesarkar. A retrospective study of risk factors and clinical profile of acute stroke. *MedPulse International Journal of Medicine*. February 2020; 13(2): 88-91. <https://www.medpulse.in/Medicine/>

The global burden of disease Study projects that total deaths from stroke in India will surpass established market economies by year 2020.⁶ Hence this study was undertaken in our set up to study risk factors and clinical profile of acute stroke.

MATERIALS AND METHODS

This is a retrospective study of 238 cases managed for stroke in the medical ward of B.K.L. WALAVALKAR RURAL MEDICAL COLLEGE from January, 2018 to December 2018. The case notes of the pts were retrieved from the medical department of the hospital and relevant data extracted and analyzed. We have only CT scan machine in house, for MRI we have to send pts to higher centers.

Inclusion criteria

- All pts above age 18 yrs and having clinical and CT confirmed diagnosis of stroke.

Exclusion criteria

- Patients below 18.
- Stroke due to trauma.
- Pts' medical records which were not showing CT confirmed diagnosis.
- Medical records in which pt sent for MRI brain with inconclusive CT scan findings.

The data obtained were analyzed using SPSS version 21.0 software. Results were expressed in frequencies and percentages.

RESULTS

238 cases of stroke case records managed in medical ward of B.K.L. Walavalkar Rural Medical College during a period of 1st January 2012 to 31st December 2013 were studied and evaluated for clinical profile and frequency of risk factors.

Incidence of age

The age range was from 26 years to 100 years with mean age of 61 years. In this study youngest pt was 26 years and oldest was 100 years old. The incidence of stroke is maximum in the age group of 61-70 years which comprises of 32.8% of total pts, as shown in Table 1. Young stroke (age ≤45 years) comprised of 15% of all pts.

Table 1: Frequency and percentage of cases according to age groups

Age groups (years)	Frequency	Percentage
20-30	2	8%
31-40	18	7.6%
41-50	41	17.2%
51-60	53	22.3%
61-70	78	32.8%
71-80	35	14.7%
81-90	7	2.9%
91-100	4	1.7%
Total	238	100%

Sex distribution of stroke pts

Out of 238 pts, 142 were males and 96 were females as shown in Table 2. The male to female ratio was 1.4:1. From above observation it can be concluded that incidence of stroke is more common in male sex.

Table 2: Sex wise distribution of stroke cases

Sex	Frequently	Percentage
Female	96	40.3%
Male	142	59.7%
Total	238	100.0

Clinical presentation of stroke pts

In our study as shown in Table 3, most common clinical presentation was hemiplegia which was 48% followed by speech involvement (25.1%), altered sensorium (13.1%), convulsions (5%), instability of gait (3.9%), vomiting (3.1%) and headache (3.1%).

Table 3: Frequency and percentage of clinical features of stroke patients

Clinical features	Frequency	Percentage
Altered sensorium	47	13.1%
Instability of gait	14	3.9%
Convulsions	18	5%
Speech involment	90	25.1%
Headache	6	1.7%
Vomiting	11	3.1%
Hemiplegia	172	48%

Prevalence of risk factors in stroke pts

In our study most common risk factor was hypertension with 34.1% incidence. it followed by previous H/o cerebrovascular accident 15%, smoking 14.2%, dyslipidemia 13.4%, diabetes mellitus 9.3%, alcohol 7.9%, H/o previous coronary artery disease 4.9%, 2 pts had past H/o of malignancy and 1 pt was having rheumatic valvular disease, as shown in Table 4.

Table 4: Frequency and percentage of stroke risk factors

Risk factors	Frequency	Percentage
HT	84	34.1%
DM	23	9.3%
Past H/o CAD	12	4.9%
Dyslipidemia	33	13.4%
Alcohol	19	7.7%
Smoking	35	14.2%
RHD with valvular disease	1	0.4%
Past H/o CVD	37	15%
H/o Cancer	2	0.8%

Type of stroke

In our study as shown in Table 5, 178 pts (74.8%) suffered ischemic stroke and 54 pts (22.7%) suffered hemorrhagic stroke followed by 6 pts (2.5%) were due to some primary brain malignancy or secondaries in brain. So most common type of stroke was ischemic that is cerebral infarction. Out

of 178 ischemic stroke pt 111 (46.8%) were males and 67 (28.3%) were females. Second most common type of stroke was hemorrhagic (22.7%). Out of 54 hemorrhagic stroke pts 27 (11.4%) were males and same numbers were females. Stroke due to space occupying lesion either due

to primary brain malignancy or secondaries in brain was 2.5%.

Topographic distribution of hemorrhage

In our study most common site of hemorrhage was thalamus (24.7%) followed by ventricular (17.5%) and basal ganglia (13.4%), as shown in Table 6.

Table 5: Gender wise frequencies of different types of stroke

Gender		Type of stroke			Total
		Ischemic stroke	Hemorrhagic stroke	Stroke due to primary brain malignancy or secondaries in brain	
Female	count	67	27	2	96
	percent	28.3%	11.4%	0.8%	40.1%
Male	count	111	27	4	142
	percent	46.8%	11.4%	1.7%	59.9%
Total	count	178	54	6	238
	percent	75.1%	22.8%	2.5%	100%

Table 6: Topographic distribution of cerebral hemorrhage and infarct

Affected areas of brain on CT scan brain	Cerebral hemorrhage		Cerebral Infarct	
	frequency	Percent	frequency	Percent
pons	3	3.1%	2	0.7%
Midbrain	2	2.1%	2	0.7%
Thalamus	24	24.7%	4	1.3%
Basal ganglia	13	13.4%	32	10.5%
Centrum semiovale	7	7.2%	5	1.6%
Paraventricular	2	2.1%	14	4.6%
ventricular	17	17.5%	-	-
External capsule	1	1%	12	3.9%
Internal capsule	5	5.2%	7	2.3%
Lentiform nucleus	1	1%	1	0.3%
cerebellar	2	2.1%	11	3.6%
frontal	5	5.2%	51	16.7%
parietal	12	12.4%	103	33.7%
temporal	3	3.1%	24	7.8%
occipital	-	-	24	7.8%
Caudate nucleus	-	-	11	3.6%
Medulla Oblangata	-	-	3	1%

Topographic distribution of infarct

In our study most common site of infarct was parietal (33.7%), followed by frontal (16.7%) followed by basal ganglia (10.5%), as shown in Table 6. Thus findings were favoring middle cerebral artery territory involvement.

DISCUSSION

The mean age observation of 61 in our study which correlates with study done by Maskey *et al.* (mean age 63) and Awad SM *et al.* (mean age 63.66). The common age group involved was between 61-70 years which closely correlates with study done by Ukoha Ob *et al.* and Maskey *et al.*⁷ Young stroke (age ≤45 years) comprised of 15% of all pts w/ich closely correlates with study done by Abdu Sallam *et al.* (13.6%), Gauri *et al.* (19%), P. Chitrabalam *et al.* (20%). The male to female ratio was 1.4:1.⁸ Which correlates with study of Aiyar *et al.* (1.9:1). So it can be concluded that incidence of stroke is more common in male sex which correlates with study done by Aiyar *et al.*, Pinhero *et al.*, Eapen *et al.*⁹ In our study most common clinical presentation was hemiplegia which was followed

by speech involvement. This observation closely correlates with the study done by P. Chitrabalam *et al.*, in which most common was hemiplegia (in <45 years 93.3%, in >45 years 89.2%) followed by speech involvement (in <45 years 43.3%, in >45 years 30.8%).¹⁰ In our study most common risk factor was hypertension was the commonest risk factor which correlates with the study done by Eapen *et al.* (40%), Abdu-Alrhaman Sallam *et al.* (67%). H/o past cerebrovascular accident accounted for 15% which correlated with study done by Ukoha Ob *et al.*¹¹ (16.2%) and by Abdu-Alrhaman Sallam *et al.* (12.2%). In our study percentage of smoking and alcohol were less as compared to other studies. The likely explanation is this being a retrospective study in few case histories those data was not filled properly by emergency duty doctors attending those

patients. In our study dyslipidemia was 13.4% which was correlating with study done by Eapen *et al.* (17%), Abdu-Alrhaman Sallam *et al.* (13.9%). In our study diabetes pts were 9.3% which correlates with study done by Maskey *et al.* (9.3%), Gauri *et al.* (9%) and Eapen *et al.* (8%). In our study pts with previous H/o coronary artery disease were 4.9% which co related with study done by Kaur *et al.* (6%) and Eapen *et al.* (9%).¹² In our study most common type of stroke was ischemic that is cerebral infarction (74.8%) which correlated with studies done by Aiyar *et al.* in which infarction was in 70%, in Eapen *et al.* 68% and in Devichand *et al.* (75%).¹³ Second most common type of stroke was hemorrhagic (22.7%) which correlated with study done by Eapen *et al.* (32%), Aiyar *et al.* (26%), Devichand *et al.* (25%). Stroke due to space occupying lesion either due to primary brain malignancy or secondaries in brain was 2.5% which correlated with study by Aiyar *et al.* (4%). In our study most common site of hemorrhage was thalamus (24.7%) followed by ventricular (17.5%) and basal ganglia (13.4%). This findings correlates with study done by Eapen *et al.* and Aiyer *et al.* where it has been concluded that in multiple hematoma sites most common was thalamic ganglionic region.¹⁴ In our study most common site of infarct was parietal (33.7%), followed by frontal (16.7%) followed by basal ganglia (10.5%). This observation was consistent with study done by Eapen *et al.*, in which most common site was parietal (56%) followed by basal ganglia and frontal. These findings were favoring middle cerebral artery territory; this was also confirmed in study done by Devichand *et al.* and Caroli *et al.*¹⁵

CONCLUSION

To conclude stroke in our county is on rise. The occurrence rises with age with peak between 60 to 70 years. Young pts (age ≤45 years) were 15% of pts which is more dangerous in view of productive year lost. This study showed male predominance in stroke cases. Cerebral infarction was more than hemorrhage. Males were more affected than females in ischemic stroke but for hemorrhage, incidence was equal. Hypertension was amongst leading risk factors for both types. After hypertension previous H/o CVA, smoking, dyslipidemia, DM and alcohol intake and previous H/o CVA were amongst leading risk factors, they were more prevalent in ischemic stroke. Most common clinical presentation was hemiplegia followed by

speech involvement. In cerebral infarction most common site was parietal followed by frontal, basal ganglia, temporal and occipital. In hemorrhage most common site was thalamus followed by ventricular, basal ganglia and parietal.

REFERENCES

1. S. Hartona. Experiences from a multicenter stroke register: a preliminary report. Bull WHO. 1976;54(5):541-53.
2. P. Bath. Acute stroke. In: D. Machin, S. Day S. Green, eds. Textbook of Clinical Trials. 2nd ed. Hoboken: Wiley; 2006: 179-180.
3. S. K. Das, T. K. Banerjee, A. Biswas, D. K. Raut, C. S. Mukherjee, A. Chaudhari, *et al.* A prospective community based study of stroke in Kolkata, India. Stroke. 2007;38(3):906-10.
4. D. Nagaraja, G. Gururaj, N. Girish, Samhita Panda, A.K. Roy, G.R.K. Sarma, *et al.* Feasibility study of stroke surveillance: data from Bangalore, India. Indian J Med Res. 2009 Oct;130:396-403.
5. R. P. Eapen, J. H. Parikh, N. T. Patel. A study of clinical profile and risk factors of cerebrovascular stroke. Guj Med J. 2009;64(2):47-54.
6. Prasad Kameshwar, Singhal Kapil K. Stroke in young: an Indian perspective. Neurol India. 2010;58(3):343-50.
7. Feigin V, Lawes C, Bennet D, Barker Cello S, Parag V. Worldwide stroke incidence and early case fatality in 56 population based studies: a systematic review. Lancet Neurol. 2009;8(4):355-69.
8. Shah B, Mathur P. Workshop report on stroke surveillance in India. In: Shah B, Mathur P, eds. WHO Report. New Delhi: Division of Non Communicable Diseases, Indian Council of Medical Research; 2006: 1-33.
9. Maskey A, Parajuli M, Kohli SC. A study of risk factors of stroke in patients admitted in manipal teaching hospital, Pokhara. Kathmandu Univ Med J (KUMJ). 2011 Oct-Dec;9(36):244-7.
10. Awad SM, Al-Jumaily HF, Al-Dulaimi KM, Abdulghafoor RH. Assessment of major risk factors among stroke patients. Saudi Med J. 2010 Sep;31(9):1028-31.
11. Ukoha OB, Ajaegbu O, Eke CO. A review of stroke cases in a military hospital in Nigeria. AFRIMEDIC J. 2012 July-Dec;3(2):30-3.
12. Gauri LA, Kochar DK, Joshi A, Jain R, Gupta S, Saini G, *et al.* A study of risk factors and clinical profile of stroke at Bikaner. J API. 2000 Jan;48(1).
13. P. Chitrambalam, Dipti Baskar, S. Revathy. A study on stroke in young and elderly in Rajiv Gandhi government general hospital, Chennai. Int J Clin Med. 2012;3:184-9.
14. Aiyar *et al.* A study of clinic-radiological correlation in cerebrovascular stroke (A study of 50 cases). Guj Med J. 1999 Mar;52:58-63.
15. Pinhero L, Damodar S, Roy AK. Risk factors in stroke: a prospective study. J Assoc Physician India. 2000 Jan;48:72-6.

Source of Support: None Declared
Conflict of Interest: None Declared