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Research Article

Study of clinical profile of stroke patients in rural tertiary health care centre

Sanjay V. Patne[1]*, Kailas N. Chintale[2]

[1]Department of General Medicine, Indian Institute of Medical Sciences and Research Medical College, Badnapur, District Jalna, Maharshtra, India
[2]Department of General Medicine, S. R. T. R. Govt. Medical College, Ambajogai, District Beed, Maharashtra, India

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***Correspondence:**
Dr. Sanjay V. Patne,
E-mail: patne.sanjay30@gmail.com

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ABSTRACT

Background: There are 15 million people worldwide who suffer a stroke each year. According to the World Health Organization, stroke is the second leading cause of death for people above the age of 60 years, and the fifth leading cause in people aged 15 to 59 years old. Each year, nearly six million people worldwide die from stroke. One in six people worldwide will have a stroke in their lifetime.
Methods: This cross sectional study was carried out from July 2014 to April 2016 of all new patients admitted with stroke in Indian institute of Medical Sciences and Research Center, Badnapur, Jalna, Maharashtra. India.
Results: The cerebrovascular strokes were more common in males (58.53%) than females (41.46%). Most common age group was 61-70 years (34.95%). The Most common clinical feature was Hemiplegia (55.28%). most common risk factor was hypertension (48.78%), tobacco chewing (26.01%), smoking (19.51%), followed by past h/o of cerebrovascular stroke (12.19%), Dyslipidemia (8.94%). Most common type of stroke was ischemic (68.28%) and hemorrhagic (31.69%) was second most common in ischemic strokes most common involved areas were parietal (30.08%), basal ganglia (9.75%), frontal lobe (7.31%). In hemorrhagic stroke most common site was thalamus (10.56%) followed by ventricular (5.69%) and basal ganglia (4.06%).
Conclusions: Young patients (age ≤45 years) were 16.26% which is more dangerous in view of productive year lost. Stroke having male predominance with hypertension was the most common risk factor smoking tobacco chewing and dyslipidemia were other risk factors for stroke and most common type of stroke was ischemic. Developing countries like India are facing a double burden of communicable and non-communicable diseases. Stroke is one of the leading causes of death and disability in India

Keywords: Hypertension, Smoking, Ischemic stroke, Hemorrhagic stroke, Tertiary health care centre

INTRODUCTION

Stroke was defined by the world health organization (WHO) more than 40 years ago as "rapidly developing clinical signs of focal (or global) disturbance of cerebral function, lasting more than 24 hours or leading to death, with no apparent cause other than that of vascular origin." Stroke is one of the leading causes of death and disability in India. The estimated adjusted prevalence rate of stroke range from 84-262/100,000 in rural and 334-424/100,000 in urban areas. The incidence rate is 119-145/100,000 based on the recent population based studies.[1] Stroke is becoming an important cause of premature death and disability in low-income and middle-income countries like India, largely driven by demographic changes and enhanced by the increasing prevalence of the key modifiable risk factors. As a result developing countries are exposed to a double burden of both communicable

and non-communicable diseases. The poor are increasingly affected by stroke, because of both the changing population exposures to risk factors and, most tragically, not being able to afford the high cost for stroke care. Majority of stroke survivors continue to live with disabilities, and the costs of on-going rehabilitation and long term-care are largely undertaken by family members, which impoverish their families.[1]

Studying the burden of stroke and the availability of health services will help the policy makers to tackle the rising burden of stroke. Recently there has been an increase in the epidemiology data on stroke from India. This review will address the changing burden of stroke. Without coordinated effort on the part of the international public health community; stroke will claim the lives of up to 6.5 million people each year by 2015, according to the World Stroke Organization.[2] The objective of this study was to understand the clinical presentation, risk factors and pattern of areas of brain affected as per CT SCAN brain and MRI brain in patients in Indian Institute of Medical Sciences and Research Medical College Badnapur, Dist. Jalna, Maharshtra, India.

METHODS

This cross sectional study was carried out amongst 123 cases that fulfils the inclusion and exclusion criteria and admitted in medicine ward and intensive medical care unit of Indian Institute of Medical Sciences and Research Medical College and Noor Hospital, Badnapur, Dist. Jalna, Maharshtra, India from July 2014 to April 2016. Case records and data collected from record section.

Inclusion criteria

All patients above 18 years of age and having CT/ MRI confirmed diagnosis of stroke.

Exclusion criteria

- Patient below 18 years of age.
- Stroke due to trauma (head injury).
- Patients CT/MRI reports not showing confirmed diagnosis.
- Coagulation disorders, AV malformations.

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

RESULTS

A total of 123 cases of cerebrovascular accident admitted in medicine wards and intensive medical care unit of Indian institute of medical sciences and research center, Badnapur and who fulfils inclusion and exclusion criteria were studied during period of May 2014 to April 2016 for the clinical presentation, risk factors, neurological presentation and pattern of areas of brain affected.

Table 1: Age wise distribution of patients.

Age group (in years)	Frequency	Percentage
20-30	04	3.25
31-40	09	7.31
41-50	17	13.82
51-60	31	25.20
61-70	43	34.95
71-80	14	11.38
Above 81	05	4.06

As shown in Table 1 that the age range was from 22 to 86 years with mean age was 64 years. In this study, youngest patient was 24 year old and oldest was 87 years old.

The incidence of cerebrovascular accident is maximum in 61-70 years of age group which comprises of 34.95% of total patients and young stroke (age <45 years) comprised of 16.26% of all patients.

Table 2: Gender wise distribution of stroke patients.

Gender	Frequency	Percentage
Male	72	58.53
Female	51	41.46
Total	123	100

Out of total 123 cases, 72 were males and 51 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 3: Clinical features of stroke patients.

Predominant presenting Clinical features	Frequency	Percentage
Hemiplegia	68	55.28
Speech involvement	17	13.82
Umn facial palsy	2	1.62
Fasciobrachial palsy	7	5.69
Altered sensorium	12	9.75
Convulsions	6	4.87
Instability of gait	5	4.06
Headache	6	4.87
Vomiting	8	6.50
Giddiness	5	4.06
Coma	9	7.31
More than 2 clinical features	24	19.51

As shown in Table 3 that most common clinical presentation was hemiplegia which (55.28%) followed by speech involvement (13.82%), altered sensorium (9.75%), deep coma was seen in 7.31% patients and more than 2 associated clinical features were seen in 19.51% patients.

Table 4: Risk factors for stroke patients.

Risk factors	Frequency	Percentage
Hypertension	60	48.78
Diabetes	18	14.63
Morbid obesity	10	8.13
Dyslipidemia	11	8.94
Alcohol	14	11.38
Smoking	24	19.51
Tobacco chewer	32	26.01
RHD with valvular Heart disease	02	1.62
i.v. Drug users	02	1.62
Past h/o CAD	10	8.13
Past h/o CVD	15	12.19
Sedentary life style	07	5.69

As shown in Table 4 that most common risk factor was hypertension with 48.78% followed by tobacco chewing in (26.01%), smoking (19.51%), diabetes (14.63%), H/O of previous cerebrovascular accident (12.19%), alcohol (11.38%), dyslipidemia (9.75%), morbid obesity (8.1%), H/O coronary artery disease (8.10%) sedentary life style (5.69%), intravenous drug users (1.62%), RHD with valvular heart disease (1.62%).

As shown in Table 5 that 84 patients suffered ischemic stroke and 39 patients suffered hemorrhagic stroke. Out of 84 patients 49 were males and 35 were females, among hemorrhagic stroke patients 23 were males and 16 were females.

In this study male sex was important high risk factor for stroke both ischemic as well as hemorrhagic.

Table 5: Gender wise distribution of different types of stroke.

Gender	Type of stroke			
	Ischemic stoke	Percentage	Hemorrhagic stroke	Percentage
Male	49	39.83	23	18.69
Female	35	28.45	16	13.00
Total	84	68.28	39	31.69

Table 6: Topographic distribution of cerebral hemorrhage.

Altered areas of brain on CT /MRI	Cerebral hemorrhage	
	Frequency	Percentage
Frontal lobe	2	1.62
Parietal lobe	3	2.43
Temporal lobe	2	1.62
Occipital lobe	1	0.81
Basal ganglia	5	4.06
Thalamus	13	10.56
Centrum semiovale	1	0.81
Ventricular	7	5.69
Paraventricular	1	0.81
Internal capsule	1	0.81
Lentiform nucleus	1	0.81
Midbrain	1	0.81
Cerebeller	1	0.81
Total	39	31.69

In this study, most common site of hemorrhage was thalamus (10.56%), Followed by ventricular (5.69 %) and basal ganglia (4.06%) as shown in Table 6.

In our study, most common site of infarct was parietal (30.08%), followed by basal ganglia (9.75%), followed by frontal lobe (7.31%) as shown in Table 7.

Thus, findings were favoring middle cerebral artery territory involvement which is most commonly involved in thrombotic stroke.

Table 7: Topographic distribution of cerebral infarction

Altered areas of brain on CT /MRI	Cerebral infarction	
	Frequency	Percentage
Frontal lobe	9	7.31
Parietal lobe	37	30.08
Temporal lobe	4	3.25
Occipital lobe	3	2.43
Basal ganglia	12	9.75
Thalamus	3	2.43
Centrum semiovale	1	0.81
Ventricular	1	0.81
Paraventricular	3	2.43
Internal capsule	3	2.43
External capsule	2	1.62
Lentiform nucleus	2	1.62
Caudate nucleus	1	0.81
Midbrain	1	0.81
Cerebeller	2	1.62
Total	84	68.28

DISCUSSION

In the present study, the mean age for stroke was 64 years which correlates with study done by Maskey et al having mean age 63 years and Awad SM et al having mean age 63.66 years. 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.[11-13]

Young stroke (age ≤45 years) comprised of 16.26% of all patients witch closely correlates with study done by Abdu Sallam et al who have 13.6%, Gauri et al has 19%, and P. Chitrambalam et al have 20%.[14,15,18] In present study, the male to female ratio was 1.4:1 which correlates with study of Aiyar et al male to female ratio was 1.9:1.[16] 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, and Eapen et al.[7,16,17]

In present study, most common clinical presentation was hemiplegia 55.28% which was followed by speech involvement 13.82%. This observation closely correlates with the study done by Chitrambalam Pet al in which most common clinical presentation was hemiplegia (in <45 years was 93.3%, and in >45 years was 89.2%) followed by speech involvement (in <45 years was 43.3%, and in >45 years 30.8%).[15] In the present study, most common risk factor was hypertension 48.78% which correlates with the study done by Eapen et al, in which (40%), Abdu-AlrhamanSallam et al had (67%).[7,18] Present study shows H/o past cerebrovascular accident accounted for 12.19% which correlated with study done by Ukoha Ob et al (16.2%) and by Abdu-Alrhaman Sallam et al (12.2%).[13,18] In present study percentage of smoking and alcohol were less or more same as compared to other studies.

In present study, dyslipidemia was 8.94% which was less as compared with study done by Eapen et al (17%), Abdu-Alrhaman Sallam et al (13.9%).[7,18] In present study, diabetes patients were 14.63% which is slightly more as compared to study done by Maskey et al (9.3%), Gauri et al (9%) and Eapen et al (8%).[7,11,14] In present study, patients with previous H/o coronary artery disease were 8.1% which corelated with study done by Kaur et al. (6%) and Eapen et al (9%).[7,19]

In present study, most common type of stroke was ischemic that is cerebral infarction (68.29%) which correlated with studies done by Aiyar et al in which infarction was in 70%, in Eapen et al was 68% and in Devichand et al was (75%).[7,16,20] Second most common type of stroke was hemorrhagic (31.69%) which correlated with study done by Eapen et al was (32%), Aiyar et al was (26%), and Devichand et al was (25%).[7,16,20]

In present study, most common site of hemorrhage was thalamus (10.56%) followed by ventricular (5.69%) and basal ganglia (4.06%). 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. In the present study, most common site of infarct was parietal (30.08%), followed by frontal (7.31%) followed by basal ganglia (9.75 %). 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 lobe. These findings were favouring middle cerebral artery territory; this was also confirmed in study done by Devichand et al. and Caroli et al.[7,16,20]

CONCLUSION

India like other developing countries is in the midst of a stroke epidemic. There is a huge burden of stroke with significant regional variations 0f stroke in our county. The occurrence rises with age with peak between 60 to 70 years. Young patients (age ≤45 years) were 16.26 % 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 as well hemorrhagic.

Hypertension was amongst leading risk factors for both types. After hypertension previous tobacco chewing smoking, H/o CVA, diabetes, dyslipidemia, obesity, sedentary life style & alcohol intake and previous H/o CAD were amongst leading risk factors, they were more prevalent in ischemic stroke. Most common clinical presentation was hemiplegia followed by speech involvement and altered sensorium. 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.

Stroke units, thrombolysis, and rehabilitation are predominantly available in urban areas, particularly in private sector hospitals. As a first step, the Government of India has started the National programme for prevention and control of cancer, diabetes, cardiovascular diseases and stroke (NPCDCS). The government is focusing on early diagnosis, management, infrastructure, public awareness, and capacity building at different levels of health care for all the non-communicable diseases including stroke. An organized effort from both the government and the private sector is needed to tackle the rising stroke burden in India.

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