Original Research Article

Clinico-radiological profile of stroke in relation with different anatomical sites: Cross sectional study at tertiary care centre

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Abstract

Background: 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. **Aims and Objectives:** To study Clinico-radiological profile of stroke in relation with different anatomical sites: cross sectional study at tertiary care centre. **Methodology**: This was a cross-sectional study carried at medicine department in the patients of stroke during the one year period i.e. January 2017 to January 2018 in the one year period there were 49 patients admitted to ward for stroke were included into the study. All the information of the patients like age, sex, clinical features and undergone CT scan imaging for the identification of site and type of stroke . The data was entered to excel sheet and presented in tabular form and expressed in percentages. **Result:** The majority of the patients were in the age group of 51-60 were 38.78 %, followed by 41-50 were 30.61 %, >60 were 16.33%, 31-40 were 10.20%, 21-30 were 4.08%. The majority of the patients were Male i.e. 59.18% and female were 40.82%. The majority of the patients were having complains of Headache in 79.59%, followed by Hemiplegia in 77.55%, Speech involvement in 65.31%, Altered sensorium in 59.18%, Gait Instability in 30.61%, Convulsion in 36.73%. The majority of the patients on CT Scan imaging were having the Infartcive type of Stoke i.e. 31% as compared to 18% hemorrhagic in hemorrhagic the most common site were Basal ganglia- 27.78%, Thalamus in 16.67%, Frontal, Parietal, Ventricular-11.11% respectively. In infarctive the Parietal was 29.03%, Frontal was 16.1%, Basal ganglia was 12.90%, Paraventricular, Cerebellum, Occipital were 9.68% respectively. **Conclusion:** It can be concluded from our study that the majority of the patients were in the age group of 51-60, the majority of the patients were having complains of Headache , followed by Hemiplegia The majority of the patients on CT Scan imaging were having the Infartcive type of Stoke, In hemorrhagic the most common site were Basal ganglia, Thalamus. In infarctive the Parietal and Frontal

Key Word: Stroke, Hemiplegia, Hemorhagic stroke, Infarctive stroke

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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

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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] Stroke incidence ranges from 0.2 to 2.5/1000 population per year. There is no reliable information from India, but analysis of data suggests that 2% of all hospital cases, 4.5% of medical and 20% of neurological cases are from stroke. Stroke is the leading cause of death. It accounts for 10-12% of total deaths[2,3]. The typical signs of acute stroke and TIA are as follows: Sudden numbness or weakness of the face, arm or leg, especially on one side of the body Sudden confusion, difficulties in speaking or understanding (aphasia) Sudden visual impairment in one or both eyes Sudden difficulty in walking, dizziness, or loss of balance or coordination Sudden, severe headache with no known cause The consequences of stroke can also be of a cognitive and perceptual nature and at first sight these are less obvious. Such symptoms are sometimes called “silent handicap” and may have a great impact on performances of activities of daily living (ADL) and quality of life[4,5]. So we have studied the Clinico-radiological profile of stroke in relation with different anatomical sites: cross sectional study at tertiary care centre.

METHODOLOGY

This was a cross-sectional study carried at medicine department in the patients of stroke during the one year period i.e. January 2017 to January 2018 in the one year period there were 49 patients admitted to ward for stroke were included into the study. All the information of the patients like age, sex, clinical features and undergone CT scan imaging for the identification of site and type of stroke . The data was entered to excel sheet and presented in tabular form and expressed in percentages.

RESULT

Table 1: Clinico-radiological profile of stroke in relation with different anatomical sites: cross sectional study at tertiary care centre

Age	No.	Percentage (%)
21-30	2	4.08
31-40	5	10.20
41-50	15	30.61
51-60	19	38.78
>60	8	16.33
Total	49	100.00

The majority of the patients were in the age group of 51-60 were 38.78 %, followed by 41-50 were 30.61 %, >60 were 16.33% , 31-40 were 10.20%, 21-30 were 4.08%.

Table 2: Distribution of the patients as per the Sex

Sex	No.	Percentage (%)
Male	29	59.18
Female	20	40.82
Total	49	100.00

The majority of the patients were Male i.e. 59.18% and female were 40.82%.

Table 3: Distribution of the patients as per the clinical features

Clinical feature	No.	Percentage(%)
Headache	39	79.59
Hemiplegia	38	77.55
Speech involvement	32	65.31
Altered sensorium	29	59.18
Gait Instability	15	30.61
Convulsion	18	36.73

The majority of the patients were having complains of Headache in 79.59%, followed by Hemiplegia in 77.55%, Speech involvement in 65.31%, Altered sensorium in 59.18%, Gait Instability in 30.61%, Convulsion in 36.73%.

Table 4: Distribution of the patients as per the Site and type of Stroke with respect to CT scan

CT Scan	Cerebral haemorrhage		Cerebral Infract	
	Frequency	Percent	Frequency	Percent
Percent Pons	1	5.56	2	6.45
Midbrain	1	5.56	1	3.23
Ex VVThalamus	3	16.67	2	6.45
Basal ganglia	5	27.78	4	12.90
Paraventricular	1	5.56	3	9.68
Ventricular	2	11.11	0	0.00
Cerebellum	1	5.56	3	9.68
Frontal	2	11.11	5	16.13
Parietal	2	11.11	9	29.03
Temporal	0	0.00	2	6.45
Occipital	0	0.00	3	9.68
Total Lesions	18	100.00	31	100.00

The majority of the patients on CT Scan imaging were having the Infartcive type of Stoke i.e. 31% as compared to 18% hemorrhagic in hemorrhagic the most common site were Basal ganglia- 27.78%, Thalamus in 16.67%, Frontal, Parietal, Ventricular-11.11% respectively. In infarctive the Parietal was 29.03%, Frontal was 16.1%, Basal ganglia was 12.90%, Paraventricular, Cerebellum, Occipital were 9.68% respectively.

DISCUSSION

Ischemic Stroke: Ischaemic stroke is the most common type of stroke and is caused by a thrombus or embolus. Atherosclerosis primarily affecting larger vessels is responsible for about 25 % of ischaemic strokes. An embolus is a clot that is formed at another site, often in the left atrium of the heart or in the carotid arteries, and then follows the blood stream until the diameter of the vessel is too narrow for it to pass. Cardiac embolism is reported to account for 15 to 36 % of strokes. The most common source of cardiac embolism is atrial fibrillation from any cause. Other sources are endocarditis, cardiomyopathies and dyskinetic myocardial segments caused by myocardial infarction and ventricular aneurysms[6].

Haemorrhagic stroke: Haemorrhagic stroke consists of intracerebral haemorrhage (12 %) caused by rupture of a vessel in the brain or in the subarachnoid space on the surface of the brain, the latter called subarachnoid haemorrhage (5-6 %). The cerebral bleedings have three major causes: arterial hypertension, ruptured arterio-venous malformations (AVMs) and in younger people certain drugs. Subarachnoid haemorrhage (SAH) is most often caused by rupture of an intracranial aneurysm or AVM [7,8].Pathological damage from cerebral vascular occlusion varies depending on the degree and duration of the impaired blood flow.Loss of cerebral bold supply causes loss of membrane potentials (anoxic depolarisation) and in its mildest form (brief focal ischemia) kills uniquely vulnerable neurones such as the pyramidal neurons in the CA1 and CA4 zones of the hippocampus while sparing other neurons and all glial cells. However, about 1 hour of focal ischemia causes cerebral infarction characterized by the death of neurons, glial, and other supportive cells within the affected vascular bed[9].When ischemia lasts more than 1 hour, this zone of infarction beginning in the central zone of lowest blood flow progressively enlarges in a circumferential fashion towards its maximum volume over 6-7 h in primates and an undetermined time in humans. Exhaustion of oxygen supply to the brain tissue leads to activation of the ischemic cascade with a series of molecular mechanisms being activated. There is depletion of adenosine triphosphate and consequent high levels of lactate and unbuffered hydrogen ions. These hydrogen ions facilitate the generation of ferrous iron-mediated free radicals that result in astroglial injury[10]. Alterations in intra cellular mechanisms including ion pumps leads to deterioration of membrane ion gradients, opening of selective and unselective ion channels, and equilibration of most intracellular and extracellular ions (anoxic depolarisation). Thus potassium ions leave the cell, sodium, chlorine and calcium enter and many excitatory neurotransmitters (glutamate, aspartate) are released in potentially toxic concentrations[11]. In our study we have seen that The majority of the patients were in the age group of 51-60 were 38.78 %, followed by 41-50 were 30.61 %, >60 were 16.33%, 31-40 were 10.20%, 21-30 were 4.08%. The majority of the patients were Male i.e. 59.18% and female were 40.82%. The majority of the patients were having complains of Headache in 79.59%, followed by Hemiplegia in 77.55%, Speech involvement in 65.31%, Altered sensorium in 59.18%, Gait Instability in 30.61%, Convulsion in 36.73%. The majority of the patients on CT Scan imaging were having the Infartcive type of Stoke i.e. 31% as compared to 18% hemorrhagic in hemorrhagic the most common site were Basal ganglia- 27.78%, Thalamus in 16.67%, Frontal, Parietal,

Ventricular-11.11% respectively. In infarctive the Parietal was 29.03%, Frontal was 16.1%, Basal ganglia was 12.90%, Paraventricular, Cerebellum, Occipital were 9.68% respectively. These findings are similar to Kali Prasanna Swain *et al* [12] they found Out of 137 patients of cerebrovascular stroke, 86 are male and 51 female ranges from 26 years to 91 years with mean age is being (67±15.6) years. The male to female ratio is being 1.7:1. The cerebrovascular strokes are more common in males (62.7%) than females (37.3%). Most common age group is 61-70 years (37.3%) and the commonest clinical feature is hemiplegia (72.2%) followed by speech involvement (37.9%). Maximum cases presented with hypertension (57.7%) followed by dyslipidemia (23.4%). Ischemic stroke (70%) is higher than hemorrhagic (30%). most common site of hemorrhage is basal ganglia (43.9%) followed by thalamus (14.6%), both ventricular and cerebellar constitute 9.7% each. The most common site of infarction was parietal (41.7%), followed by basal ganglia (16.7%) and frontal (12.5%). Sanjay V. Patne *et al* [13] found 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%).

CONCLUSION

It can be concluded from our study that the majority of the patients were in the age group of 51-60, the majority of the patients were having complains of Headache , followed by Hemiplegia The majority of the patients on CT Scan imaging were having the Infartcive type of Stoke, In hemorrhagic the most common site were Basal ganglia, Thalamus. In infarctive the Parietal and Frontal

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