Original article

Study of clinical profile of the patients presenting with acute Cerebrovascular accident to the emergency medicine

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Abstract

Introduction: Stroke involves an acute insult to the brain and is a major disabling disease. Globally, stroke is the second leading cause of death. Stroke has become an important cause of premature mortality and morbidity in low-income and middle-income countries like India, which are largely driven by demographic changes and enhanced by the increasing prevalence of the key modifiable risk factors.

Material and Methods: It was a prospective observational study , was carried out on patients in the Emergency Medicine department at Dr. D. Y. Patil Medical college, Hospital & Research Centre, Pimpri, Pune.

CVA cases confirmed on CT/MRI brain and admitted in emergency medicine within 48 hours of onset of stroke fulfilling inclusion and exclusion criteria were enrolled as study subjects. Detailed history, clinical examination and relevant laboratory investigation were carried out as per the proforma.

Results and conclusion: Maximum 65.8% had no facial deviation while 20% had right and 14.3% had left facial deviation. More than two third (77.1%) had one side body weakness and 17.1% had no weakness of either side. Maximum (41.4%) had right sided weakness, 34.3% had left side weakness and 22.9% had no upper limb weakness. Maximum (38.6%) had right sided weakness, 34.3% had left side weakness and 25.7% had no lower limb weakness. Glasgow Coma Scale (GCS) score -Most of the subjects (94.3%) had score >8 and very few 5.7% had score ≤8.

Keywords: Stroke, Glasgow Coma Scale

Introduction

Stroke involves an acute insult to the brain and is a major disabling disease. Globally, stroke is the second leading cause of death.[1] Stroke has become an important cause of premature mortality and morbidity in low-income and middle-income countries like India, which are 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 double burden of both communicable and non-communicable diseases. The poor are increasingly affected by

stroke, because of both - changing population exposures to risk factors and most tragically, not being able to afford the high cost for stroke care. Most of the stroke survivors continue to live with morbidities, and the costs of ongoing rehabilitation and long-term care are undertaken by family members, which impoverish their families.[2,3]

Cerebrovascular accident is the commonest cause of chronic adult disability. The lifetime risk of CVA after 55y of age is 1 in 5 for women and 1 in 6 for men. Almost four-fifth of all strokes occur in developing countries.[4]

According to WHO 2009 report in India prevalence is 90-222 per lakh population and 6,398,000 DALYs (Disability Adjusted Life Years)[6.] Strokes cost more than $70 billion annually, and has a devastating effect on the quality of life of the patients and their caregivers.[7] At the basic level, stroke is divided into two main types haemorrhagic and ischemic strokes. Majority of strokes are ischemic, although the relative burden of haemorrhagic versus ischemic stroke varies among different populations.

Material and Methods

It was a prospective observational study , was carried out on patients in the Emergency Medicine department at Dr. D. Y. Patil Medical college, Hospital & Research Centre, Pimpri, Pune.

Sampling method: purposive sampling- All consecutive cases who meet the inclusion criteria included in study till desired sample size was obtained.

Inclusion criteria:

-Patient presenting with clinical features of CVA within 48 hours

-Age ≥18yrs

Exclusion criteria:

-Patients below 18.

-Trauma.

-More than 48hours of onset of symptoms.

-Past history of CVA.

- CVA due to venous thrombus.

- Transient ischemic attack (TIA)

Informed written consent was taken from patients/patient's relatives.

Institutional Ethics Committee approval was obtained before the start of study.

Methodology:

CVA cases confirmed on CT/MRI brain and admitted in emergency medicine within 48 hours of onset of stroke fulfilling inclusion and exclusion criteria were enrolled as study subjects. Detailed history, clinical examination and relevant laboratory investigation were carried out as per the proforma.

Data analysis:

Data was collected using preformed data collection form and case record form. Data entry was done in Microsoft Excel and analysed using SPSS (Statistical Package for Social Sciences) Software version 20. Categorical variable expressed in terms of frequency and percentage and continuous variables in terms of mean and SD.

Results

Maximum subjects (34.3%) were in age group of 61-70yrs followed by 22.9% in 41-50yrs. Younger age (till the age of 40yrs) were one fifth (21.5%) of study population. Age range of subjects was 18-81yrs and mean age of 53.33$\pm$15.81years. Three fourth (75.7%) were male and one fourth were female. M: F was 3.1:1

Maximum (72.9%) subjects were from urban area and 27.1% were from rural area.

Maximum were either skilled (34.3%) or unskilled (28.6%) workers and 8.6% were students among study subjects.

Table 1: Symptom wise distribution of study subjects

Symptoms	Frequency	Percent
Slurred speech	45	64.3
Giddiness	25	35.7
Right sided weakness	25	35.7
Left sided weakness	19	27.1
Vomiting	17	24.3
Loss of Consciousness	15	21.4
Tingling	6	8.6
Altered sensorium	6	8.6
Swaying while walking	5	7.1
Headache	5	7.1
Disoriented	4	5.7
Facial deviation	4	5.7
Other	17	24.3

Table shows symptom wise distribution of study subjects. Most of the study subjects (64.3%) were presented with slurred speech followed by weakness of either side (right & left-62.8%), giddiness in 35.7%, vomiting in 24.3%, loss of consciousness in 21.4% and other symptoms include fever, unresponsive or disoriented, seizure and numbness (24.3%) as a main complaint to get hospitalize.
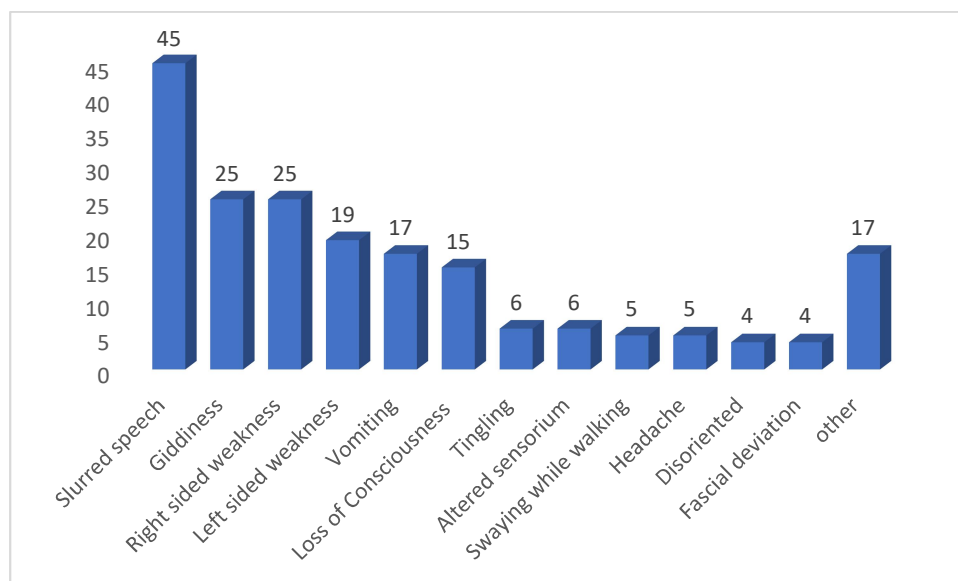
Figure 1: Symptom wise distribution of study subjects

 It was found that 43% were hospitalized within 3 hours and 51.4% were hospitalised after 4.5hours of symptoms.

Many of the study subjects (18.5%) were alcoholics.

Most common risk factor was hypertension in47.1% followed by diabetes in 21.4% and ischemic heart disease in 17.1%.

Table 3: Continuous variables distribution among study subjects

Variables	Mean+ Std. Deviation	Range
Age in yrs	53.33+15.81	18-81
Systolic BP	159.09+35.29	100-250
Diastolic BP	96.31+17.28	70-160
Pulse	79.37+12.65	58-146
RR/Min	19+1.85	16-26
GCS	13.4+2.86	3-15
BSL (mg/dl)	134.39+52.1	74-410
NIHSS	6.64+4.08	1-18

Table 4: Facial deviation findings among study subjects

Facial deviation	Frequency	Percent
No	46	65.8
Left	10	14.3
Right	14	20
Total	70	100

Table shows facial deviation findings among study subjects. Maximum 65.8% had no facial deviation while 20% had right and 14.3% had left facial deviation.

Table 5: Weakness presentation among study subjects

Weakness	Frequency	Percent
One side	54	77.1
Both side	2	2.9
No	14	17.1
Total	70	100

Table shows findings of weakness among study subjects. More than two third (77.1%) had one side body weakness and 17.1% had no weakness of either side.

Maximum (41.4%) had right sided weakness, 34.3% had left side weakness and 22.9% had no upper limb weakness.

Maximum (38.6%) had right sided weakness, 34.3% had left side weakness and 25.7% had no lower limb weakness.

Table 6: Glasgow Coma Scale (GCS) score among study subjects

GCS	Frequency	Percentage
<8	4	5.71
>8	66	94.29
Total	70	100

Table shows findings of Glasgow Coma Scale (GCS) score among study subjects. Most of the subjects (94.3%) had score >8 and very few 5.7% had score <8.

Table 7: National Institute of Health Stroke Scale (NIHSS) among study subjects

NIHSS	Frequency	Percentage
Minor	23	32.86
Moderate	5	7.14
Mod to Severe	42	60.00
Total	70	100

Table shows National Institute of Health Stroke Scale (NIHSS) findings among study subjects. More than half (60%) had mod to severe score, 32.86% had minor and few (7.14%) had moderate NIHSS.

Discussion

Stroke is a disease associated with a high rate of disability and death. The World Health Organization defines stroke as a vascular event that occurs suddenly, leading to focal or global cerebral dysfunction, which might last at least 24 hours and may lead to death. It causes disabilities and psychosocial economic problems in family members of stroke victims. Thus, prevention and treatment of strokes is a significant public health concern. [2]

This was a prospective observational study involving 70 cases of first attack of Cerebrovascular accident admitted to emergency unit within 48 hrs of symptoms and assessed for functional outcome using NIHSS Scale. Age is an important non modifiable risk factor for stroke. Studies shows that approximately 70% of people with stroke are above the age of 65 years.[8,9] In contrast to the other studies, our study found that only 31.4% were ≥ 65y.

The age distribution of patients in our study was between 18-81 years with mean age of 53.33±15.81yrs. The risk of stroke increases with increasing age and maximum (78.6%) incidence was found in age >40years in the present study. These findings were in corroboration with studies by Mishra Talreja P, et al [10] and Chowdhury N et al.[11]

In present study there was male predominance i.e. three fourth (75.7%) study population were male and one fourth were female. Vaidya CV et al [87]found stroke incidence in older population (≥45 years) was higher than young (<45 years) patients with male predominance in both groups. Kuriakose C et al [88] found occurrence of stroke steeply rises with age with male predominance. Another study by Punna S et al [89] found that stroke incidence was higher in 50–70 years age group with male preponderance. Findings of our study correlates with earlier study.[12,13,14]

Although reports published shows that stroke is not so common in young adults, in our clinical practice we often face acute neurologic manifestations in this age group, and stroke is considered as a differential diagnosis. Compared to older people, stroke in young have disproportionately high economic impact by leaving its victims disabled at their most productive years of life. A recent study revealed data indicating an increasing incidence of stroke in younger population.[15] The number of first attack of stroke in young adults differs from nation to nation, ranging from 5% - 20% of all strokes.[6,7]

Strokes in individuals <45years age accounts for approximately 2% of all first-ever strokes in a community based study conducted in Italy,[16] 6% of all ischemic strokes hospitalized,[17]and 11% of all consecutive ischemic

stroke victims in 2 centres in Switzerland.[43]Hospital-based study conducted in Finland showed yearly incidence of stroke increased from 2.4/100,000 for people between age 20 to 24 years to 4.5/100,000 for people between 30 to 34 years of age with further increase of up to 32.9/100 000 for people aged 45 to 59 years.[4] In comparison to all those studies, our study found that incidence of stroke in young was 27% of all stroke admitted in emergency unit. These findings from our study showed that incidence of stroke is high in adults of age <45 years in Indians compared to other countries. These variations may be due to study timings, ecology, stress, lifestyle, race and ethnicity. Long-term survival is more in younger than in older patients of stroke ,[4] stroke in young leads to increase in total disability and economic burden of the society.[18]

The heterogeneity of stroke pathogenesis and difference between stroke subtypes may hamper diagnosis and management. Usually, the neurological findings help to identify the location of lesions and to predict the stroke mechanism, which is fundamental for determining the initial investigations and treatment. Different patterns of weakness may be found in lesions of the middle cerebral artery (MCA) territory. Hemiplegia is related to large or deep MCA infarcts. Lesions in the upper branch of MCA produce hemiparesis with facio-brachial predominance. On the other hand, weakness predominates in the contralateral lower limb with lesions in the anterior cerebral artery territory. Sensory deficit is common in MCA stroke, resulting from lesions affecting the territory of the posterior parietal artery. Usually, complete contralateral sensory loss is produced by lesions in the ventroposterolateral part of the thalamus. Many patients can develop speech disorders, called aphasia, related to infarcts in the dominant hemisphere, as a cortical sign. It affects the capacity of speaking, listening, reading or writing.[19]

 In our study most of the subjects (48.6%) were having MCA involvement followed by 14.3% each were having PCA and 4.3% subjects were having ACA involvement. In our study most of the study subjects (64.3%) presented with slurred speech followed by weakness of either side (right & left-62.8%), giddiness in 35.7%, vomiting in 24.3%, loss of consciousness in 21.4% and other symptoms include fever, unresponsiveness or disorientation, seizure and sensory deficit (24.3%) as a main complaints and 20% had right and 14.3% had left facial deviation. More than two third (77.1%) had one side body weakness.

Limitations of our study:
1. Cases of venous CVA were not included as the pathophysiology and presentation are different from AIS & ICH.
2. Lack of EVT and mechanical thrombectomy as treatment option in our set-up due to the patient's financial constraints.
3. Small sample size

Conclusion:
Maximum 65.8% had no facial deviation while 20% had right and 14.3% had left facial deviation. More than two third (77.1%) had one side body weakness and 17.1% had no weakness of either side. Maximum (41.4%) had right sided weakness, 34.3% had left side weakness and 22.9% had no upper limb weakness. Maximum (38.6%) had right sided weakness, 34.3% had left side weakness and 25.7% had no lower limb weakness. Glasgow Coma Scale (GCS) score -Most of the subjects (94.3%) had score >8 and very few 5.7% had score ≤8.

References

1. Tintinalli Judith E. Yealy Ma, Meckler, Stapczynski, Cline, and Thomas. Tintinalli's Emergency Medicine, A Comprehensive Study Guide 9th edition.2019

2. Bonita R, Beaglehole R. Stroke prevention in poor countries: time for action. Stroke. 2007;38(11):2871-2.

3. Pandian JD, Srikanth V, Read SJ, Thrift AG. Poverty and stroke in India: a time to act. Stroke. 2007;38(11):3063-9.

4. Seshadri S, Beiser A, Kelly-Hayes M, Kase CS, Au R, Kannel WB, et al. The lifetime risk of stroke: estimates from the Framingham Study. Stroke. 2006;37(2):345-50.

5. Hankey GJ. Stroke: How large a public health problem and how can the neurologist help: Arch Neurol.1999;56:748-54.

6. Fiona C. Taylor, Suresh Kumar K. Stroke in India factsheet (updated 2012).

7. Lloyd-Jones D, Adams RJ, Brown TM, et al., for the American Heart Association Stroke Council. Heart disease and stroke statistics—2010 update: a report from the American Heart Association. Circulation 2010;121:e46–215.

8. OGUZHAN Ç. Beyin damar hastalıklarında tanımlar, sınıflama, epidemiyoloji ve risk faktörleri. In: Öge AE, editör. Nöroloji. Istanbul: Nobel Tıp Kitapevleri; 2004. 193-194.

9. KIYAN S, ÖZSARAÇ M, ERSEL M, AKSAY E, YÜRÜKTÜMEN A, MUSALAR E, ÇEVRIM Ö. Acil Servise Başvuran Akut _skemik _nmeli 124 Hastanın Geriye Yönelik Bir Yıllık _ncelenmesi, Akademik Acil Tıp Dergisi 2009; 8: 15-20.

10. Mishra TP, Chandra R, Saxena SK, Verma S, Jain R, Bhuyan A. High Sensitivity C-reactive Protein (hsCRP) Level in Cerebrovascular Accident (Stroke). JIACM , 2010;11(3):204–7

11. Chowdhury N, De A, Bhattacharya R, Chakraborty I. Ischemia modified albumin in myocardial infarction and its correlation with selected acute phase reactants. Nig J Cardiol 2015;12: 65-70

12. Vaidya CV, Majmudar DK. A study on clinical profile of stroke in young and elderly in GMERS Medical College and Hospital, Gandhinagar, Gujarat. Int J Res Med Sci 2014;2:1446-52.

13. Kuriakose C, Naseem Shifafiya M, Tharakan NS, Sattanathan K, Sambath Kumar R. A prospective study of clinical profile of stroke in a tertiary care hospital. Asian J Pharm Clin Res, Vol 9, Suppl. 3, 2016, 178-181

14. Punna S, Shailendra D, Mohammad AB, Balla KS, Joseph KA, Edem S, et al. Clinical profile of patients with stroke in a tertiary hospital setting in rural Telangana. Natl J Physiol Pharm Pharmacol 2020;10(06):473-477.

15. Kissela BM, Khoury JC, Alwell K, et al. Age at stroke: temporal trends in stroke incidence in a large, biracial population. Neurology. 2012;79: 1781–1787.

16. Marini C, Totaro R, De Santis F, Ciancarelli I, Baldassarre M, Carolei A. Stroke in young adults in the community-based L'Aquila registry: incidence and prognosis. Stroke. 2001;32:52–56.

17. Grau AJ, Weimar C, Buggle F, Heinrich A, Goertler M, Neumaier S, et al. Risk factors, outcome, and treatment in subtypes of ischemic stroke: the German stroke data bank. Stroke. 2001;32:2559–2566

18. Katzenellenbogen JM, Begg S, Somerford P, Anderson CS, Semmens JB, Codde JP, et al. Disability burden due to stroke in Western Australia: new insights from linked data sources. Int J Stroke. 2010;5:269–277

19. Demarin V. Pathophysiology and classification of cerebrovascular disorders. eJIFCC2004Vol15No3pp044-046

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For any images presented appropriate consent has been obtained from the subjects: NA

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