Research Article

Prevalence of Stroke in a Tertiary Care Teaching Hospital, Warangal

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ABSTRACT

Background: History: Stroke is one of the biggest deaths as well as the major cause for victims ' disabilities worldwide. Stroke is a disorder of considerable public health concern. Stroke has serious economic and social implications. In future decades, Stroke is expected to rise and may double until 2030. *Aim:* The aim of that analysis is to determine the frequency of ischemic stroke in the Telangana community with hemorrhagic stroke and other forms of stroke. *Methods:* It is a forward-looking observer study in the MGM Hospital. Our study includes patients diagnosed with ischemistry, hemorrhaging and other types of stroke. *Results:* Out of 750 patients, 703 patients are suited for our study. The regional distribution of stroke is estimated to be more prevalent in Warangal when compared to other regions of Telangana. Male patients are more likely to be more affected by stroke when compared to females. Majority of the patients affected are between the age group of 51-60 years. Ischemic Stroke was found to be highest when compared to hemorrhagic stroke and other types of stroke. Majority of the patients were presented with co-morbidity of hypertension and subjects with social habits like alcoholism, smoking and gutkha chewing are estimated to be more prone to stroke. *Conclusion:* The study showed that prevalence of stroke is higher in Warangal population, Ischemic stroke (60.17%) was found to be highest when compared to hemorrhagic (34.28 %) and other types of stroke (5.54 %). Major modifiable risk factors are associated with stroke symptoms.

1. Introduction

The Stroke can be defined as an abrupt onset of focal neurologic deficit that lasts for at least 24 hours and it may be either ischemic or hemorrhagic. Ischemic stroke occurs due to local thrombus formation or emboli occlusion in a cerebral artery. Hemorrhagic stroke may occur due to subarachnoid hemorrhage, intracranial hemorrhage and subdural hematomas. Transient ischemic attacks (TIA) is characterised by focal neurologic deficits lasting less than 24 hours and usually less than 30 minutes.[1] Stroke is second leading cause of death worldwide. High morbidity of stroke results in 50% of survivors left being disabled chronically. The high mortality and morbidity of stroke is said to rise over future decades in developing countries. It is estimated that 15 millions of people are presenting with stroke symptoms worldwide each year. Out of these, 5 millions die and other 5 millions are left seriously disabled. High blood pressure and improper lifestyle are the key contributors of stroke. It is predominant in developing countries.[2]Stroke mortality is higher in Asia due to low birth weight , insecure social health system, hypertension, diabetes, obesity and cigarette smoking are prevalent and poorly controlled. Moreover organised stroke centres and diagnostic tools are insufficient which is increasing the stroke mortality in Asia [3]. Among the Asian countries, in India, the mortality rate of stroke is higher ranging 262/100, 000 in rural areas, while 424/100,000 in urban areas. The stroke units are predominantly available only in private hospitals in urban areas. Because of this rural people were unable to get proper diagnosis and treatment for stroke. Early diagnosis, management and public awareness for stroke is necessary to reduce the mortality rate [4]. Women have poorer functional and lower quality of life than men due to factors like coagulation status, Sex hormones, genetic backgrounds and lifestyle [5].

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Age, Gender, Race, Family history of stroke and Low Birth Weight (LBW) are considered as non-modifiable risk factors of stroke [6, 7]. Hypertension, Atrial fibrillation, Dyslipidemia, Cigarette smoking, Alcohol consumption, obesity, diet, physical inactivity, migraine and sleep disordered breathing are considered as modifiable risk factors [8, 9, 10]. Ischemic stroke is caused due to due to atherosclerotic plaque, cardiac embolism, migraine, arthritis and dissections [11].

Ischemic stroke occurs from vascular occlusion. Ischemia causes cell hypoxia and depletion of ATP. Since no ATP, there will be no energy to maintain ionic gradients across the cell membrane. Sodium and calcium influx and passive inflow of water into cell causes cytotoxic edema. Affected regions with cerebral blood flow of lower than 10ml/100g of tissue/minute is called core and zones of decreased perfusion <25ml/100g of tissue is called the Ischemic Penumbra. Tissues in core will die within minutes of onset while tissues in penumbra remain viable [12].

Hemorrhagic stroke occurs by intracerebral hemorrhage, subarachnoid hemorrhage, subdural hematomas. Intracerebral hemorrhage caused by damage of brain due to pressure by mass effect of hematomas. Subarachnoid Haemorrhage causes elevated intracranial pressure and impairs cerebral auto regulation which occurs in combination with acute vasoconstriction and micro vascular perfusion [13]. Subdural hematoma is a collection of blood below the inner dura region but external to brain and arachnoid membrane.[14]

Testing of muscle weakness, Physical examination, CT-scan, MRI-scan are useful tools in diagnosis of stroke [15]. Blood thinners, ACE-inhibitors, Statins and Mannitol are used in management of stroke [16, 17, 18].

The study is about prevalence of stroke in tertiary care teaching hospital. The rural people are not aware of stroke symptoms due to insufficient knowledge and negligence. This results in their failure to seek medical care further leading to high mortality rate. Identifying individuals with history of stroke symptoms and early diagnosis will reduce the mortality. There is no proper stroke studies reported in Warangal region. Hence the study is conducted to educate the Patients explaining the symptoms and time crux in management of stroke and its complications.

2. Results

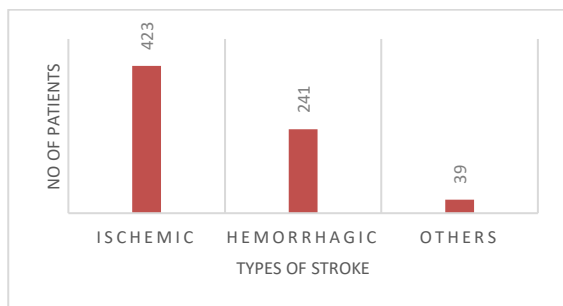Ischemic stroke is the most common type of stroke when compared to hemorrhagic and other types of stroke.

Fig 1: *Diagnosis*

The geographical distribution of stroke is estimated to be more prevalent in Warangal when compared to other regions.
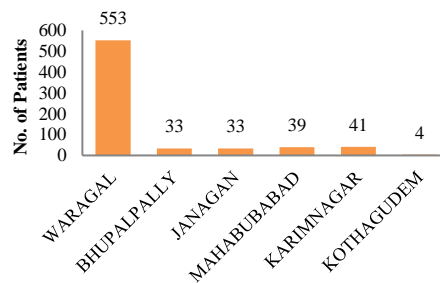

Fig 2: *Geographical distribution*

The subjects exposed to symptoms such as weakness of upper and lower limbs, slurred speech and deviation of mouth as follows.
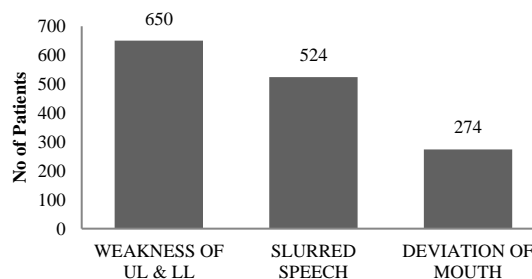

Fig 3: *Symptoms*

Out of all 703 patients, male patients are more likely to be proned to stroke compared to female patients

Maximum number of patients was presented with risk factor of hypertension (409) and least number of patients with diabetes.
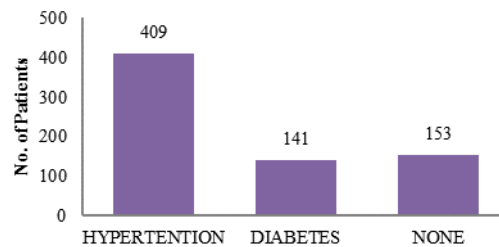

Fig 4: *Risk factors*

The mean age of study population (n= 703) was 56.8($\pm$) 11.9 years. Majority of the patients are between the age group of 51-60 years

Subjects with social habits like alcoholism, smoking and gutkha chewing are estimated to be more prone to stroke

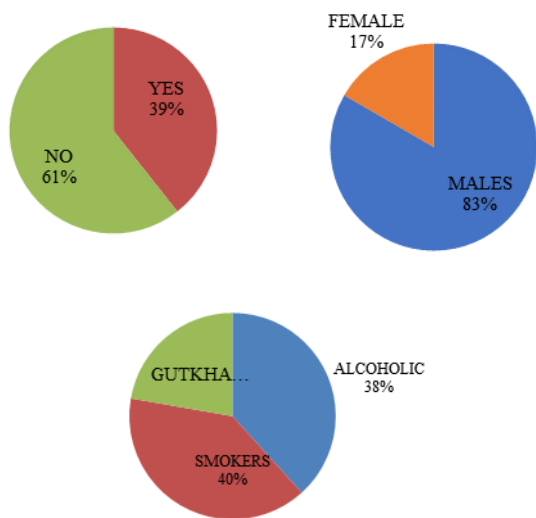In this study out of 705 patients, 277 (39%) patients were receiving physiotherapy for the recovery of symptoms.

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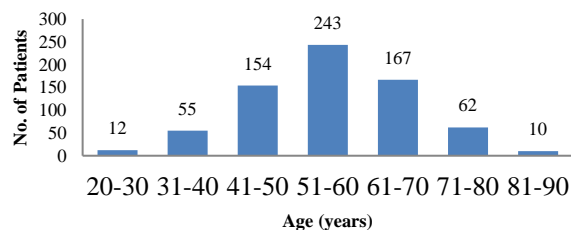**Fig 3:** *Physiotherapy, Gender distribution Social history of samples*

Fig 1: *Distribution of Age*

3. Discussion

The main finding of this study is that the incidence of ischemic stroke was found to be highest among other types of stroke. Warangal region is found to have higher incidence of stroke rates in the study. 703 samples were included in the study, among them 586 are males and 117 are females, which tells that prevalence of stroke is higher in males when compared to females.

Age groups of 51-60 years are in larger numbers due to hypertension and social habits like alcoholism and smoking.

The modifiable risk factor was found in the study is hypertension. Out of 703 patients, 409 patients were hypertensive. From this, it is clear that the incidence of stroke was higher in hypertensive patients who are complementary with the study conducted by Maliha Fathimaet al., 2018[19].

Our study showed that 277 out of 703 patients are receiving physiotherapy because of lack of knowledge regarding stroke symptoms and lack of proper rehabilitation centres in rural areas.

The majority of the patients in the present study experienced weakness of limbs as the most common symptom followed by slurred speech and deviation of mouth.

Smoking and Alcoholism were found to be the risk factors in the study. Out of 703 patients, 541 patients are smokers which were supported by a study done by Robert et al., 1986.

The demographic details, family history, personal history, signs and symptoms were assessed and estimated the prevalence of stroke. Ischemic stroke showed a higher incidence among hemorrhagic and other types of stroke.

4. Materials & Methods

Study design: It is a prospective observational study conducted in Mahatma Gandhi Memorial Hospital, Warangal. The patients who are diagnosed with ischemic, hemorrhagic and other types of stroke were included.

Inclusion criteria: Patients diagnosed with measurable neurologic deficit, Subarachnoid hemorrhage (SAH), Intracranial hemorrhage, Stroke presenting emboli were included.

Exclusion criteria: Patients presenting with seizures, gastrointestinal hemorrhage, myocardial infarction, underlying neurologic disorder and with co morbidities (ESRD, Pregnant women, lactating mother) were excluded.

5. Conclusion

The study revealed high prevalence of stroke in Warangal population. Among them ischemic stroke was found to be highest (60.17%) than hemorrhagic (34.28%) and other types of stroke (5.54%). Major modifiable risk factors are associated with stroke symptoms. These findings suggest that target interventions aiming to reduce hypertension, smoking, psychological distress and to encourage physical activity and adherence to Mediterranean Diet should be conducted to decrease the burden of stroke.

Acknowledgements

Conflict of Interest

The author(s) confirm that this article content has no conflict of interest.

References

1. Donald LJ, Robert A, Mercedes C, Giovanni DS, Bruce FT, Katherine FCI, Earl F, Karen F, Alan G, Kurt G, Nancy H (2009). Heart disease and stroke statistics-2009 update:A report from the American Heart Association Statistics Committee and Stroke Statistics subcommittee. Circulation. 119 (3): 121-81.
2. Shintani Y, Terao Y, Ohta H (2011). Molecular mechanisms underlying hypothermia-induced neuroprotection. Stroke research and treatment.
3. Kim JS (2014). Stroke in Asia: A global disaster. Int. J. Stroke. 9(7): 856-63.

4. Pandian JD, Sudhan P (2013). Stroke epidemiology and stroke care services in India. J. Stroke. 15(3):128.

5. MK, Fang J, Hill MD, Silver F, Richards J, Jaigobin C, Cheung AM (2005). Sex differences in stroke care and outcomes:results from the Registry of the Canadian Stroke Network. Stroke. 36(4): 809-14.

6. Goldstein LB, Adams R, Alberts MJ, Appel LJ, Brass LM, Bushnell CD, Culebras A, DeGarba TJ, Gorelick PB, Guyton JR, Hart RG (2006). Primary prevention of ischemic stroke: A guideline from the American heart association/American stroke association stroke council:Cosponsored by the atherosclerotic peripheral vascular disease interdisciplinary working group; cardiovascular nursing council; clinical cardiology council: Cosponsored by the Atherosclerotic peripheral vascular disease interdisciplinary working group; cardiovascular nursing council; clinical cardiology council; nutrition, physical activity, and metabolism council; and the quality of care and outcomes research interdisciplinary working group: The American academy of neurology affirms the value of this guideline. Stroke. 37(6): 1583-633.

7. Kajantie E, Eriksson JG, Osmond C, Thornburg K, Baker DJ (2009). Pre-eclampsia is associated with increased risk of stroke in the adult offspring: The Helsinki birth cohort study. Stroke. 40(4): 1176-80.

8. Bassetti CL,Milanova M, Gugger M (2006). Sleep disordered breathing and acute ischemic stroke: diagnosis, risk factors, treatment, evolution, and long-term clinical outcome. Stroke. 37(4): 967-72.

9. Mosca L,Manson JE, Sutherland SE,Langer RD, Manolio T, Barrett Connor E (1997). Cardiovascular disease in women:a statement for healthcare professionals from the American Heart Association. Circulation. 96(7): 2468-82.

10. Wolf PA (2003). Fifty years at Framingham:contributions to stroke epidemiology. Advances in neurology. 92: 165-72.

11. Cooper R, Cutler J, Desvigne-Nickens P, Fortman L, Havlik R, Hogelin G,Marler J, McGovern P, Morosco G, Mosca L (2000). Trends and disparities in coronary heart disease, stroke, and other cardiovascular diseases in United States:findings of the national conference on cardiovascular disease prevention. Circulation. 102(25): 3137-47.

12. Akopov SE, Simonian NA, Grigorian GS (1996). Dynamics of polymorphonuclear leucocytes accumulation in acute cerebral infarction and their correlation with brain tissue damage. Stroke. 27(10): 1739-43.

13. Reisi P, Babri S, Alaei H, Sharifi MR, Mohaddes G, Lashgari R, (2008). Effects of treadmill running on short-term pre-synaptic plasticity at dentate gyrus of streptozotocin-induced diabetic rats. Brain research.: 1211: 30-6.

14. Maurice-Williams RS (2001). Bedside treatment of chronic subdural hematoma? The Lancet. 357(9265): 1308-9.

15. Runchey S, McGee S (2010). Does this patient have hemorrhagic stroke? Clinical findings distinguishing hemorrhagic stroke from ischemic stroke. JAMA. 303(22): 2280-6.

16. Bansal S, Sangha KS, Khatri P (2013). Drug treatment of acute ischemic stroke. American Journal of Cardiovascular Drugs. 13(1): 57-69.

17. Amarenco P (2006). For the Stroke Prevention by Aggressive Reduction in Cholesterol Levels (SPARCL) Investigators:high-dose atorvastatin after stroke or transient ischemic attack. Nengl J. Med. 355: 549-59.

18. Inzitari D, Poggesi A (2005). Calcium channel blockers and stroke. Aging clinical and experimental research. 27(4 suppl): 16-30.

19. Maliha Fathima, Sanjeeda Najeeb, Sumaiya Fatima (2018). Alcohol prospective observational study on risk factors and management of stroke at a tertiary care teaching hospital. 10(6).