ORIGINAL ARTICLE

FREQUENCY OF MODIFIABLE RISK FACTORS IN STROKE PATIENTS ADMITTED TO TEACHING HOSPITALS IN BANNU DISTRICT

Abdul Razzaq, Mian Akhtar Ali Kakakhail, Fawad Ahmad, Mohammad Ishaq
Department of Medicine, Radiology and Physiology, Bannu Medical College, Bannu, Pakistan

ABSTRACT

Background: Stroke is one of the common causes of admission in medical and neurological wards in the hospitals. The aim of this study to assess the prevalence of modifiable risks factors in stroke patients admitted to the teaching hospitals in Bannu District. **Methods:** This descriptive study was conducted on 56 patients admitted with stroke to medical units of District Headquarter and Khalifa Gul Nawaz Teaching Hospitals, Bannu, from January 2011 to December 2011. History and thorough clinical examination were performed on all patients to collect all relevant information. Necessary laboratory investigations were done. CT was performed to establish the diagnosis of stroke. All the findings were recorded on printed proformas. Patients with focal neurological deficit for more than 24 hours, presenting within 7 days of onset, irrespective of age and sex were included in the study. Those with tubercular meningitis, brain tumor, encephalitis, trauma or multiple sclerosis were excluded. **Results:** Out of 56 patients, 34(60.71%) were males and 22(39.30%) females, with male to female ratio of 1.5:1. Mean age was 57.5 years. Cerebral infarction was found in 37(66%), while hemorrhagic stroke in 19(34%) patients. The risk factors were hypertension in 36(64%),diabetes mellitus14(25%), hyperlipidemia10(18%),and cardiovascular diseases 10(18%). **Conclusion:** The major modifiable risk factors for stroke in our set-up are hypertension, diabetes mellitus, cardiovascular disease and hyperlipidemia.

KEY WORDS: Stroke, Risk factors, Modifiable risk factors.

INTRODUCTION

Stroke, also called cerebrovascular accident (CVA) is an acute neurological dysfunction of the brain which is usually due to disruption of the cerebral blood supply.[1] Traditionally, it is divided into ischemic (85%), and hemorrhagic (15%). It is the second leading cause of death worldwide.[2,3] Approximately 15 million people worldwide suffer from stroke annually, of these more than 5.5 million die,[4] another 5 million are left with permanent disability, posing burden on the family and community.[5] Despite the decline of this disease in developed countries, its burden in South Asian countries has increased and is expected to rise.[6] In Pakistan no exact incidence of stroke is available, but there is estimated incidence of 250/100,000, translated to 350,000 new cases every year.[7]

There are several risk factors which predispose to stroke. These can be broadly divided into non-modifiable and modifiable. The non-modifiable are, age, sex, race, ethnicity, and family history of stroke. Major modifiable risk factors are hypertension, diabetes, cardiovascular diseases, hyperlipidemia, cigarette smoking, alcohol, and sedentary life style.[8] Prevention of risk factors remains an important approach to reducing the incidence, recurrence, disability and mortality of stroke.[9]

This study aimed to find out the prevalence of common modifiable risk factors among patients admitted to teaching hospitals of Bannu.

MATERIAL AND METHODS

This study descriptive was conducted from January 2011 to December 2011, on the patients admitted to the medical wards of DHQ Teaching Hospital, and Khalifa Gul Nawaz Teaching Hospital Bannu. History and thorough clinical examination was performed and recorded on printed proforma to gather relevant information. CT scan brain was done to confirm the diagnosis of stroke. Other necessary investigations were also performed for the evaluation of risk factors. All the patients with tubercular meningitis, brain tumor, encephalitis, multiple sclerosis, were excluded. Stroke was defined as focal neurological deficit due to vascular event in the brain. Hypertension was diagnosed as patient taking anti-hypertensive drugs, or blood pressure 140/90 mmHg or more. Diabetes mellitus was diagnosed according to WHO criteria.

Hyperlipidemia was diagnosed if the patient total cholesterol, LDL, and HDL cholesterol were abnormal according to NCEP 111 Guidelines.

RESULTS

A total of 56 patients with stroke confirmed on CT brain were selected for the study. Out of these, 34 (61%) were males and 22 (39%) females, with male to female ratio of 1.5:1. The mean age was 57.5 years.

Cerebral infarction was found in 37 (66%) patients, while 19 (34%) were having hemorrhagic stroke.

Hypertension was the most common risk factor, 36 (64%). The number of male hypertensive patients was double than females (24 male 12 female). Hypertension was present in 15 (41%) of infarct and 14 (74%) of hemorrhagic strokes. Other risk factors were diabetes mellitus in 14 (25%), hyperlipidemia in 10 (18%), cardiovascular disease in 10 (18%), previous history of TIA or stroke in 4 (7%), cigarette smoking in 3 (5%), and obesity in 2 (3.5%).

Table 1: Age and sex distribution of patients with stroke.

Age group (years)	Sex		Total
	Male	Female	
25-34	1	2	3
35-44	2	0	2
45-54	3	1	4
55-64	13	7	20
65-74	9	9	18
>75	3	6	9
Total	34	22	56

DISCUSSION

Stroke is the leading cause of morbidity and mortality in the elderly people. The stroke incidence increases with advancing age, more in males than females.[10] Our study showed 34 males and 22 females.The age range was 25-90 years with a mean age 57.5 years which is lower than Kamal et al (63.4 years) and much lower than USA which is 70 years. This difference may be due to better awareness and control of risk factors in USA. The other reason may be that most of our people and especially females are uneducated and they do not know exactly of their ages. In our study male to female ratio was 1.5:1, which is similar to other studies.[10-12]

Ischemic stroke was reported in our study as 66% and hemorrhagic stroke as 34%, which is similar to other studies.[10,11] In our study we found 5% case of subarachnoid hemorrhage.

Among the modifiable risk factors, hypertension was the most common which is similar to other studies in Pakistan.[10-13] Scientific review has shown that hypertension, smoking and physical inactivity increases the risk of stroke by a relative risk of 25-40%, 25%, and 25% respectively. Blood pressure reduction of 5-6 mmHg systolic and 2-3 mmHg diastolic would result in 40% fewer strokes.[14] Diabetes was reported in our study as 25%, which is lower than other local studies.[15] Diabetic patients are at greater risk for stroke as these patients may have hypertension and hyperlipidemia.

Hyperlipidemia was present in 18% in our study which closely resemble another local study conducted in nearby district D.I.Khan by Kamal et al.[10]

Other risk factors were, cardiovascular diseases (16%), of these 10 patients, 3 were young and suffering from atrial fibrillation. Patients with valvular atrial fibrillation have 17 fold higher risk of

Table 2: Modifiable risk factors in stroke patients (n=56).

S. No.	Risk factors	Males	Females	Total	Percentage
1	Hypertension	24	12	36	64%
2	Diabetes mellitus	8	6	14	25%
3	Hyperlipidemia	6	4	10	18%
4	Cardiovascular diseases	7	3	10	18%
5	Previous TIA/stroke	3	1	4	7%
6	Obesity	2	0	2	3.5%
7	Cigarette smoking	3	0	3	5%

acquiring stroke. In our study all the cases of atrial fibrillation were of valvular origin.

Although cigarette smoking is an important risk factor for ischemic heart disease and stroke, our study showed 5% of smoking which is lower than other studies (44.4-53%),[16] this may be due to the reason that people in Bannu district use oral snuff (*naswar*) instead of smoking.

In our study obesity was 3.5%. It may be due to the reason that most of our patients belonged to rural areas.

No case of alcohol intake was found in our study. Alcohol consumption of more than 60 g/day is associated with increased risk of stroke.[17]

CONCLUSION

The major modifiable risk factors for stroke in our set-up are hypertension, diabetes mellitus, cardiovascular disease and hyperlipidemia.

Awareness of these risk factors will be helpful in prevention of stroke.

REFERENCES

1. Devenport R and Dennis M. Neurological emergencies: acute stroke. Neurol Neurosurgery psychiatry 2000; 68: 277-88.
2. Allen CMC, Lueck CJ, Dennis M. Neurological disease. In: Davidsons's Principles and Practice of Medicine. 20th edn. 2006. p. 1200-10.
3. Murry CJ and Lopez AD. Mortality by cause for eight regions of the world. Global burden of disease study. Lancet 1997; 349: 1269-76.
4. World Health Organization. The World Health Repot 2000.Geneva: WHO, 2000.
5. Adams RJ, Mckia VC, Branbillar D. Stroke prevention trail in sickle cell anemia.Controlled clinical trials. New Eng J Med 1998; 19: 110: 29.
6. Bulatau RA and Stefan's PW. Global estimates and projections of mortality by cause. Washington DC: population, health & nutrition department; World Bank, pre-working paper 1992; 1007.
7. www.pakstroke.com. An official website of Pakistan Stroke Society.
8. Pakistan Stroke Society. 14th annual meeting, Pakistan society of Neurology, March 24-25, 2007. Avari Hotel Lahore Organizer: Professor Nasri.
9. Straus SE, Magumdar SR, Mc Alistair FA.New Evidence for stroke prevention.JAMA 2002; 288:1388-95.
10. Kamal A, Aslam S, Khattak S. Frequency of risk factors in stroke patients admitted in DHQ Hospital D.I.Khan.Gomal J Med Sci 2010; 8: 200-3.
11. Feign V, Bennet D, Berken Willo S, Purag V. Worldwide stroke incidence and case fatality in 56 population basedstudies.A systemic review. Lancet Neurol 2009; 8: 355-69.
12. Ahmed A, Yousuf M, Iqbal J, Khan MM.Frequency of known risk factors for stroke in poor patients of a teaching hospital in District Swat. J Saidu MedColl2007; 1: 52-6.
13. Sacco RL, Benjamin EJ, Broderic JP. Risk factors. Stroke 1997; 28: 1507-17.
14. Hassan SR, Ghouri ASA. Frquency of known risk factors of stroke and its outcome in patients admitted in Sindh government Qatar Hospital Karachi. Pakistan J Med Sci 2007; 23.
15. Shreen A, Shabir G, Rehman S, Shah NH, Zarif M. Hypertension in acute ischemic and hemorrhagic stroke JPMI 2005;19:220-5.
16. Collin R, Peto R, McMahon S. Blood pressure Stroke and Coronary Artery Diseases. Part 2. Short term reduction in blood pressure. Overview of randomized drug trails in their epidemiological context. Lancet 1990; 335: 827-38.
17. Neil B, Mac Mahon S, ChapmanN.Effects of ACE inhibitors, Calcium antagonist and other blood pressure lowering drugs: Results of prospectively designed overviews of randomized trails. Blood pressure lowering treatment list collaboration. Lancet 2005:356:1955-64.
18. Reynolds K, Lewis LB, Nolen JDL, Kinney GL, Sathya B, He L. Alcohol consumption and risk of stroke. JAMA 2003; 289: 579-88.
19. Khan J, Rehman AU, Ali SA, Jilani A. Frequency of hypertension in stroke patients presenting at Ayub Teaching Hospital. J Ayub Med Coll Abbottabad 2006; 8: 59-61.
20. Khan H, Afridi AK, Ashraf S.A hospital based study on stratification of risk factors for stroke in Peshawar. Pak J Med Sci 2006; 122: 304-7.
21. Bashrat RA, Yousaf M, Iqba MM. Frequency of known risk factors for stroke in poor people admitted to Lahore General Hospital in 2000.Pak J Med Sci 2002; 18: 280-3.

Corresponding author:

Dr. Abdul Razzaq

Assistant Professor Medicine

Bannu Medical College

Bannu, Pakistan

E-mail: razaq27@hotmail.com