The Pattern and Presentation of Stroke in Federal Teaching Hospital Abakaliki (FETHA) South-East Nigeria

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Abstract
Stroke is a common neurologic disorder and it is the third leading cause of mortality worldwide after ischaemic heart disease and cancer. Males are predominantly affected and ischaemic stroke is more prevalent than haemorrhagic stroke. This study determined the pattern and presentation of stroke in Federal Teaching Hospital Abakaliki (FETHA) South-East Nigeria. It was a retrospective, descriptive and hospital based study. The stroke register of the neurology unit was reviewed and relevant data were extracted and analyzed using Statistical Package for Social Sciences (SPSS) version 19 software. The sex ratio was M:F =3:2 and the peak age prevalence of stroke was the 7th decade. Ischaemic stroke was present in 65%, while intracerebral haemorrhage and subarachnoid haemorrhage were 31% and 4% respectively. Stroke constituted 12% of medical deaths with 30 day case mortality rate of 15%. Stroke is highly prevalent in Abakaliki south east Nigeria. The 30 day case mortality rate is relatively low in this study. There should be regular public enlightenment for stroke prevention and prompt referral of stroke patients to a stroke unit for adequate management.
Keywords: stroke, ischaemic, haemorrhagic, Abakaliki, South-East, Nigeria

Introduction

Stroke is defined as rapidly developing clinical signs of focal (or global) disturbance of cerebral function, with symptoms lasting 24 hours or longer or leading to death, with no apparent cause other than of vascular origin (WHO MONICA Project Investigators 1988). It affects both gender and it's increasingly common from the sixth decade, although young patients are not exempted (Schulte BPM 1989). People of African descent are more susceptible than their Caucasian counterparts (Agyemang C & Addo J 2009).

The incidence of stroke is 254/100,000 person years in the United Kingdom (UK), 330/100,000 in Taiwan, and varies between 100 and 300/100,000 in the United State of America (USA) (Aho K et al 1980).

In Nigeria, the report of a Stroke Registry in Ibadan gave the incidence of stroke as 26/100,000 populations in 1977 (Osuntokun BO 1977) but the result of a recent study in an urban community in Lagos gave an overall crude prevalence rate of 1.14/1,000 (Danesi M & Okubadejo N 2007).

According to World Health Organization (WHO), stroke is the third leading cause of mortality worldwide (after cancer and ischemic heart disease), accounting for approximately 4.6 million deaths annually (Bonita R 1997). In industrialized countries, it accounted for about 10% of all deaths (Broderick J et al 2007), and in Nigerian hospitals, it constituted 3.7% of emergency admissions, 8.7% of medical admissions, and 4-17% of medical deaths (Ogun SA 2000). Elsewhere in Africa, it accounted for 3.5% of all causes of hospital deaths; 8% of admissions at Korle Bu Hospital, Ghana, and 3.7% of total admissions in Ugandan hospitals (Osuntokun BO 1977). Case fatality for stroke is generally accepted to be 12% within the first 7 days and 19% at 1 month for first-ever stroke, falling drastically to about 9% per annum after the first 30 days (Venables G 2002).

In Caucasian populations, approximately 80% of all strokes are ischemic, 10%-15% intracerebral hemorrhage (ICH), 5 % subarachnoid hemorrhage (SAH), and the rest is due to other causes of stroke (Sudlow CLM & Warlow CP 1997). Studies from Asian countries indicate that the proportion of ICH is higher than in Caucasians with approximately 20 % to 30% being hemorrhagic (Hu HH et al 1992). In Nigeria, the proportions of stroke types are similar to that of Asian countries. In a study in south west Nigeria, 64.4% had ischemic stroke while 34.7% had hemorrhagic, with intracerebral hemorrhage accounting for 31.7% and subarachnoid hemorrhage accounting for 3.0% (Desalu OO et al 2011).

There has not been any study on stroke in Abakaliki south east Nigeria. Hence, the need for this study on the pattern and presentation of stroke in a tertiary health centre in Abakaliki south east Nigeria.

Methodology

The stroke register of the neurology unit of Federal Teaching Hospital Abakaliki (FETHA) was reviewed from 1st August 2012 to 30th April 2013. The patients were drawn from either the casualty, medical outpatient clinic or the medical wards. Relevant data like biodata, and clinical features of the patients were extracted and analyzed. The diagnosis of the type of stroke was made using World Health Organization (WHO) criteria. The data was analyzed using SPSS version 19.

Results

A total of 108 patients with stroke made of 64 (59%) males and 44 (41%) females (M:F = 3: 2) were seen over the study period. The above constituted 11.6% of the medical admission over the period. The age range was 40-95 years with mean age of 61.59±12.54years (M= 62.20years, F= 61.76years). The age distribution is shown in table 1.

Seventy (65%) had ischaemic stroke, 33 (31%) had intracerebral haemorrhage (ICH) while 5 (4%) had subarachnoid haemorrhage (SAH). The age distribution of stroke types is as shown in table 2 while the sex distribution of stroke types in table 3.

Seventy (65%) patients presented with Hemiparesis(plegia). The details of the clinical features are shown in table 4.

The identified risk factors for stroke were hypertension (82), diabetes mellitus (42), previous stroke (24), and dyslipidaemia (12). In 5 patients, there were no identified risk factors. Stroke constituted 12% of medical deaths with 30 day case mortality of 15%.

Discussions

This is the first study on the pattern and presentation of stroke in Abakaliki South East Nigeria. A total of 108 patients with stroke were seen over a period of 9 months. This is high compared to other hospital based studies which reported lower frequencies per unit time (Desalu OO et al 2011). The disparity could be because this study was carried out in the only tertiary health centre in Ebonyi state which receives many referrals. Also, it could suggest increased stroke prevalence due to increasing major risk factors (hypertension, diabetes mellitus) for stroke. Stroke constituted 11.6% of medical admissions which is close to 8.7% reported in some hospital studies (Ogun SA 2000) in Nigeria but higher than 4.5% reported in South West Nigeria (Desalu, et al 2011). This further strengthens the argument of higher prevalence of stroke in Abakaliki South East Nigeria. The male to female sex ratio of 3:2 is in keeping with other studies that reported male preponderance (Owolabi LF & Nagoda M 2012). The male sex has been listed as a risk factor for stroke (Gorelick PB 1995).

The age range in this study was 40- 95years with mean age of 62yrs. This is in keeping with other studies that reported mean age of 56- 68years (Watila MM & Nyandaiti YW 2011). The above age range is where the risk factors for stroke are most prevalent.

The prevalence of stroke increased with age. The peak age prevalence (40%) was at the 7th decade of life. This is in keeping with a study in south west Nigeria which reported same trend with 33.7% between 60- 69 age range (Desalu et al 2011). The above could be from increased risk factors for stroke with increased age and also decreased life expectancy in Nigeria. This explains why the prevalence reduced after the 7th decade of life.

Seventy (65%) had ischaemic stroke while 33(31%) and 5(4%) had intracerebral haemorrhage (ICH) and subarachnoid haemorrhage (SAH) respectively. This is similar with a study in south west Nigeria which reported 64%, 31% and 3% for ischaemic, ICH and SAH respectively (Desalu et al 2011).

 Fifteen (71%) of those <50yrs and 26% of those ≥50yrs had haemorrhagic stroke. This trend suggests that increasing age (or risk factors associated with age) increases the likelihood of infarct more than ICH. This is similar to other studies both in north western Nigeria (Owolabi LF & Nagoda M 2012) and in the United States of America (USA) (Jacobs BS & Boden-AIbala B 2002). Forty (63%) males and 30 (68%) of females had ischaemic stroke. There is no significant sex predilection to particular type of stroke. This is in keeping with a finding in south west Nigeria (Watila MM & Nyandaiti YW 2011).

Hemiparesis(plegia) was present in 70% of the patients and is the most common symptom of stroke in this study. This strengthens its sensitivity for the diagnosis of stroke.

Hypertension was the most prevalent risk factor and it was present in 76% of the patients in this study. This finding closely approximates other studies that reported 85.5% (Desalu et al 2011).

The risk of stroke has been strongly related to both systolic and diastolic blood pressure (Walker R 1994). A rise of 10 mmHg in the mean arterial pressure leads to about 20 to 30% increase in stroke risk (Sacco RL).

Diabetes mellitus (DM) was the second most prevalent (39%) risk factor. This is close to 23.8% in the south west Nigeria where DM was also ranked second (Desalu et al 2011) but higher than 8% in the North Eastern Nigeria (Ogun SA & Ojini FI 2005). DM is a major risk factor for the development of atherosclerosis and the excess risk of stroke in patients with diabetes mellitus is about four times higher when compared with normal individuals in a general population (Hasan SR & Khan GAS 2007). Therefore, it is vital to ensure good glycaemic control in those with DM to prevent the development of stroke. The 30 day hospital case mortality rate in this study was 15% and it closely approximates the generally acceptable 30 day case mortality of 19% (Venables G 2002). This mortality was lower than other studies that reported 24- 38% (Njoku CH & Aduloju A 2004). The above finding could result from the fact that majority of the patients were managed with a defined stroke management protocol in a neurology unit. Stroke constituted 12% of all medical deaths. This is similar to 4-17% reported in some other hospital based studies in Nigeria(Ogun SA 2000).

Conclusions and Recommendations

This study showed that stroke is highly prevalent constituting 11.6% of medical admissions in Abakaliki south eastern Nigeria. The peak age incidence is the 7th decade with male preponderance. Ischaemic stroke is more prevalent than haemorrhagic stroke though not as high as the Caucasians. It is recommended that public education be done regularly with emphasis on screening for the risk factors for stroke. The risk factors identified should be well controlled. The 30 day case mortality is relatively low because most the patients were managed in a stroke unit with a defined stroke management protocol. It is also recommended that stroke patients should be referred early to a stroke unit for proper management because "time is brain".

References

1. Aho, K., Harmsen, P., Hatano, S., Marquardsen, J., Smimov, V & Strasser T, *et al*. (1980). 'Cerebrovascular disease in the community: Results of a WHO collaborative study'. Bull World Health Organ, vol. 58, pp. 113-130.

2. Agyemang, C, Addo, J, Bhopal, R, Aikins Ade, G & Stronks K.. (2009). 'Cardiovascular disease, diabetes and established risk factors among populations of sub-Saharan African descent in Europe: A literature review'. Global Health. Vol. 5, pp. 7.

3. Bonita R. (1997). 'Epidemiology of stroke'. Lancet vol. 349, pp. 1269-1276.

4. Broderick, J, Connolly, S, Feldmann, E, Hanley, D, Kase, C, Kase C, *et al*. (2007). 'Guidelines for the management of spontaneous intracerebral hemorrhage in adults: 2007 update: A guideline from the American Heart Association/ American Stroke Association Stroke Council, High Blood Pressure Research Council, and the Quality of Care and Outcomes in Research Interdisciplinary Working Group'. Circulation vol. 116, pp. 391-413.

5. Danesi, M, Okubadejo, N & Ojini F.(2007). ' Prevalence of stroke in an urban, mixed-income community in Lagos, Nigeria'. Neuroepidemiology vol. 28, pp. 216-223.

6. Desalu, O.O., Wahab, K.W., Fawale, B., Olarenwaju T.O., Busari, O.A., Adekoya, A.O., et al. (2011). 'A review of stroke admissions at a tertiary hospital in rural Southwestern. Nigeria'. Annals of African Medicine vol. 10, no. 2, pp. 80-85.

7. Gorelick PB. (1995). 'Stroke prevention'. Arch Nuerol vol. 52, pp. 347-355.

8. Hasan, S.R & Khan, G.A.S. (2007). 'Frequency of known risk factors of stroke and its outcome in patients admitted in Sindh Government Qatar hospital Karachi'. Pak J Med Sci vol. 2, pp. 634-636.

9. Hu, H.H., Sheng, W.Y., Chu, F.L., Lan, C.F., Chiang, B.N., Lo, Y.K et al. (1992*). 'Incidence of stroke in Taiwan'. Stroke vol. 23, pp. 1237-1241.

10. Jacobs, B.S., Boden-AIbala, B., Lin, I.F & Sacco, R.F. (2002). 'Stroke in the young in the Northern Manhattan Stroke Study'. Stroke vol. 33, no. 12, pp. 2789-2793.

11. Njoku, C.H & Aduloju, A.B. (2004). 'Stroke in Sokoto, Nigeria: a five year retrospective study'. Annals of African Medicine vol. 3, no. 2, pp. 73-76

12. Ogun SA. (2000). ' Acute stroke mortality at Lagos University Teaching Hospital-a five year review'. Nig Q J Hosp Med vol. 10, pp. 8-10.

13. Ogun, S.A., Ojini, F.I., Ogungbo, B., Kolapo, K.O & Danesi MA. (2005). 'Stroke in South West Nigeria: A 10-Year Review'. Stroke vol. 36, pp. 1120-1122.

14. Osuntokun BO. (1977). 'Stroke in the Africans'. Afr J Med Sci vol. 6, pp. 39-53.

15. Owolabi, L.F & Nagoda, M. (2012). 'Stroke in developing countries: Experience at Kano, Northwestern Nigeria'. Sudan J of Med Sc. vol. 7, no. 1, pp. 9-14

16. Sacco RL. (1995). 'Risk factors and outcome for ischemic stroke'. Neurology vol. 45, pp. 10-14.

17. Schulte, B.P.M. (1989). 'Neuroepidemiology of cerebrovascular disease: An overview in advances in neurology'. Chopra JS, editor. Proceedings of the XIVth World Congress of Neurology, New Delhi, India pp. 3.

18. Sudlow, C.L.M & Warlow, C.P. (1997). 'Comparable studies of the incidence of stroke and its pathological types. Results from an international collaboration'. Stroke vol. 28, pp. 491-499.

19. Venables G. (2002). 'Prognosis, outcome and recurrence of stroke'. Stroke Series vol. 9, pp. 103-105.

20. Walker R. (1994). 'Hypertension and stroke in sub-Saharan Africa'. Trans R Soc Trop Med Hyg vol. 88, pp. 609-611.

21. Watila, M.M., Nyandaiti, Y.W., Bwala, S.A & Ibrahim, A. (2011). 'Gender variation in risk factors and clinical presentation of acute stroke, Northeastern Nigeria'. Journal of Neuroscience and Behavioural Health vol. 3, no. 3, pp. 38-43.

22. WHO MONICA Project Investigators. (1988). 'The World Health Organization MONICA Project (Monitoring trends and determinants in cardiovascular disease)'. J Clin Epidemiol vol. 41, pp. 105-114.

Table 1: Age distribution

Age range	N(%)
40- 49	21 (19)
50- 59	22 (20)
60- 69	43 (40)
70- 79	14 (13)
80- 89	4 (4)
90- 99	4 (4)
Total	108 (100)

Table 2: Age distribution of stroke type

Age range	Ischaemic n (%)	ICH n (%)	SAH n (%)	Total N (%)
40- 49	6 (29)	15 (71)	-	21 (100)
50- 59	10 (47)	9 (40)	3 (13)	22 (100)
60- 69	33 (77)	8 (19)	2 (4)	43 (100)
70- 79	14 (100)	-	-	14 (100)
80- 89	4 (100)	-	-	4 (100)
90- 99	3 (75)	1 (25)	-	4 (100)
Total	70 (65)	33 (31)	5 (4)	108 (100)

Table 3: sex distribution of type of stroke

Sex	Ischaemic n (%)	ICH n (%)	SAH n (%)	Total N (%)
Male	40 (63)	20 (31)	4 (6)	64 (100)
Female	30 (68)	13 (30)	1 (2)	44 (100)
Total	70 (65)	33 (31)	5 (4)	108 (100)

Table 4: Clinical features of stroke

Symptom/sign	n (%)
Hemiparesis(plegia)	70 (65)
Impaired consciousness	60 (56)
Dysarthria	26 (24)
Dysphasia/aphasia	22 (20)
Headache	17 (16)
Seizure	12 (11)
Vomiting	12 (11)

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