The incidence and pattern of stroke in bayelsa state, nigeria

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Citation

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Abstract

Stroke is a major cause of death in adults' world wild and it contributes to disability and reduced quality of life. In this study stroke patients constituted 2.3% of the total hospital admissions and 9.3% of medical admissions. In order to understand the pattern of stroke in Bayelsa state, a total number of 28 stroke patients out of 300 patients that were admitted over a period of seven months, between November 2007 and June 2008 at the Niger Delta University Teaching Hospital, Okolobiri were studied. Questionnaires which assessed their biodata, clinical and laboratory data's were used. Risk factors assessed were hypertension (89%), alcohol (57%), tobacco smoking (53.5%), Male factor (m: f =1.15:1). The mean age of the study group was 62.2±9. 64% of the stroke patients were in the active social segment of the society. Stroke affected more of the poor society who lived in the rural areas. The prevalence of ischaemic stroke was higher than haemorrhagic stroke. In conclusion, hypertensive heart disease was a major co-morbidity of stroke.

INTRODUCTION

A stroke is the rapidly developing loss of brain functions due to a disturbance in the blood vessels supplying blood to the brain. This can be due to ischemia caused by thrombosis or embolism or due to a hemorrhage [1] . In the past, stroke was referred to as cerebrovascular accident or CVA, but the term "stroke" is now preferred. A stroke is a medical emergency and can cause permanent neurological damage, complications and death. It is the leading cause of adult disability in the United States and Europe. It is the number two cause of death worldwide and may soon become the leading cause of death [2] . Studies carried out in 2005 revealed an estimated 16million first time stroke patients and 5.7million stroke deaths, accounting for nearly 10% of all deaths worldwide [2, 3, 4] . World health organization defined stroke as rapidly developing clinical signs of focal or global disturbance of cerebral function with symptoms lasting more than 24 hours or leading to death, with no apparent cause other than vascular origin [3] . Risk factors for stroke include advanced age, hypertension (high blood pressure), previous stroke or transient ischemic attack (TIA), diabetes, high cholesterol, cigarette smoking, atrial fibrillation, excess alcohol consumption, polycythaemia and oral contraceptive [6, 7, 8, 9] . High blood pressure is the most important modifiable risk factor of stroke [1] .

The pathophysiology of ischaemic stroke involves inability to maintain the brain homeostatic neurological deficit. Hypoxia leads to reduced ATP which causes influx of sodium into the cells (cytotoxic oedema) and the release of glutamate which further opens the membrane channels allowing influx of calcium and sodium into the cells. Calcium activates the intracellular enzymes that complete the destructive process. The destruction of the neurons is worsened by the anaerobic production of lactic acid and low PH. In haemorrhagic stroke there is explosive entry of blood into the brain parenchyma causing immediate cessation of function in that area as neurons are disrupted and white matter fibres are split apart [10] . It manifest with hemi paresis, headache, dysphasia or aphasia, cranial nerve dysfunction (The most common nerve affected is facial nerve). Point for special attention on examination includes blood pressure, heart rhythm, murmurs, peripheral pulses and bruits, jugular venous pressure, respiratory and urinary tract infections, bed sores, urinary retention and retinal changes.

In Africa, stroke account for 0.9% to 4% of all hospital admissions, and 2.8% to 4.5% of total deaths [11] . The incidence of stroke in Africa is on the increase [12, 13, 14, 15] . In Africa, access to safe and effective blood pressure control medication is limited; consequently, the mortality, case fatality and morbidity remains high [3, 16, 17] . Stroke causes great burden on the family, friends and society at large due

to long stay on bed with subsequent disability and inability to return to work [18] . In this study, we aimed at determining the prevalence, etiological factors and pattern of stroke in Bayelsa state.

MATERIALS AND METHOD

A total of 28 stroke patients made up of 15 males and 13 females (m: f = 1.15:1) were enlisted into the study on presentation at the emergency room of the Niger Delta University Teaching Hospital (NDUTH), Okolobiri. This is a young tertiary institution that receives referrals from peripheral hospitals and communities in Bayelsa state. Exclusion criteria included non vascular stroke-like conditions. Examples are space occupying lesions and subdural haemorrhage. All the patients that participated in this study were all living in Bayelsa state.

A standard questionnaire which included patients bio data, body mass index (BMI), etiological factors, types of stroke and associated morbidities was administered to the study group and each patient was requested to do serum electrolyte, urea and creatinine, Chest X-ray, echocardiography, random blood sugar, lipid profile. Computed tomography could not be done because it was not available as at the time of this study. However, the type of stroke was determined using the world Health Organisation (WHO) criteria.

RESULTS

A total of 28 stroke patients made up of 15 males and 13 females (m: f = 1.15:1) were admitted during the period of study. The result showed that 10 patients were between 40 and 55years, 11 were between 56 and 70years of age. The mean age was 62.2±9. Peak incidence of stroke for male and female were in the 7 th and 6 th decades respectively.

All the patients were married with an average of 5 children and most patients (68%) lived in the rural areas of Bayelsa State. The study population included farmers (35.8%), housewives (21.4%), civil servants (21.4%), business men and women (21.4%).

Hypertension (89%) was the commonest etiological factor causing stroke in Bayelsa state. Other risk factors included alcoholism (57.1%), tobacco smoking (53.5%), diabetes mellitus (10.7%) and hyperlipidemia (7%).

20 (71.4%) of the patients had ischaemic stroke while 8(28.6%) had hemorrhagic stroke.16 patients with ischaemic stroke had a prior transient ischaemic attack and all of them survived with residual disability while all the patients with haemorrhagic stroke died within one week on admission. All patients with hypertensive stroke also had associated hypertensive heart disease. 2 patients had obvious congestive cardiac failure.

The upper limbs were affected in 82.2%, while the lower limbs were affected in 17.8% of the patients. The facial nerve was the predominant cranial nerve affected in about 21.4% of patients.

Figure 1

Table 1: Age and Sex distribution of Stroke patients and controls (Non Stroke)

	Stroke		Non - Stroke	
Age yrs)	Male	Female	Male	Female
40 – 55	3	7	3	3
56 - 70	7	4	6	6
≥71	5	2	6	4

A total of 28 stroke patients made up of 15 males and 13 females (m: f = 1.15:1) were admitted during the period of study.10 patients were between 40 – 55years and 11 were between 56 – 70years of age. The mean age was 62.2±9. Peak incidence of stroke for male and female were in the 7 th and 6 th decades respectively.

Figure 2

Table 2: Demographic factors of stroke patients and controls

	Stroke	Non Stroke
Mean Age SD)	62.25(9.3)	60.9 (8.1)
Married with children	28 (100%)	28 (100%)
Rural dwellers	19 (68%)	19 (68%)
Urban dwellers	9 (32%)	9 (32%)
Body mass index	22.1 (2.7)	22.2 (2.6)

All the patients were married with an average of 5 children and most patients (68%) live in rural areas of Bayelsa State.

Figure 3

Table 3: Occupational distribution of stroke patients and controls

	Stroke	Non Stroke
House wife	6 (21.4%)	6 (21.4%)
Civil servant	6 (21.4%)	7 (25%)
Business	6 (21.4%)	6 (21.4%)
Farmers	10 (35.8%)	9 (32.2%)

The study population included farmers (35.8%), housewives (21.4%), civil servants (21.4%), business men and women (21.4%).

Figure 4

Table 4: Risk factors for stroke

Stroke	Non Stroke
Risk Factors	N (%)
Hypertension	25 (89.2)
Diabetes mellitus	3 (10.7)
Alcohol	16 (57.1)
Tobacco smoking	15 (53.5)
Hyperlipidaemia	2 (7)

Hypertension (89%) was the commonest etiological factor causing stroke in Bayelsa state. Other risk factors included alcoholism (57.1%), tobacco smoking (53.5%), diabetes mellitus (10.7%) and hyperlipidemia (7%).

Figure 5

Table 5: Types of stroke and the affected areas

	Ischaemic	Haemorrhagic
N (%)	20 (71.4)	8 (28.6)
TIA	16 (57.1%)	Nil
Survival	20 (71.4%)	Nil
Co-morbidities (HHD)	17 (60.7%)	8 (28.5%)
Cranial nerves	5 (17.9%)	2 (7.1%)

20 (71.4%) patients had ischaemic stroke while 8(28.6%) had hemorrhagic stroke.16 patients in the ischaemic group had a prior transient ischaemic attack and all the ischaemic stroke patients survived with residual disability while all the patients with haemorrhagic stroke died within one week on admission. All patients with hypertensive stroke also had associated hypertensive heart disease. 2 patients had obvious congestive cardiac failure.

Figure 6

Table 6: Percentages of Limbs Involvements

	Left	Right	Total
Upper Limbs	12 (42.9%)	11 (39.3%)	23 (82.2%)
Lower Limbs	2 (7.1%)	3 (10.7%)	5 (17.8%)

The upper limbs of the patients were affected in 82.2% of the patients while the lower limbs were affected in 17.8% of the patients. The facial nerve was the predominant cranial nerve in about 21.4% of patients.

DISCUSSION

Stroke patients constituted 2.3% of the total hospital admissions and 9.1% of the medical admissions within the study period. This result correlated with the report from other parts of Africa [11] . It was also observed that the incidence of stroke increased with age and the peak incidence for male and female was in the 7 th and 6 th decades respectively. This report corroborates the work of Osuntokun et al 1997 [12] , but differs in peak incidence. In his report, the peak incidence for male and female was in the 8 th and 7 th decades respectively. Nyame et al reported that the peak incidence for stroke had fallen by 10 – 15years [19] . This is in consonance with the result of our study: 21(75%), which were in the active social group of the society (40 – 70years) in Africa and corroborates the work of other researchers in Africa but at variance with the findings among Caucasians where majority of their patients are 75years and above [20, 21] .

Ignorance of common risk factors, non compliance with therapy and clinic attendance and high cost of living in the area must have contributed to the high incidence of stroke among famers, lowly paid civil servants and house wives who mainly dwell in the rural areas of Bayelsa state. This correlates with reports of other researchers in Africa [22, 23, 24, 25] . Early marriages and polygamy is responsible for the increased number of children in this area of study. The stress of having more children that they can care for could contribute to the high incidence of stroke in our environment. Hypertension was the most powerful, highly prevalent, independent modifiable risk factor and cause of stroke in this study. This is in agreement with the report of other researchers [26, 27] .

There was a higher incidence of Ischaemic stroke (71.4%) than haemorrhagic stroke (28.6%).It also revealed that the facial nerve is the commonest cranial nerve affected by stroke and that the upper limbs (82.2%) were more affected than the lower limbs (17.8%). Hypertensive heart disease (89%) was a common co-morbidity in our study. Hence, in the management of hypertensive stroke, the possibility of cardiac problems should be envisaged. 8 (28.6%) who had haemorrhagic stroke died within the first one week of admission. This agrees with the reports of other studies [11] . The mortality rate of 28.5% in this study correlates with the 14.9% - 35% reported for Africa and the developed world [11, 21] .

CONCLUSION AND RECOMMENDATION

In conclusion, hypertension was the major cause of stroke affecting the active social group (40-70years) in Bayelsa state. As a new referral centre not much patient could be got for the study and it appears that adequate access to safe and

effective medication, renewed emphasis on lifestyle changes and primary prevention of stroke and its risk factors should be emphasised. The development of policies that strengthens primary health care systems will be crucial for the prevention and control of hypertension and stroke. It is recommended that further studies be carried out to corroborate these findings

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