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Prevalence and prognosis of cerebrovascular accident in Zaria, Kaduna State, Nigeria

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Abstract

Cases of cerebrovascular accident (CVA) are a common occurrence within the population of Zaria, causing much morbidity and significant mortality. Population-based research in stroke (CVA) has provided a foundation for development of new ideas and approach aimed at preventing as much disability from stroke as is feasible. In order to determine the prevalence and prognosis of CVA in Zaria, a retrospective study of 51 patients admitted into Ahmadu Bello University Teaching Hospital (ABUTH), Tudun Wada, Zaria, Nigeria, between the period of January and December 1999 was carried out. The relationship between age, sex, occupation, possible etiologies and / or precipitating factors and prevalence of the disease was determined. Results show that the age of the patients ranged from 20 to over 100 years, with the highest occurrence of CVA in the age bracket 41-60 (37.2%) and 61-80 (41.1%). More males (56.9%) than females were affected. Housewives (45.1%) and traders (21.6%) appear to be at greater risk. Hypertension is the main factor in etiology of CVA (98.0%). Other factors: cigarette smoking, diabetes, use of oral contraceptive and heart disease, aggravate this condition. The study also revealed that management is along symptomatic and supportive lines in this centre. Prognosis was found to be about 50%. In conclusion, CVA occurs at a relatively high frequency in this area causing much disability. The disease is common among low income earners affecting males as well as females. There is also a need to improve management strategies for this disorder in this centre.

Keywords: Cerebrovascular accident; Prevalence; Prognosis; Zaria.

Introduction

Stroke is a generic term that is applied to one or more clinical syndromes that are caused by an abnormality of one or more arteries leading to the brain or of the venous channels leaving the brain (Whisnant, 1993). A stroke (CVA or brain attack) occurs when an infarct (damage) to the brain occurs, either because there is not enough blood or oxygen (non-hemorrhagic stroke) going to the brain, or due to bleeding into the brain (hemorrhagic stroke). A non-

hemorrhagic stroke is more common than a hemorrhagic stroke. Stroke causes symptoms and physical signs that are dependent on the area of the brain that suffered the injury. Some of these symptoms include: arm or leg weakness and paralysis, speech difficulties, balance problems when walking, numbness or lack of sensation, head clumsiness, sudden vision loss, confusion, room spinning, seizure and coma. After heart disease and cancer, strokes are the commonest cause of death in

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Europe and North America and they cause major handicap in about 1% of the population (Rang *et al.*, 1995). In our society, CVA is a common clinical problem and is a common cause of disability and mortality. Although statistics are hardly available, there is an increased incidence of the disease in Zaria, Nigeria, which is largely unreported in appropriate health circles. Management strategies employed are not ideal but merely supportive.

This study aims at giving an insight into the prevalence and prognosis of this leading cause of morbidity in this part of Nigeria. It will also hopefully reveal the adequacy or otherwise in management of CVA in this teaching hospital as well as possibly highlight and thus form the basis for educating the public on the risk factors associated with the disease.

Experimental

The Ahmadu Bello University Teaching Hospital (ABUTH) Tudun Wada, Zaria, was used as the study centre. It is an ideal health institution where cases of CVA are handled in this part of the country. Medication files of a total of 51 recorded cases at the Department of Clinical Medicine, ABUTH within the period of January – December 1999 were retrospectively studied. Data including family history of the patients, age, sex, occupation, predisposing and/ or risk factors were compiled. The adopted management strategies as well as the prognosis for each case were collated and analyzed. The collated data was subjected to chi-square (χ^2) statistical analysis and result compared to tabulated critical values in order to make logical inferences.

Results

The general characteristics of the patients in this study are shown in table I. Fifty-one (51) patients in all were included in the study. About 56.1% of the patient population were males, while 43.9% were females, showing an

almost equal gender distribution. The majority of the patients were within the age bracket of 41-60 (37.3%) and 61 – 80 (41.2%). The ratio of females in the age groups 21 – 40 and 81 – 100 is higher than that of males. The study shows that, exclusively low income earners are affected (Table II). Traders and farmers are among the most vulnerable accounting for 19.6% and 21.6% respectively. The incidence is however highest among the housewives (45.1%).

Risk factors found to be associated with CVA according to the study (Table III) include: High blood pressure, cigarette smoking, diabetes, heart disease, use of oral contraceptive and high body cholesterol (Obesity). The most important risk factor is hypertension 12 patients (23.5%) are afflicted by the disease with hypertension as the only cause. Only 4 (7.8%) had stroke without any history of hypertension. Other notable factors are cardiac diseases (27.5%) and smoking (15.7%). In the management of established stroke, so far the emphasis has been placed on warning signals that may be recognized as a prelude to a major stroke. In the acute stage, intensive care is needed. The airway must be cleared and maintained but assisted respiration is seldom justified. Feeding by nasogastric tube may be needed. The patient in coma will require the full routine of general care, frequent turning, catheterization and other supportive measures. Hypertension is to be controlled while avoiding sudden falls in the blood pressure. Arrhythmia or cardiac failure and diabetes need treatment. These management strategies and others are employed in ABUTH.

Prognosis for recovery is good if there is improvement, during the first days or weeks. If no recovery has taken place after a month, there may still be improvement, but it is likely to be slow. In the study, the ratio of improved (discharged) patients (51%) to not-improved (dead) (49%) was found to be almost equal (Table IV).

Table I: General characteristics of Patients

| Parameters Age (years) | Male N= 28 N (%) | Female N=23N (%) | Total (N=51) |
|------------------------|------------------|------------------|--------------|
| 1 – 20 | 0 (0.0) | 0 (0.0) | 0 |
| 21 – 40 | 2(7.1) | 7(30.4) | 9 |
| 41 – 60 | 10 (35.7) | 9(39.1) | 19 |
| 61 – 80 | 15 (53.6) | 6(26.1) | 21 |
| 81 – 100 | 0 (0.0) | 1(4.4) | 1 |
| >100 | 1(3.6) | 0(0.0) | 1 |

χ^2 – calculated (0.3137) < χ^2 – tabulated (male:female ratio) at 1 degree of freedom and 95% confidence interval (3.841) thereby accepting the Null hypothesis of no difference between the two means.

Table II: Occupational distribution of Patients

| Occupation | Number of Patients | Relative frequency % |
|----------------|--------------------|----------------------|
| Civil Servants | 6 | 11.8 |
| Housewives | 23 | 45.1 |
| Traders | 10 | 19.6 |
| Farmers | 11 | 21.6 |
| Applicants | 1 | 2.0 |
| N | 51 | 100 |

Table III: Risk or predisposing factors leading to CVA

| Factor(s) | Number of patients | Relative frequency % |
|------------|--------------------|----------------------|
| D;TIA; HTN | 2 | 3.9 |
| C;TIA | 2 | 3.9 |
| HTN;TIA | 1 | 2.0 |
| HTN,D | 3 | 5.9 |
| HTN;S;O | 4 | 7.8 |
| HTN;O | 4 | 7.8 |
| A;CD | 1 | 2.0 |
| HTN | 12 | 23.5 |
| HTN;S | 1 | 2.0 |
| HTN;CD;TIA | 2 | 3.9 |
| HTN;S;TIA | 2 | 3.9 |
| HTN;S;D | 1 | 2.0 |
| HTN;A;CD | 1 | 2.0 |
| HTN;O;D;A | 1 | 2.0 |
| HTN;CD | 4 | 7.8 |
| OC;TIA | 2 | 3.9 |
| HTN;OC | 1 | 2.0 |
| HTN;O;CD | 2 | 3.9 |
| HTN;S;CD | 1 | 2.0 |
| HTN;O;D;CD | 1 | 2.0 |
| HTN;D;CD | 2 | 3.9 |
| TIA | 1 | 2.0 |

D = Diabetes mellitus; TIA – Transient Ischaemic attack; HTN- Hypertension;
O – obesity; S – Smoking, CD- cardiac disorder; A – anaemia; OC – oral contraceptives.

Table IV: Prognosis for stroke Patients in ABUTH

| Parameter | Number of patients | Relative frequency % |
|------------------------|--------------------|----------------------|
| Improved (discharged) | 26 | 51 |
| Not – improved (dead) | 25 | 49 |

Chi – square calculated (0.0) is less than chi – square tabulated at 1 degree of freedom and 95% confidence interval (3.841), thereby accepting the hypothesis of no difference between the two means.

Discussion

Cerebrovascular accident occurs when an infarct (damage) to the brain occurs, either because there is not enough blood or oxygen (non – hemorrhagic stroke) going to the brain, or due to bleeding into the brain (hemorrhagic stroke). A Non- hemorrhagic stroke is more common than a hemorrhagic stroke. It is clear however, that the loss of neurons following interruption of blood supply to the brain is not simply due to the cells dying for lack of oxygen (Rang *et al*, 1995). A complex cascade of events takes place, including movements of ions, pH changes, generation of Mediators such as Nitric oxide (NO) and arachidonic acid, production of free radicals and the development of cerebral oedema (Kogure *et al*, 1993). There is evidence that glutamate excitotoxicity delivers the final neuronal death blow in ischaemic brain damage (Rothman and Olney 1986, McCulloch 1992).

The occurrence of hemiplegia has long been known as an occasional event in the later stages of pregnancy (Ashworth and Saunders 1985). In some cases, this is due to venous sinus thrombosis and others are caused by arterial occlusion. The same may happen to women taking the contraceptive pill, and it is aggravated by a high oestrogen content. This may be the reason why there was a high incidence of the disease in females (43.9%), and particularly in the child – bearing age bracket (21 – 40), and (41 – 60) where there are more females (30.4% and 39.1% respectively) than males. The same argument may be advanced for the relatively high frequency (45.1%) of housewives as against traders (19.6%) and farmers (21.6%) in occupational distribution of the patients.

Effective antihypertensive therapy does significantly reduce the risk of recurrent CVA by 42% (Robert 1996). This is an important component of therapy in patients with stroke.

Control of hypertension has reduced the incidence of cerebral haemorrhage (Ashworth and Saunders 1985). These are consistent with the finding in this study where only 4(7.8%) of all patients studied, had stroke without any history of hypertension. It follows also, that patients who can not afford effective antihypertensive medication (Low income earners), such as peasant farmers, traders, housewives are the most vulnerable. Following acute ischemia, the processes leading to cerebral infarct can take many hours to develop (Rang *et al*, 1995). And so there is a potential for reversing or ameliorating the process in its early stages. Prognosis for recovery is good if there is improvement during the first days or weeks. If no recovery has taken place after a month, there may still be improvement, but it is likely to be slow (Ashworth and Saunders 1985). However, most of the patients in this study were admitted into ABUTH only after weeks of the brain damage. This accounts for the poor prognosis of the disorder in this health centre as supported by the rather high mortality (49.0%) rate and high morbidity (51%) rate.

We therefore conclude that prompt and early diagnosis of hypertension, effective management of hypertension, avoidance of risk factors such as smoking, quick and effective medical intervention could be very important in reducing the morbidity and mortality associated with CVA in this part of Nigeria.

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