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Pattern of Neurological Admissions in the Tropics: Experience At Abakaliki South-Eastern Nigeria

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Abstract
The pattern of neurological admissions varies amongst different regions of the world and this depends on many factors including the regional burden of neurological disorders. This study determined the pattern of neurological admissions in a tertiary health centre in Abakaliki South Eastern Nigeria and compared it with that from other parts of the country. A review of admissions into the medical wards of the Federal Teaching Hospital Abakaliki south-eastern Nigeria from July 2012 to June 2013 was done using the register of admissions and discharges. Out of 1247 patients admitted in medical ward over the study period, 267 (21%) had neurological disorders with mean age of 55.1±20.2years. There were 154(58%) males and 113(42%) females, with a sex ratio of 4:3. Seventy two percent of the patients were between 30 and 69years. Stroke accounted for 62% (166) of the neurologic admissions. Others were central nervous system (CNS) infections, seizure disorders, hypertensive encephalopathy, myelopathies, CNS tumors and neurodegenerative disorders in descending order of frequency. The burden of neurological disorders is high with male preponderance in Abakaliki south-eastern Nigeria mainly of the productive population. Stroke and CNS infections were the most prevalent neurological disorders identified which are both largely preventable. There should be good health planning that will address the enormous neurological disease burden and emphasize preventive health.
Keywords: Pattern, neurological admissions, Abakaliki, Nigeria

Introduction

The pattern of neurological admissions varies amongst different regions of the world and this depends on many factors including the regional burden of neurological disorders. The global burden of neurological disorders is high. It accounts for 1.4% of all deaths and 28% of all disability adjusted life years (DALY)(Menken M & Munsat TL 2000).

The burden of Neurological diseases may be on the increase especially in developing countries (Reddy KS & Yusuf S 1998). Several factors have contributed to this change including improvement in maternal and child health, increasing age of populations, and newly recognized disorders of the nervous system (Menken M & Munsat TL 2000). The global prevalence of neurological disorders is projected to rise to 14.7% by 2020 (Menken M & Munsat TL 2000).

In Nigeria, neurological disorders constitute about 14- 24% of medical admissions (Ekenze OS & Onwuekwe IO 2010)(Philip-Ephraim EE & Eyong KI 2013). Stroke is the most prevalent neurological disorder accounting for 60- 70% of neurological admissions in most studies, followed by CNS infections (Talabi OA 2003).

This study was conducted at a tertiary health facility in Abakaliki South-eastern Nigeria. Abakaliki is the capital of Ebonyi state which has only one tertiary health facility. This hospital takes referral from the state which has a population of about 4,339,136 and its environs. However, the pattern of neurological admissions in this area is not known. Therefore, this study was undertaken to determine the pattern of neurological diseases warranting admission in a tertiary hospital in Abakaliki and compare it with that elsewhere in the country with the view of using the data generated as a baseline for planning purposes and for future studies.

Methodology

This is a retrospective, descriptive and hospital based study of the demographics and admission pattern of neurologic patients in the medical wards of the Federal Teaching Hospital Abakaliki (FETHA) over a 1 year period from July 2012 to June 2013.

The diagnosis of Stroke was made in the presence of sudden onset focal or global neurological deficit lasting more than 24 hours or resulting in death for which there was no apparent cause but cerebrovascular (WHO MONICA Project Investigators 1988). Diagnosis of meningitis was made in the presence of headache, stiff neck, altered mental status, white blood cells in spinal fluid with or without isolation of *pathogens* from cerebrospinal fluid (CSF), tetanus was diagnosed in the presence of acute onset of hypertonia and/or painful muscular contractions (usually of the muscles of the jaw and neck), and generalized muscle spasms without other apparent medical cause (Tetanus (Clostridium) 1996 case definition). Meningitis, encephalitis, cerebral abscess and tetanus were classified as CNS infections. Parkinsonism was diagnosed in the presence of three out of tremor, rigidity, akinesia or bradykinesia, and postural instability. The patients' case files were retrieved from the hospital medical records department and relevant data extracted (age, sex and final diagnosis) and analyzed

using Statistical Package for Social Sciences (SPSS) version 19 software. The qualitative data were expressed as frequencies and percentages, while the quantitative data were summarized as means and standard deviation. The age and sex distributions of the neurologic disorders were compared using Fisher's test and p-value <0.05 was regarded as statistically significant.

Results

A total of 1,247 patients were admitted in the medical wards within the study period. Twenty one per cent (267) of them had neurological disorder with sex ratio of 4:3 (Male= 58%: Female= 42%). The age range of the patients with neurological disorders was 16 to 90years with mean age of 55.1±20.2years (Male= 56.8years, Female= 52.8years). Seventy two percent (193) of the patients were between 30 and 69years. The details of age and sex distribution are shown in table 1.

Stroke accounted for 62% (166) of the neurologic admissions. Others were CNS infections, seizure disorders, hypertensive encephalopathy, myelopathies, CNS tumor and neurodegenerative disorders in descending order of frequencies. The details are shown in table 2.

Discussion

The study describes the pattern of neurological admissions in a tertiary health care facility in Abakaliki south-eastern Nigeria. Neurological cases constituted about 21% of all medical admissions over the study period. This is in keeping with the report of most hospital based studies in Nigeria of 14- 24% (Ekenze OS & Onwuekwe IO 2010) (Owolabi LF & Shehu MY 2010). This is higher than the projected global prevalence of neurological disorders of 14.7% by 2020 (Menken M & Munsat TL 2000). The difference is in keeping with the current trend of increasing burden of neurological disorders especially in developing countries (Reddy KS & Yusuf S 1998). Contrariwise, the difference could be more apparent than real as this study reported hospital prevalence amongst medical admissions while the projected global prevalence refers to community burden of all diseases. There is male preponderance (58%) amongst neurologic admissions in this study. This is because male sex is a risk factor for stroke which is the most prevalent neurological disorder in this study (Gorelick PB 1995). Also, it could stern from gender inequality that still exist in developing nations like Nigeria giving men more access to health care delivery than women. Male preponderance of neurological disorders was also reported in North-Western Nigeria (Owolabi LF & Shehu MY 2010) and in South-Southern Nigeria (Chapp-Jumbo Emmanuel N 2004). The age range of the patients in this study was 16- 90years with mean age of 55.1years. The majority of the patients (72%) were between 30 and 69 years which is the productive population. This portends great drain on the economy and much strain on limited health facilities. This is similar to the report in South-Southern Nigeria (Chapp-Jumbo Emmanuel N 2004).

Stroke is the most prevalent neurological disorder in this study accounting for 62% of the neurological admissions. This accounts for high disability adjusted life years (DALYs) considering high morbidity and mortality of stroke. The other neurological disorders noted in this study include central nervous system (CNS) infections (19%), seizure disorder (5%), hypertensive encephalopathy (5%), myelopathies (4%) and dementia (2%). Rarely seen neurological disorders were CNS tumors, subdural hematoma, headache, Parkinson disease, and motor neuron disease. This is in keeping with other hospital based studies in Nigeria which identified stroke as the most prevalent neurological disorder followed by CNS infections (Owolabi LF & Shehu MY 2010). Also, a hospital based study in Ethiopia reported stroke to account for 45% of neurological admissions (Lester FT 1979). CNS infections currently rank high in neurological burden because of Human immunodeficiency virus/Acquired immune-deficiency syndrome (HIV/AIDS) pandemia. On the contrary, it is not surprising that seizure disorder and headache ranked low in this study despite their high prevalence (Tegueu CK & Nguefack S 2013). Both disorders most frequently present in the clinic and would have been excluded from this study.

In conclusion, the burden of neurological admissions is high in Abakaliki south-eastern Nigeria with male preponderance and mainly affecting the productive population. Stroke and CNS infections were the most prevalent neurological disorders identified which are both largely preventable.

There should be good health planning that will be able to address the enormous neurological disease burden and also that will emphasize preventive health.

Regional well equipped stroke centre should be established to take care of the enormous stroke burden. Also grass root campaign against the spread of HIV/AIDS, diagnosis and treatment of common risk factors for stroke like hypertension and Diabetes mellitus should be intensified.

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Table 1: Age and sex distribution

Age range	Male n(%)	Female n(%)	Total n(%)
10-19	1(0.37)	1(0.37)	2(0.75)
20-29	11(4.12)	11(4.12)	22(8.24)
30-39	8(3.00)	16(5.99)	24(8.99)
40-49	21(7.87)	19(7.12)	40(14.98)
50-59	39(14.61)	23(8.61)	62(23.22)
60-69	42(15.74)	25(9.36)	67(25.09)
70-79	19(7.12)	13(4.87)	32(11.99)
80-89	11(4.12)	4(1.50)s	15(5.62)
90-99	0(0.0)	1(0.37)	1(0.37)
Total	154(57.68)	113(42.32)	267(100)

Table 2: Sex distribution of neurological disorders

Diagnosis	Male n(%)	Female n(%)	Total N(%)	p-value
Stroke	91(34.08)	72(26.97)	163(61.05)	0.6116
CNS infections	28(10.49)	24(8.99)	52(19.48)	0.6116
Seizure disorder	11(4.12)	3(1.13)	14(5.25)	0.1631
Hypertensive encephalopathy	8(3.00)	6(2.25)	14(5.25)	1.0000
Myelopathies	6 (2.25)	5(1.87)	11(4.12)	1.0000
Dementia	3(1.13)	2(0.75)	5(1.88)	1.0000
CNS Tumour	2(0.75)	1(0.38)	3(1.13)	1.0000
Subdural hematoma	2(0.75)	-	2(0.75)	1.0000
Headache	1(0.38)	-	1(0.38)	1.0000
Parkinson disease	1(0.38)	-	1(0.38)	1.0000
Motor neuron disease	1(0.38)	-	1(0.38)	1.0000
Total	154(57.68)	113(42.32)	267(100)	

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