PATTERN OF PAEDIATRIC NEUROLOGICAL EMERGENCIES IN UNIVERSITY OF UYO TEACHING HOSPITAL, UYO, AKWA-IBOM STATE OF NIGERIA

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ABSTRACT

Background: *Neurological problems are responsible for a significant number of emergencies in children. Knowledge of its pattern is important for effective preventive strategies, healthcare planning and delivery.*

Aim: *To determine the pattern of paediatric neurological emergencies seen in University of Uyo Teaching Hospital, Uyo.*

Method: Health information records of children with paediatric neurological problems who presented in the Children's Emergency Unit (CHEU) of University of Uyo Teaching Hospital (UUTH) over a two year period between January 2007 and December 2008 were retrieved. Data obtained were age, gender, diagnosis made, duration of hospitalisation and outcome.

Results: Of the one thousand eight hundred and thirty three (1833) patients seen during the study period, one hundred and ninety six (196) had neurological problems giving a prevalence rate of 10.7%. Majority (78.6%) of the patients were under the age of five years. Males were more affected with a male to female ratio of 1:0.75. The three commonest neurological emergencies encountered were febrile convulsion (42.3%), bacterial meningitis (21.9%) and cerebral malaria (17.9%). Duration of hospitalization ranged from one to thirty days with a mean of 4.5days. Mortality rate of 6.1% was recorded with cerebral malaria and bacterial meningitis responsible for 83.3% of the deaths.

Conclusion: *Febrile convulsion is the commonest neurological emergency recorded in this study. Since malaria is the commonest cause of febrile convulsion in Nigerian children, its prevention and control could be achieved by provision and proper utilisation of insecticide treated nets as well as early diagnosis and treatment.*

Keywords: *Neurological emergencies, pattern, Paediatric, Uyo*

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INTRODUCTION

Neurological problems account for a significant number of admissions in the Paediatric Emergency Unit.[1,2] Worldwide, the prevalence rate and pattern vary depending on the geographical location and the season of the year. Ofovwe et al, in Benin, southern Nigeria reported a prevalence rate of 15.6% with most cases presenting during the rainy season.[3] The three commonest neurological problems encountered were febrile convulsion, cerebral malaria and meningitis. On the other hand, Iloeje reported a prevalence rate of 11.5% in Enugu, Eastern Nigeria.[4]

Nigeria, like other developing countries, is enshrined by superstitious beliefs. Most neurological problems are perceived to be as a result of demonic attack.[5] Sick children are therefore subjected to unorthodox cultural treatments as first aid by their parents or guardians resulting in delayed presentation to hospitals with attendant increased mortality.[5-7]

In our environment, fraught with poor infrastructural facilities and inadequate manpower and drugs for handling neurological emergencies, the result of this study will therefore help in effective preventive strategies.

MATERIALS AND METHODS

Uyo is the capital city of Akwa-Ibom State, in South-South geopolitical zone of Nigeria. It lies at an altitude of 122metres

above sea level. It is blessed with an abundant rainfall of about 2095mm and has a mean temperature of 27^0 celsius and relative humidity of greater than 60%.[8] The population is mainly Ibibios and Annangs though the Igbos, Yorubas and the Hausas are also residents.

The city has one tertiary health facility which is situated about six kilometres from the heart of the city. It also has a secondary health facility, the Saint Luke's hospital-Anua, several primary health centres as well as private health facilities.

The study was conducted in the Children's Emergency Unit (CHEU) as well as the Paediatric ward of the University of Uyo Teaching Hospital (UUTH), Uyo. The CHEU has a twenty-two bed capacity while Paediatric ward a twenty-seven bed capacity. Emergency clinical conditions from the age of six weeks to eighteen years are admitted in CHEU. Those less than six weeks old are examined and quickly transferred to the sick babies unit for admission. Patients admitted in CHEU are treated and monitored for twenty-four to forty eight hours to stabilise after which they are either discharged home or transferred to the Paediatric ward. The CHEU has a Consultant Paediatrician as a supervisor with other staff such as resident doctors, house officers and nurses working under him. It serves as a referral unit for paediatric cases within and outside Uyo metropolis.

For every patient that presents to this unit, a detailed history and thorough physical examination is carried out. Those with neurological problems are assessed for level of consciousness with the use of either modified Glascow/Glascow coma scale (depending on the age of the patient) or the Blantyre coma scale. They are also assessed for signs of meningeal irritation (neck stiffness, Kernig's and brudzinski signs), intact cranial nerves, muscle tone, power and reflexes. Laboratory investigations are requested for depending on the initial diagnosis made. These include cerebrospinal fluid (CSF) analysis for white blood cells, protein, glucose, gram stain, culture and sensitivity, blood for culture, random blood sugar, blood film for malaria parasite and urea/electrolyte/creatinine estimation. A diagnosis of bacterial meningitis is entertained if the CSF protein is raised plus CSF glucose of less than 60% of simultaneously done blood glucose and increased CSF white blood cells with or without a positive culture. Cerebral malaria is diagnosed when a patient remains comatose thirty minutes after a convulsion in addition to normal CSF findings and presence of malaria parasite in the blood film. For a diagnosis of febrile convulsion, the patient must be between the ages of three months and six years with fever associated with convulsion, with normal CSF findings and full regain of consciousness after the seizures.

First, the number of patients with neurological problems admitted into the CHEU over a two year period (i. e. from 1st January, 2007 to 31st December 2008) were gotten from the admission register in CHEU. Then their case notes were retrieved from the health information unit of the hospital. Information extracted included age, gender, main diagnosis, duration of hospitalisation as well as outcome.

Data obtained was analysed using the Statistical Package for Social Sciences (SPSS) version 18. Frequency tables and percentages were used to present the results.

RESULT

One hundred and ninety six (196) patients had neurological problems out of one thousand eight hundred and thirty three (1833) admissions recorded during the study period giving a prevalence rate of 10.7%. One hundred and fifty four patients (78.6%) were under the age of five years, 28(14.3%) between five and ten years and 14(7.1%) were more than ten years of age. One hundred and twelve (57.1%) were males while eighty-four (42.9%) were

TABLE 1: AGE AND GENDER DISTRIBUTION OF THE PATIENTS

Age(years)	N	%
<5	154	78.6
5-10	28	14.3
>10	14	7.1
Total	196	100
Gender		
Male	112	57.1
Female	84	42.9
Total	196	100

TABLE 2: DISTRIBUTION OF NEUROLOGICAL PROBLEMS ACCORDING TO THE MONTH OF THE YEAR

Month of the year	Number of neurological cases	Percentage of neurological cases	Total admissions	Percentage of total admissions
January	21	10.7	177	11.9
February	14	7.1	206	6.8
March	7	3.6	135	5.2
April	16	8.2	102	15.7
May	22	11.2	173	12.7
June	19	9.7	138	13.8
July	20	10.2	173	11.6
August	18	9.2	140	12.9
September	14	7.1	157	8.9
October	13	6.6	150	8.7
November	15	7.7	143	10.5
December	17	8.7	139	12.2
Total	196	100	1833	10.7

TABLE 3: FREQUENCY DISTRIBUTION OF DIAGNOSIS MADE

Diagnosis	N	%
Alcohol poisoning	4	2.0
Carbonmonoxide poisoning	1	0.5
Cerebral malaria	35	17.9
Encephalitis	3	1.5
Encephalocele	1	0.5
Febrile convulsion	83	42.3
Head injury	5	2.6
HIV encephalopathy	1	0.5
Bacterial meningitis	43	21.9
Seizure disorder	14	7.1
Tetanus	2	1.0
Tuberculous meningitis	3	1.5
Total	196	100

TABLE 4: CAUSES OF DEATH

Cause of death	Number of cases that died	Number of cases admitted	Percentage of cases that died
Cerebral malaria	6	35	17.1
Bacterial meningitis	4	43	9.3
Alcohol poisoning	1	4	25
Tetanus	1	2	50

females with a male to female ratio of 1:0.75. Age and gender distribution of the study population is shown in table1.

There was no significant difference in the number of admissions recorded during the two seasons of the year. In this study, rainy season was adjudged to comprise of the months of May to October while dry season, the months of November to April. There were 96(49.0%) and 100(51%) admissions during the rainy and dry seasons respectively. Table 2 shows the monthly distribution of the patients.

Table 3 shows the diagnosis made. Twelve diagnoses were made in all but the commonest diagnosis recorded was febrile convulsion in 83(42.3%) patients. This was closely followed by bacterial meningitis and cerebral malaria accounting for 43(21.9%) and 35(17.9%) admissions respectively.

Duration of hospitalisation ranged from one day to thirty days with a mean of 4.5days. One hundred and eighty-four (93.9%) patients were discharged home after treatment while twelve (6.1%) died. Analysis of the mortality showed that six (17.1%) of thirty-five patients with cerebral malaria died while four (9.3%) of forty-three with bacterial meningitis died. Of the total number of death recorded, ten (83.3%) died within forty eight hours of admission. This is depicted in table 4.

DISCUSSION

This study being the first on pattern of paediatric neurological emergencies in this centre will serve as a baseline for comparison in future. A prevalence rate of 10.7% compares well with 11.5% from Enugu[4] but lower than 15.6% from Benin, a town in Southern Nigeria.[3] The observation that more males presented with neurological problems is not surprising. Though this was also reported in South-Eastern Nigeria,[4] it follows the normal trend in our environment in which medical treatment is sought for male children and the females are left unattended to.[5,9] Majority of the patients (78.6%) were under the age of five years. This is similar to reports from other parts of the country.[3,4] This could be due to the fact that children in this age group are susceptible to febrile convulsion which was recorded as the commonest neurological problem in this study. Also they are prone to other infections such as bacterial meningitis and other infective causes of febrile convulsions due to their suboptimal immunity against these infections.

When compared with reports from other centres,[3,4] the findings that febrile convulsion is the commonest paediatric neurological emergency seems to suggest an unchanged pattern in the past two decades. Other common causes of neurological emergencies in this study were bacterial meningitis and cerebral malaria which were also reported by Ofovwe in Benin, Southern Nigeria.[3] On the other hand, Iloeje in Enugu, Eastern Nigeria[4] reported bacterial meningitis and afebrile seizure as the other common causes of neurological emergencies. The reason for the variation in pattern may be due to the difference in the study location. Malaria has been documented as the commonest cause of febrile convulsion in many studies in Nigeria.[2,10,11] When this is considered, malaria (i. e febrile convulsion and cerebral malaria) could be regarded as the commonest cause of Paediatric neurological emergencies in this study. This finding was not surprising, as Uyo is a high transmission area for malaria. Majority of malarial disease and particularly the severe disease such as cerebral malaria with rapid progression to death occur mainly in children living in high transmission areas due to lack of acquired immunity.

Mortality rate of 6.1% is lower than that reported in Benin and Enugu.[3,4] It shows that mortality rate from neurological emergencies is gradually reducing in the past decade. Cerebral malaria was the commonest cause of death with most occurring within forty-eight hours of admission. This could be due to delay in presentation as untreated uncomplicated malaria is known to rapidly progressed into severe and potentially fatal disease. It is worth mentioning that one (25.0%) of four patients diagnosed as alcohol poisoning died. It is not surprising that the patient was a four year old male as poisonings and home accidents are common among children of this age and gender. As policies are put in place to combat infections in our environment, we may be faced with cases of poisoning especially of alcohol. This is

because alcohol is easily available to children in our environment. It is stored as an article of trade and freely consumed by adults at ceremonies. Moreover, the locally brewed gin is stored in containers which may be mistaken for water and consumed by children.

CONCLUSION

Febrile convulsion remains the commonest neurological emergency in our environment. Since malaria has been documented as the commonest cause of febrile convulsion in Nigeria, its control and early treatment is advocated. This can be achieved by widespread use of insecticide treated nets especially by children below the age of five years and easy access to treatment of malaria within twenty-four hours of illness.

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