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Pattern of Childhood Epilepsies in a Tertiary Health Facility in Nnewi, South-East Nigeria

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ABSTRACT

Background: *Childhood epilepsy is one of the commonest chronic neurologic disorders affecting children in developing countries. Objective: This study is aimed to determine the pattern of childhood epilepsies in a Nigerian tertiary hospital.*

Methods: *This is retrospective hospital-based study done at the Pediatric epilepsy clinic of a tertiary health facility in South-east, Nigeria. Relevant data were collected from hospital records of children attending the clinic from June 2013 to June 2015.*

Results: *A total of 179 patients (104 males (58.1%) and 75 females (41.9%)) were studied. The mean age at seizure onset was 2.74 +1.69 years. The main risk factors associated with epilepsy were birth asphyxia, neonatal jaundice and neonatal convulsions (55.9%), and a family history of epilepsy (44.1%). Generalized tonic-clonic epilepsy was the commonest form of epilepsy (68.7%). More than 50% of the patients presented to epilepsy clinic within a year of seizure onset. Most of the patients (80.4%) had received some form of orthodox medications before presenting to the clinic. The most common disorders found to co-exist with epilepsy were cerebral palsy (26.8%) and mental retardation 25.4%).*

Conclusion: *Childhood epilepsy in our environment is largely associated with preventable perinatal and neonatal risk factors. Neuroimaging abnormalities are common in children with epilepsy in our environment. Prompt and appropriate care of the high risk neonate and other infections of central nervous system in childhood will significantly reduce the incidence of epilepsy.*

Key Words: *Childhood epilepsies, pattern, South-east, Nigeria.*

INTRODUCTION

Epilepsy is a chronic disorder of the brain that affects people in every country of the world. It is one of the most common chronic neurological disorders in children, affecting about 10.5million children worldwide majority of whom reside in developing countries.[1] There is a higher incidence in developing countries with prevalence rates ranging from 10-40%.[2-4] The higher incidence of childhood epilepsy reported in developing countries has been largely attributed to the presence of many risk factors for epilepsy in these regions. These factors include risks at birth and adverse neurological complications of central nervous system infections during and beyond childhood.[5]

Even when epilepsy is recognized and treatment sought, appropriate treatment is not commenced due to non-availability of trained health personnel, high cost and difficulty of access to ancillary investigations and unsustainable drug treatment. Social stigma, myths, and misconceptions often add to delays in seeking appropriate orthodox medicare.[6] Moreover, caregiver's beliefs often determines the response to an illness and hence the strategies to adopt.[7] This often adds to delays in seeking appropriate medical treatment since children depend solely on caregivers for treatment. We report our observation in children with epilepsy attending a pediatric epilepsy clinic over a two year period in a tertiary care centre in Nnewi, south-east Nigeria.

PATIENTS AND METHODS

This was a descriptive, retrospective study conducted among children presenting with seizure disorders seen at the outpatient paediatric epilepsy clinic during the period, June 2013 to June 2015. The medical records of all the patients who were seen within the period under review were retrieved and reviewed. The study population included all children within the age range 3months to 18 years who were on treatment for active epilepsy. Children who were less than 3 months and those whose data were incomplete were excluded from the study. Data was collected using a proforma. Information obtained from the records were the socio-demographics characteristics, age at first seizure, duration of seizures and treatment received before presenting to the clinic. Also obtained were clinical seizure type, presence of risk factors for epilepsy such as adverse perinatal events (prematurity, evidence of birth asphyxia, neonatal jaundice, birth trauma, neonatal convulsions), cranial injuries, history suggestive of previous central nervous system infections, febrile seizures and family history of afebrile seizures. Presence of co-existing neurological disorders and results of relevant investigations that were conducted were also retrieved. One hundred and seventy nine of the study subjects met inclusion criteria.

The data were analyzed using Statistical Package for the Social Sciences (SSPS) computer software for windows version 22.0.

RESULTS

A total of 207 hospital records of children who were attending epilepsy clinic within the period under review were retrieved. Out of these, 28 records were excluded because of incomplete data. A total of 179 patients made up of 104 males (58.1%) and 75 females (41.9%) met the inclusion criteria. (M: F= 1.4:1) The basic characteristics of the study population are as shown in Table I. The most common risk factors associated with epilepsy were adverse perinatal events (55.9%) and a positive family history of epilepsy (44.1%).

Table II shows the age and gender distribution at onset of seizure. The mean age of seizure onset was 2.7 + 1.69. About a third (33.0%) of the patients was less than one year of age at the onset of seizure.

Table III shows the types of epilepsies amongst the subjects. Generalized tonic clonic epilepsy was the commonest (68.7%) while Atonic epilepsy was the least common type (2.2%).

Table IV depicts the duration of epilepsy before presentation to epilepsy clinic. Majority of the

patients (57.5%) presented within 1 year of seizure onset.

The treatments received by the patients before presenting to epilepsy clinic are shown in table V. Most of the patients (80.4%) had received some form of orthodox medications before presenting to the clinic. Sodium valproate was the most commonly used drugs before presenting to epilepsy clinic (33.5%). While 13.4% sought traditional therapy, 3.4% opted for spiritual therapy. Only 2.8% of the patients did not seek any form of alternative treatment before presenting to the clinic.

The most common morbidities found to co-exist with epilepsy amongst the study population were Cerebral palsy (26.8%) and Mental retardation (25.4%), (Table VI).

Cranial computerized tomography (CT) studies were obtained in only 21 of the patients. Of these, different forms of cranial abnormalities were noted in 15 (71.4%). Similarly, interictal abnormalities were noted in 42 (93.3%) of 45 electroencephalogram (EEG) recordings.

Table I: Basic Characteristics of study subjects (N=179)

Parameters	N(%)
Age (yrs)	
< 3	44 (24.6)
4 – 6	40 (22.4)
7 – 9	19 (10.6)
10 -12	29 (16.2)
13-15	26 (14.5)
16 -18	21 (11.7)
Gender	
Male	104 (58.1)
Female	75 (41.9)
Risk factors associated with epilepsy	
Family history of epilepsy	79 (44.1)
Birth asphyxia only	29 (16.2)
Neonatal jaundice only	25 (14.0)
Neonatal convulsions only	16 (8.9)
Combination of perinatal factors	30 (16.8)

Table II: Distribution by Age and Gender at first seizure (N=179)

Age (years)	Gender		Total
	Male (%)	Female	N (%)
<1	40 (38.5)	19 (25.3)	59 (33.0)
1 – 3	30 (28.8)	19 (25.3)	49 (27.4)
4 – 6	10 (9.6)	10 (13.3)	20 (11.1)
7 – 9	8 (7.7)	10 (13.3)	18 (10.1)
10-12	10 (9.6)	12 (16.0)	22 (12.3)
13 – 15	5 (4.8)	4 (5.3)	9 (5.0)
16 – 18	1 (1.0)	1(1.3)	2 (1.1)
Total	104 (100)	75 (100)	179 (100)

Table III: Pattern of Seizure among the children with epilepsy

Seizure types	N=179 (%)
Generalized tonic clonic	123 (68.7)
Myoclonic	18 (10.1)
Unclassified	10 (5.6)
Absence	9 (5.0)
Simple partial	8 (4.5)
Complex partial	7 (3.9)
Atonic	4 (2.2)
Total	179 (100%)

Table IV: Duration of seizure before presenting to epilepsy clinic

Duration (yrs)	Number of cases (%)
< 1	103 (57.5)
1 – 3	50 (27.9)
4 – 6	16 (8.9)
7 – 9	9 (5.0)
10 -12	1 (0.6)
Total	179 (100%)

Table V: Treatment received before presenting to Epilepsy Clinic

Treatment received	Number (%)
None	5 (2.8)
Spiritual	6 (3.4)
Traditional	24 (13.4)
Orthodox	144 (80.4)
-drug combinations	62 (34.6)
-sodium vaporate	60 (33.5)
-carbamazepine	17 (9.5)
-phenobarbitone	5 (2.8)
Total	179 (100%)

Table VI: Types of neurological disorders co-existing with epilepsy in 67 children with epilepsy

Neurological disorder	N (%)
Cerebral palsy	18 (26.8)
Mental retardation	17 (25.4)
Mental retardation	13 (19.4)
Visual impairment	13 (19.4)
Hearing impairment	6 (9.0)
Total	67 (100%)

DISCUSSION

On the basis of hospital records of children attending the pediatric epilepsy clinic in the tertiary centre, this study has provided some important baseline information about childhood epilepsy in Nigeria. The information obtained can be useful in improving services and addressing preventable and treatable causes of epilepsy amongst children in our environment.

The male preponderance seen amongst the study population is in accord with the findings of other workers.[5,6,8-10] In this study, family history of epilepsy was noted as the most commonly identifiable single risk factor associated with epilepsy. Genetic factors invariably play a role in the risk of developing epilepsy. The overall incidence of epilepsy in the offspring when one parent is affected is about 4%, and this rises to

about 10% when both parents are affected.[11] If there are more than two affected family members, the risks are greater still. Other risks associated with development of epilepsy observed in this study but are largely preventable include birth asphyxia, severe neonatal jaundice, and neonatal convulsions. The observation that etiologic risk factors for childhood epilepsy in developing countries are largely preventable has been noted in several studies within and outside Nigeria.[3,8,12]

This study showed that about one third of childhood epilepsies had their onset within the first year of life. This is consistent with the observation that majority of childhood epilepsies often begin during infancy or early childhood.[7,8,13,14] A higher incidence of seizures among males and in younger children with a decreasing frequency among older age groups have also been noted in many studies.[12,15] Majority of the children in this study were younger than 6yrs. Males had higher prevalence compared to the females in almost all the age groups of the study population. Several epidemiologic studies suggest that epilepsy starts earlier in developing countries than in developed countries.[12,13,15]. One of the main reasons for this earlier onset is more exposure to higher risks of permanent brain damage resulting from central nervous system infections, head trauma and perinatal complications of severe neonatal jaundice, prematurity and neonatal convulsions. Since preventable adverse perinatal events contribute largely to development of epilepsy in our environment, early identification and management of high risk neonates will significantly reduce the incidence of secondary epilepsies. The predominant seizure type in this study is generalized tonic-clonic epilepsy and this is in keeping with reports in Nigeria[8,9] and beyond.[10,13,15]

The health seeking behavior of a caregiver is often influenced by knowledge of disease causation and prevailing socio-cultural factors.[16] Social stigma, myths, misconceptions and distance to health facilities with attendant delays often add to not seeking appropriate orthodox medicare.[6,17] It is reassuring to note that more than half of the study population presented within one year of seizure onset. This may be due to enlightenment, appropriate and early referrals by primary care physicians and advice of care-givers whose children are already receiving treatment at the epilepsy clinic.

The practice of using traditional and spiritual methods for treatment of epilepsy is common in sub-Saharan African countries and other developing countries.[18] These healers are more numerous and easily available than physicians and often more affordable. It is when these alternative modalities fail that orthodox treatments are sought. The present study however noted that the majority of the patients received orthodox treatment either as a monotherapy or as a combination even though in inappropriate doses before presenting for appropriate treatment.

In this study, cerebral palsy and mental retardation represented the most commonly associated abnormality amongst children with epilepsy. An epidemiological study done in a rural Tanzanian community noted that the risk of developing epilepsy in children is higher in the presence of neurologic abnormalities like cerebral palsy and mental retardation.[19]

Neuroimaging studies could not be obtained in the majority of the patients because of lack of funds. Electroencephalographic (EEG) abnormalities were observed in 93.3% of the studies done. EEG although useful in classifying seizure types, however a normal EEG does not rule out epilepsy. Abnormalities were noted in 71.4% of the Cranial Computed tomography scans (CT scan). Magnetic resonance imaging (MRI) though is a better neuroimaging modality is more costly. Subsidizing the cost of these ancillary investigations will improve the management of childhood epilepsy in our locality.

CONCLUSION

This study has demonstrated that childhood epilepsy in our environment appear to be mainly

related to neonatal morbidities and familial factors. Prompt and appropriate management of these neonatal morbidities will significantly reduce the incidence of childhood epilepsy. Neuroimaging abnormalities are common in children with epilepsy in our environment. The importance of neuroimaging studies in management of childhood epilepsy cannot be overemphasized. Provision of affordable neuroimaging facilities will significantly improve childhood epilepsy care. Subsidizing the cost of these investigations therefore will encourage utilization of these services in the provision of care for childhood epilepsy.

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