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Research Article

Pattern of Paediatric Neurological Disorders in Paediatric Neurology Clinic of Ekiti State University Teaching Hospital, Ado Ekiti, Nigeria

OKE, O. J.[1*], Taiwo, A. B.[2], Adebisi, A. O.[2] & Ilori, B. F.[2]

[1]*Department of Pediatrics, Obafemi Awolowo University Teaching Hospital, Ile Ife, Nigeria*

[2]*Department of Paediatrics, Ekiti State University Teaching, Hospital, Ado-Ekiti, Nigeria*

[*]**Correspondence to:** Dr. OKE, O. J., Department of Paediatrics and Child Health, Obafemi Awolowo University, Ile Ife, Nigeria.

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Abstract

Background: Neurologic disorders lead to huge morbidity and disability in childhood. It is one of the leading world disease burdens with a majority of affected children living in Africa. In developing countries, Paediatric neurological disorders pose a serious challenge due to their stigmatization, long period of treatment and delayed presentation. Non-availability of modern technology and manpower is a bane of management in an African setting.

Objectives: This study aims to determine the pattern of neurological disorders in the Paediatric Neurologic Clinic of Ekiti State University Teaching Hospital (EKSUTH), Ado Ekiti.

Methods: This was a prospective hospital-based study of neurological disorders seen in the Paediatric Neurology Clinic of the Ekiti State University Teaching Hospital (EKSUTH), Ado Ekiti, Nigeria, over the period of 1 year. All children who received care at the Paediatric Neurology clinic of the EKSUTH, Ado Ekiti, Nigeria were prospectively studied over a period of 12 months. The diagnoses were made from good history, and properly done physical examination, with more focus on the central nervous system. Salient and relevant investigations indicated were done.

Results: There were 123 Paediatric neurological cases seen during the study period of 12 months. There were 80 males and 43 females in the participants. This gives a male-to-female ratio of 2:1. There were 1150 cases at the paediatric specialist clinic. The Paediatric neurological cases were 10.7% of the total 1150 cases seen at the specialist clinics of the Paediatric department of the hospital. The cases seen at Paediatric neurological clinic included epilepsy (53.1%), cerebral palsy (30.9%), learning disability (4.1%), speech impairment 2.4%, ADHD 1.6%, and conduct disorders 1.6%. Autism, Cerebrovascular disorder, facial nerve palsy, sciatic nerve palsy and Duchenne muscular dystrophy accounted for 0.8% each.

Conclusions: Neurological disorders have been on the increase in our environment. The high prevalence of epilepsy and cerebral palsy in this study reflects the need for early diagnosis, evaluation, and prompt treatment of this disorder for a better prognosis. Proactive measures to checkmate the risk factors such as severe birth asphyxia and neonatal jaundice are also needed to mute the tide. Modern biotechnological facilities for genetic and molecular diagnosis of neurological disorders will enhance prompt and accurate diagnosis.

Introduction

Neurological disorders are among the leading cause of morbidity in children in clinical practice. The morbidity and burden of this disorder are highest in African children and account for about 20% of the global disease burden. [1,2]. Paediatric neurologic disorders are burdensome to caregivers and require a longer period of treatment. The caregiver of patients with neurological disorders often develop fatigue and patients are sometimes lost to follow up. Neurologic disorders are a major cause of morbidity and disability in childhood. It is one of the leading world diseases burdens with a majority of affected children living in Africa. Managing Paediatric neurological disorders poses a serious challenge due to their stigmatization, long period of treatment and delayed presentation. Non-availability of modern technology and manpower is also a deterrent in the management in an African setting. The caregiver, families, and siblings of the patient with these disorders also bear the burden of the disease. The affected children are sometimes handicapped and would not be able to care for themselves, in terms of toileting, feeding, personal hygiene, clothing, and necessary adaptive behaviours. Caregivers of children with neurological disorders in developing countries were observed to patronise several doctors for a solution to overcome the challenges of their wards. This could be frustrating and discouraging with antecedent wrong treatment by non-specialists, delay presentation and eventually lost to follow-up. The chronicity of treatment may give room for lost to follow-up [3]. In advanced countries, biotechnological diagnostic facilities have assisted the management. Also, the use of molecular biology and DNA analysis has resulted in boosting the outcome significantly [4] but this is contrary in several developing nations. There is an increase in the prevalence of Paediatric neurological disorders in several developing nations due to lifestyle changes and poor obstetrics care. There are also huge challenges in managing these neurological cases in resource-poor settings like Ado Ekiti. This study aimed to evaluate the pattern of neurological disorders seen in EKSUTH, Ado Ekiti, Nigeria.

Material and Method

This was a prospective hospital-based study of neurological disorders seen in the Paediatric Neurology Clinic of the Ekiti State University Teaching Hospital, Ado Ekiti, Nigeria, over the period of 1 year. All children treated at the paediatric neurology clinic of the EKSUTH, Ado Ekiti, Nigeria were studied prospectively over a period of 12 months. The diagnoses were made from good history, and proper physical examination, with more focus on the nervous system. Relevant indicated investigations were also done.

Study Location and Design

This study was conducted at the pediatric neurology outpatient department (OPD) of EKSUTH, Ado Ekiti, Southwest Nigeria. Ado Ekiti is the state capital of Ekiti State with a population of about 308,621 and agriculture is the major occupation of the citizens of this area [5]. EKSUTH is the only government-owned teaching hospital in Ado Ekiti. The teaching hospital is the tertiary hospital located primarily in the metropolis of Ado Ekiti, Ekiti State, South, West, Nigeria. It is a 300-bed referral hospital serving the people state and neighbouring states as well.

Study Participants

A total of 1150 children were seen at the paediatric specialized clinic of EKSUTH, Ado Ekiti over the period of 12 months. Children whose parents/caregivers consented to participate in the study were included. The participants were examined. The details and purpose of the study were explained to the parents/ caregivers of the participants and written informed consent was obtained from them. Also, verbal assent was obtained from the participants as applicable. The Ethics and Research Committee of the Ekiti State University Teaching Hospital gave the Ethical approval. Descriptive statistics were applied to the result analysis.

Data Collection, Inclusion Criteria,

Data were collected using a predesigned proforma. Data on age, clinical history gender, diagnosis, examination findings, and treatment outcome were obtained. Social class were stratified into low middle and high social class based on Oyedeji classification [6] Affected children were referred to the appropriate specialists after paediatric neurologist evaluation to optimise management. These patients were co-managed with Ophthalmologists, Audiologists, Physiotherapists, Clinical Psychologists. Orthopaedic Surgeons, and Psychiatrists. Laboratory investigations such as full blood count, E, U&CR, blood, urine and stool cultures, and cerebrospinal fluid (CSF) analysis were done. Available radiologic investigations like skull, spine and chest were also done for some patients. Brain Computed tomography scans and /or magnetic resonance imaging studies were also done for some patients in the centres where it was available. Electroencephalography (EEG) was done for children with seizure disorders. Data were analyzed with SPSS version 20.

Result

One hundred and twenty-three patients had neurological disorders out of a total of 1150 patients who were seen in the Paediatric specialist clinic of the Paediatric unit of the hospital. This accounted for a prevalence

of 10.7% for neurological disorders. There were 80 (65%) males and 43 (35%) females with male to female ratio of 2:1. The age of participants ranged from 3 months to 14 years. The preschool and the school-age group were the most affected age group which constitute 43.9% and 43.1% respectively. The prevalence of various Paediatric neurological disorders was epilepsy (55.3%), cerebral palsy (30.9%), and learning disability (4.1%). Other neurological disorders such as Autism, Cerebrovascular disorder, facial nerve palsy, sciatic nerve palsy and Duchenne muscular dystrophy accounted for 0.8% each.

Table 1: *Sociodemography factors of patients with neurological disorders in EKSUTH*

Sociodemography factors	**N=123**	**%**
Age		
Preschool(1-3years)	54	43.9
School-age(4-9years)	53	43.1
Adolescent (10-18years)	16	13.0
Sex		
Male	80	65.0
Female	43	35.0
Gestational age at birth		
Preterm	12	9.8
Term	111	90.2
Socioeconomic status		
Low	26	21.1
Middle	91	74.0
High	6	4.9
Healthcare financing method		
Out of pocket	119	96.8
NHIS	4	3.2
Place of Delivery		
Home	19	15.4
Mission	20	16.3
Private Hospital	38	30.9
PHC	13	10.6
State Specialist Hospital	15	12.2
EKSUTH/ Teaching Hospital	18	14.6

Mode of Delivery		
Ceasarean Section	29	23.6
SVD	93	75.6
Instrumental Delivery	1	0.8
Mothers' Education		
No Education	6	4.9
Primary	9	7.3
Secondary	19	15.5
Tertiary	80	65.0
Postgraduate	9	7.3

Table 2: *Pattern of neurological disorder in EKSUTH, Ado Ekiti*

Cases	**N=123**	**%**
Seizure disorder	68	55.3
Cerebral palsy	38	30.9
Learning disability	5	4.1
Speech impairment	3	2.4
Conduct disorder	2	1.6
ADHD	2	1.6
Autism	1	0.8
CVD	1	0.8
Sciatic nerve injury	1	0.8
Facial nerve palsy	1	0.8
Duchene muscular dystrophy	1	0.8

Discussion

This study revealed that neurological diseases accounted for 10.7% of all Paediatric cases which implies that neurological disorders contributed immensely to morbidity in the Paediatric age group in Ado Ekiti, Nigeria. Appropriate attention has not been afforded to neurological cases in children in the developing part of the world [7]. This may be due to the lack of necessary medical facilities to care for the attendant morbidity associated with neurological disorders in this part of the world. Children between preschool and school ages were more than four-fifths of the total cases seen in this study. This may be due to manifestations of neurodevelopmental disorders in this period of development. Furthermore, the children in this age group are very vulnerable to morbidities of the disorder due to the immaturity of the brain in the early years of development [7]. The most common neurological disorder in this study was epilepsy followed by cerebral palsy and then learning disability. This was in accordance with reports from other parts of Nigeria [8,9] and in other African countries [1]. Epilepsy and cerebral palsy were the major Paediatric neurological disorders

seen at the UCH, Ibadan, Nigeria as reported by Osuntokun *et al* [1]. This pattern was similar to the previous reports from other parts of the country [10,11]. The disease pattern of neurological disorders in Nigeria has not changed after about forty years. Seizure disorder was the most common neurological disorder seen in the neurology clinic [11,12]. This high prevalence of seizure disorder in this study may be due to the fact that most parents in this study were educated and this increased awareness on the part of the parents: most these parents knew that seizure is a treatable medical condition unlike previously belief that it is not treatable and was associated with evil spirit manipulation [11]. Public enlightenment in recent times might have contributed to the education of parents and enhanced hospital patronage. The prevalence of Cerebral palsy (CP) was next to seizure disorder in this study. This high prevalence supports the notion that antenatal and perinatal care in our country is still far from the expected standard. The situation in developing countries like Nigeria in which child delivery is majorly taken outside the hospital by untrained traditional birth attendants, individual or mission homes. The largest portion of child delivery in Nigeria takes place outside the hospital. The risk factors include severe birth asphyxia, low birth weight, severe neonatal jaundice, and CNS congenital anomaly [13,14]. Cerebral Palsy constitutes a serious burden; economic, psychological, and physical stress on the affected child and the family [15,16]. Poor management of jaundice such as exposing the affected child to early morning sunlight and intake of glucose water with little or no beneficial effect has been in vogue [17]. These domestic interventions contribute to neurological sequelae. Lack of health personnel and patronage of unorthodox treatments mitigate against the proper care of neurological disorders. Preventable factors are responsible for most of the Paediatric neurological disorders in this part of the globe, which sometimes can be prevented with good obstetric care. Genetic disorders have also being implicated as risk factors which are similar to another report [18]. The non-availability of biotechnological facilities for evaluation, which could assist in definitive diagnosis in our setting, can also cause misdiagnosis or delay diagnosis. Seizure disorder and cerebral palsy ranked highest among the causes of neurological disorders seen in our study which was reported in other parts of the world [11,19,20]. Affected children need specialized and rehabilitative care which is scarce in our country.

Limitation

Difficulty in making a definitive diagnosis was a challenge. Most patients have financial constraints and the majority pay out-of-pocket for all investigations and treatment. Also, management of these disorders is chronic in nature and some of them were lost to follow-up when their caregiver developed burnout syndrome from the burden of the disorders.

Conclusion

Neurodevelopmental disorders contribute significantly to chronic morbidity among the children seen in the Paediatric unit of EKSUTH, Ado Ekiti. Proactive measures are needed to curb the risk factors and possible aetiological factors such as severe birth asphyxia, neonatal meningitis, neonatal jaundice and others. The availability of biotechnological diagnostic facilities to diagnose genetic and chromosomal anomalies that can cause neurological disorders will help in the better management of these cases. Support groups for some of these cases could also be of help. If these patients could be managed under the NHIS scheme, it will also alleviate the burden of the caregiver and optimal management of the patient. Standard obstetric care will also assist to prevent the risk factors.

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