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The Pattern of Neurological Disabilities in Children seen at the University of Calabar Teaching Hospital

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Summary

Asindi AA. The Pattern of Neurological Disabilities in Children seen at the University of Calabar Teaching Hospital. *Nigerian Journal of Paediatrics* **1986; 13:127.** One hundred and eighty-one children with well established neurological deficits were seen in the paediatric neurology clinic of the University of Calabar Teaching Hospital, Calabar, during a period of three and a half years. Cerebral palsy (39.8%), paralytic poliomyelitis (20.4%) and epilepsies (16.6%) were the major handicaps. Speech impairment, Down's syndrome (10.5% each) and deafness (2.2%) were the other important causes of disability. Eighty-eighty (48.6%) of the 181 patients were mentally retarded and cerebral palsy constituted the vast majority of these (83.3%). Infections like poliomyelitis and meningitis and deleterious perinatal events such as birth asphyxia and neonatal hyperbilirubinaemia, were the major causative factors in many of the patients. About 80% of the known causes of these disabilities can be prevented through improvement in maternal and child health services and immunization. There is also a great need for health education and more day-care and residential centres for the rehabilitation of handicapped children.

Introduction

IN developing countries, the pattern and aetiology of neurological handicaps in children have not been well documented. Most authors[1-4] tend to study each handicap in isolation. However, in the surveys carried out in Benin City[5] and Kenya,[6] the authors described the patterns of all forms of neurological diseases seen in the Outpatients or admitted into the hospitals. From these isolated or comprehensive reports, coupled with the large number of handicapped children who roam and beg along the streets, an impression is created that the size of the problem is enormous. Unfortunately, rehabilitation services for these unfortunate members of the community are grossly inadequate in Nigeria and other developing countries.[2-3] The aims of this study were to (*a*) delineate the pattern and aetiology of neurological handicaps seen at the paediatric neurology clinic of the University of Calabar Teaching Hospital (UCTH) Calabar, and (*b*) make recommendations for the care of these children and for the prevention of such handicaps.

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Subjects and Methods

The subjects of this study were children aged 15 years and below, who were attending the paediatric neurology out-patient clinic of the UCTH during a period of 3½ years (Jan 1982 - June 1985). The children consisted of referrals from Consultant and General Outpatient Clinics in the UCTH and from other medical institutions in the Cross River State as well as children admitted for acute neurological problems in the UCTH who were seen for follow-up in the neurology clinic after discharge from the ward, during the study period. The clinic is held every Friday by the author and a paediatric registrar. As far as possible, hospital records were reviewed for those whose pregnancy supervision, delivery and neonatal care took place in the UCTH. All these children except one who has died, are still being followed-up in the clinic. The diagnosis and classification of children with epilepsies were based on detailed description of the seizures by the parents. There was no facility for electroencephalograph. Diagnosis of Down's syndrome was based on the clinical manifestations. Although no formal psychometric tests were carried out, a child was regarded as mentally retarded if he or she persistently showed no interest in the surroundings, lacked speech skills and social responsiveness and exhibited poor concentration and alertness.

Results

A total of 181 children (M = 111, F = 70) with well established disabilities were treated during the study period. Their ages at referral ranged from 3 months to 12 years (Table I). Aetiological factors were identified in 133 (73.5%) patients (Table II). Infections formed the largest single group of causative factors. In 48 (26.5%) patients, the cause of the handicaps could not be identified. The forms of disabilities identified among the patients, in descending order of frequency, included cerebral palsy, poliomyelitis, epilepsies, speech defect, Down's syndrome and deafness (Table III).

Cerebral palsy

Cerebral palsy (CP) was the commonest indication for referral; it alone accounted for 72 (39.8%) of the 181 patients. Kernicterus (21 cases)

TABLE I

Age Distribution in 181 Children with Neurological Disabilities

Age (Months)	*Types of Disabilities*						*Total*
	Cerebral Palsy	*Polio*	*Epilepsy*	*Speech Defect*	*Down's Syndrome*	*Deafness*	
3-12	28	6	2	0	11	1	48
13-24	26	23	0	5	4	0	58
25-36	6	2	5	7	1	1	22
37-48	4	1	1	3	2	1	12
49-60	1	3	0	2	1	0	7
> 60	7	2	22	2	0	1	34
Total	72	37	30	19	19	4	181

TABLE II

Aetiological Factors in 181 Children with Neurological Disabilities

Factor	*No of Patients*	
Infections		60 (33.1)
Poliomyelitis	37	
Meningitis	22	
Pertussis	1	
Perinatal		48 (26.5)
Birth asphyxia	23	
Neonatal hyperbilirubinaemia	21	
Prematurity	4	
Congenital anomalies		24 (13.3)
Down's syndrome	19	
Microcephaly	5	
Trauma		1 (0.6)
Road Traffic Accident	1	
Undetermined		48 (26.5)
Total		181 (100.0)

Figures in parenthesis represent percentages

TABLE III

Sex Distribution in 181 Children with various Neurological Disabilities

Types of Disabilities	*No of Patients*			*%*
	Male	*Female*	*Total*	*of Total*
Cerebral palsy	47	25	72	39.8
Poliomyelitis	19	18	37	20.4
Epilepsy	25	5	30	16.6
Speech defect	11	8	19	10.5
Down's syndrome	7	12	19	10.5
Deafness	2	2	4	2.2
Total	111	70	181	100.0

followed by asphyxia and post-natal infections (16 cases each) were the major causes of cerebral palsy in our series. Other causes included congenital microcephaly (4 cases) and prematurity (3 cases). One of the 4 children with microcephaly was also micro-ophthalmic and blind in both eyes. The causes of CP could not be identified in 12 (17%) cases. Mixed and spastic quadriplegia were the commonest types of cerebral palsy, accounting for 56 (79%) of the children in this group.

Poliomyelitis

Poliomyelitis accounted for 37 (20.4%) cases. The distribution of weakness seen in the 37 patients with paralytic poliomyelitis was as follows: one lower limb (19 cases), both lower limbs (13 cases), both lower limbs and one upper limb (4 cases) and one lower limb plus left paravertebral muscles (1 case).

Epilepsies

Thirty patients with various types of epilepsies were seen; the male to female ratio was 5:1. The types of epilepsies included generalised tonic-clonic (24 cases, 85%), absences, infantile spasms and focal motor seizures (2 cases each, 6.7%). The possible causes of epilepsy could be traced in only 5 patients. These consisted of 3 cases due to birth asphyxia and one case each due to head injury from road traffic accident (a 10-year old boy) and meningitis.

Speech defect

Speech impairment was encountered in 19 children, accounting for 10.5% of the total patient population. The ages of the children ranged from 18 months to 12 years with a peak between 30 and 36 months. Seven of the children who were of older age group, merely exhibited varying degrees of dysarthria while the remaining 12 children who were much younger were completely mute. Possible causes of the speech defect could be found in only 9 patients whose

condition was traced to bith asphyxia (4 cases), meningitis (3 cases), prematurity and microcephaly (one case each). Hearing was within normal limits in all 19 children.

Down's syndrome

Cases of Down's syndrome presented with the parents consistently complaining that their infants were too floppy and slow in achieving milestones.

Other defects

Four patients presented with deafness. Two of these patients were both deaf and dumb as a result of meningitis. There was a 10-year old boy with profound deafness following an attack of an undiagnosed encephalopathic and febrile illness at the age of six; his speech was satisfactory. There was also an 11-month old boy who did not respond to sound from birth; the cause of his defect could not be determined.

Mental retardation

Eighty-eight (48.6%) of the 181 patients were mentally retarded. The frequency of mental defects among the various groups of patients is shown in Table IV. All the cases of mongolism were presumed to be mentally retarded. This was followed by cerebral palsy (83.3% of the cases). Two cases of generalised tonic-clonic epilepsy and both children with infantile spasms were also mentally retarded.

Mortality

Only one patient in this series has died. This was an 8-month old female with spastic hemiplegia from pertussis encephalopathy.

TABLE IV

Mental Retardation in association with Neurological Disabilities

Disability	*Total No of Patients*	*No with Mental Retardation*	*% of Total*
Cerebral palsy	72	60	83.3
Polio	37	0	-
Epilepsy	30	4	13.3
Speech defect	19	5	26.3
Down's syndrome	19	19	100
Deafness	4	0	-
Total	181	88	48.6

Discussion

The number of cases in this study is not an indicator of the magnitude of the problem in the community in view of the fact that hospital population is usually unrepresentative of the community. However, to some extent, hospital-based data serve as a pointer to the pattern of disease in a community. The study has shown that cerebral palsy is the commonest form of neurological handicap in the UCTH. Neonatal hyperbilirubinaemia was the predominant cause of cerebral palsy in our series accounting for almost a third of the patients in this category. This was followed by birth asphyxia and post-natal infection, each of equal frequency. The prevalence of neonatal jaundice in the causation of cerebral palsy is similar to that reported from Benin[5] and Lagos[3] where it accounted for 30% and 50% respectively. By contrast, in a report from Ghana,[4] only 5% of cerebral palsy was attributed to this cause, birth asphyxia being the underlying factor in a majority of their CP patients. The relatively high frequency of kernicterus in Calabar may be explained by the fact that, in that city and indeed, in the whole of the Cross River State, exchange blood transfusion service is available only in the UCTH. The peripheral centres merely refer such babies and, in many cases, in advanced stages of kernicterus.

A majority of the children with cerebral palsy had other disabilities including mental retardation. This appears to be in keeping

with the findings of other workers in both developed and developing countries.[4 7 8]

Paralytic poliomyelitis affected very young children, 80% of whom were below 2 years of age. It is disturbing that whereas, polio vaccine has been available for almost 30 years and its effective use in the developed countries of Europe and America has resulted in virtual eradication of this disease, yet, polio control in Nigeria has remained elusive even though the efficacy of the polio vaccine in our environment has been tested and proven.[9]

The preponderance of males over females in African epileptic patients documented by several authors [10-12] was confirmed in this study. That a large proportion of the cases was of the idiopathic type is also the experience in most African series.[13 14] Partial seizures (6.7%) did not feature appreciably in ours unlike Izuora's[10] series in which a significant proportion (30%) of the epileptics had partial seizures. The frequency of mental subnormality among our epileptics is much lower than that reported in other series.[8] Most of these were found in association with complex partial and infantile spasms which do not appear to feature significantly in our series.

The incidence of mental retardation in cerebral palsy was high in the present study, a finding that is in keeping with those reported by workers even in developed countries.[8 15] Neonatal jaundice, birth asphyxia and meningitis were identified as the commonest causes of CP in the patients in this series. It may be postulated that the lack of both expertise and material resources to effectively handle these dangerous conditions when seen in medical institutions in our community, left a majority of these children with the very severe forms of CP which are expectedly[15] associated with a very high incidence of mental retardation.

A closer look at the aetiological factors indicate that about 80% of the known causes (infective, perinatal and traumatic) of disabilities which afflict our children are preventable. The incidence of cerebral palsy can be reduced considerably if the causative factors can be eliminated or controlled. A closely monitored pregnancy and labour with early detection of high risk pregnancy and infants at risk, as well as effective neonatal resuscitation, will help reduce the role of perinatal complications. Early detection and appropriate management of neonatal jaundice, and aggressive treatment of meningitis are all steps in the prevention of long-term neurological deficits. It is hoped that with the introduction of the Expanded Programme on Immunization (EPI), if backed with community education, infections like poliomyelitis and pertussis will be reduced to the barest minimum. Meanwhile, there is a need for the establishment of more day-care and residential centres and trained staff who would specialise in the care and education of these disabled children.

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