Original Research Article

A study of clinical profile and factors associated with cerebral palsy in children at tertiary health care center

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Abstract

Background: Cerebral palsy (CP) is a chronic disorder, predominantly, of the motor function, which occurs in children as a result of non-progressive insult to the immature brain. The primary manifestation in CP is the disorder of the motor function. **Aims and Objectives:** To study clinical profile and factors associated with cerebral palsy in children at tertiary health care center **Methodology:** After approval from Institutional ethical committee this cross-sectional study carried out in the patients of Cerebral palsy at the department of Pediatric of the tertiary health care center. The cases were classified based on the modified Minear's classification. All the necessary details like age, sex, Clinical types and Associated factors like Antenatal, Natal, Post-natal etc. were retrieved from the parents or caregivers of the patients. **Result:** The majority of the patients were in the age group of 1-5 i.e. 48%, followed by 5-10-32%. The majority of the patients were Male i.e. 68% followed by Females i.e. 32%. As per the Clinical types the most common type was Spastic-52%, Atonic-28%, Mixed-20%.Delayed milestones in 96% persons followed by Feeding difficulties and excessive drooling in 88%, Speech defects in 72%, Disturbance of tone and posture in 52%, Respiratory tract infections in 48%. The most common prenatal associated factors were Maternal age 35 were 68 % followed by Consanguinity in 8%. In Perinatal factors Severe Asphyxia-84% followed by Low birth weight in 80%. The most common post-natal factors were Neonatal hyperbilirubinemia in 48% followed by Neonatal septicemia in 44%. **Conclusion:** As per the Clinical types the most common type was Spastic followed by Atonic, Mixed. The most common presenting features were Delayed milestones followed by Feeding difficulties. The most common associated factors in our study were Maternal age >35 followed by Consanguinity, Severe Asphyxia, Low birth weight, Neonatal hyperbilirubinemia, Neonatal septicemia etc.
Key Words: Cerebral palsy (CP), Consanguinity, Severe Asphyxia, Low birth weight, Neonatal hyperbilirubinemia, Neonatal septicaemia.

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INTRODUCTION

Cerebral palsy (CP) is a chronic disorder, predominantly, of the motor function, which occurs in children as a result of non-progressive insult to the immature brain.[1] The primary manifestation in CP is the disorder of the motor function. The incidence of CP varies significantly across different geographical zones, although the Centers for Disease Control and Prevention (CDC) study found that the average prevalence of CP in 2004 was 3.3 per 1,000 live births. The prevalence was significantly higher in boys than girls (male/female ratio 1.4:1).[2] It is one of the commonest causes of motor disabilities in childhood. While there has been controversies regarding the alterations in the rates over time, studies in recent days have reported a prevalence of 2–3 per 1,000 live births.[3]Sigmund Freud postulated in 1897 that CP may be the result of intrauterine factors affecting fetal neurological development.[4] The causes of CP are numerous. In Nigeria, birth asphyxia (causing hypoxic ischemic encephalopathy), severe neonatal jaundice (NNJ), (causing bilirubin encephalopathy), and prematurity appear to be the most important factors associated with CP. Other causes include hypoglycemia, intrauterine infection, meningitis, and encephalitis.[1] In a

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significant proportion of children with CP, no obvious cause could be determined.[5] The WHO in the update on December 6, 2010 on "the meningitis vaccine project" stated that "20% of survivors have serious permanent health problem as a result of the disease including CP, mental retardation, epilepsy and deafness."[6] Other reports by the WHO reflect this, including WHO world health report 2005 on "Make Every Mother and Child Count," which states that "while data are limited, it is estimated that each year over a million children who survive birth asphyxia develop problem such as CP, learning difficulties and other disabilities."[7]

MATERIAL AND METHODS

After approval from Institutional ethical committee this cross-sectional study carried out in the patients of Cerebral palsy at the department of Pediatric of the tertiary health care center. The cases were classified based on the modified Minear's classification[4,5]. All the necessary details like age, sex, Clinical types and Associated factors like Antenatal, Natal, Post-natal etc. were retrieved from the parents or caregivers of the patients.

RESULT

Table 1: Age distribution of patients

Age group (Yrs.)	No. of cases	Percentage
<1	3	12
1-5	12	48
5-10	8	32
>10	2	8
Total	**25**	**100**

The majority of the patients were in the age group of 1-5 i.e. 48%, followed by 5-10-32%.

Table 2: Sex distribution

Sex	No. of cases	Percentage
Male	17	68
Female	8	32
Total	**25**	**100**

The majority of the patients were Male i.e. 68% followed by Females i.e. 32%.

Table 3: Distribution of the patients as per the Clinical types

Clinical Types	No. of cases	Percentage
Spastic	13	52
Atonic	7	28
Mixed	5	20
Total	**25**	**100**

As per the Clinical types the most common type was Spastic-52%, Atonic-28%, Mixed-20%.

Table 4: Presenting symptoms

Symptoms	No. of cases	Percentage (%)
Delayed milestones	24	96
Feeding difficulties and excessive drooling	22	88
Speech defects	18	72
Disturbance of tone and posture	13	52
Respiratory tract infections	12	48
Convulsions	9	36
Hearing	7	28
Vision	6	24
Involuntary movement	5	20
Contractures	4	16

Delayed milestones in 96% persons followed by Feeding difficulties and excessive drooling in 88%, Speech defects in 72%, Disturbance of tone and posture in 52%, Respiratory tract infections in 48%.

Table 5: Distribution as per the prenatal factors

Factors	No. of cases	Percentage
Prenatal factors		
Maternal age 35	17	68
Consanguinity	2	8
Pregnancy induced Hypertension	7	28
Bleeding	4	16
Infections	5	20
Trauma	1	4

The most common prenatal associuated factors were Maternal age 35 were 68 % followed by Consanguinity in 8%.

Table 6: Distribution as per the perinatal factors

Perinatal factors	No. of cases	Percentage
Severe Asphyxia	21	84
Low birth weight	20	80
Difficult forceps	17	68
Breech	12	48
Transverse lie	9	36
Twins	7	28
Preterm	6	24

In Perinatal factors Severe Asphyxia-84% followed by Low birth weight in 80%.

Table 7: Distribution ofpost-natal factors

Post -natal factors	No. of cases	Percentage
Neonatal hyperbilirubinaemia	12	48
Neonatal septicaemia	11	44
Meningitis	3	12
Encephalitis	2	8
Head injury	2	8
Convulsions	3	12

The most common post-natal factors were Neonatal hyperbilirubinaemia in 48% followed by Neonatal septicaemia in 44%.

DISCUSSION

Cerebral palsy is a static encephalopathy that may be defined as a non-progressive disorder of posture and movement, often associated with epilepsy and abnormalities of speech, vision and intellect resulting from a defect or lesion of the developing brain (Robert ha Haslam)[8]. Many definitions have been given for the condition.

All the definitions emphasize several points. Firstly all children of cerebral palsy have suffered some form of brain damage and this has involved the motor system. Secondarily they indicate that the condition is non-progressive and hence exclude conditions such as degenerative brain diseases, cerebral tumour etc. and those disorders of posture and movement which are 1) Of shorter duration 2) Due to progressive disease or 3) Due to solely to mental deficiency. Cerebral palsy is a symptom complex, rather than a specific disease. It is "umbrella term covering a group of non-progressive but often changing, motor impairment, syndrome secondary to lesions or anomalies of the brain arising in the early stages of its development"[9].

Although the essential diagnostic sign is a motor defect the possibility that there may be other associated symptom. Complexes of cerebral dysfunction are implicit in the stipulation of central nervous system pathology[10]. The upper age limit of insult to the brain is not strictly defined but in 1985 mackeith and polani described as A persisting qualitative motor disorder appearing before the age of 3 years(little club memorandum,1959)[11]. Although the pathology is static the manifestations may be dynamic, changing with brain maturation[12].

In our study we have found that The majority of the patients were in the age group of 1-5 i.e. 48%, followed by 5-10-32%. The majority of the patients were Male i.e. 68% followed by Females i.e. 32%. As per the Clinical types the most common type was Spastic-52%, Atonic-28%, Mixed-20%. Delayed milestones in 96% persons followed by Feeding difficulties and excessive drooling in 88%, Speech defects in 72%, Disturbance of tone and posture in 52%, Respiratory tract infections in 48%. The most common prenatal associated factors were Maternal age 35 were 68 % followed by Consanguinity in 8%. In Perinatal factors Severe Asphyxia-84% followed by Low birth weight in 80%. The most common post-natal factors were Neonatal hyperbilirubinemia in 48% followed by Neonatal septicemia in 44%.

These findings are similar to Nabanita Das *et al*[15] they found Spastic type was the predominant (80%), with quadriplegic subtype being the most common (43%). The other types were mixed type (8%), hypotonic (7%) and athetoid (5%) being the least. Speech delay was the most common associated problem (76 %) followed by microcephaly (56%), seizures (48%), visual defects (23%), feeding difficulty (21%), hearing problems (18%), contractures and deformities (9%) and behavioural problems (7%) being the least.

The most common etiologic risk factors were maternal age <20 years and >35 years and pregnancy induced hypertension in prenatal period; asphyxia, low birth weight and prematurity in perinatal period; and central nervous system infections and hyperbilirubinemiain the postnatal period.

The clinical spectrum of CP in our country may differ from that reported from the western countries. Perinatal factors were leading risk factors in CP etiology in this study.

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