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CEREBRAL PALSY;
CROSS SECTIONAL SURVEY

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ABSTRACT… Background: Cerebral Palsy is a disorder of movement and postural balance due to insult to the brain. The injury to the developing brain may be prenatal, natal or postnatal. The diagnosis is clinical mainly. The spastic Cerebral Palsy is classified into monoplegic, hemiplegic, diplegic, and quadriplegic types. There is a difference in the frequency of these types of Cerebral Palsy in different studies. The patterns of various forms of Cerebral Palsy emerge gradually with a delay in developmental milestones. A spectrum of associated developmental disabilities has been found to be common in these children. Management is through a multi-disciplinary approach. **Objectives:** To find out the frequency of different types of Cerebral Palsy and degree of associated developmental delay. **Methodology:** A cross sectional study was carried out for a period of six months (October 1, 2006 to March 31, 2007) at The Children's Hospital & Institute of Child Health Lahore. 100 Cases diagnosed as Cerebral Palsy on clinical basis were assessed for the type of cerebral palsy and the degree of associated developmental delay. **Results:** Out of the total 100 patients 54% had quadriplegia, 32% had diplegia, 10% had himiplegia and 4% had monoplegia. The total fifty-four cases of quadriplegic cerebral palsy 54 had developmental delay and amongst them 4 (7%) had mild delay, 16 (30%) had moderate delay while 34 (63%) had severe delay. Amongst the total forty-six other three types of cerebral palsy 12 (26%) had mild delay, 6 (13%) had moderate delay and 28 (61%) had severe delay. The P-value was >0.05. **Conclusions:** Quadriplegic is the commonest type of CP, associated with the factors (peri-natal more than socio-demographic) and had significant effect on the developmental parameters.

Key words: Cerebral Palsy, types, developmental delay

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INTRODUCTION

The 'Cerebral Palsy' is a diverse, multi-factorial and a common lifelong developmental disability with Worldwide incidence of 2- 2.5 per 1000 live births[1]. It is more prevalent in deprived socioeconomic populations[2]. The most important risk factors for Cerebral Palsy (CP) are low birth weight, intrauterine infections and multiple gestations[2]. Its clinical diagnosis made by an awareness of risk factors, regular developmental screening of all high-risk babies and neurological examination1. The clinical spectrum of cerebral palsy is different in developing countries compared with developed countries[3].

CP involves weakness or paralysis of the involved part and abnormal tone and posture. Tone may be increased or decreased. Early hypotonia mostly changes to increased tone by twelve to eighteen months of age[1]. A national study found that the quadriplegic type (involving four limbs, associated with acute hypoxic intrapartum asphyxia) was the most common out of other types of 'CP' including hemiplegia (unilateral involvement), diplegia (both lower limbs) and monoplegia (one limb)[2,3,4] Neurologically CP are spastic, dyskinetic, ataxic, hypotonic or mixed with spastic being the commonest one and this patterns emerge gradually with a delay in developmental milestones[2].

Keeping these clinical types a study was planned to find the local commonest type (s) of CP cases presenting in our hospital with different clinical problems.

Objectives

To find the frequency of the different types of

Cerebral Palsy locally common in this referral hospital.

Operational Definitions

Cerebral Palsy: A disorder causing weakness of one or more limbs associated with abnormal tone due to some prenatal, perinatal or postnatal risk factor, which is known to cause brain insult.

PATIENTS AND METHODS

This cross sectional study was conducted at the department of 'Developmental Pediatrics', The Children's Hospital, Lahore from October 1, 2006 to March 31, 2007. 100 cases of cerebral palsy judged on clinical basis selected through convenience sampling and following selection criteria:

Inclusion Criteria

- Up to 18 years of age of either sex
- Patients having squeal of meningitis

Exclusion Criteria

- Patients having Degenerative brain disease.
- Patients of Spinomuscular Atrophy
- All syndromes presenting with or without developmental delay

Data Collection

Selected cases were interviewed after getting their consent for the basic demographic information, family history, socioeconomic history, medication history and History related to meningitis, spinomuscular atrophies and degenerative brain disease was obtained. Detailed medical history (antenatal risk factors like fever, prolonged rupture of membranes, prematurity etc., mode of delivery and the postnatal factors like delayed cry, fits, jaundice and whether the baby was admitted to nursery or not. The history of any weakness in limbs and any disturbance of posture and balance was inquired). The physical examination was done starting from the general physical examination and measuring the head circumference of the child. Then gait was assessed. Muscle bulk, tone, power and reflexes were examined in all the four limbs. This much made confirm the clinical impression of CP and determine its type. The variables of interest on examination were the different types of cerebral palsy and classified by age, by gender, OFC, weight, type of delivery, place of delivery and analyzed by Chi square and t-test of significance. The p value of less than 0.05 was considered significant.

RESULTS

Out of 100 cases of CP, almost half (n=54) were identified as quadriplegic type (see figure1), followed by diplegic (n=32), hemiplegic (n=10) and only 4 cases of monoplegic type. Regarding background variables included Age, Gender, history of previous hospitalization and socio-economic status of study cases.

On descriptive analysis of these background factors is shown in table 1. Age of study cases was from 6 months and 12 years with mean±sd of 3.35 ±3.02 years. Almost half (n=52) were between 1 to 5 years of age, the distribution was found to be persistent in quadriplegic type. Gender distribution showed slightly more male cases (n=56) and the similar increased distribution also seen in quadriplegic. Out of 67 cases having history of previous hospitalization 30 were females while 37 were males. These cases belonged to varied socio-economic status (finding based on the response about mean monthly income asked from each study case). It was ranging from three to fifty thousand rupees with mean of 11,040 rupees but distribution was slightly skewed towards category having salary less than 5000 rupees per month.

Descriptive analysis of studied risk factors is shown in table 2. Among these risk factors present during antenatal period in our study, mothers of 6 cases had history of fever & Pregnancy Induced Hypertension each and mothers of 2 cases had history of premature rupture of membranes. Majority was delivered through vaginal route (n=88) and at home (n=82). Among the risk factors present during postnatal period, the most common was history of delayed cry (n=78) followed by cyanosis (n=4%) with fits and jaundice in only few cases.

On inferential analysis about numerical variables is shown in table 3. On comparing mean age, body weight and OFC of quadriplegic cerebral palsy cases with other types of Cerebral Palsy significant difference was seen (P value <0.05).

DISCUSSION

Out of the total 100 cases 54% had quadriplegia being the commonest similar to another study in Allied Hospital Faisalabad. Birth asphyxia (36%) was the major etiologic factor in their study, which was also similar to our results, but it accounted for a far larger number of cases (78%) in our study. The Results show identical figures (34%) for the

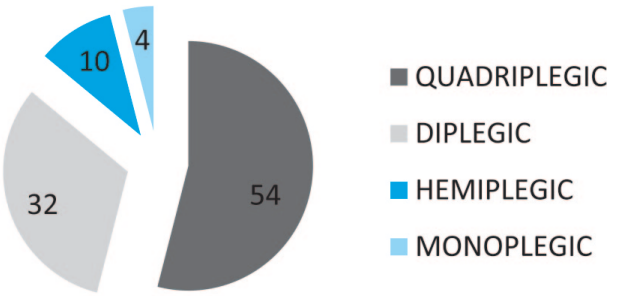

Figure-1. Frequency of different types of Cerebral Palsy

Characteristics		Quadriplegic (n=54)	Diplegic (n=32)	Hemiplegic (n=10)	Monoplegic (n=4)
Age	≤ 1 YEAR (n=28)	22	4	--	2
	1-5 YEAR (n=52)	24	18	8	2
	>5 YEAR (n=20)	8	10	2	--
Sex	Female (n=44)	22	18	4	--
	Male (n=56)	32	14	6	4
Previous hospitalization (n=67)		33	24	6	4
Income in Rs/ mont	≤ 5000 (n=36)	22	8	6	--
	6 to10000 (n=36)	16	16	2	2
	>10000 (n=26)	16	8	2	2

Table-I. Type of Cerebral Palsy Versus Background Variables

Characteristics		Quadriplegic (n=54)	Diplegic (n=32)	Hemiplegic (n=10)	Monoplegic (n=4)
Ante Natal Risk	FEVER (n=6)	2	4	--	--
	P I H (n=6)	4	2	--	--
	PROM (n=2)	-	2	--	--
Mode of Delivery	SVD (n=88)	48	28	8	4
	C Section (n=12)	6	4	2	--
Natal	Prolonged Labor (n=10)	2	6	--	2
	Pre-maturity (n=8)	4	4	--	--
	Home Delivery (n=82)	18	8	4	2
Post Natal Risk Factors	Delayed Cry (n=78)	44	24	6	4
	Cyanosis (n=48)	24	16	6	2
	Jaundice (n=18)	10	4	2	2
	Fits (n=34)	14	14	2	4

Table-II. Type of Cerebral Palsy Versus Risk Factors

Mean values	Quadriplegic	Other types	Sig. (2-tailed)	95% Confidence Interval of the Difference	
				Upper	Lower
Chronological Age (years)	2.8±2.5	12±6.8	0.001	-1.868	-0.483
Body weight (kg)	10±6.2	12±6.8	0.001	-3.9373	-1.9515
Head Circumference (cms)	40±3.6	43±5.5	0	-3.687	-0.268

Table-III. Comparative Statistics of Quadriplegic CP with other types of CP

patients experiencing fits in our study with those found to have meningoencephalitis (34%) in their study[5].

Yvonne W.Wu, Steven M. Day, David J. Strauss and Robert M.Shavelle conducted a study in California on cerebral palsy, which was published in 2004. Spastic quadriplegia was the predominant type of Cerebral Palsy in the majority of the cases in their study also[6].

Sankar C, Mundkur N from india, in their analysis of the frequency of Cerebral Palsy all over the world, have found that in most studies diplegia (30%-40%) is the most common type, followed by the hemiplegic type (20%-30%) and then the quadriplegic one (10-15%); while the monoplegic variety has been the least common. This is more reflective of the developed countries trend as a far greater number of studies are conducted over there are as compared to the developing countries[1].

Wu YW, Coren LA, Shah SJ, Newman TB, Najjar DV conducted study on 377 cases of CP. Spastic hemiplegia (39%) was found to be the most common type, followed by the quadriplegic type (28%), which is contrary to my study results. Fifty nine percent had moderate or severe impairment. The brain imaging findings showed that those with mild delay were more likely to have a normal result[7].

Johnston MV and Hoon AH found in their studies that the diplegic type as the most common one and also that of the total 152 patients, the majority 81 (53%) had diplegia while 45 (30%) had quadriplegia, which was the most common type in my study. However the hemiplegic type is in the third in both the studies, having 17% in their study as compared to 10% in ours. Howard J et al conducted a study in Victoria on 374 children of Cerebral Palsy. They found that there was a fairly even distribution across the topographical distributions of hemiplegia (35%), diplegia (28%) and quadriplegia (37%). The quadriplegic type was again found to be the most common one. The hemiplegic type was the second most common as seen in majority of the data from the developed countries[8]. The finding that severe developmental delay was so frequent might be due to late referral and improper management if any, earlier. Limitations of this study were the inaccurately narrated antenatal history due to a lesser degree of awareness.

CONCLUSIONS

We found that the quadriplegic variety is the commonest type of Cerebral Palsy, mostly associated with the factors (peri-natal more than socio-demographic) and had significant effect on key developmental parameters.

RECOMMENDATION

This study has highlighted the importance of preventing and managing commonest type of cerebral palsy that may prevent grave consequences faced by the families of affected ones.

REFERENCES

1. Sankar C, Mundkur N. **Cerebral palsy-definition, classification, etiology and early diagnosis.** Indian J Pediatr 2005;72:865-868.

2. Behrman R E, Kliegmann R M, Jenson H B. **Nelson textbook of Pediatrics.** 17th ed. Philadelphia: Elsevier; 2004:1485-87.

3. Paneth N, Hong T, Korzeniewski S. **The descriptive epidemiology of cerebral palsy**. Clin Perinatol. 2006

Jun;33(2):251-67.

4. Odding E,Roebroeck ME, Stam HJ . **The epidemiology of cerebral palsy: incidence,impairments and risk factors.** Disabil Rehabil.2006 Feb 28; 28(4): 183-91

5. Nazir B, Butt M A, Shamoon M, Sheikh S, Malik A, Hashmat N. **Etiology and types of cerebral palsy.** Pakistan Ped J 2003; 27:152-6.

6. Yvonne W.Wu, Steven M. Day, David J. Strauss, Robert M. Shavelle. **Prognosis for Ambulation in Cerebral Palsy: A Population-Based Study.** Pediatrics.2004, 114(4): 1264-1271

7. Wu YW, Coren LA, Shah SJ, Newman TB, Najjar DV. **Cerebral Palsy in a term population: Risk factors and neuroimaging findings.** Pediatrics.2006, Aug; 118(2): 690-697.

8. Howard J, Soo B, Graham HK, Boyd RN, Reid S, Lanigan A, Wolf R, Reddihough DS. **Cerebral palsy in Victoria: motor types, topography and gross function.** J Paediatr Child Health. 2005 Sep;41 (9-10):479-83.