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Causes of Cerebral Palsy in Sulaimani

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Abstract

Background and objectives: Cerebral palsy is a common neurodevelopmental condition encountered by pediatricians The condition may present itself in many different clinical spectra. The etiological and risk factors are many and an awareness of the interplay of multiple factors in the causation of cerebral palsy is crucial. The aim of the study is to evaluate the risk factors of cerebral palsy in Sulaimani city. A better understanding of the etiology of cerebral palsy is necessary for preventive strategies and treatments to be developed. **Methods:**This is a retrospective case control study including 100 cerebral palsy patients; data were taken from the records of rehabilitation center in Sulaimani city from 1st Jan 2017 up to 1st- Sep 2017and 100 control group of the same age admitted in our hospital. **Results:** One hundred cases of CP (52% male) and (48% female) were collected ,their mean age was 1.64 years and standard deviation (.52262) ,the risk factors of the cerebral palsy were birth asphyxia , prematurity , unknown cause ,and jaundice were (31 % , 26 %, 17%, 11% ,) respectively. There was a significant difference between control and cerebral palsy groups regarding (birth asphyxia, prematurity, pregnancy induced hypertension and jaundice). **Conclusions:** Birth asphyxia was identified as a major cause of cerebral palsy in Sulaimani city according to our study followed by prematurity as a second risk factor of cerebral palsy.

Keywords: Cerebral palsy; Asphyxia; Prematurity.

Introduction

Cerebral palsy is a long-term disorder[1]. It illustrates a group of permanent disorders of the development of movement and posture[2]. Clinical and epidemiological evidence point out that white matter brain lesions detected by neurosonography during the neonatal period are the most significant identifiable risk factors for the development of cerebral palsy[3]. Symptoms of cerebral palsy vary in severity and they vary from human to another, and the symptoms may change as the child get older[4] .The motor type of cerebral palsy is frequently described as spastic, dyskinetic, ataxic, hypotonic or mixed[5].Spastic types exhibit pyramidal involvement with upper motor neuron signs[6]. Hypotonia, occurring in those with cerebral palsy or other neurologic disorders usually results in growth inhibition[7]. Atonic diplegia is characterized by hypotonia, motor disability, and, usually, severe mental retardation[8].The spastic type can be quadriplegic, diplegic, triplegic, monoplegic, hemiplegic or double hemiplegic depending on type of involvement[9]. The incidence of CP among term-born infants ranges between 1 and 1.7 per 1000 live births[10].The diagnosis is made by clinical examination, with special attention to the assessment of posture and the pattern of tone in the limbs and trunk[11] aberrant control of movement or posture, which appears early in life and leads to a constant motor disability[12]. It depends enormously on the child's IQ, severity of the motor deficits, and degree of incapacity[13]. Neonatal asphyxia has also been a known risk factor for developing CP[14]. Intrauterine exposure to maternal infection was associated with a significant increase in the risk of CP in normal birth weight[15]. Refractive errors are seen in 25% to 50% of children with cerebral palsy and referral to ophthalmologists for phorias and tropias that continue after 4 months of age is necessary to protect from amblyopia[16]. The management of CP need a team consist of physiotherapist ,person skilled in speech therapy and using botulinum toxin to those who complain from movement disorder and observation of general condition of the patient like the presence of seizures[17].

Patient and methods

This is a retrospective case control study including one hundreds CP patients , data were taken from the records of rehabilitation center in Sulaimani city from 1st Jan 2017 up to 1st- Sep 2017and 100 control cases of the same age who were admitted to our hospital. Collected data included age, sex, mobile number, questions related to perinatal problems (age of mother at time of delivery, parity, maternal problems during pregnancy like diabetes mellitus, pregnancy induced hypertension, anemia, etc...), neonatal problems during birth (birth asphyxia, breech presentation, etc…) type and place of delivery, and postnatal questions. The data were analyzed by IBM SPSS version 21. In this study we couldn't insert a data related to Apgar score at birth because of difficulty to getting such a data in our society, unless it is medically documented.

Results

Overall male: female ratio of (1.06), with a mean (1.4800 ±.50212 SD), most of patients were born at governmental hospitals, some of them in private hospitals. In Table 1, there were 26 (26%) cases of preterm birth and 20% of them had birth in rural regions, while 6% only from those preterm had birth in urban regions. Other cases were full term. The data in Table 1 shows that the number of preterm newborns among CP group is more common in rural

areas than urban areas

Table (1): Geographical distribution

	Urban	Rural	Total
Term	32	42	74
Preterm	6	20	26
Total	38	62	100

In Table 2, the birth asphyxia for children with CP was 31 case (p=0.008). Cases of jaundice in CP group were 11 while 23 in control group so there is a significant relationship since the p value<0.001. There was no statistical significant difference between cerebral palsy and control group regarding assisted delivery, breech presentation, consanguinity marriage.

Table (2): Maternal variables in CP and Control group

Variables	CP child	Control child	P value
Birth asphyxia			
Yes	31	12	0.008
No	69	88	
Jaundice			
Yes	11	23	<0.001
No	89	77	
Assisted delivery			
Yes	7	5	0.31
No	93	95	
RDS			
Yes	3	2	0.691
No	97	98	
Breech			
Yes	4	5	0.188
No	96	95	
Consanguineous marriage			
Yes	44	23	0.691
No	56	77	
Prematurity			
Yes	26	10	0.012
No			

In Table 3, most of patients were delivered by vaginal delivery (61 case) and 39 case delivered by C/S. The mothers of 8 cases had pregnancy induced hypertension (PIH), while only 3 mothers had PIH in the control group , so the P value is <0.001, there was no statistical significant difference between cerebral palsy cases and control group regarding the parity, diabetes mellitus , mode of delivery, and family history of cerebral palsy.

Table (3): Fetal risk factors

Variables	CP child (n=100)	Control child (n=100)	P value
Mother age at delivery			
Below 20yr	4	7	
20_40Yr	83	84	<0.001
More than 40 yr.	13	9	
Multigravida	72	19	0.449
Primigravida	28	81	
PIH			
Yes	8	3	<0.001
No	92	97	
D.M			
Yes	3	1	0.97
No	97	99	
C/S	39	21	0.123
NVD	61	79	
FH of CP			
Yes	32	3	0.69
No	68	97	
Anemia			
Yes	3	1	0.97
No	97	99	
Rubella			
Yes	1	0	0.01
No	99	100	
Toxoplasmosis			0.01
Yes	1	0	
No	99	100	

In Table 4, the possible etiologies of cerebral palsy were: birth asphyxia (31 %), prematurity (26 %), and idiopathic cause (17%), Jaundice (11%). Two cases had history of neonatal meningitis. (26%) cases were premature and etiology was uncertain in 17cases (17%).

The data in this table shows that the number of preterm newborns among CP group is more common in rural areas than urban areas.

Table (4): Supposed risk factors in CP group

Risk factors	%
Birth asphyxia	31
Prematurity	26
Unknown Cases	17
Jaundice	11
Assisted delivery	7
Breech	4
Meningitis	2
*Other causes	2
Total	100

*The other causes included one case of cri du chat syndrome which was approved by a chromosomal study and the other case was toxoplasmosis

Discussion

The most common risk factor for cerebral palsy in our study was birth asphyxia n=31(31%), prematurity n=26(26%), unknown causes n=17(17%), Kareem's study[18] showed that the most common etiology was preterm delivery (28.42%). Ashour's study[19] showed that birth asphyxia accounts for 36% of cases and prematurity 8.6%. A study done by Ejeliogu[20]. showed that most common cause of cerebral palsy is home birth. In our study unknown causes of CP were 17 cases (17%), while in Ashour's study19 it was 18.9%, while in Ramesh study[21] it was 13% of cases. In our study postnatal infection (meningitis) accounted for 2 cases (2%), while in Ashour's[19] study it happened in 10.8% of cases, and in Kulak's[22] study it is (8.82%), in Ejeliogu's study20 it was (15.0%). In our study the prematurity constituted 26%, in Kareem's study18 it was (28.42%), in Ejeliogu's study[20] it is (6.4%), in Kulak study[22] it is (43.6%).In our study consanguinity is (44%) in CP group with (23%) in control group while it was (25.89%) in Kareem's study[18]. Regarding pregnancy induced hypertension our study showed significant relationship with CP patients. Eight percent of mothers had PIH whose sons has a CP while 3% mothers had PIH from control group, in Ramesh study[21]PIH was (4.4%) .Our study showed that assisted delivery was (7%); Saadi's study[23] also found that the assisted delivery was not of statistical significance. The rate of jaundice in this study was (11%) and only was confined to those who got TSB level above 15mg/dl and underwent a blood exchange, while other newborns who got a mild jaundice for a few days were not put under the jaundice category as risk factor because they had other problems apart from neonatal jaundice during neonatal period like: birth asphyxia, because the fact that the data related to the level of jaundice depend on what was documented in the medical records and on what the parents had said, therefore the data related to this variable is not so accurate. In Kareem's study[18] the Jaundice constituted (18.31%) of CP cases, in Ejeliogu's study[20] it was constitute 33.6% of cases, in Kulak's study it is (21%)[22].

Conclusions

Birth asphyxia was the major cause of cerebral palsy in Sulaimani city according to our study followed by prematurity as a second risk factor . There is a necessity for improving the health facilities to overcome this costly neuromotor disability.

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