

BIRTH VENUE IN PATIENTS WITH CEREBRAL PALSY

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ABSTRACT

Objective: To determine the venue of birth in patients with cerebral palsy (CP).

Methodology: It was a descriptive observational study conducted in the Out Patient Department (OPD) of Neurosurgery, Lady Reading Hospital, Peshawar, from January to July 2013. The age, sex and location was recorded from the parents of the CP child on a predesigned performa as well as the venue of delivery; whether home or hospital and/or delivered through caesarian section or normal vaginal delivery. Information about the birth asphyxia, seizures as well as preterm delivery was noted.

Results: A total of 82 patients were included in this study including 57 males and 25 females with a male to female ratio of 2.4:1. The age of the patients ranged from 14 months to 14 years with a mean age of 4.73 ± 3.35 years. Of the total 82 patients 59 were delivered either at hospital or the maternity center and 23 were delivered at home. In hospital delivered patients 5 patients were delivered through caesarian section where as 54 children through normal vaginal delivery. Birth asphyxia was present in 9(10.84%) of hospital delivered group whereas 3(3.61%) of patients delivered at home. 2(2.40%) patients were preterm in hospital delivered group and 4 (4.40%) in home delivered group.

Conclusion: Most of the patients with the cerebral Palsy were delivered at hospital. The birth venue is not wholly responsible for the CP. There are more hospital deliveries compared to home deliveries.

Key Words: Birth venue, Cerebral palsy

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INTRODUCTION

Cerebral palsy (CP) is a group of disorders of the development of movement and posture, causing activity limitation and is attributed to non-progressive disturbances that occurred in the developing fetal or infant brain. The motor disorders of CP manifest as hemiplegia, diplegia or quadriplegia but also as hypertonicity and contractures. These are often accompanied by disturbances of sensation, cognition, communication and seizure disorder¹.

The estimated prevalence of the cerebral palsy is about 2.1/1000 live births². Local studies on the epidemiology of CP are lacking. However it is not only a problem of the developing world but its rate is either constant or on the rise in the developed countries like the United States as well³. The etiology is multifactorial and includes hypoxic ischemic brain injury, periventricular leukomalacia or intraventricular and/or parenchymal hemorrhage that occurs in the first year of life¹. Studies using conventional magnetic resonance imaging (MRI) have shown that 70 to 90% of affected children have structural brain abnormalities⁴. Moreover ethnicity,

low socioeconomic status, low birth weight, prematurity and male gender are risk factors for CP⁵. No cure is available for a patient with CP till date and current treatments are targeted towards maintaining function, relieving contractures, improving nutrition and providing developmental supportive care and family counseling. Future focus is on the role of autologous umbilical cord blood transfusions and the use of Granulocyte- Colony Stimulating Factor (G-CSF) in children with CP⁶.

CP child is not just a disease child to be cared for but has the fiscal brunt on the family in the form of extra care and frequent consultation as the CP has one of the highest lifetime costs of any congenital abnormalities⁶. In a developing country like Pakistan where maternal and child health facilities are still far from reach in the majority of the areas, most of the babies are delivered in the hands of the midwives and Dais. Similarly home delivered CP babies may never present to hospital or they may die at home with no medical care, yet in our clinical practice we came across children with CP most of whom are delivered in the hospital. This coerced us to know about the birth venue of patients with cerebral palsy and dig out the covert factors responsible for this

seemingly increased proportion of CP among the hospital delivered group.

METHODOLOGY

This was a descriptive observational study conducted in the Department of Neurosurgery, Lady Reading Hospital, Peshawar, from January to July 2013. History was taken from the parents of all children with cerebral palsy brought to the Outpatient Department of the Neurosurgery; the information was filled on a pre-designed Performa including the age, sex, location, hospital or home delivery, normal vaginal delivery or delivery through caesarian section, presence or absence of birth asphyxia, seizures, any congenital anomaly such as microcephaly or not. Chances for a recall bias were very low as majority of parents know about the birth venue and mode of delivery (whether C-section/ normal vaginal delivery) of their children. CT scans were performed in all cases and congenital anomalies like brain atrophy or ischemic insult in the form of infarction were also noted. The patients who do not have a congenital or birth related cause of CP like motor vehicle accident, history of fall from height or near drowning were excluded from the study. All the data was entered to the SPSS software version 16 and was analyzed and presented in the form of tables.

RESULTS

A total of 82 patients were included in this study with 57(69.51%) males and 25(30.48%) females. Male to female ratio was 2.4:1. The patients' age ranged from 14 months to 14 years with a mean age of the patient being 4.73 ± 3.35 years. The patients were grouped into two i.e. above seven years and those below seven years; on the basis to know whether there had been any change in the last seven years in the hospital or home delivery group. 63(76.82%) patients were below seven years of age and 19(22.89%) patients were above seven years of age. Of the 82 patients in the study 59(71.95%) patients were delivered in the hospital and 23(28.04%) were delivered at home. Age and the place of delivery is shown in table 1. Five patients were delivered in the maternity homes that were included in the hospital delivery group. In the hospital delivery group there were 5(8.47%) patients who had undergone caesarian section and 54 patients who were delivered through normal vaginal deliveries. Birth asphyxia was present in total of

13 patients which was more in the hospital group (9 children; 10.85%) as compared to home group (4 children; 4.81%).

DISCUSSION

Cerebral palsy is among the leading causes of physical disability. A child with CP is a continuous source of perturbation for the family. It is estimated that more than 80%⁸ of the deliveries in our country are done at home where the child and the mother both are on the mercy of an untrained personnel.

Much work has been done on the CP in the west especially the Scandinavian countries, we are lacking in this subject in the form of local data^{2,3,11}. We conducted this study on 82 children with CP who presented to the OPD of Department of Neurosurgery during a period of six months. Of these 82 patients the male to female ratio in our study was 2.4:1. There has been slight increase prevalence in male children compared to females²⁰. The modest increase observed in our society could be due to the more attention given to a male child compared to a female child as it is primarily a male dominant society. The mean age in our series was 4.73 ± 3.35 years. The proper age defined for a patient to be labeled CP is 3 years¹⁹, but literature support labeling a child as early as 14 months endorsed by the magnetic resonance imaging¹⁹.

The impetus behind grouping the children with CP as below and above seven years of age was to know about the difference in the hospital and home delivered children in the last seven years. There were 23.17% of patients in the above seven years group the children in below seven years constituted 76.83%. Of the hospital delivered group comprising 71.95% of total; the children with CP constituted 57.32% in group I as compared to 19.51% in home delivered (comprising 28.05% of the total). This reflects an increasing trend towards hospital delivery in the last seven years compared to the previous 07 years which is a good omen towards maternal and child health care. So the first clue that we clenched is that there is an increasing trend towards hospital delivery and as more patients are delivered at hospital there would be an increased number of patients born out of an adverse obstetric or gynecological event even if they constitute a small percent of the total. Although studies show that only 40%⁹-61%¹⁰ of our

Table 1: Group wise distribution of CP children according to age and correlation with the place of delivery

Group	Delivered at home	Delivered at hospital	Total
I (1-7 years)	16(19.51%)	47(57.32%)	63(76.83%)
II (8-14 years)	7(8.54%)	12(14.63%)	19(23.17%)
Total	23(28.05%)	59(71.95%)	82 (100%)

population has hospital based deliveries (36% in tertiary care hospital while 25% in private clinics and hospitals).

Before blaming the hospitals and questioning the safety of delivery lets go through a review of the events and the risk factors that may contribute to CP and take a vantage of our population. The risk factors for infants with CP are birth asphyxia, placental abnormalities, major and minor birth defects, low birth weight, twin pregnancies, lack of maternal education (89%¹⁸ in our set up) premature birth, meconium aspiration, instrumental/emergency caesarean delivery, neonatal seizures, hypoglycaemia, and neonatal infections^{9,11-14,17}.

Rehana et al studied risk factor for birth asphyxia which is present in 15.25% in our series up and is also a risk factor for CP. These included lack of antenatal visit (64%), maternal anemia and hypertension (19%), age >35 or <18(30%), lack of maternal education, mode of delivery as C-section (20%), meconium stained liquor, prolong rupture of membrane >18 hours (24%) and presentation other than cephalic (20%).

Preterm deliveries were recorded in a total of 6 (7.34%) and constituted 17.39% of the home delivery group and 3.38% of the hospital delivered group. Rehana¹⁵ showed that 12% of the children born in our set up were pre term. The incidence of CP is raised among the preterm compared to the term babies because of the issues in the survival of the preterm infants. The incidence of CP among preterm is very high 43/1000 live births (32-36 weeks of gestation) compared to the 1.46/1000(>36 weeks of gestation) live births as reported by Himmelmann et al¹⁶.

No record was available regarding twin pregnancies and CP in our study which is a limitation on the part. A study by Qazi G¹⁸ shows that 3.2% are twin pregnancies in society and the increase in the delivery of the retained twin (12%)¹² in our set up contributes further to the brunt of CP.

The increasing incidence of patients with CP delivered at hospital could be attributed to multi-factorial causes. The hospital can't be blamed wholly for this increasing incidence. As shown in the results during the last seven years there was an increasing trend towards hospital delivery as the ratio of hospital to home delivery has increased during the last seven years. Additionally the patients are from low socioeconomic group which itself is a risk factor for having children with CP. The data about the hospital record is lacking which is a limitation as whether these were born in a tertiary care unit or in secondary set up. In developed countries almost one third of the patients with CP had at least one adverse obstetric event. In our country where there are limited facilities in the suburb areas there is a lot of burden on the hospital and the criteria regarding intra-partal events severe enough to cause CP as outlined by the

American College of Obstetricians and Gynecologists (ACOG)¹⁶ cannot be followed. Most of the government set ups do not have the facilities to follow that.

CONCLUSION

Most of the patients with the cerebral palsy were delivered at hospital. The birth venue is not wholly responsible for the CP. As there are more hospital deliveries compared to home deliveries.

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CONTRIBUTORS

MA conceived the idea, planned the study, and drafted the manuscript. KMK, RH, MUK and BZK helped acquisition of data and did statistical analysis. BK helped acquisition of data, drafted and critically revised the manuscript. All authors contributed significantly to the submitted manuscript.