Original Research Paper

Physical Medicine and Rehabilitation

A STUDY ON CLINICAL PROFILE AND RISK FACTORS OF CEREBRAL PALSY

C. Hemachithra*	Lecturer, Division of PM&R, RMMC&H, Annamalai University, Tamilnadu, India. *Corresponding Author
N. Meena	Lecturer, Division of PM&R, RMMC&H, Annamalai University, Tamilnadu, India.

ABSTRACT
Cerebral palsy (CP) is the most common congenital neurological disorder. The etiological and the risk factors are many and an awareness of the interplay of multiple factors in the causation is crucial. The aim of the study is to investigate the clinical profile and risk factors of CP children in and around Chidambaram. A retrospective cross sectional study was conducted in the Division of Physical Medicine and Rehabilitation, Rajah Muthiah Medical College and Hospital, Chidambaram. Seventy clinically diagnosed CP children were enrolled and clinical profile and history were retrieved from the case sheets and the parents of CP children. The result shows that out of 70 CP children 53% of males and 47% of females were found. The anthropometric measurements like height and weight of the CP children were found lower than the normal. Among 70 children spastic type of CP was the most common, Athetoid type (5.7%) and ataxic type (5.7%) are the least common type. This study concluded that neonatal care services in Chidambaram should be reviewed to get more attention which helps to promote early intervention and rehabilitation of CP children.

1. INTRODUCTION

Cerebral Palsy(CP) is a non-progressive disorders of movement and posture caused by injury or anomaly to the developing brain which represents a group of clinically heterogeneous conditions and accompanied by various co morbidities such as epilepsy, impairments of sensation, cognition and communication[1,2]. The literatures have been reported that the worldwide prevalence of CP ranges from 1.5 to more than 4 per 1000 live births[3,4]. CP is one of the disorders which impose a huge burden on the family psychologically, emotionally, financially and socially. It could also constitute a major burden on the National health system, because it is a chronic disorder and needs collaborative efforts between many teams and organizations for treatment and rehabilitation[5-7]. The occurrence of CP has been associated with many risk factors such as prematurity, low birth weight, birth defects, neonatal and maternal infections, birth asphyxia, and epilepsy. Still the exact causes of CP have not been identified and studies proved that pre-natal and perinatal events are responsible for approximately 75% of all the cases of CP[8].

There may be variations exists in the prevalence and pattern of CP among different geographical regions, due to different etiological factors[5]. Limited studies have been explored the incidence and prevalence of CP in rural area. Population based monitoring of CP prevalence also helps to determine services needed for the affected children and their families. Descriptions about frequency of CP subtypes in the population may also helpful in predicting aetiology and risk factors. It also helps clinicians and other service providers to provide holistic care[9]. The aim of the study is to investigate the clinical profile and risk factors of children with cerebral palsy in and around Chidambaram.

2. METHODS

2.1 Study design and Settings

This retrospective cross sectional study was carried out in the outpatient department of Physical Medicine and Rehabilitation(PMR), Rajah Muthiah Medical College and Hospital(RMMCH), Annamalai University, Chidambaram. The study has been enrolled the cases of children with cerebral palsy from the period of January 2017 to January 2019. The study was approved by the Institution Human Ethics Committee(IHEC), RMMC, Annamalai University.

2.2 Participants

In this study the total number of 70 cerebral palsy children were included, who have been coming for regular physiotherapy management in the division of PMR OPD. Convenient sampling method was chosen and the following inclusion criteria were set down: Clinically diagnosed cerebral palsy, age up to 12yrs, both male and female children. The children with non-central motor deficits were excluded.

2.3 Study procedure:

Informed consent was obtained from the parents before collecting the data. Basic information like age, sex, height and weight were noted down. History of antenatal, perinatal and postnatal risk factors were collected from the parents through face to face interview and the semi structured questionnaire.

3. RESULTS

Descriptive statistics was used to analyse the basic characteristics of the children. Total number of 70 cerebral palsy children were included, out of which 37were boys and 33 were females depicted in fig 1. For easy computation age group were divided into four groups such as < 1 year, 1-3 years, 3-5 years, 5-7 years, and 7-12 years. Out of 70 children there are 8 under 1 year, 43 between 1-3years, 10 between3-5 year, 4 between 5-7 years and 5 between 7-12 years were found (fig 2). Most of the children observed between the age group of 1-3 years. The observed mean value of height (85.9±20.3) and mean value of weight (11.3±5.5) depicted in table 1. Regarding the types of cerebral palsy spastic type of CP (Diplegia 60%, Quadriplegia 21.4%, and Hemiplegia 7.1%) Athetoid type (5.7%) and ataxic type (5.7%) were observed which displayed in fig 3. The observed motor functional level of CP children found as GMFCS level 1- 12 (17%), level 2- 25 (36%), level 3- 22 (31%), level 4- 7 (10%) and level 5- 4 (6%) displayed in table 1. The antenatal and post natal risk factors found as less than 5%. The perinatal risk factors are more in number Pre term (37.1%), low birth weight (47.1%), birth asphyxia (48,6%), neonatal seizures (44.2%) and others (37.1%) displayed in fig 4.
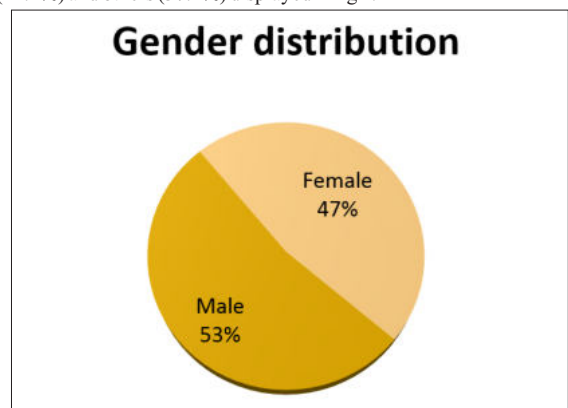

Figure – 1 Gender distributions of CP children

Table – 1 Basic characteristic of CP children including motor function levels

Basic characteristics	Mean	SD	Motor function level (GMFCS)				
			Level 1	Level 2	Level 3	Level 4	Level 5
Height (cms)	85.9	20.3	12	25	22	7	4
Weight (kgs)	11.3	5.5					

SD- Standard deviation, GMFCS-Gross Motor Function Classification Scale

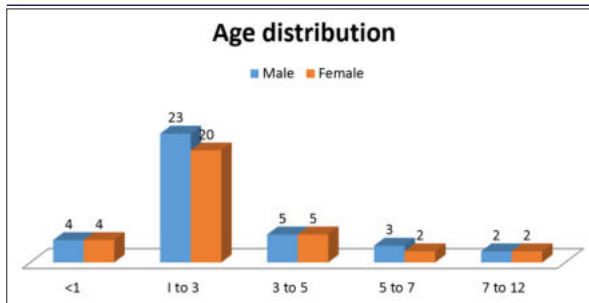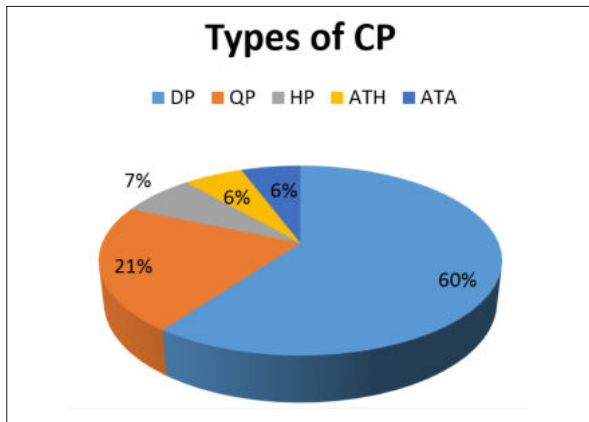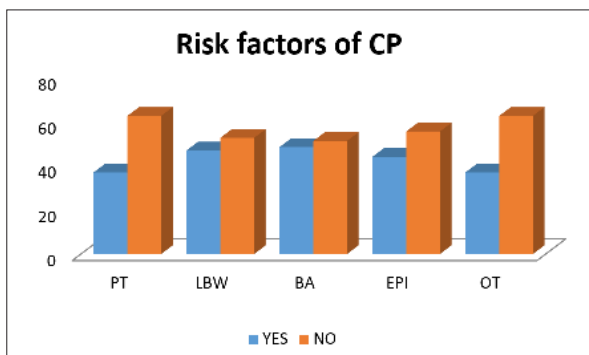## Age distribution

Figure -2 Age distribution of CP children

Types of CP

DP-Diplegia, QP- Quadriplegia, HP- Hemiplegia, ATH- Athetoid, ATA- Ataxia

Figure – 3 Types of CP children

Risk factors of CP

PT-Preterm, LBW- Low birth weight, BA-Birth asphyxia, NS- Neonatal seizures, OT- Others

Figure – 4 Risk factors of CP children

4. DISCUSSION

Cerebral palsy is a chronic condition which requires continuous care and service from the childhood throughout life. In this study among 70 cases 53% of male children and 47% of female children were observed, which denotes that male gender had higher incidence of CP than female gender in Chidambaram. The results of the study supported by Hag berg et al., declared that female gender showing lower risk with the development of CP than male gender [10].

The study results declared that the basic characteristics such as height and weight of the CP children were found lower than the normal children, which suggested that children with CP had lesser growth than the children without CP. This results strengthened by Suzan K. Campbell justified that children exposed to early insult in gestation typically produces proportional decrease in all anthropometric measures [11]. In this study most of the CP children were found in the age group of 1-3 years and the least number of children were found between the age group of 7 to 12 years, similar results was found in the study by Rajkumar et al [12]. It was found that most of the CP children are younger age group between 1-5 years.

The GMFCS is a widely used functional classification tool for CP in both clinical and research fields. Most of the children found in the motor functional level of 1 - 3 (as per GMFCS), which denotes the observed population of CP children in Chidambaram had moderate disability and able to move with self-mobility aids and needs assistance for ambulation. Maysoun saleh and Nihad almsri [13] stated that the heterogeneity of CP needs a wide range of services which differs by age and level of functional limitations. Regarding the clinical types of CP, spastic type of CP were found very common in Chidambaram and spastic diplegia observed as common subtype of CP. Athetoid and Ataxic type of CP are the least common type observed in this study. This result coincides with the study done by Nabanita Das et al (5) found spastic type of CP was the predominant and further strengthened by Rosenbloom L. [14] addressed that Spastic CP is a primary type of CP which accounts for 40-60%. The observed data reveals that most of the children had the positive history of many associated risk factors. The antenatal risk factors such as maternal infections observed as very minimal and also postnatal risk factors such as infections and trauma were found only a few. Perinatal risk factors are commonly observed in most of the children which denotes, these factors are associated with the occurrence and incidence of CP.

The main strength of the study is inclusion of clinically diagnosed CP children, the diagnosis is preferably made by pediatrician. The sample represents CP children from different rural areas around Chidambaram which helps to generalize our findings to the rural areas. Interview and semi structured questionnaire was used to collect the data which leads to possible chances of interviewer bias and examiners bias is the major limitation of the study and poor memory and unavailability of the medical records was another limitation in the study. The present study is hospital based and identified only cases of children with CP attending PMR OPD. There is also possibility that some children would have been missed in community without reference.

5. CONCLUSION

This study came to a conclusion that male children are found higher than female children. Spastic diplegia was the most common sub type of CP. Perinatal risk factors are associated with the incidence of CP and constitute major risk factors for CP in Chidambaram. These results help to strengthen the need of health promotion programs to improve holistic care and neonatal services.

REFERENCES:

1. Wolraich M, Droter D, Dworkin P, Peerin E. Developmental- behavioral pediatrics. Evidence practice. 2008; 14:483-517
2. Oskoui M, Gazzellone MJ, Thiruvahindrapuram B,, Zarrei M, Andersen J, wei J et al. Clinically relevant copy number variations detected in cerebral palsy. Nat Commun 2015: 6: 7949
3. Centers for disease control and prevention. Date & statistics for cerebral palsy, prevalence and characteristics. Available at http://www.cdc.gov/ncbddd/cp/data.html [last cited June2016]
4. Jones Kathy. Incidence of cerebral palsy remains constant in India on Indian Health News. Available at http://www.medindia.net/news/incidence of cerebral palsy remains constant in India
5. Nabanita Das, Gayatri Bezboruah, Indira Das. Study on the clinical profile of patients with cerebral palsy. IOSR Journal of Dental and Medical Sciences (IOSR-JDMS), Volume 15, Issue 7 Ver. V (July.2016), PP 54-58
6. Gayatri bezboruah, Indira Das. Study on the Clinical profile of patients with cerebral palsy. Journal of Delhi and Medical Sciences 2016: 15(7):54-58
7. Anant Ganpath Bendale, Sanjay Pundalik Baviskar. A study of clinical profile and factors associated with cerebral palsy in children at tertiary health care center. International Journal of Paediatrics 2017; 2(2):8-11.
8. Hussain R. Saadi, Rosnah sutan, Aqil M Dhaher, Serene A. Alshaham. Maternal and foetal risk factors of cerebral palsy among Iraqi children: A case control study. Journal of preventive medicine 2012; 2(3):350-358.
9. Sunil Kumar Raina, Sushil Razdan and Renu Nanda. Prevalence of cerebral palsy in children <10 years of age in R.S Pura Town of Jammu and Kashmir. Journal of Tropical Pediatrics. 2011, Vol. 57, No.4
10. Hagberg, B., Hagberg, G., Beckung, E., Uvebrant P. Changing panorama of cerebral palsy in Sweden. VIII. Prevalence and origin in the birth period 1991-94. Acta Paediatrica 2001; 90(3):271-277.
11. Suzan K. Campbell Irma J. Wilhelm, Darlene S. Slaton. Anthropometric characteristics of Young Children with Cerebral Palsy. Paediatric physical therapy 1989; 1(3):105-108.
12. Rajkumar, Anand Kumar Gupta, Ritesh Runu, Sanjay Kumar Pandey, Manish Kumar. Clinical profile of cerebral palsy: a study from multidisciplinary clinic at tertiary care centre. International Journal of Contemporary Paediatrics 2018; 5(4):1626-1630.
13. Maysoun saleh and Nihad Almsri, Cerebral palsy in Jordan: Demographics, medical characteristics, and access to services. Children's health care2017,46(1)49-65.
14. Rosenbloom L. Diagnosis and management of cerebral palsy. Archives of disease in childhood.(1995);72.4: 350-354.