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Prevalence of Dysphagia in Children with Cerebral Palsy": A Multicenter Study in Lahore

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Short Research Article

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ABSTRACT

Objective: The objective of the study was to determine the prevalence of dysphagia in children with cerebral palsy.
Materials and Methods: A sample of 105 children with cerebral palsy age between four and sixteen years, were selected from cerebral palsy centers in Lahore. Out of these children almost all were with spastic cerebral palsy. Data was collected by using a questionnaire filled by the caregivers of children with cerebral palsy. This questionnaire constitutes questions regarding swallowing difficulty of CP child and their eating & feeding patterns to determine the prevalence of dysphagia.
Results: Result indicated that out of 105 children's caregiver with cerebral palsy 36(34.3%) responded affirmatively that their children have swallowing difficulty and 69(65.7%) responded negatively that their children have no swallowing difficulty.
Conclusion: The findings suggested that prevalence of dysphagia in children with cerebral palsy is 34.3% in Lahore city.

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1. INTRODUCTION

As many people know that Cerebral palsy is a disorder in which there is much difficulty in moving different body parts due to the brain damage [1]. So these two terms has simply described that cerebral palsy is a disorder of movement and posture [2] resulting by a problem in cerebrum or the part of brain which control the movements of body [3]. In this disorder person cannot perform different actions ant activities and cannot move his muscles properly. According to an estimated value it is believed that in each 1000 live births the seven will develop cerebral palsy and more than 35% will be fall in most severe cases [4]. Now every year 10,000 infants and babies are come up with this disorder. Cerebral palsy is the most common motor disorder in children [5]. There are so many causes which cause brain damage resulting in CP before, after and during birth. With other brain relating disabilities in CP like sitting, walking, speaking, writing etc [6]. They also have dysphagia which is difficulty in swallowing during feeding. Dysphagia is a medical condition in which person is unable to swallow food of different consistencies [6]. It may caused by the nerve damage or any physical and structural abnormality. Dysphagia is 99% prevalent in severe cases of cerebral palsy but overall 40% of cases with cerebral palsy must have dysphagia in their early years of life [7]. The brain of the premature neonate is at risk two main pathologies are periventricular leukomalacia (PVL) and intraventricular hemorrhage (IHV) [8]. By these two pathologies of brain especially periventricular leukomalacia the neonate is at more risk of having cerebral palsy because PVL express white matter is damage in periventricular region. Corticospinal tracts are formed by the descending motor axons and there route is through the periventricular region. This term explains that there is a bleeding into the brain‘s ventricles from the subependynal matrix which is the basis of brain cells in the fetus. The formation of blood vessels starts in the late third trimester of gestation period therefore the periventricular vessels in preterm infant are underdeveloped which influence these infants to enhance the risk of intraventricular hemorrhage and ultimately greater risk of cerebral palsy. Intraventricular hemorrhage is a predisposing cause for periventricular leukomalacia (PVL) but still it is a separate pathological procedure [9]. There are two main factors which are involved in its pathogenesis, ischemia/Hypoxia and infection and inflammation.

The commonness of dysphagia in kids with neuromotor weaknesses is high. The term dysphagia is the medical name for trouble in swallowing [10]. In children the development of dysphagia is usually caused by the esophageal problems. To understand dysphagia normal physiology of swallowing should b understood. Two typical models are normally used to portray the physiology of usual eating and swallowing. The Four Stage Model for drinking and swallowing liquid and solid food. The normal swallow was initially express with a sequential model consisting of three stages. The swallowing procedure was divided into oral, pharyngeal, and esophageal stages according to the site of the bolus or its position. After some time the oral stage was sub classified into oral preparatory and oral propulsive stages, and the four stage model was formed. Studies stands on the four stage model sufficiently illustrate biomechanics and bolus movement throughout controlled swallows of liquids. On the other hand, this model cannot show the bolus movement and the process of eating of hard food.

2. METHODOLOGY

The study design was cross sectional survey. Study was conducted at Riphah International University Lahore Campus. Data was collected from Lahore, Pakistan. The study was completed in the duration of six months from January 2017 to June. Study population was Children with Cerebral Palsy. Convenient sampling technique was used in this study. The participants satisfying the inclusion and exclusion criteria were recruited in this study after informed consent. The sample size was 105 of estimated population. Inclusion criteria was Parents of patients with cerebral palsy, caregiver of patients with cerebral palsy, Speech therapist of children with cerebral palsy and All the children other than cerebral palsy were excluded from the study. A pre-designed Questionnaire was used as a data collecting instrument. It was used for record keeping purpose. Data was collected from both caregivers and speech therapist of children with cerebral palsy. An observational study was conducted using convenient sampling technique. Statistical package for social sciences version 18 was used to analyze data. Descriptive statistics were performed to analyze demographic

variables. Categorical data was presented as frequency & percentage. Quantitative variables were presented as mean SD. Cross tabulation were used for comparison. Paired sample t-test was used for data analysis

3. RESULTS

In this study a total of 105 subject with cerebral palsy were taken .Out of 105 subject 61(58.1%) were male and 44(48.9%) were female and the mean age of patients was 9.57 ± 2.878 years. Swallowing difficulties in children with cerebral palsy was 36 (34.3%). Pain during swallowing in children with cerebral palsy was 8 (7.6%). 31(29.5%) responded that their child has difficulty in swallowing liquids. On asking the respondent about swallowing semisolids is difficult for child or not, 16(15.2%) responded that their child has difficulty in swallowing semisolids while 89(84.8%) responded that their child has no difficulty in swallowing semisolids. On asking the respondent about swallowing solids is difficult for child or not, 31(29.5%) responded that their child has difficulty in swallowing semisolids while 73(70.5%) responded that their child has no difficulty in swallowing solids. On asking the respondent about their child, do they have difficulty in chewing hard food or not, 38(36.2) responded that their child has chewing difficulty for hard foods while 67(63.8) responded that their child has no difficulty in chewing hard foods. On asking the respondent about their children, does they have episodes of airway obstruction or not, 31(29.5%) responded that their child has episodes of airway obstruction while other 74(70.5) responded that their child has no episode of airway obstruction. On asking the respondent about their children, does they ever have pneumonia or aspiration pneumonia or not, 53(50.5%) responded that their child had pneumonia while other 51(48.6) responded that their child never had pneumonia. On asking the respondent about their children, does they cough or chock during or after swallowing or not, 39(37.1%) responded that their child cough or chock during or after swallowing while other 66(62.9) responded that their child has no coughing or chocking problem during or after swallowing.

4. DISCUSSION

On reviewing the Literature study was supportive to Miller and Willging, Prasse et al indicates in 2003 that as many as 40% of appropriately developing children and as many as 80% of children with developmental disabilities experience feeding difficulties. The number of infants experiencing dysphagia is reportedly increasing yet there is a dearth of knowledge surrounding the management and care of infants with such difficulties particularly within South Africa.

The findings suggested that the possible reason for dysphagia was oral musculature in the patients with CP. There was also found that CP child who has swallowing difficulty is also associated with some other problems such as chocking, drooling, pneumonia, weak chew and long mealtimes. In this study 105(100%) children with cerebral palsy were taken while 61(58.1%) were male and 44(48.9%) were female. When I go through the responses of caregivers of CP children about swallowing difficulty in them 36 (34.3%) responded affirmatively that their child has swallowing difficulty and 69(65.7%) responded negatively that their child has no swallowing difficulty in which 31(29.5%) has difficulty in swallowing liquids, only 16(15.2%) has difficulty on taking semisolid food and 31(29.5%) out of 105(100%) has difficulty on solids. While a previous study has the 27% evidence of dysphagia. These findings were supportive to Avedon and Brodsky reported in 2002 that pharyngeal phase swallowing disorders cannot definitively be determined without the use of an objective assessment measure although some of the signs of dysphagia, such as coughing or a gurgly voice may be indicative of a pharyngeal phase swallowing disorder. Impairments in this phase of swallowing may result in pooling or residue in the valleculae and pyriform sinuses or a delayed swallow mechanism. One of the most concerning aspects of dysphagia, aspiration, is classified as a pharyngeal phase disorder.

5. CONCLUSION

The findings suggested that prevalence of dysphagia in children with cerebral palsy is 34.3% in Lahore city.

CONSENT AND ETHICAL APPROVAL

As per international standard or university standard guideline parental consent and ethical approval has been collected and preserved by the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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