RESEARCH ARTICLE

Frequency of language and swallowing problems in children with cerebral palsy at a tertiary care hospital Rawalpindi, Pakistan

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Abstract

Objective: To investigate the occurrence of language and swallowing problem in individuals with cerebral palsy.

Methods: The cross-sectional survey was conducted at the Riphah International University, Rawalpindi, Pakistan, from September 2018 to January 2019 while data was collected from the Armed Forces Institute of Rehabilitation Medicine, Rawalpindi, a tertiary care hospital. The sample comprised individuals with cerebral palsy of either gender aged 5-18 years. Language Sample Checklist was used for language problems and the North western Dysphagia Patient Checklist was used for swallowing problems. Data was analysed using SPSS- Version 21.

Results: Of the55 subjects,62% were males, 38% were females, 76% were from urban areas and 24% were from rural areas. In terms of concepts, processing, and comprehension, 18(33%) persons were able to attempt the tasks, 45(81%) were unable to attempt morphological tasks, 41(74%) were unable to attempt sentence structure tasks, 40(72%) were unable to attempt literacy and narrative skills tasks, 41(74%)could not fulfil pragmatic tasks and 49(89%) had unintelligible speech. The patient checklist showed that 47(85%) children had normal medical history, 41(75%) had normal behavioural variable, 29(52%) had normal gross motor ability,40(73%) completed oral motor test, and 39(71%) had normal swallow trials.

Conclusion: Language problems were more prevalent in children with cerebral palsy compared to swallowing difficulties.

Keywords: Cerebral palsy, Dysarthria, Language, Swallowing, Dysphagia. (JPMA 72: 236; 2022)

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Introduction

Cerebral palsy (CP) is a neurological issue along with developmental abnormal state which begins in infancy and persists throughout the lifetime. It is often associated with cognitive dysfunction, epilepsy, sensory problems, vision compromise, communication and behavioural problems.[1] CP is indicated by inefficiency in muscular control or actions in a normal way, and it affects the development of a child to speak, learn and to be independent in his life.[2]

The aetiology of CP is very diverse and depends on several factors. It includes prenatal, perinatal and postnatal causes. Children with CP have complications, such as increased muscle tone, an abnormal and usually permanent contraction of muscles, uncontrollable dropping of saliva from the mouth, feeding problems, low bone mineral density (BMD), and gastrointestinal (GI) problems leading to vomiting and constipation.[3]

A study on CP associated with the gross motor skills used video fluoroscopy on 29 CP children, and reported decreased labial closure, inappropriate formation of bolus, residue in the oral cavity, delayed swallowing response, decreased laryngeal eminence, multiple swallow and aspiration.[4]

A study assessed natural language understanding in 87 non-verbal CP children having high severity level. A standardised tool for diagnosis was used for natural language understanding evaluation along with a computer-aided tool. Results showed 33% variance in natural language understanding related to physical age, CP form and classification of completed motor tasks. Among them, 32% children having abnormality in performing voluntary movements achieved high scores compared to those who had involuntary jerky movements. No remarkable variation was identified among variables of foetal age, seizure and tactical capability levels in contrast to complete motor tasks identified which noted a significant variation among children aged6 year and 6 months.[5]

Children who are physically disabled tend to have worse problems in language and swallowing compared to those who have primary language delay/disorder. The current study was planned to find out the presence of language and swallowing problems in CP individuals.

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Patients and Methods

The cross-sectional survey was conducted at the Riphah International University, Rawalpindi, Pakistan, from September 2018 to January 2019 while data was collected from the Armed Forces Institute of Rehabilitation Medicine (AFIRM), Rawalpindi, a tertiary care hospital. Cross sectional survey has been done for this research. The study was conducted at Riphah International University while data was collected from the tertiary care hospital, AFIRM Rawalpindi. After approval from the institutional ethical review committee, the sample size was calculated using an online calculator[6] with 9% margin of error and 91% confidence level. The sample was raised using convenience sampling technique.[7] Those included were CP individuals of either gender aged 5-18 years. Individuals with co-morbid conditions, like hearing impairment, learning disability, and intellectual disability, were excluded.

After taking informed consent from the patients or their caregivers, data was collected by using a predesigned questionnaire. The Cronbach's alpha value for reliability or internal consistency of items in the questionnaire was checked and found to be satisfactory at a value of 0.89.

Language Sample Checklist (LSC) was used for the assessment of language problems, while the Northwestern Dysphagia Patient Checklist (NDPC) was used for the assessment of swallowing problems. Data was analysed using SPSS-Version 21.

Results

Of the 55 subjects, 62% were males, 38% were females, 76% were from urban areas and 24% were from rural areas. In LSC showed that in terms of concepts, processing and comprehension, 18(33%) persons were able to attempt the tasks, 45(81%) were unable to attempt morphological tasks, 41(74%) were unable to attempt sentence structure tasks, 40(72%) were unable to attempt literacy and narrative skills tasks, 41(74%) could not fulfil pragmatic tasks and 49(89%) had unintelligible speech (Table-1).

Table-1: Language sample checklist.

Category A in language checklist	Yes (%)	No (%)
Concepts, Processing, auditory comprehension	18(33%)	37(68%)
Category B:		
Morphology/Grammar	11(19%)	44(81%)
Category C:		
MLU and Sentence structure	15(26%)	40(74%)
Category D:		
Literacy and narrative skills	15(28%)	40(72%)
Category E:		
Pragmatics	14(26%)	41(74%)
Category F:		
Speech Intelligibility	6(11%)	49(89%)

Table-2: Northern dysphagia patient check sheet.

	Yes (%)	No (%)
Category A:		
Medical history	9(16%)	46(85%)
Category B:		
Behavioural variable	Normal: 41(75%)	Abnormal: 14(25%)
Category C:		
Gross motor function	Normal: 29(52%)	Abnormal: 26(48%)
Category D:		
Oral motor test function	Normal: 40(73%)	Abnormal: 15(27%)
Category E:		
Observations during trial swallows	Normal: 39(71%)	Abnormal: 16(29%)

The NDPC showed that 47(85%) children had normal medical history, 41(75%) had normal behavioural variable, 29(52%) had normal gross motor ability, 40(73%) completed oral motor test, and 39(71%) had normal swallow trials (Table-2).

Discussion

The current study was designed to find out the occurrence of language and swallowing problems in CP children. A study on CP associated with the gross motor skills used video fluoroscopy on 29 CP children, and reported decreased labial closure, inappropriate formation of bolus, residue in the oral cavity, delayed swallowing response, decreased laryngeal eminence, multiple swallow and aspiration.[4]

A study on the prevalence and severity of feeding and nutritional problems in children with neurological impairment focused on widespread presence of feeding problems with brain injury. The sample of 377 individuals was aged 4-13 years, and showed that 93% had CP, 47% had inability to walk, and 28% had excessive saliva. Results indicated that feeding difficulty was prevalent among individuals with brain damage.[8] Likewise, in the current study, some CP children had swallowing difficulty.

One study reported that children with early CP diagnosis had 36% motor speech difficulties, children had feeding and deglutition impairment up to 21%, while 22% of children had impaired saliva control, and 42% of children had problems in speech and language but articulation deficits were not included. Also, motor speech difficulties, gross motor limitations and impaired saliva control were found in CP children with cognitive impairment.[9] However, in the current study, indistinct verbal expression was observed in 20 patients, and 5 patients had unintelligibility of speech.

One study concluded that language impairment was identified in 61% of its participants 24% were non-verbal, co-occurring receptive and expressive language impairment was found in 44% cases, isolated receptive 7% and expressive 5% impairments occurred relatively infrequently. At the group level, verbal and non-verbal participants demonstrated deficits across language sub-domains, like semantics, syntax, and morphology, rather than in single domains. Cognitive impairment and Gross Motor Function Classification System levels IV and V were associated with higher rates of language impairment. Only cognition was independently associated with language impairment when both of these factors were considered within a multivariable model.[10]

Families or parents of children with special needs need counselling for the effective management of the handicapped child. Most families of children with special needs find it difficult to accept them due to ignorance, superstitious beliefs, pride, fear misconceptions and misinformation. Counselling of parents is necessary to bring about behavioural change, positive mental health, problem resolution, personal effectiveness and decision-making.[11]

Conclusion

It was concluded that Language problems were found to be more prevalent in CP children compared to swallowing difficulties. Parents' counselling and supportive programmes must be conducted for understanding the coexistence of language and swallowing problems in CP children.

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