

Relationship between Deglutition, Oral Reflexes and Articulatory Ability of the Cerebral Palsied

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There are controversial views regarding the relationship between deglutition, oral speech reflexes and articulation in the cerebral palsied. Some authors are of the view that there is no relationship between these 3 variables (Hardy, 1933; Ingram, 1962; Hixon and Hardy, 1964; Bosma, 1975). However others opine that these 3 variables exhibit some inter-relattjon (Mysak, 1959; Shepperd, 1964; Gallender, 1979; and Love, Hagerman and Taimi, 1980).

The current study was carried out in an attempt to resolve this controversial issue, since actual research on the relation between deglutition, oral speech reflexes and articulatory ability is very limited.

Aim :

1. To compare the performance of spastic cerebral palsied children on (a) deglutition of liquids and (b) deglutition of solids.
2. To test the oral speech reflex profile in the cerebral palsied.
3. To test the relationship between deglutition patterns and the oral speech reflex profile in the cerebral palsied.
4. To test the relationship between deglutition patterns and articulatory ability at the phoneme level.
5. To test the relationship between abnormal oral speech reflexes and articulatory ability at the phoneme level in the cerebral palsied.

Methodology

The study was staged in the following steps.

1. The test format included Deglutition of liquids - imbibition (5 parameters) and swallowing (8 parameters).
2. Deglutition of solids - imbibition (2 parameters) mastication (9 parameters) and swallowing (7 parameters).
3. Oral speech reflex profile (7 parameters).
4. Articulatory ability at the phoneme level.

Administration of the test: The test was administered to a group of 51 cerebral palsied subjects, age ranging from 3-17 years. All subjects were otologically normal with no significant mental retardation, otological abnormalities, could follow oral instructions and were verbal and could speak in English.

The transcribed data were analyzed for patterns, if any, across the age groups studied in different parameters of deglutition.

Table - 8 : Parameters of deglutition of liquids, their corresponding trends seen and diagnostic significance

Deglutition	Developmental trend seen	No developmental trend seen	Significant diagnostic indicator
Imbibition	- Position of glass		X
	- Degree of lip Protrusion		
	- Degree of labial tension		X
Swallowing		- Degree of Cheek indrawing	X
		- Position of the straw	
	- Anterior seal		
	- Posterior seal		
	- Laryngeal elevation		X
	- Lingual positioning		
		- Swallow reflex	X
		- Circumoral tension	X
		- Mandibular stability	

Implications :

1. Screening tests for deglutition may be devised using only those parameters that seem to best represent the subtests on deglutition.
2. A more intensive study, on the presence of abnormal oral speech reflexes and specific articulatory patterns, needs to be carried out. This will help in establishing the relationship between certain specific types of articulatory errors and abnormal oral speech reflexes.
3. Therapy aimed at modifying or eliminating abnormal oral speech reflexes will prove more useful in facilitating speech than vegetative therapy or therapy aimed at improving dysphagia.

Limitations :

Inter judge reliability and test-retest reliability were not carried out due to time constraints.

Table - 9 Parameters of deglutition of solids, their corresponding trends and diagnostic significance

Deglutition	Developmental trend seen	No developmental trend seen	Significant diagnostic indicator
Imbibition	- Oral structure employed in spoon clearance.		X
	- Efficiency		
Mastication	- Chewing sound		
	- Mandibulararc traversed		X
	- Accompanying lingual movements.		X
		- Labial movements accompanying chewing	X
Swallowing		- Detection of food position	
		- Spillage	X
		- Masseter contraction	
		- Mode of labial clearance during chewing	X
		- Chewing efficiency	
		- Cohesive bolus formation	
		- Mandibular stability	
		- Laryngeal elevation	
		- Masseter contraction	
		- Circumoral tension	
	- Lingual positioning	X	
	- Post swallow intraoral examination		

Table - 10 : Oral speech reflexes and their diagnostic significance

Reflex	Significant diagnostic indicator
Cephalic reaction	
Facial response	
Cardinal points reaction	
Mandibular / jaw }	
Jerk reflex }	
Palatal reflex	X
Pharyngeal reflex	X
Swallowing reflex	X
Articulatory ability	X

No specific articulatory patterns of errors were observed.