Deglutition and Related Speech Performance in Normals and Spastic Cerebral Palsied

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Current status of speech therapeutics in amelioration of dysarthria in cerebral palsy has seen a universal prescription of oroneuromotor vegetative exercises. This is based on the premise that speech and deglutition ("... the process whereby a bolus, liquid or solid, is transferred from the buccal cavity to the stomach" - Lund, 1987) have manifold connections, with the two automated motor acts developing in parallel or subserved at least in part by different neuronal structures (Netsell, 1986). Providing a finesse to our therapeutic regime demands an insight into this oral motor physiology of deglutition. In lieu of the inevitable application of the transdisciplinary team approach, borrowing principles in practice from the allied professions in Indian set up, the current study is an attempt:

1 To obtain a developmental profile of oral-pharyngeal deglutition based on direct visual, tactual and auditory information ;

2. To gauge the status of deglutition in spastic cerebral palsied, enlisting the normal/near normal; primitive and pathological features;

3. To study the relationship between speech (articulation and voice) and oral pharyngeal deglutition).

Hypotheses:

1. There is no difference in the eating habits (oral and pharyngeal phases of deglutition) and speech in normal children of different age groups and normal adults.
2. There is no difference in the act of oral pharyngeal deglutition and speech in spastic cerebral palsied and normals.
3. There is no relationship between the motor acts of deglutition and speech.

Methodology:

The study was staged in the following steps :

1. Development of the test protocol based on review of literature and pilot study. The test format included -
   i. Articulation testing in isolation and word level of all the Kannada phonemes from the test of Articulation in Kannada - Diagnostics Form B (Rathna, Babu, Bettageri, 1972) (Dentals and Velars)
   ii. Deglutition of solids - imbibition (2 parameters) mastication (12 parameters) and swallowing (8 parameters).
   iii. Deglutition of liquids - imbibition (5 parameters) and swallowing (8 parameters) for quantitative analysis)

The testing on deglutition was performed in natural and simulated interrupted conditions with instruction to cease the deglutition act when required and noting the corresponding response. A semiquantified/rating scale, rated 1 through 3 (1=abnormal; 3=normal adult pattern) was designed to transcribe the data for further analysis.

Administration of the test: The test was administered to a group of 12 randomly chosen adult females, age ranging 17-25 years; 35 normal children, age ranging 2-9 years, divided into 7 subgroups on the age basis (2-3, 3-4, 4-5,5-6, 6-7, 7-8, 8-9) and 7 verbal spastic cerebral palsied (1=minimal; 2=mild, 3=moderate and 1 with moderately severe oral involvement) with no significant retardation contributory to speech delay, age ranging 3.5 -13.5 years. All the subjects were essentially otologically normal, with no alimentary or respiratory tract infection at the time of testing. The testing was individualized with distractions kept to a minimum.

Analysis, results and discussion :

1. Deglutition of solids : The transcribed data was analyzed for patterns, if any across the age groups studied in different parameters of deglutition. Table-21.a, enlists these parameters in terms of the pattern obtained.