

The Impact of Swallowing Therapy on Neurodevelopment in Individuals with Cerebral Palsy, Epilepsy, and Spinal Cerebellar Ataxia

Zehra Çetin

Language and Speech Therapist, Istinye University, Faculty of Health Sciences, Speech and Language Therapy, Istanbul, Turkey

Miray Dicle

Language and Speech Therapist, Istinye University, Faculty of Health Sciences, Speech and Language Therapy, Istanbul, Turkey

Biröl Öztürk

Department of Paediatric Gastroenterology, Hepatology and Nutrition Prof.Dr. Cemil Tascioglu City Hospital Istanbul Turkey

Abstract:

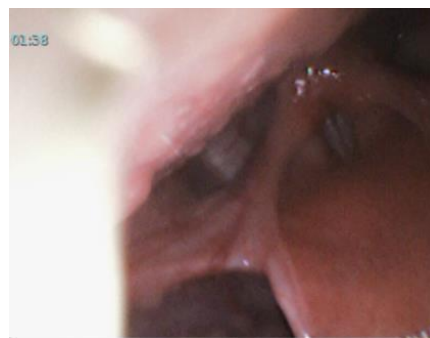
Introduction: Cerebral palsy is a motor control and posture disorder that arises from a non-progressive brain injury occurring in the intrauterine period, during birth, or within the first three years of life, when the brain has not yet completed its development (Papavasiliou et al., 2008).

Case Study: The 8-year-old male patient with known diagnoses of cerebral palsy, epilepsy, and spinal cerebellar ataxia presented with complaints of vomiting. Investigations and follow-ups revealed that the complaint did not improve, and the patient had deep metabolic acidosis, leading to their admission to the pediatric intensive care unit for further evaluation and treatment. The pediatric gastroenterologist was consulted. The patient's gag reflex was weak, and swallowing problems were identified during oral feeding. Oral feeding was discontinued, and enteral feeding via a nasogastric tube and formula were recommended. Nuclear medicine reflux scintigraphy and gastric emptying studies were also suggested. Cranial MRI showed bilateral periventricular deep white matter T2 FLAIR hyperintense signal increase, more prominent on the right side. No significant mass or hemorrhage was observed in the brain parenchyma.

With the approval of the intensive care unit staff at Prof. Dr. Cemil Taşçıoğlu Hospital, the patient underwent a flexible endoscopic evaluation of their swallowing function while hospitalized. The assessment was conducted using a Storz C-MAC monitor and a flexible nasopharyngolaryngoscope, and was performed through the patient's left nasal passage.

The assessment revealed that the nasopharynx was unobstructed, and there was no velopharyngeal dysfunction. No accumulation of secretions was observed. The vocal cords moved freely, and the airway was patent with a clear subglottis. A mild impairment in laryngopharyngeal function was present. Stimulation of the aryepiglottic folds triggered a laryngeal adductor reflex response. When the patient was fed water stained with green food coloring, premature spillage occurred, and delayed initiation of the pharyngeal swallow was observed due to inadequate oral motor control. The oral phase was impaired, with insufficient mouth closure and tongue movements. Out of four swallows following the administration of a teaspoon of water, three did not demonstrate aspiration, while one resulted in micro-aspiration. The patient responded to penetration and aspiration with cough, and the cough reflex was robust. Residue in the vallecula was cleared by an external maneuver. No complications arose. The patient was prescribed a regimen of two 40-minute swallowing therapy sessions per week.

Conclusion and Implications: The findings of this case report suggest that swallowing therapy can have a positive impact on neurodevelopmental outcomes in individuals with complex neurological conditions such as cerebral palsy, epilepsy, and spinal cerebellar ataxia. After 12 weeks of the prescribed swallowing therapy regimen, the patient was able to discontinue nasogastric feeding, and improvements were noted in their perception, voice, and sensory processes. These results highlight the importance of early and targeted interventions to address swallowing difficulties in this population, which can in turn support broader neurodevelopmental progress. Further research is warranted to explore the longitudinal effects of swallowing therapy and identify optimal treatment approaches for individuals with similar neurological profiles.



The nasopharynx was unobstructed, and there was no velopharyngeal dysfunction. The vocal cords moved freely, and no accumulation of secretions was observed.