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Dysphagia Intervention in Patient with Diffusion Axon Injury with Bilateral Frontal Lobe Contusion: A Case Report

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ABSTRACT

Introduction: Traumatic brain injury (TBI) is a leading cause of chronic neurologic disability. Damage often affects the frontal lobes, and thus the most frequent cognitive sequelae are deficits in the prefrontal cortex (PFC)-dependent functions, such as attention, working memory, social behavior, mental flexibility, and task switching.

Objective: The goal of this case report is to highlight the assessment and intervention of the dysphagia program.

Case Report: The patient was diagnosed with diffuse axonal injury with bilateral frontal lobe contusion. The patient is receiving care in the Physical Medicine and Rehabilitation (PMR) unit, where they are undergoing physiotherapy occupational therapy, and speech therapy.

Results: Swallowing assessment revealed Oro-pharyngeal Dysphagia. Recommendations for further follow-ups for speech & swallowing therapy and other medical management were made.

Conclusion: The case reports suggest through the comprehensive assessment protocol and intensive program, the optimal functional outcome on deglutition function is achievable in patients with Traumatic Brain Injury/ Dysphagia. The current approaches and interdisciplinary team effort bring the patients deglutition functions and improves the patient's quality of life.

Keywords: Traumatic brain injury, Speech Therapy, Dysphagia, Swallowing.

Introduction:

Traumatic brain injury (TBI) is a leading cause of chronic neurologic disability (Wilson et al., 2017). Damage often affects the frontal lobes, and thus the most frequent cognitive sequelae are deficits in the prefrontal cortex (PFC)-dependent functions, such as attention, working memory, social behavior, mental flexibility, and task switching (Spikman et al., 2012). In recent days, the statistics provided the number of road traffic accident cases all over India and the census tells that most of the cases are young adults. One of the complications due to road traffic accident /TBI is Dysphagia. Dysphagia is a complicated task that requires both CNS and PNS to coordinate a group of muscles from the subsystem. If any disturbances in this neural and peripheral mechanism would cause swallowing difficulties.

Aim of the study:

The goal of this case report is to highlight the assessment and intervention of the dysphagia program. It's mandatory to carry on the bedside evaluation and initiate an intensive dysphagia program in a timely manner so that the patient recovers the swallowing functions and maintains adequate nutrition and hydration intake.

Case Report:

An 18-year-old male client was admitted to the SRM medical hospital with post-RTA. The patient was diagnosed with diffuse axonal injury with bilateral frontal lobe contusion. The patient is receiving care in the Physical Medicine and Rehabilitation (PMR) unit, where they are undergoing physiotherapy occupational therapy, and speech therapy. The patient has a tracheostomy tube (cuffed type) in place and is being fed through a nasogastric (NG) tube. The client was seen to be awake and conscious, but he lacked environmental awareness. A detailed procedure and session report are mentioned in Table 1 and Table 2.

Table 1: P.O. trials initiation and its review details

Procedure:
Initiate P.O trials with least restive diet texture
Aspiration precaution/ safe swallow strategies.
Decannulation of the tracheostomy tube and recommendation on the removal of the nasogastric tube
Diet upgradation with caregivers training on safe swallow strategies

Table 2: Detailed session report and patient improvement

Swallowing Functions	**Baseline**	**Session 4**	**Session 9**	**Session 14**	**Session 20**
PO Trials	Thin liquids/Pureed diet (5 tsp)	Thin Liquid(TL) / Pureed texture	Thin/Pureed texture	Mechanical Soft Finally chopped texture /TL	Mechanical Soft with TL
Tracheostomy Cuff status	Inflated	Inflated	Deflated	Deflated and Initiated Spigotting	Tracheostomy tube Decannulated
NG Tube Feedng	Continued Tube feeding (1900 Calories)	Continued feeding (1000 Calories) Initiated Oral gratificatio	Hold NG Tube (except water flushing) Feeding and Initiated	Recommended for NG Tube Removal and Diet Upgraded	Recommended Complete PO intake / Complete pills via Oral .

		ns with small portions at meal times	Least Diet Texture at all mealtime		
Lip seal	Adequate	Adequate	Adequate	Adequate	Adequate
Lingual Sweep	Inadequate Range of motion (ROM)	↓ ROM	↓ ROM	Fairly good ROM	Good ROM
Bolus preparation	-	Delayed on MS FC Trial	Prolonged mastication on MS FC	Fairly Adequate	Adequate
Bolus Manipulation	-	Poor	Fair	Fair	Fair
Bolus Propulsion	Delayed 10sec	Delayed 8 Sec	Delayed 6 sec	Delayed by 5 sec	Adequate
Swallow onset Time	Delayed 8 sec	5sec	4sec	3 sec	2 sec
Oral residue	PPW/ PPT/BC	PPW/PPT	PPT	PPT / Clears with multiple swallows	Clears with multiple swallows
Laryngeal Elevation	Delayed 7 Sec	Delayed 5 sec	Delayed by 4-5 Sec	Fairy adequate 3 sec	Adequate
Laryngeal aspiration	S/S Present	S/S Present	Nil	Nil	Nil
Laryngeal penetration	Present	Present	Present	Nil	Nil
Compensatory Approaches	Effortful swallow(ES)	ES/ Multiple Swallows (MS)	Chin Tuck, ES ,MS, Small Bite/Sips	Chin Tuck, ES ,MS, Small Bite/Sips	Multiple Swallow and chin tuck
Diet Recommendation	NPO/PO Trials by SLP	NPO/ Po trials by SLP	Pureed /Thin Liquids	MS FC/TL	MS/TL

Conclusion:

The case reports suggest through the comprehensive assessment protocol and intensive program, the optimal functional outcome on deglutition function is achievable in a patient with Traumatic Brain

Injury/ Dysphagia. The current approaches and interdisciplinary team effort bring the patients deglutition functions and improve the patient's quality of life.

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