

Hyperkinetic Dysarthria with Spasmodic Torticollis

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ABSTRACT

Introduction

Spasmodic Torticollis is a condition in which tonic or clonic spasm in the Sternocleidomastoid and Trapezius muscles, cause the head to be deviated to the right or left and has also been reported to disrupt speech production. Spasmodic Torticollis is a part of unknown etiology of Hyperkinetic Dysarthria.

Case Report

We report a case of 30 years old male diagnosed as Hyperkinetic Dysarthria who was treated with speech therapy and without Botulinum toxin. Post therapy status was recorded after 12 sessions (frequency twice a week) and it shows improvement in speech characteristics.

Discussion

Management of the patients with Hyperkinetic Dysarthria with Spasmodic Torticollis is a long term and often a lifelong process. Speech therapy is offered at intervals in order to maintain communicative competence. Reported studies suggest the use of Botulinum toxin, but in the present study treatment efficacy was proven without the use of Botulinum toxin.

Keywords

Dysarthria, Hyperkinetic; Torticollis, Spasmodic; Speech Therapy

Dysarthria is a speech disorder caused by muscle weakness due to brain damage.¹ Hyperkinetic Dysarthria is usually caused due to pathologies and/or lesion in the Basal Ganglia, the related portion of the Extrapyrimal System, or sometimes the Cerebellar control unit.² Spasmodic Torticollis is a condition in which tonic or clonic spasm in the Sternocleidomastoid and Trapezius muscles causes the head to be deviated to the right or left and has also been reported to disrupt speech production³. It is also known as Cervical Dystonia³ and is found to be associated with Hyperkinetic Dysarthria of unknown etiology (21%).⁴

Case Report

We report a case of 30 years old male patient with paresis of left hand and presented to us with symptoms of getting stuck during conversation and having effortful speech. Previous medical report revealed to have variable diagnoses such as Focal Dystonia, Spasmodic Dysphonia and Orofacial Dyskinesia. He reported with a

history of Hepatitis and Seizures at the age of 9 yrs. He took various medications for recovery from Dyskinesia but it was not benefitted. We followed an assessment protocol for the subject as given by American Speech Language Hearing Association.⁵ Assessment involves the use of both formal and informal tests. Pre-therapy assessment involves non-speech assessment, speech production assessment and other assessments include language, cognitive-communication and dysphagia assessment. (Table I)

As the management, speech therapy was provided to establish intelligible communication skills in all the communicative situations. Specific targets were selected as the goal for treatment to improve respiratory support, articulation, oral resonance, prosodic features, alternate

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Table I: Pre-therapy assessment of the case

1.	Non speech assessments:
a.	Oral peripheral mechanism (OPM) examination showed normal appearance of all the articulators except for tongue which is short. Functions of articulators were assessed and it revealed restricted movement of soft palate. Gag reflex was found to be hypoactive.
b.	Maximum phonation duration (MPT) was found to be 15 seconds with the average of 3 trials.
c.	Alternate Motion Rate (AMR) and Sequential Motion Rate (SMR) were found to be affected.
d.	Observation of facial and neck muscle tone:
i.	At rest: Hypertonia
ii.	During non-speech activities: Hypertonia
e.	Cranial nerve examination (CN V, VII, IX, X, XI, XII) — shows VII, IX, X, XII are affected.
2.	Speech Production Assessment:
a.	Articulation assessment was done using Bengali Articulation Test⁵ and findings revealed devoicing of Stop sounds.
b.	7-point Intelligibility rating scale⁶ was used and client's speech was rated as 3, which indicates that the speech could be understood with concentration and effort especially by sympathetic listener (where 0 is denoted as normal and 6 as unintelligible).
c.	Through informal assessment prosodic features of the client was evaluated and it was found to be affected.
d.	Frenchay Dysarthria Assessment⁷ revealed all the domains were affected with varying degree except for Reflex (figure 1).
e.	Acoustic analysis involved both perceptual and instrumental measurements. Perceptual assessments was done using GRBAS⁸ scale which revealed Grade 1, Roughness 2, Breathiness 0, Asthenic 0, and Strain 1. Instrumental assessment of voice analysis was done using Dr. Speech software by Tiger electronics version 4.0 and Nasometer-II version 2.6 and findings revealed hoarse voice and Hypernasal voice respectively.
3.	Other assessments include Language, Cognitive-Communication and Dysphagia assessment.
a.	Language assessment was done using Aphasia screening and language was found to be intact.
b.	Cognitive-Communication assessment was done using Mini Mental State Examination (MMSE)⁹ and cognition was found to be intact with a score of 30.
c.	Dysphagia assessment was done using Mann Assessment of swallowing ability (MASA)¹⁰ and it revealed no difficulty in swallowing with a score of 187.
d.	Differential Diagnosis was done and the Final diagnosis for the case was Hyperkinetic Dysarthria.

motion rate, sequential motion rates, and vocal function and to reduce rate of speech.¹¹ (Table II)

Treatment method used while treating the patient was devoid of Botulinum Toxin-A (BOTOX). Post therapy status was recorded after 12 sessions (frequency twice a week) and it shows improvement in speech characteristics. (Table III)

Discussion

The aim of the therapy given in this case study was to achieve “compensated intelligible speech” rather than “normal speech” and through speech therapy this aim was achieved successfully. Although, pharmacological therapy with Botulinum toxin is used more commonly,¹³

Fig. 1. Pre Therapy Frenchay Dysarthria Assessment

Table II: Therapy plan illustrating the goals and activities

GOALS	ACTIVITIES
To improve respiratory support	Client was instructed to take breathe deeply before initiation of speech and exhale slowly while onset of speaking ² .
Rehabilitate and improve vocal function.	Techniques:- Relaxation ¹ ?:
	· Relax the shoulders and using a mirror for visual feedback.
	· Discrimination between tensed and relaxed muscles.
	To improve Reduced loudness (Change of loudness technique ¹):
	· Client was instructed to raise his shoulders, inhale and phonate a high pitch “hummm”. And then was instructed to lower the shoulders and exhale and produce “hummm” sound.
	· Client was made to produce inhalation phonation and exhalation phonation.
To facilitate oral resonance and improve articulation	Client was instructed to speak in an increased loudness with mouth and jaw- open
To elicit gag reflex	Palpation of the soft palate was administered as a therapeutic management.
To improve prosodic features	Stress and emphasis were used to convey different meanings and at a reduced rate of speech by increasing the pauses between words.
To improve alternate motion rate (AMR)	The client will be asked to take a breath and repeat “Puh-Puh-Puh ” as fast and as steadily as possible for 3 to 5 secs ² . This will be followed by similar repetitions of “Tuh-Tuh-Tuh----” and “Kuh-Kuh-Kuh----”. These AMR tasks permit judgments of rate, rhythm, precision and range of motion and rapid movements of the lips, jaw and tongue.
To improve sequential motion rate (SMR)	The client will be instructed to take a breath and produce “Puh-Tuh-Kuh” repeatedly for 3 to 5 seconds ² .
To reduce the rate of speech,	Client was counseled to speak at a slower rate, and Hand tapping ¹² was also demonstrated to the client as a self-monitoring skill for the same.

Table III: Showing the post therapy improvement

DOMAINS	PRE THERAPY				POST THERAPY			
Acoustic analysis (instrumental) [Nasometer II Normative values for Bengali speakers Zoo passage: 11.25+5.63 Nasal passage: 59.25+7.96 PB passage:31.47+6.65]	Hoarse voice (as measured using Dr. Speech software). Hypernasality was found (as measured using Nasometer-II)				Normal voice (as measured using Dr. Speech software) and Hypernasality was reduced (as measured using Nasometer-II).			
	Passage	Mean %	Min %	Max %	Passage	Mean %	Min %	Max %
	ORAL	22	4	98	ORAL	20	4	96
	NASAL	80	16	98	NASAL	62	11	97
	PB	87	45	99	PB	38	7	96
Acoustic analysis (Perceptual)	GRBAS scale showed G1R2B0A0S1				GRBAS scale showed G1R0B0S1			
FDA	Revealed all the domains were affected with varying degree except for Reflex				Showed improvements in all the domains as illustrated in figure ²			
Gag reflex	Absent				Present			
MPT (average of 3 trials)	18 seconds				22 seconds			
AMR	/pa/- 20 times in 7 seconds				/pa/- 20 times in 5 seconds			
	/ta/- 20 times in 9 seconds				/ta/- 20 times in 6 seconds			
	/ka/- 20 times in 10 seconds				/ka/- 20 times in 7 seconds			
SMR	/pataka/- 20 times in 14 seconds				/pataka/- 20 times in 9 seconds			
Cranial nerve examination (CN V, VII, IX, X, XI, XII)	Shows CN VII, IX, X, XII are affected				Shows CN XII is affected			
Speech Intelligibility (measured using 7-point intelligibility rating scale where '0' indicates normal and '6' indicates unintelligible)	Client's speech was rated as 3, which indicates that the speech could be understood with concentration and effort especially by sympathetic listener.				Speech intelligibility was also improved to achieve point 1 rating in which indicates "speech could be understood without difficulty, however still feel that speech is not normal"			
Rate of speech	Cannot be measured due to unintelligible speech				140 words/min			
Bangla Articulation test	Devoicing of speech sounds: /b/, /g/, /gh/.				Correct production of all speech sounds			

much research is still needed to establish the findings of this case study.

The treatment for Hyperkinetic Dysarthria with Spasmodic Torticollis is basically based on the Client-Oriented approach.² Here in this case report, compensatory speaker strategies² were used to improve speech intelligibility and it was noted that rate reduction resulted in improvement in the speech intelligibility. Another study¹⁴ also reported similar findings that reducing the speech rate resulted in improved speech intelligibility. Also enhancement in the voice quality¹⁵ results in improvement of speech intelligibility as seen in the present case. Although some people with

Hyperkinetic Dysarthria inadvertently discover their own tricks, which they use to inhibit certain movements and facilitate speech and these may be further explored with the speech pathologist to develop communication.

Basically the client's presenting Hyperkinetic Dysarthria with Spasmodic Torticollis (Laterocollis) might not be fully cured¹⁶ with speech therapy and if speech impairment prevails in further Dysarthria assessment, then BOTOX or Botulinum Toxin-A injection might be required as advised by the Neurologist. In the present case, the patient was not willing to go for BOTOX treatment. Thus it might be suggested that speech therapy might improve symptoms of these clients

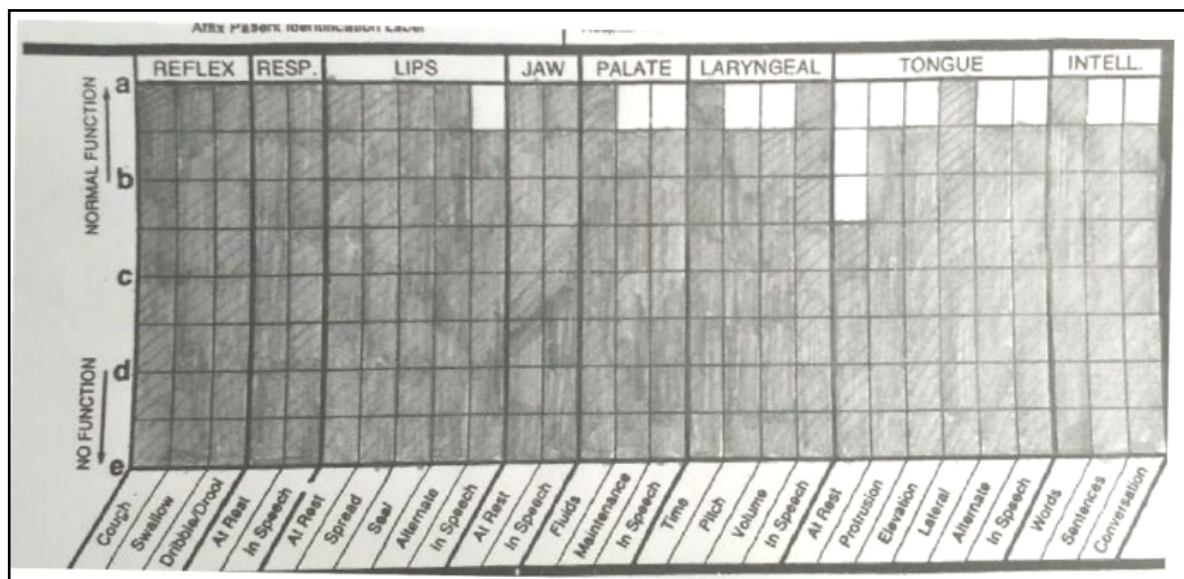


Fig. 2. Post Therapy improvement in FDA (after 12 sessions of speech therapy)

thereby reducing the dependency on medications.

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