

Case Report

Changes in speech characteristics post thymoma

Shantanu Arya^{1*}, Sachin², L. N. Garg¹, Tashi Wangmo³, Nima Zangmo³, Komal Sharma³

¹Department of ENT, ³BASLP, MMIMSR, Haryana, India

²Department of Audiology and Speech Language Pathology, PGIMER, Chandigarh, India

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*Correspondence:

Dr. Shantanu Arya,

E-mail: nzangmo11@gmail.com

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ABSTRACT

Thymomas are rare tumors of the anterior mediastinum that may be benign or malignant. Thymomas are frequently associated with neuromuscular disorders like myasthenia gravis. Multiple cranial nerves are involved which may affect speech of the patients. Flaccid dysarthria is one of the common motor speech disorders associated with thymoma. Other characteristics may include decrease of intelligibility, reduced vocal stamina, reduction of emotional expressivity etc. The present case study illustrates changes in speech characteristics in a 35 year old male patient with thymoma associated with myasthenia gravis. Detailed speech assessment was done which revealed deviant speech patterns like vocal tremors, decreased loudness, hypernasality etc. The aim of the study was to document speech characteristics in a known case of thymoma associated with myasthenia gravis.

Keywords: Thymoma, Myasthenia gravis, Flaccid dysarthria, Frenchay dysarthria assessment

INTRODUCTION

Thymoma is a rare but most common type of tumor originating from the epithelial cells of thymus that may be either benign or malignant.¹ Incidence accounts for 0.15 per 100,000 cases and is located in anterior superior mediastinum immediately beneath the breastbone at the level of the heart.² It has been found to occur at any age but occur most frequently at 40 to 60 years of age, and is extremely rare in children. Bernatz and colleagues in 1961 described thymomas according to their dominant cell type and was further revised by Levine and Rosai in 1976 based on presence or absence of invasiveness.³ Thymomas are frequently associated with the neuromuscular disorders like myasthenia gravis and other autoimmune disease of neuromuscular junction.⁴

In neuromuscular disorders like myasthenia gravis there is damage to lower motor neurons that innervate the respiratory musculature and/or cranial nerves which

innervate muscles responsible for speech production.⁵ This damage results in deviant speech patterns collectively designated as Flaccid Dysarthria. The specific defective speech patterns depend upon the degree and extent of damage to the cranial nerves involved in speech production.

CASE REPORT

A 35 years old male known case of myasthenia gravis reported to the ENT Department of Maharishi Markandeshwar Institute of Medical Sciences, Mullana, Ambala, Haryana, India with complaints of inability to speak properly and inability to swallow for the last 2 months. He also gave history of severe allergic reactions and unilateral lower motor weakness with change of voice and ptosis of left eye leading to on and off diplopia. Moreover, the onset of problem was sudden and progressive in nature.

MRI study was done using a special dye called contrast medium and X-ray which indicated normal findings and study. However, non-contrast computed tomography study revealed soft tissue heterogeneously enhancing mass in anterior mediastinum anterior to aortic arch.

SPEECH ASSESSMENT

Subjective evaluation of speech revealed decreased Phonation time, slurring of speech, sialorrhoea etc. Franchay's dysarthria assessment tool was administered on the patient. Detailed assessment revealed that patient had flaccid dysarthria. The speech features included slurred speech, moderate hyper nasality, hypotonia and lowered diadochokinetic rate. Facial tremors were also prominently seen due to multiple cranial nerve involvement. His breathing pattern was thoracic-clavicular which indicated shallow breathing. The range of motion of tongue movements was reduced. Stressful mouth opening affected the bilabial sounds which drastically reduced the speech intelligibility. Severe nasal regurgitation was evident on sucking through straw with active gag reflex. The loudness of voice was also significantly reduced. Dynamic range of pitch and intensity of voice was also found to be reduced. Frequent gaps of involuntary silence were observed while conversing with the patient. Misarticulations were experiential due to oro-structural weakness. Paresis and atrophy of musculature, fibrillations and fasciculations of tongue were also evident during the oro-musculature examination. GRBAS scale revealed severe vocal problem. Speech was intelligible upto level 4 which indicate that the speech of the patient can be understood without difficulty but need to ask for frequent repetitions.

These speech symptoms could be attributed to neurological insult by thymoma. After reviewing clinical, neurological and speech findings, a diagnosis of flaccid dysarthria was made which is a rare entity in cases of thymoma.

AUDIOLOGICAL EVALUATION

Standard pure tone audiometric evaluation was done which revealed bilateral hearing sensitivity within normal limits. On impedance audiometry, it revealed 'A' type tympanogram with ipsilateral reflex present and contralateral reflex present. Moreover otoacoustic emission was done to rule out other neural disorders and it revealed bilateral both DPOAE and TEOAE pass suggestive of normal outer hair cells functioning.

DISCUSSION

Thymus is a pyramid shape lymphoid organ located anatomically in the anterior superior mediastinum in front of heart and behind the sternum.⁶ It resembles that of thyme leaf and hence the name thymus. Histologically, it is composed of two identical lobes with each lobe divided into central medulla and peripheral cortex which is surrounded by outer capsule. They serve a vital role in

training and development of T-lymphocytes or T-Cell. Thymus is composed predominately of epithelial cells and lymphocytes.⁷ Individuals with various systemic syndromes develop a tumor in the epithelial cells of thymus that may be benign or malignant.

Thymoma has been found to be associated with a number of other health conditions. Medical conditions that are associated with cancers are known as paraneoplastic syndromes.⁸ The etiologies for thymoma remain idiopathic but are associated with numerous autoimmune diseases and neuromuscular disorder mainly of myasthenia gravis. Blalock et al in 1939, incidentally reported relation between Myasthenia Gravis and thymoma in 19 year old girl with Myasthenia Gravis. Individuals manifest numerous symptoms like weakness, fatigue, ptosis, double vision, shortness of breath, dysphasia, nasal regurgitation, cough and various speech problems. The speech characteristics involve hyper nasality, imprecise consonant productions, nasal emissions and breathiness of voice.⁵

Multiple cranial nerves involvement is prominent. The presence of thymoma near to the aortic arch involves vagus nerve compression which certainly affects adequacy of oromotor movements for efficient speech. Respiratory weakness contributes to a labored speech and gradually progresses into flaccid dysarthria.⁵ Depending on which nerves are damaged; flaccid dysarthria affects respiration, phonation, resonance and articulations. Individuals exhibit numerous speech characteristics like slow labored articulations, marked degrees of hyper nasal resonance, hoarse breathy phonation caused by paralysis, weakness, hypo tonicity, atrophy and hypoactive reflexes of involved speech musculature.

To compensate for the speech abnormalities, speech therapy is indicated. Speech therapy focuses on decreasing the hypernasality of speech, increasing muscle tone.

CONCLUSION

Although the precise incident is unknown, thymoma appears to be rare condition in which speech disorders is suspected. The findings should trigger the detail assessment to establish whether it is isolated or if there are any associated problems. This case study shows the importance of a speech language pathologist in diagnosing and management of this rare speech disorder.

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