

Muscle Tension Dysphonia

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Abstract

Voice is an important attribute which we as humans possess. This very voice is able to convey our thoughts and emotions. Muscle tension dysphonia (MTD) is a condition which is associated with excessive muscular tension or muscle misuse. This case report highlights one such case of a young pilot who developed hoarseness of voice after an attack of URTI and did not recover fully and was finally diagnosed as a case of Muscle Tension Dysphonia (MTD) with Laryngo-pharyngeal reflux (LPR). The aircrew was evaluated and managed in a non-flying category with a multi-pronged approach towards management of MTD. On complete recovery of her voice she had a complimentary executive report and was thus made fit for flying. Association of a common entity like LPR in cases of hoarseness is also highlighted in this case report.

IJASM 2016; 60(2): 39-41

Introduction

Voice is an important attribute which we as humans possess. This very voice is able to convey our thoughts and emotions. When a baby is born the first thing which signifies the sign of life is the infant's cry. "Although the voice is not visible to the eyes during speech production but its absence or malfunction is obvious" [1]. When there is a change in the normal voice quality it is termed as hoarseness. The term is non-specific and may imply breathiness, roughness, voice breaks or unnatural changes in the pitch. The term dysphonia is commonly used by otolaryngologists to describe abnormal voice quality. In the words of Chevalier Jackson "Hoarseness is a symptom of utmost significance and calls for a separate consideration as a subject because of the frequency of its occurrence as a distant signal of malignancy and other conditions" [2].

Muscle tension dysphonia (MTD) is a condition which is associated with excessive muscular tension or muscle misuse. Various terms like laryngeal tension-fatigue syndrome, functional dysphonia, spasmodic dysphonia are used to describe the same. In some cases this can be the only presenting diagnosis or can be a secondary issue as a compensatory response to some other pathology in the larynx, such as a weakness (paresis or paralysis of one or both vocal folds), a vocal

fold pathology (cyst, nodule or other vocal fold mass), viral laryngitis, or more commonly laryngo-pharyngeal reflux (LPR).

Case Report

In Jan 2010, Ms TN, 28 years old female pilot from the transport stream with 350 hours of experience, presented with hoarseness of voice after an attack of Upper Respiratory Tract Infection (URTI). The officer complained of decreased voice along with headaches. She gave a history of laryngitis. The officer was placed in a non-flying category and voice therapy was started.

In June 2010, she presented at AFCME with history of hoarseness and breaking of voice after talking long sentences. Indirect Laryngoscopy (IDL) revealed minimal phonatory gap with bowing of right vocal cord. No congestion/ nodule / polyp or oedema was seen. X-Ray PNS, PTA and Tympanogram were normal and was managed as a case of hoarseness of voice. The officer continued in a non-flying category. During the next review in Sep 10 her condition did not change much and she was continued in a non-flying category.

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In Dec 2010, telescopic laryngoscopy revealed very mildly oedematous vocal cords with a posterior phonatory gap. She was diagnosed as a case of Muscle Tension Dysphonia (MTD) and was advised voice therapy and voice hygiene.

The officer did not follow the advice and during the subsequent review in Apr 2011, the clinical findings remained same and she was again advised voice therapy, voice hygiene and behavioural therapy.

In Jun 2011, laryngoscopy revealed bilateral mobile vocal cords with small gap posteriorly. Stroboscopy revealed poor wave formation. There was not much of improvement in the quality of speech since the last review therefore she continued in non-flying status. In Oct 2011, the officer complained of breaking of voice off & on, but gave history of subjective improvement in the quality of speech. IDL revealed no congestion or oedema on the vocal cords but revealed a mild phonatory gap. The aircrew was placed in a restricted flying category and an executive report on flying to include intra-cockpit communication, handling simulated emergencies and communication with ATC was sought.

During the subsequent review the officer claimed improvement in voice quality with deterioration in voice off and on. However, the change in voice persisted. Laryngoscopy revealed restricted mobility of both vocal cords i.e. phonatory gap was present on adduction. Both the arytenoids and posterior 1/3rd of vocal cords were oedematous which was suggestive of laryngo-pharyngeal reflux (LPR) Grade I/II. The officer gave an additional history that during the period of observation she had attained normal / near normal voice for certain duration which deteriorated again after an attack of URTI Dyspepsia. On the basis of history and the laryngoscopic findings she was labelled as a case of Muscle Tension Dysphonia with Laryngo-pharyngeal Reflux (MTD LPR). She was managed with proton pump inhibitors, voice therapy, voice hygiene, relaxation, exercises, pulling and pushing exercises.

During her last review, in the last 12 weeks the voice has shown improvement and there has not been even a single attack of hoarseness. Laryngoscopic findings revealed mobility of both vocal cords as normal and no phonatory gap on adduction was visualised. The voice analysis was normal. The officer had flown two sorties and the executive report was complimentary with speech clear on RT and the aircrew did not show any symptoms of fatigue or pain. In view of the complimentary executive report and normal clinical and laryngoscopic findings she was awarded a full flying category.

Discussion

Hoarseness of voice is a common symptom and it is the earliest manifestation of a large variety of conditions directly or indirectly affecting the larynx, ranging from benign to malignant. Hoarseness is not a disease in itself, but rather a symptom of a disease or a functional disturbance in the larynx or along the course of laryngeal motor nerve. The term muscle tension dysphonia (MTD) implies that when the patient has a voice disturbance without structural or neurologic laryngeal pathology. It occurs because of excessive reflex tension in the intrinsic and/ or extrinsic laryngeal muscles. The muscle tension dysphonia can be classified into primary MTD and secondary MTD. Primary MTD is when vocalizing or speaking in which the muscles in the neck are tense and when no other lesion or paralysis is seen. Secondary MTD is when a compensatory method of vocalising comes into force due to a paralysis, paresis or muscular weakness causing the person to squeeze other parts of the larynx to help produce sound.

The incidence of MTD is 10-40% in females and especially in professional voice users. The main reasons are technical misuse of vocal mechanism, learned adaptations after URTI, increased pharyngeal tone secondary to LPR, extreme compensation of minor glottic insufficiency and / or underlying mucosal disease, psychologic and / or personality factors that tend to induce elevated tension in the laryngeal region. MTD presents with a breathy or harsh voice through the day and

recovers with rest. The reason for the laryngeal irritation may be a post nasal drip or a sinus disease. Laryngo-pharyngeal Reflux (LPR) is the causative factor for MTD in 10% of general population and 46% of professional users. Besides hoarseness of voice the patient may complain of heartburn, acid tastes in mouth along with nocturnal coughing and halitosis. There is swelling of the laryngeal mucosa which results in frequent throat clearing and coughing. The reflex increases the muscle tension in the pharynx and the larynx [3]. The management of MTD is multifold including voice relaxation, voice therapy, behavioural therapy in terms of understanding of the environmental and behavioural aspects of voice use, acid reducing drugs in case of LPR and lifestyle advice chart.

Aeromedical Concerns

Considering that the aircrew is physically and neurologically fit except for the muscle tension dysphonia there is no issue of sudden inflight incapacitation. However, as there is hoarseness of voice, the obvious risk to the aircrew is the inability to communicate with the crew members and with the air traffic controllers. The volume of voice affected by dysphonia is dangerous in the noisy environment of a cockpit. Dysphonia prevents the aircrew from forming complete and precise sentences which is especially important in radio communications. Thus the quality of voice and speech is an important factor in deciding the fitness of the aircrew. The aircrew needs to undergo a flight test in terms of executive report to ensure proficiency and compatibility with the flight environment.

Conclusion

Hoarseness of voice is just a symptom with a very diverse etiology. Viral illness along with hoarseness of voice in

our country is a common entity and generally everyone recovers from it with ease. A case with prolonged duration of hoarseness of voice needs to be carefully and thoroughly evaluated to know the early diagnosis of underlying pathology for prevention and accurate management.

This case report highlights one such case of a young pilot who developed hoarseness of voice after an attack of URTI and did not recover fully and was finally diagnosed as a case of Muscle Tone Dysphonia (MTD) with Laryngo-pharyngeal reflux. The aircrew was evaluated and managed in a non-flying category with a multi-pronged approach towards management of MTD. On complete recovery of her voice she had a complimentary executive report and thus was made fit for flying. Association of a common entity like LPR in cases of hoarseness is also highlighted.

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