

Paradoxical vocal cord movement: an unusual cause of stridor

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ABSTRACT

Breathy dysphonia and inspiratory stridor due to paradoxical vocal cord movement is the characteristic feature of this rare disease. Here we present a case of a young 20-year-old female university student, presenting to the Accident and Emergency unit (A&E) of Rehman Medical Institute in the middle of night with marked inspiratory stridor, shortness of breath and breathy dysphonia. A conservative multidisciplinary approach was taken in the management of this patient.

Keywords: Vocal Cords; Dysphonia; Hoarseness; Dyspnea.

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INTRODUCTION

Paradoxical vocal cord movement (PVC) is a series of paroxysmal spasm of anterior two-thirds of the vocal cord during respiration and phonation resulting in stridor and breathy dysphonia. This condition was reported by Roger and Stell in 1978.¹ It is more common in women (6:1), aged between 20-40 years. It presents with respiratory stridor, breathy dysphonia and shortness of breath. Very occasionally it may present with expiratory stridor, coughing, and dysphagia. The inspiratory stridor is considerable in comparison to respiratory.² However, at times, the obstruction can be severe enough to warrant an emergency tracheostomy.

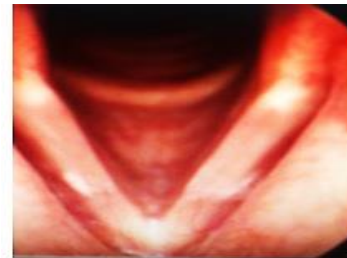
Here we present case of a young 20-year-old female university student, presenting to the Accident and Emergency Unit of Rehman Medical Institute Peshawar, in the middle of night with marked inspiratory stridor, shortness of breath and breathy dysphonia.

CASE REPORT

A 20-year-old female university student presents to the Accident and Emergency Unit of Rehman Medical Institute Peshawar, Khyber Pakhtunkhwa, on March 10, 2021 with marked inspiratory stridor, shortness of breath and breathy dysphonia in the middle of the night. She was admitted in the ENT ward. The patient did not have any co-morbidities or past surgical history however, past medical

history was significant for an upper respiratory tract infection, one week prior to presentation. There was no family history of note. She had previously been seen by a medical team who ruled out asthma.

ENT team was called to exclude vocal cord pathology. Indirect laryngoscopy using fiberoptic laryngoscopy was performed which showed paradoxical vocal cord movement with marked inspiratory stridor and breathy dysphonia (Fig 1).



(a) Normal



(b) Paradoxical Vocal Cord

Figure 1: Vocal Cord during Inspiration

Baseline investigations were carried out (unremarkable) along with a repeat CXR and Pulmonary Function Tests (PFTs), which showed a normal volume flow loop. A multidisciplinary approach was decided upon which included otolaryngologists, speech therapist, respiratory physicians and psychologists. The patient was given reassurance. Humidification with steam was done and psychological support was given to the patient. She recovered without the need for surgery and was discharged after 2 days without any respiratory problem.

DISCUSSION

Paradoxical Vocal Cord Movement is a series of spasms of the anterior two-thirds of the vocal cord during normal breathing. Active movements of the vocal cord with active inspiratory effort aggravates the stridor. Decreasing the inspiratory effort relieves or lessens the stridor. The psychological

theory explains the motor, sensory, perceptual and linguistic impairment. This patient did not exhibit psychogenic etiology nor was there any suspicion of its presence. The other neurological theory is explained by the activation of vagal nerve fiber leading to lowering of the threshold for onset of vocal cord spasm. Collet et al postulated the phase reversal relationship between the activity of laryngeal motor neuron and inspiratory neuron but confirmatory evidence is lacking from literature.³

Patients with extra pyramidal disorders can lead to upper airway obstruction.⁴ Relief in PVCN is supported by the gastro-oesophageal reflux theory with use of anti-reflux drug therapy. Paradoxical vocal cord movement needs to be differentiated from laryngeal oedema, asthma, inhaled foreign body, abductor spasmodic dysphonia, vocal cord paralysis, laryngeal cancer, type I hypersensitivity reaction, and angioneurotic oedema. Pulmonary function tests, arterial blood gases, and exercise induced dyspnea are tests for differentiation of paradoxical vocal cord movement from asthma. Because of its clinical importance paradoxical vocal cord movement should be kept in mind when dealing a patient with stridor.

Management and treatment depend upon etiological factors, but

inhalation of gas mixture containing oxygen and helium in 1:4 ratio can give relief from dyspnea and wheeze caused due to laryngospasm.⁵ Multiple studies have reported the value of anxiolytics and anti-depressants but the psychotherapeutic methods like patient education, reassurance, counseling, relaxation, and speech therapy have proven to be efficacious while managing patient with PVCN. Secondary problems due to forceful vocal cord adduction, like vocal cord nodules, vocal cord ulcer and polyps, and hoarseness have been reported in the literature with no clear etiology. Different modalities of surgical treatment, like lateralization of vocal cord, partial and total laser arytenoidectomy and tracheostomy are mentioned. Continuous Positive Airway Pressure (CPAP) use can overcome the need for tracheostomy in severe breathing problems.

Our patient responded to simple reassurance, relaxation, and steam inhalation. These should be given to a patient before going for any surgical options. With no clear etiology, and different treatment options with poor efficacy, the management needs further workup with randomized controlled trials, otherwise conservative treatment regimen should be given in non-life-threatening conditions of paradoxical vocal cord movement.

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