Exercise-Induced Laryngeal Obstruction and Performance Psychology

Using the Mind as a Diagnostic and Therapeutic Target

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KEYWORDS

• Exercise-induced laryngeal obstruction • Performance psychology • Therapy
• Vocal cord dysfunction • Paradoxical vocal fold motion

KEY POINTS

- Recent literature suggests that patients with exercise-induced laryngeal obstruction do not exhibit the mental health patterns described in seminal literature on inducible laryngeal obstruction, but rather are mentally healthy.
- With the performance psychologist or mental skills coach, it is reasonable to assess and restructure patient belief systems and thought patterns regarding the relationship between exercise and episodes of respiratory distress.
- Moving forward, there is adequate rationale to study the use of performance psychology as an adjunctive therapy for patients with exercise-induced laryngeal obstruction.

INTRODUCTION

Exercise-induced laryngeal obstruction (EILO), previously known as vocal cord dysfunction and paradoxic vocal fold motion, is a condition that causes severe shortness of breath during exercise in patients across a spectrum of athletic levels.[1,2] The mechanism of disease remains enigmatic, although several investigators have postulated a variety of contributing factors, including anatomic factors (airway size and pliability), upper airway reactivity, extrinsic factors (including postnasal drip and gastroesophageal reflux), and behavioral health factors (such as a stress-prone personality, perfectionistic tendencies, attributional style, and impaired self-efficacy).[3–9]

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Since the early reports of this condition, clinicians and researchers have documented an observation that behavioral health factors are associated with the pathogenesis of disease.[10] Later reports of cohorts strongly emphasized this possibility although with rare exception,[11,12] research in the 1990s and 2000s did not routinely stratify patients based on isolation of symptoms to exercise grouping of patients with EILO and inducible laryngeal obstruction (ILO), also known as vocal cord dysfunction, caused by a variety of triggers.[4,5,13,14] This lack of stratification may be important, because it is possible that the behavioral health features of patients with symptoms limited to exercise differ from those who experience symptoms in response to irritants or overt situational stresses.[15–18] At the current time, there is no published spectrum of psychiatric and psychological disease, personality disorders, or dysfunctional traits and coping mechanisms in patients with isolated EILO.

Despite the lack of prospective behavioral health assessments that are isolated to patients with EILO, this review aims to achieve a few specific goals. First, we summarize some of the literature that characterizes the behavioral health features of the prototypical patient with EILO, drawing comparisons with the general ILO patient. This discussion will include some of the chronic features of personality documented in the literature as well as descriptions of thoughts verbalized by patients struggling with symptoms. Second, we discuss some of the available assessment tools that can quantify some of the features noted. Finally, we discuss in detail some therapeutic approaches from the perspective of the performance psychology. We will use a few cases to demonstrate key concepts.

CASE 1

A 15-year-old female competitive swimmer presented with several months of exertional dyspnea in the context of asthma. Evaluation before specialty care included spirometry with mild obstruction and a positive response to bronchodilators, as well as a normal computed tomography scan of the sinuses. Therapeutic trials before specialty care included daily fluticasone 100 μg/salmeterol 50 μg, which was escalated to fluticasone 250 μg/salmeterol 50 μg as well as montelukast 10 mg/d, nasal steroids, and oral antihistamines. She was then evaluated by an allergist, who optimized nasal care (with nasal saline washes and improved in nasal steroid technique) and transitioned combination controller therapy to a metered dose inhaler formulation with spacer (of comparable dosage). She was later referred to our exertional dyspnea program for an incomplete response of exertional dyspnea to therapy, described by the patient as “a block near the top of my lungs.” Symptoms only occurred during high-intensity swimming and were not clearly associated with audible stridor, although the patient noted that she was unable to assess her breathing while underwater. Initially, the dyspnea was quite frightening for the patient, although this response had improved somewhat. There was associated cough during and after exercise. There was no associated chest pain, pallor, cyanosis, presyncope, or syncope. Events generally occurred after 7 minutes of intense exercise and returned to baseline after about 10 minutes.

Physical examination was normal. Spirometry demonstrated mildly obstructed airflow (forced expiratory volume in 1 second [FEV_1]/forced vital capacity of 0.78) with an 8% improvement in FEV_1 in response to bronchodilator. Continuous laryngoscopy during exercise testing demonstrated excellent fitness (peak oxygen consumption of 51 mL/kg/min at our altitude of 1600 m above sea level), no desaturation, no postexertional bronchoconstriction (7% increase), and mild inspiratory glottic adduction associated with a faint audible stridor and inspiratory blunting of exercise flow volume loops.