Vocal Cord Dysfunction

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INTRODUCTION
Vocal cord dysfunction (VCD) occurs when the vocal cords fail to properly abduct during breathing. Normally, during inhalation the vocal cords are open and moved away from midline and during exhalation the folds adduct, moving back to midline. With VCD, the vocal cords typically remain at midline during inhalation and sometimes exhalation, which creates an airway obstruction. This manifests as not being able to breathe, or more specifically, a feeling of not being able to get air in to the lungs. Along with shortness of breath, VCD may present as chest pain or tightness, throat tightness or choking and you may hear audible stridor on inspiration. Due to the similarity in symptoms, VCD can sometimes be mistaken as asthma, which can increase morbidity and health care costs due to a delay in diagnosis. Diagnosis of VCD can be difficult because symptoms are highly variable and can be difficult to reproduce. Symptoms are often worse in higher stress environments such as during competition as opposed to practice.

DIAGNOSIS
The gold standard for diagnosis is visualization of the vocal cords via direct laryngoscopy while the patient is symptomatic. Pulmonary function tests may be helpful as well and can show flattening of the inspiratory loop with normal expiratory loop.

Flexible Laryngoscopy
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TREATMENT
Acute management involves relaxation and promotion of normal breathing. If not urgent, the athlete can bend at the waist, crouch, or kneel to promote diaphragmatic. They should inhale through the nose and slowly exhale through pursed lips. Panting or frequent sips of water can also help as can concentrating on making a soft “s” sound during exhalation which helps to reassure the athlete that air is being moved. Occasionally supplemental oxygen or sedatives may be needed if other techniques are not effective.

Much of preventative therapy relies on the athlete’s ability to recognize when troubled breathing will happen and to utilize breathing techniques before symptoms begin. Relaxed breathing techniques are first performed at rest and then gradually progressed through different activities with the goal being to perform these techniques during sports participation. Treatment should involve a multidisciplinary team which may include a speech therapist, psychologist, athletic trainer, and the athlete’s own parents.

No medications are required for VCD that is not associated with any comorbidities. However, any underlying medical problems such as GERD, rhinitis or anxiety should be treated appropriately. Trying to avoid triggers and treating any environmental allergies may benefit the patient as well.

Return to Play
Athletes may return to their sport as tolerated once symptoms resolve. Once the diagnosis is established, education and reassurance alone can help minimize symptoms. However, most athletes benefit from learning and performing breathing techniques that help during activity.

Resources available upon request.
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Vocal cord dysfunction (VCD) occurs when the vocal cords fail to move with the correct motion during breathing. Normally, when you take a breath the vocal cords open allowing air to move in to the lungs and as you breathe the air out of the lungs the vocal cords begin to close. When there is vocal cord dysfunction, the vocal cords will remain slightly closed when trying to breath in making it difficult to breathe normally. With this partial obstruction, you get a feeling of shortness of breath or difficulty of breathing in air. This may manifest as chest pain or tightness, throat pain or tightness, or choking. You may hear an audible high-pitched noise with each breath in. In athletes, this most commonly occurs during stressful, high-level competitions. The feeling of inability to breathe is a scary experience for both the athlete and the parents. However, if the athlete can calm themselves, the symptoms usually subside and normal breathing can resume. If symptoms fail to quickly improve however, medical assistance should be sought immediately.

VCD is often misdiagnosed as asthma due to the difficulty breathing that is associated with exercise. However asthma usually causes difficulty with breathing out and is commonly associated with a wheezing sound, whereas VCD causes difficulty with breathing in and is commonly associated with a noise called stridor.

Sometimes a chest x-ray is ordered to make sure a different disease process is not occurring in the lungs. Pulmonary function tests may be done to rule out asthma and can sometimes be helpful in suggesting a diagnosis of VCD. However, ultimately VCD is diagnosed by having a doctor visualize the movement of the vocal cords with a special scope while the athlete is having symptoms. Because of this, and also because symptoms can be hard to reproduce, making a diagnosis is often challenging.

Albuterol is a medication that is used in asthma to help relax the airway to allow for easier breathing. This medication is sometimes used with VCD initially but usually does not improve the symptoms. VCD treatment generally starts with recognizing risk factors (stress) and managing underlying medical problems (reflux, allergies, anxiety) in addition to providing reassurance and education regarding the diagnosis. Athletes with VCD can learn specific breathing techniques to help them relax and move air more effectively. Commonly used techniques include rapid sniffing or panting and breathing while bending at the waist or while crouching down. Athletes may also be referred to speech therapists or psychologists to help with treatment.

Tips to treat and help prevent VCD symptoms:
- Let your doctor know if your athlete is having any breathing difficulty during or after sports participation
- Look for underlying conditions that may contribute to symptoms (reflux, allergies, anxiety or depression)
- Provide education about what VCD is and reassurance that it can be treated
- Teach the athlete breathing exercises to help them relax and move air effectively
- Ask about a referral to a speech therapist or psychologist to help manage VCD if basic breathing exercises are not effective.

Parent Handouts

Parents may find more helpful information on other sports-related injuries and concerns on the Ohio AAP website. The Sports Shorts Library includes the following topics:
- Weight Loss Practices and Nutrition in Wrestlers
- Iron in Athletes
- Hip and Pelvis Injuries in Athletes
- Hydration in Children
- Heat Illness
- Overuse Injuries
- Concussions
- Performance-Enhancing Substances
- Staph and Skin Infections

You may find these printable handouts at OhioAAP.org/Resources.