
Vocal cord dysfunction aka VCD is a functional voice disorder that has increased in prevalence since its initial description in 1983. Vocal cord dysfunction is considered a paradoxical disorder because the vocal folds tend to close (adduct) during the inspiratory phase of respiration. VCD is commonly misdiagnosed as asthma, thus resulting in unnecessary medical intervention and a possible delay in appropriate referral and treatment (Christopher, et al, 1983). The prevalence of VCD tends to be higher in females and among adolescents that are active in athletics.

The available sparse literature on clinical characteristics of VCD is limited to pulmonary dysfunction, immunological problems, and impaired athletic performance (Koester & Amundson, 2002; Niggeman, 2002; Anderson, 2005). There is no information regarding vocal/laryngeal performance of individuals with VCD. The need exists to determine:

- the triggers for VCD
- related vocal-respiratory characteristics
- management of vocal tract symptoms

The purpose of this retrospective case study is to share preliminary findings regarding each of the above-mentioned issues.

A 13 year old female (‘X’) with the history of vocal-respiratory problems one year prior to referral for speech therapy served as the subject. Multiple medical examinations ruled out possible cardiac and pulmonary pathologies. Pharmacological management for exercise-induced asthma failed to show favorable outcome. Eventually, the diagnosis of VCD was made and ‘X’ was referred for speech therapy. ‘X’ is an academically strong student and athlete from a supportive home environment.

Her reported respiratory symptoms included episodic tightness in chest and decreased ability to obtain a full breath upon inhalation; these were described as “vocal attacks.” Assessment revealed predominantly clavicular and antero-posterior chest expansion with minimal use of lateral expansion or diaphragmatic breathing. Phonatory/vocal fold performance was found to be adequate for habitual pitch (Fo=209 Hz), maximum phonation time (14.6 sec. avg.), and perceived vocal quality. Increased level of anxiety was reported during and after onset of vocal attacks.

Intervention goals included the following:

- Education of ‘X’ and parents regarding respiratory mechanism and its impact on laryngeal performance.
- Reduction in frequency and duration of the vocal attacks.

Treatment began with one session per week for the first two months followed by three bi-monthly sessions, and subsequent discharge.
Relaxation exercises utilizing visual imagery (“Floating in Space”) were completed to induce general relaxed posture. Facilitatory and compensatory respiration techniques were completed. Generalization exercises involved exposure to physical activities to trigger vocal attacks with simultaneous monitoring of respiratory performance; pulse oximeter and subjective reports were used for data collection. ‘X’ was required to maintain a log to code occurrence and circumstance/triggers for each vocal attack. (see Figure 2)

Results revealed the following:

- A progressive reduction in number of vocal attacks occurred across the first four month period (see Figure 1).
- The number of attacks progressively decreased from one per week to none for an entire month.
- Duration of each attack decreased from 15 minutes before intervention to average of 2.22 minutes per attack after intervention.
- The slight regression in occurrence of attacks during the third month related to increased physical activity during basketball camp which involved four hours practice per day.
- Six-month follow-up assessment showed maintenance of improved performance. ‘X’ reported no occurrence of vocal attacks for the six months following discharge.

**FIGURE 1: NUMBER OF VOCAL ATTACKS FOR SIX-MONTH PERIOD**

‘X’ was able to modify her breathing pattern to include more lateral chest expansion as well as utilize diaphragmatic/abdominal muscles. She reported that she was able to monitor and modify her breathing during intensive physical activities without cessation of the activity. This change allowed her to stay on the basketball team and helped improve her overall performance. Finally, ‘X’ reported increased confidence in her ability to handle the episodes of vocal attacks.
In conclusion, this case description indicates an obvious relationship between physical exertion, exercise-induced asthma, and lower vocal tract dysfunction. Behavioral intervention is valid and successful in the presence of all three (above) factors. Combined use of specific respiratory strategies and self-therapy served as an effective intervention approach. Client motivation and family support play an important role in successful outcome for VCD intervention. Further research is needed to determine if “vocal cord dysfunction” is a valid diagnostic label for obvious pulmonary pathology.

REFERENCES


