

Hypnosis as a Diagnostic Modality for Vocal Cord Dysfunction

Ran D. Anbar, MD, and David A. Hehir, MD

ABSTRACT. Vocal cord dysfunction (VCD) is a condition of paradoxical adduction of the vocal cords during the inspiratory phase of the respiratory cycle. VCD often presents as stridorous breathing, which may be misdiagnosed as asthma. The mismanagement of this disorder may result in unnecessary treatment and iatrogenic morbidity. An association with psychogenic factors has been reported, and a higher incidence of anxiety-related illness has been demonstrated in patients with VCD.

Definitive diagnosis of VCD is made by visualization of adducted cords during an acute episode using nasopharyngeal fiber-optic laryngoscopy. Diagnosis can be problematic, because it may be difficult to reproduce an attack in a controlled setting. To maximize diagnostic yield during laryngoscopy, provocation of symptoms using methacholine, histamine, or exercise challenges have been used. We report a case of an 11-year-old boy, wherein hypnotic suggestion was used as an alternative method to achieve a diagnosis of VCD.

The patient was admitted to the pediatric intensive care unit for elective fiber-optic laryngoscopy to confirm a diagnosis of VCD. The patient had a 4-year history of refractory asthma, severe gastroesophageal reflux disease (GERD) for which he had undergone a Nissen fundoplication, and suspected VCD.

At 9 years of age the patient began manifesting monthly respiratory distress episodes of a severe character different from those that had been attributed to his asthma. Typically, he awoke from sleep with shortness of breath and difficulty with inhalation. He described a "neck attack" during which he felt as if the walls of his throat were "beating together." The patient was at times noted by his mother to exhibit a "suckling" behavior before onset of his respiratory distress episodes. On 4 occasions the patient became unconscious during an attack and then spontaneously regained consciousness after a few minutes. On these occasions, he was transported by ambulance to the hospital and the severe difficulty with inhalation resolved within a few minutes on treatment with oxygen and bronchodilators. Sometimes he was noted to manifest wheezing for several hours, which was responsive to bronchodilator therapy.

Given the severity of the patient's disease, it was imperative to determine whether VCD was a complicating factor. It was proposed that an attempt be made to induce VCD by hypnotic suggestion while the patient underwent a fiberoptic laryngoscopy to establish a definitive diagnosis. The patient and his mother gave written consent for this procedure. He was admitted for observation

to the pediatric intensive care unit for the induction attempt. The patient requested that no local anesthesia be applied in his nose before passage of the laryngoscope because he wanted to eat right after the procedure. Therefore, the nasopharyngeal laryngoscope was inserted while he used self-hypnosis as the sole form of anesthesia. He demonstrated no discomfort during its passing. Once the vocal cords were visualized, the patient was instructed to develop an episode of respiratory distress while in a state of hypnosis by recalling a recent "neck attack." His vocal cords then were observed to adduct anteriorly with each inspiration. The patient then was asked to relax his neck. When he did, the vocal cords immediately abducted with inspiration, and he breathed easily. After removal of the laryngoscope, the patient alerted from hypnosis and said he felt well. He reported no recollection of the procedure, thus demonstrating spontaneous amnesia that sometimes is associated with hypnosis.

Because the diagnosis of VCD was confirmed, the patient was encouraged to use self-hypnosis and speech therapy techniques to control his symptoms. He also was referred for counseling.

To our knowledge this is the first description in the medical literature of the use of hypnotic suggestion for making a diagnosis of VCD. The potential utility of hypnosis in this case was suggested by the widely reported relationship of VCD to anxiety disorders and other psychological factors.

The use of hypnosis for widespread diagnosis of VCD has its limitations. Although the patient in this report was able to achieve several hypnotic phenomena, not all patients respond to hypnosis as readily. Because children may be more adept at hypnosis than adults, use of hypnosis to diagnose VCD may not be as effective in older patients. The instructor in hypnosis must have adequate training. Importantly, inducing VCD with hypnosis in an inappropriate setting might be dangerous. In this case, we chose to perform the diagnostic procedure in a pediatric intensive care unit given the risk of inducing severe respiratory distress with hypnosis.

This case was complicated by an atypical presentation of VCD with concurrent diagnoses of asthma and GERD. Unlike the patient in this report, VCD is typically characterized by stridor and by the absence of nocturnal symptoms. However, a recent case series presented 4 patients with laryngoscopically confirmed VCD who presented with nocturnal symptoms. The coexistence of VCD with asthma is well recognized. As in this patient, the presence of asthma may complicate and delay a definitive diagnosis of VCD. The presence of GERD is also a common finding in pediatric patients with VCD. However, neither asthma nor GERD could entirely account for the symptoms of this patient, because he experienced serious respiratory distress despite aggressive therapy for asthma and reflux, including a fundoplication.

The most widely used preventive treatment for VCD is speech therapy, which focuses on relaxed throat breath-

From the State University of New York Upstate Medical University, Syracuse, New York.

Received for publication Mar 8, 2000; accepted Jul 20, 2000.

Reprint requests to (R.D.A.) Pediatric Pulmonary Center, State University of New York Upstate Medical University, 750 E Adams St, Syracuse, NY 13210. E-mail: anbar@mail.upstate.edu

PEDIATRICS (ISSN 0031 4005). Copyright © 2000 by the American Academy of Pediatrics.

ing and abdominal breathing. These techniques also can be used to terminate episodes of VCD. Psychotherapy also has benefited some patients by helping patients to identify and manage issues of primary and secondary gain associated with VCD. The high prevalence of anxiety-related disorders in patients with VCD has led to the suggestion that anxiolytics may benefit patients, although this is not generally used as a first-line therapeutic option. The patient in this report demonstrated an ability to control VCD with hypnosis, as has been reported previously for other patients.

In conclusion, we found that in our patient with life-threatening respiratory distress, hypnosis could be used to achieve a diagnosis of VCD as well as an effective therapeutic measure. *Pediatrics* 2000;106(6). URL: <http://www.pediatrics.org/cgi/content/full/106/6/e81>; hypnosis, vocal cord dysfunction, asthma, gastroesophageal reflux.

ABBREVIATIONS. VCD, vocal cord dysfunction; GERD, gastroesophageal reflux disease.

Vocal cord dysfunction (VCD) is a condition of paradoxical adduction of the vocal cords during the inspiratory phase of the respiratory cycle.¹ VCD often presents as stridorous breathing, which may be misdiagnosed as asthma. The mismanagement of this disorder may result in unnecessary treatment and iatrogenic morbidity.¹ The cause and underlying mechanisms of vocal cord dysfunction are unknown. An association with psychogenic factors has been noted by a number of authors, and a higher incidence of anxiety-related illness has been demonstrated in patients with VCD.²

Definitive diagnosis of VCD is made by visualization of adducted cords during an acute episode using nasopharyngeal fiber-optic laryngoscopy. Diagnosis can be problematic, because it may be difficult to reproduce an attack in a controlled setting. To maximize diagnostic yield during laryngoscopy, provocation of symptoms using methacholine, histamine, or exercise challenges have been used.^{3,4} We report a case wherein hypnotic suggestion was used as an alternative method to achieve a diagnosis of VCD.

CASE REPORT

An 11-year-old boy was admitted to the pediatric intensive care unit for elective fiber-optic laryngoscopy to confirm a diagnosis of VCD. The patient had a 4-year history of refractory asthma, gastroesophageal reflux disease (GERD), and suspected VCD.

The patient was diagnosed with asthma at 7 years of age, based on a history of cough and wheezing associated with recurrent upper respiratory tract infections that responded to therapy with inhaled bronchodilators. He also reported shortness of breath in association with physical exertion. On physical examination the patient demonstrated transient diffuse end-expiratory wheezing. Pulmonary function testing revealed a partially reversible moderate obstructive pattern.

At 9 years of age the patient began manifesting monthly respiratory distress episodes of a severe character different from those that had been attributed to his asthma. Typically, he awoke from sleep with shortness of breath and difficulty with inhalation. He described a "neck attack" during which he felt as if the walls of his throat were "beating together." The patient was at times noted by his mother to exhibit a "suckling" behavior before onset of his respiratory distress episodes. On 4 occasions the patient became unconscious during an attack and then spontaneously regained consciousness after a few minutes. On these occasions, the severe difficulty with inhalation resolved within a few minutes on treatment in the hospital with oxygen and bronchodilators. Sometimes

he was noted to manifest wheezing for several hours, which was responsive to bronchodilator therapy.

Despite therapy, including pulses of oral corticosteroids, long-term inhaled corticosteroids, long-acting bronchodilators, and leukotriene receptor antagonists, the severe episodes recurred. Allergy skin scratch tests revealed that the patient was sensitive to dust, dust mites, and mold. Environmental precautions were undertaken to minimize exposure to these allergens and the patient was started on a long-acting antihistamine with no clinical response. Chest radiographs, neck radiographs, and a barium swallow were all normal. Complement and C₁ esterase levels were normal. Cranial magnetic resonance imaging and an electroencephalogram were normal. A bronchoscopy revealed no structural abnormalities of the airway. Nasopharyngeal flexible laryngoscopy when the patient was asymptomatic revealed a minor nodularity of the right true vocal cord, which was not believed to be related to the episodes of respiratory distress.

A 72-hour pH probe study demonstrated severe gastroesophageal reflux. The patient was started on cisapride and omeprazole and subsequently experienced a decrease in the frequency of respiratory distress episodes. Nevertheless, the patient continued to experience episodes requiring hospitalization. After 18 months of medical antireflux therapy the patient underwent a Nissen fundoplication with the hopes that prevention of gastroesophageal reflux would result in an improvement of his respiratory symptoms. However, he was readmitted to the hospital 2 weeks after surgery in respiratory distress because of difficulty with inhalation.

A diagnosis of VCD was suspected at that time, but laryngoscopy could not be performed during severe episodes because of their brief nature. The patient was referred to a speech therapist. Although his episodes decreased in frequency after the initiation of speech therapy, the patient continued to experience severe episodes. The patient then was referred to a child psychiatrist, who met with the patient and his mother on one occasion. The psychiatrist believed that anxiety caused by the patient's relationship with his mother was probably a component of the patient's presentation. He assessed the patient's mother as overprotective, while the patient engaged in risk-taking behaviors, which apparently were designed to gain a sense of freedom from domination by the relationship with his mother. Likewise, the patient was overprotective of his mother, as he described behaviors she exhibited that were upsetting to him. For example, when his mother discussed her ambivalent relationship with her boyfriend, the patient interrupted and wanted to know when she would be done with the boyfriend. In treatment of the patient's anxiety, the psychiatrist recommended that the patient maintain his ongoing good relationship with his pulmonologist and that the patient be taught stress reduction techniques. The patient's mother found the interview with the psychiatrist helpful but chose not to make another appointment.

It was proposed to the patient that his respiratory symptoms might be related to anxiety, and, therefore, potentially controllable with stress reduction techniques. The patient agreed to undergo instruction in self-hypnosis for this purpose. He was found to be very open to hypnotic suggestion. For example, he reported that he could not separate his hands when he held them together and he imagined them to be strong magnets; his right arm levitated easily when he imagined helium balloons tied to his wrist; and he reported that he was unable to perceive the "outside world" when he imagined himself in a comfortable place. The patient practiced how he might terminate episodes of severe respiratory distress with self-hypnosis. He learned to induce warmth and relaxation of his neck when he touched it. He then imagined developing respiratory distress and eliminating it by touching his neck. The patient was advised to practice hypnosis on a regular basis and to apply it as needed for respiratory distress. During the subsequent 6 months, the patient reported that he was able to control some severe episodes with hypnosis but continued to have occasional nocturnal episodes, which he said he could not control because he was asleep when they started.

Given the severity of the patient's disease, it became imperative to determine whether VCD was the cause. It was proposed that an attempt be made to induce VCD by hypnotic suggestion, while the patient underwent a fiberoptic laryngoscopy to establish a definitive diagnosis. The patient and his mother gave written consent for this procedure. He was admitted for observation to the pediatric intensive care unit for the induction attempt. The patient

requested that no local anesthesia be applied in his nose before passage of the laryngoscope because he wanted to eat right after the procedure. Therefore, the nasopharyngeal laryngoscope was inserted while he used self-hypnosis as the sole form of anesthesia. He demonstrated no discomfort during its passing. Once the vocal cords were visualized, the patient was instructed to develop an episode of respiratory distress while in a state of hypnosis by recalling a recent "neck attack." His vocal cords then were observed to adduct anteriorly with each inspiration. The patient then was asked to touch his neck. When he did, the vocal cords immediately abducted with inspiration and he breathed easily. After removal of the laryngoscope, the patient alerted from hypnosis and said he felt well. He reported no recollection of the procedure, thus demonstrating spontaneous amnesia that sometimes is associated with hypnosis.

Because the diagnosis of VCD was confirmed, the patient was encouraged to continue use of self-hypnosis and speech therapy techniques to control his symptoms. He also was referred for counseling.

DISCUSSION

This case was complicated by an atypical presentation of VCD with concurrent diagnoses of asthma and GERD. Unlike the patient in this report, VCD is typically characterized by stridor and the absence of nocturnal symptoms.⁵ However, a recent case series presented 4 patients with laryngoscopically confirmed VCD who presented with nocturnal symptoms.⁶ The coexistence of VCD with asthma is well recognized.¹ As in this patient, the presence of asthma may complicate and delay a definitive diagnosis of VCD. The presence of GERD is also a common finding in pediatric patients with VCD.⁷ However, neither asthma nor GERD could entirely account for the symptoms of this patient, because he experienced serious respiratory distress despite aggressive asthma and antireflux therapy, including a fundoplication.

To our knowledge this is the first description in the medical literature of hypnotic suggestion used in making the diagnosis of VCD. The potential utility of hypnosis in this case was suggested by the widely reported relationship of VCD to anxiety disorders and other psychological factors.^{2,8-11} The use of self-hypnosis for wide-spread diagnosis of VCD has its limitations. Although the patient in this report was able to achieve several hypnotic phenomena, not all patients respond to hypnosis as readily.¹² Because children may be more adept at hypnosis than adults,¹² use of hypnosis to diagnose VCD may not be as effective in older patients. The instructor in hypnosis must have adequate training, such as through enrollment in workshops administered by the American Society of Clinical Hypnosis, the Society for Clinical and Experimental Hypnosis, the Society for Developmental and Behavioral Pediatrics, or the Ericksonian Foundation. Importantly, inducing VCD with hypnosis in an inappropriate setting might be dangerous. In this case, we chose to perform the diagnostic procedure in a pediatric inten-

sive care unit given the risk of inducing severe respiratory distress with hypnosis.

The most widely used preventive treatment for VCD is speech therapy, which focuses on relaxed throat breathing and abdominal breathing.¹³ These techniques also can be used to terminate episodes of VCD. Psychotherapy also has benefited some patients, by helping patients to identify and manage issues of primary and secondary gain associated with VCD.⁴ The high prevalence of anxiety-related disorders in patients with VCD has led to the suggestion that anxiolytics may benefit patients, although this is not generally used as a first-line therapeutic option.² The patient in this report demonstrated an ability to control VCD with hypnosis, as has been reported previously for other patients.^{3,9} The utility of hypnosis in patients with VCD is not surprising, given its effectiveness in treatment of many other behavioral disorders, such as habitual cough, enuresis, nail biting, and stuttering.¹⁴

CONCLUSION

We found that in our patient with life-threatening respiratory distress, hypnosis could be used to achieve a diagnosis of VCD as well as an effective therapeutic measure.

REFERENCES

1. Newman KB, Mason UG, Schmalzing KB. Clinical features of vocal cord dysfunction. *Am J Respir Crit Care Med.* 1995;152:1382-1386
2. Gavin LA, Wamboldt M, Brugman S, Roesler TA, Wamboldt F. Psychological and family characteristics of adolescents with vocal cord dysfunction. *J Asthma.* 1998;35:409-417
3. Wood RP, Milgrom H. Vocal cord dysfunction. *J Allergy Clin Immunol.* 1996;98:481-485
4. Selner JC, Staudenmayer H, Koepke JW, Harvey R, Christopher K. Vocal cord dysfunction: the importance of psychological factors and provocation challenge testing. *J Allergy Clin Immunol.* 1987;79:726-733
5. Landwehr LP, Wood RP, Blager FB, Milgrom H. Vocal cord dysfunction mimicking exercise induced bronchospasm in adolescents. *Pediatrics.* 1996;98:971-974
6. Reischer C, Nelson H. Vocal cord dysfunction with nocturnal awakening. *J Allergy Clin Immunol.* 1997;99:843-846
7. Heatley DG, Swift E. Paradoxical vocal cord dysfunction in an infant with stridor and gastroesophageal reflux. *Int J Pediatr Otorhinolaryngol.* 1996;34:149-151
8. Christopher KL, Wood RP, Eckert RC, Blager FB, Raney RA, Souhrada JF. Vocal-cord dysfunction presenting as asthma. *N Engl J Med.* 1983;308:1566-1570
9. Smith MS. Acute psychogenic stridor in an adolescent athlete treated with hypnosis. *Pediatrics.* 1983;72:247-248
10. Geist R, Tallet S. Diagnosis and management of psychogenic stridor caused by a conversion disorder. *Pediatrics.* 1990;86:315-317
11. Tajchman UW, Gitterman B. Vocal cord dysfunction associated with sexual abuse. *Clin Pediatr.* 1996;35:105-108
12. London P. Developmental experiments in hypnosis. *Journal of Projective Techniques and Personality Assessment.* 1965;29:189-199
13. Blager FB, Gay ML, Wood RP. Voice therapy techniques adapted to treatment of habit cough: a pilot study. *J Commun Disord.* 1988;21:393-400
14. Olness K, Kohen DP. Hypnotherapy for habit disorders. In: *Hypnosis and hypnotherapy With children.* 3rd ed. New York, NY: Guilford Press; 1996:133-167

Hypnosis as a Diagnostic Modality for Vocal Cord Dysfunction

Ran D. Anbar and David A. Hehir

Pediatrics 2000;106:e81

DOI: 10.1542/peds.106.6.e81

Updated Information & Services

including high resolution figures, can be found at:
<http://pediatrics.aappublications.org/content/106/6/e81>

References

This article cites 13 articles, 3 of which you can access for free at:
<http://pediatrics.aappublications.org/content/106/6/e81#BIBL>

Subspecialty Collections

This article, along with others on similar topics, appears in the following collection(s):
Psychiatry/Psychology
http://www.aappublications.org/cgi/collection/psychiatry_psychology_sub

Permissions & Licensing

Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at:
<http://www.aappublications.org/site/misc/Permissions.xhtml>

Reprints

Information about ordering reprints can be found online:
<http://www.aappublications.org/site/misc/reprints.xhtml>

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN®



PEDIATRICS®

OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

Hypnosis as a Diagnostic Modality for Vocal Cord Dysfunction

Ran D. Anbar and David A. Hehir

Pediatrics 2000;106:e81

DOI: 10.1542/peds.106.6.e81

The online version of this article, along with updated information and services, is located on the World Wide Web at:

<http://pediatrics.aappublications.org/content/106/6/e81>

Pediatrics is the official journal of the American Academy of Pediatrics. A monthly publication, it has been published continuously since 1948. Pediatrics is owned, published, and trademarked by the American Academy of Pediatrics, 345 Park Avenue, Itasca, Illinois, 60143. Copyright © 2000 by the American Academy of Pediatrics. All rights reserved. Print ISSN: 1073-0397.

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN®

