

The Habit Cough Syndrome

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Involuntary cough without an identified underlying organic reason has been given various names and recommended treatments. Current experience suggests that "habit cough" best describes this clinical entity and that "suggestion therapy" is the treatment of choice. Suggestion therapy is effective when it is directed at demonstrating to the patients that they have the ability to resist the urge to cough. Attempts at medical treatment or use of placebo therapy, even with the suggestion that the medicine will stop the cough, are generally not successful. In the absence of suggestion therapy, even when the diagnosis is correctly made, continued symptomatology for years is common. On the other hand, sustained relapse after suggestion therapy is uncommon.

Introduction

INVOLUNTARY COUGH without an identified underlying organic reason has been repeatedly described. One of the earliest detailed case reports accompanied by 1 year of follow-up was published by Bernstein.¹ He described a 12-year-old girl with what he named "the barking cough of puberty." Two months later Baker² placed "chronic cough from habit or psychosomatic disease" in the differential diagnosis for chronic cough in children. The actual term "habit cough" was first used by Berman in 1966.³ He reported 6 children (3 in detail) in whom he "relied solely on the art of suggestion" to produce the cessation of cough. His 2-year follow-up supported the success of his therapy. Since then several descriptive terms have been used for this condition: "functional or psychogenic cough,"⁴ "psychogenic cough tic,"⁵ "operant cough,"⁶ "honking,"⁷ and "involuntary cough syndrome."⁸

Clinical Characteristics

Seventeen published reports of actual cases have described a total of 153 patients. Of those, 149 were younger than 18 years, and 4 patients were adult women from 19 to 30 years of age. Several clinical characteristics of habit cough (Table 1) have been described with striking similarity by all of the authors despite some differences in diagnostic approach. Habit cough occurred only slightly more often in females than in males. Ages have ranged from 5 to 30 years, but the vast majority of patients were teenagers. The duration of cough before diagnosis ranged from 1 week to 16 years, with the median for each report from weeks to months for children and 4 years for adults.

All the case reports noted a predominantly day-time cough that disappeared after patients actually fall asleep. The

cough was characterized as dry, repetitive, generally non-productive, "barking seal," loud cough that would increase whenever attention was being paid to it. In contrast to organic causes of cough, increase with exercise was not noted nor would the cough awaken the patient once asleep. Nineteen pediatric patients and all 4 adults carried the diagnosis of asthma that was disproved during the evaluation for habit cough. Recent respiratory insult such as viral infection, trauma to the airways, or severe allergic reaction with respiratory manifestations was identified in 35% (56 of 153 patients).

For most, multiple radiological, serological, clinical, pulmonary functions and endoscopic evaluations invariably showed negative results. The exceptions are the reports of localized tracheomalacia found by flexible bronchoscopy in 7 patients.⁹ Five of 7 were treated with hypnosis with sustained improvement, suggesting that a habit-like component had been acquired in these patients predisposed to irritate their tracheas due to the structural instability at the site of the malacia. However, the significant nocturnal cough in those patients with tracheomalacia distinguished them from other typical cases of habit cough. Lavigne also reported localized bronchomalacia due to vascular compression of the right main bronchus in 1 case.¹⁰

"Chin-to-chest" posture or some stereotypical "hands-to-mouth" gestures accompanying the cough were described by some authors.^{1,7,11,12} The physical examination was generally normal. However, several authors did report some specific physical findings.^{4,9,10,13,14} Cohan and Stone checked the gag and corneal reflexes in 31 of his patients with habit cough and found abnormally decreased or absent gag reflex in all and depressed or absent corneal reflex in 21.¹³ Rabin brought attention to the "presence of edema of the lingual tonsils" that "impinge on the epiglottis, obliterating the vallecula

TABLE 1. CLINICAL CHARACTERISTICS OF HABIT COUGH

Very loud, repetitive, dry cough; may be accompanied by stereotypical chin-on-chest posture or hands-to-mouth gestures
Mostly teens (range: 5–30 years of age)
Both sexes but with female preponderance
Duration of weeks to months
Weeks to months of school missed
No consistent response to bronchodilators, steroids, antibiotics, or antitussive medications
Multiple office or hospital "sick" visits
No other tics, normal physical examination except cough ^a
All the tests are normal
Initial respiratory insult is identified in 35% (viral, allergic reaction, trauma)
Misdiagnosis of asthma (at least 15% of 153 patients) ^b
Secondary gain, school phobias, and psychological conflicts identified in 22% ^c

^aDepressed or absent gag/corneal reflexes in some (Cohlan and Stone¹³).

^bAll of our patients.¹⁸

^cFor all 4 adults, but only 19 of 149 children.¹⁸

space.¹⁴ In his view this was the result of the severe cough itself. Cohlan and Stone¹³ and then Wolff¹² reported patients' ability to reproduce the paroxysm of cough on command, but our own experience was to the contrary.

The degree to which psychological abnormalities are responsible for or even present in habit cough is controversial. The extent of evaluation for possible psychological problems associated with habit cough reported in the literature varied from office interviews done by the allergist or pulmonologist (for most) to extended psychiatric evaluations done by psychologist or psychiatrist. Whether specific patients were referred for psychological evaluation appeared to depend on the authors' conception of the origin of this illness. Overall, school phobias, secondary gain, or significant psychological conflicts were reported in 34 of 153 patients. All 4 adults were reported to meet the criteria for conversion reactions or somatization with conversional symptoms.^{15,16} The contrast between those studies that found some sort of psychological problem to be present in (and responsible for) the habit cough phenomena in all or almost all of their patients^{5,7,11,17} and those that found no significant psychological problems among their patients suggests either marked differences in patient selection or biases of the observers.^{3,13} Only 1 of 33 patients of Cohlan and Stone was reported to need psychiatric treatment for a significant conversion disorder.¹³ Berman suspected school phobia in only 1 of his 6 patients.³ None of the 9 patients we previously reported with habit cough had identifiable psychological or psychiatric problems.¹⁸ Moreover, follow-up with a standardized psychological questionnaire (SCL-90-R) did not reveal any

significant somatization or other abnormalities in any of our patients.

Prevalence

The prevalence of habit cough is difficult to establish. Eighteen years of clinical experience from The Mayo Clinic revealed only 62 cases of habit cough.⁸ Cohlan and Stone reported 33 cases of habit cough from over 25 years of his clinical experience.¹³ Later Wolff, from the same clinic, described another 2 patients and mentioned a total of 6 over the next 4 years after the original report.¹² Houstek et al. reported 10 cases from 1971 to 1981.¹⁷ In our own retrospective study of close to 4,500 medical records covering over 12 years from a pediatric allergy and pulmonary referral service, we identified 23 patients with all categories of functional respiratory disorders, of whom 9 had habit cough (Table 2).¹⁸ Although habit cough was the most frequent diagnosis in that report, this probably reflects more the severity and duration of symptoms of habit cough compared with some of the other diagnoses in Table 2 rather than the true relative incidence in the community; we suspect that hyperventilation attacks, for example, are much more common than indicated in Table 2 because of the greater recognition in the community and lesser likelihood of referral to our subspecialty service. From our personal observations and communications with our colleagues, it seems that most busy allergists would encounter about 1–2 cases of habit cough a year. It is probably under-reported and under-estimated due to the lack of clear definition and specific

TABLE 2. CHARACTERISTICS OF PATIENTS FOUND TO HAVE FUNCTIONAL RESPIRATORY DISORDERS

Clinical pattern	Male/female	Age of diagnosis: median (range), in years	Previous symptom duration: median (range), in months	Hospitalized
Coughing	3/6	11 (6–17)	2 (0.25–24)	5
Hyperventilating	2/3	15 (12–16)	7 (2–72)	1
Throat clearing	1/2	15 (9–26)	48 (0.5–120)	1
Laryngeal spasm	0/3	13 (12–25)	36 (4–84)	3
Sneezing	0/1	11	0.2	0
Sniffing	0/1	8	18	0
Nose blowing	1/0	12	5	0
Summary	7/16	12 (6–26)	7 (0.25–120)	10

diagnostic tests as well as due to low awareness of it in the general medical community.

Treatment

Even when habit cough is correctly diagnosed, absence of a specific treatment plan can result in prolonged symptomatology. In a report of 60 patients from Mayo Clinic, 44 of 60 patients required an average of 6 months beyond the diagnosis for resolution and 16 continued to be symptomatic for a mean duration of 5.9 years.⁸ The therapeutic approaches reported in the literature can be divided into 2 major groups: (1) vigorous psychological intervention with behavioral techniques or psychotherapy with or without psychotropic drugs and (2) suggestion therapy using a variety of techniques.

Reports of adults with habit cough suggested that intense psychotherapy, counseling, and speech therapy resulted in a decrease of symptom severity in a small number of patients who accepted it.^{15,16} The same authors treated other patients successfully with speech therapy alone, but with no follow-up data or details of the cases involved. "Response suppression shaping" utilizing painful electric shocks was used successfully in 2 teenage boys with no relapses after 1.5–2.5 years of follow-up.^{19,20} Before this therapy, one coughed so severely that he lost consciousness. One of these patients required >100 sessions, whereas the other patient discontinued his cough immediately after 1 shock. An "elevated level of anxiety, neuroticism, affective lability, hyperactivity, low tolerance to frustration" was found in all 10 patients from 1 report¹⁷ with a good response to mild tranquilizers and prolonged psychotherapy.

One of the earliest references to a successful use of suggestion therapy for treatment of habit cough came from Bernstein in 1963.¹ He described a dramatic and lasting resolution of a severe habit cough in a 12-year-old girl after 1 session of suggestion therapy. Follow-up of over 1 year showed no significant relapses. A few mild, self-controlled episodes of habit cough were noted during the first 3 days after the suggestion therapy session. Hypnosis had been used on the same child for habit cough 2 times before suggestion therapy with no success. In 1966, Berman reported 6 patients with habit cough successfully treated with therapy that "relied solely on the art of suggestion."³ The children were told that the cough was a habit and that there was no evidence of disease-causing symptoms, and therefore the cough was unnecessary and must stop. Within a few days, the habit cough gradually subsided and did not recur during a 2-year follow-up period. Special attention was paid in that report to the possibility of psychological or emotional disturbances as a cause of cough, but only in 1 case was there a suggestion to school phobia.

In a review of functional respiratory disorders, Rabin stated that "symptoms could be alleviated by reassurance from an understanding family physician" in most cases, but he also warned: "If the symptoms do not respond rather promptly to reassurance and suggestive measures, expert psychiatric help should be sought."⁴ Rabin's report, however, gave no indication of his success rate. Kravitz et al.⁵ and later Weinberg⁷ reported treatment of a total of 12 cases of habit cough using suggestion and reassurance for all, with addition of mild tranquilizers and psychotherapy in some cases. They felt that school phobia was a factor in all but one

of their patients. Lorin et al. reported a striking case of an 11-year-old girl with habit cough coughing so severe that she had suffered rib fractures.¹⁴ She was found to have an "adjustment reaction with obsessive, hysterical, and phobic features." Her parents refused the psychotherapy. A single session of suggestion therapy utilizing a lollipop as a "distractor" was then tried with prompt cessation of symptoms; she remained asymptomatic 7 years later.

The largest group of habit cough patients treated with suggestion therapy utilized a bed sheet tightly wrapped around the patient's chest with strong verbal reinforcement that this would stop the cough.¹³ Thirty-one of 33 patients treated in this manner then became cough-free in 24–48 h after suggestion therapy. The long-term outcome, which ranged from 10 months to 21 years (median of 14 months), reported success in 17 of 18 patients with follow-up data. There has been a subsequent report of success with the same technique on 6 patients with no further symptoms reported 1 week after the treatment.¹² In our own study¹⁸ all 9 patients with habit cough were treated with suggestion therapy without psychotherapy or psychotropic medications. Eight responded well with no more than minor self-controlled symptoms reported during the long-term follow-up (8 days to 9.4 years; 2.2 years median). One patient required a second session of suggestion therapy 9 days after the original one and remained symptom-free since.

Our Approach to Suggestion Therapy

We regard suggestion therapy as a means to empower the patient with the ability to resist the urge to cough. In the process of suggestion therapy, various distractors such as lollipops,¹⁴ sips of warm water,^{4,18} tight chest rapping with a bed sheet,^{12,13} hypnosis or medications,^{4,5,7,9} and even electric shock^{19,20} have been used. The specific distractors, which essentially provides an alternative behavior to the cough, should match the physician's version of the origin of the habit cough as explained to the patient. An explanation of habit cough and the way the distractor will help should be given to the patient clearly and without any ambiguity. The distractor cannot be regarded as a placebo treatment in itself; our experience suggests that attempts at therapy where an external agent is to stop the cough result in failure.

Our success with suggestion therapy has been predominantly with those who were acutely symptomatic at the time. This treatment has generally consisted of a single short session of suggestion therapy by a staff physician who utilized a distractor, most commonly 0.5 mL of 1% lidocaine diluted to 3–5 mL with normal saline for most of our patients. A glass of warm water sipped slowly when the urge to cough was perceived has also been used as an alternative behavior. The cough was explained as a response to a perceived irritation in the airway that results in a vicious cycle of cough in response to irritation which causes more irritation and thereby more cough. The patient was instructed to focus on the distractor (slow deep breaths of the aerosol or sips of the body temperature water when the urge to cough was perceived) while listening to a constant patter by the physician telling the patient that the distractor would help soothe the irritation inducing the cough and that this would help the patient resist the urge to cough. Primary emphasis was

placed on the fact that it was the patient who actually was resisting the urge to cough and that the distractor was only soothing the irritation, which enables the patient to break the vicious cycle "cough-irritation-cough."

The major elements of the suggestion therapy sessions were as follows:

1. Expressing confidence, communicated verbally and behaviorally, that the therapist will be able to show the patient how to stop the cough.
2. Explaining the cough as a vicious cycle of an initial irritant, now gone, that had set up a pattern of coughing which caused irritation and further symptoms.
3. Encouraging the suppression of cough to break the cycle. The therapist closely observes for the initiation of the muscular movement preceding coughing and immediately exhorts the patient to hold the cough back, emphasizing that each second the cough is delayed makes further inhibition of cough easier. Utilizing the distractor as an alternative behavior to coughing was emphasized.
4. Repeating expressions of confidence that the patient was developing the ability to resist the urge to cough.
5. When some ability to suppress cough is observed (usually after about 10 min), asking in a rhetorical manner if they are beginning to feel that they can resist the urge to cough, for example, "You're beginning to feel that you can resist the urge to cough, aren't you?"
6. Discontinuing the session when the patient can repeatedly answer positively to the question, "Do you feel that you can now resist the urge to cough on your own?" This question is only asked after the patient has gone 5 min without coughing.

A cough-free period was generally reached within the first 10 min. The complete session was then over in about 15 min. Patients are advised that, now that they have learned they can suppress the cough, they need to continue concentrating on suppressing the cough for the remainder of the day. They are further advised to treat minor recurrences promptly by isolating themselves, using sips of tepid (body temperature) water to soothe the irritation and concentrate on suppressing the urge to cough. It has been common for the patients to readily do this at home with generally prompt success.

Discussion

The origin of the habit cough remains unclear. However, it is associated with considerable morbidity and disruption of life, and can result in considerable iatrogenic problems due to misdiagnosis. Conflicting views are presented by those who approach it as a manifestation of severe psychological problems and those who concentrate on the respiratory symptoms alone. If the rationale for an approach can be judged by the results of the therapy, then the therapy with the fastest symptom resolution and the lowest relapse rate may be accepted as the answer to this clinical problem until more in-depth prospective studies are available.

The use of hypnosis, psychotropic medications, or psychiatric hospitalizations that did not incorporate some form of suggestion toward cough suppression has not resulted in cough cessation. The consequence of simply diagnosing the habit cough and then counseling the patient can result in a

prolonged symptomatic course for many patients.⁸ On the other hand, suggestion therapy aimed at empowering the patient with the ability to resist the urge to cough results in rapid and sustained resolution of symptoms in almost all the patients for whom it had been used.

Conclusion

From the point of view of therapeutic simplicity and immediate and long-term success, suggestion therapy appears to be an effective, rapid, and cost-effective means of treatment. Diagnosing requires that the clinician be alert to the clinical characteristics of the habit cough syndrome and has an index of suspicion based on the clinical characteristics. Organic disease needs to be effectively ruled out. For the majority of patients, a careful history, a chest roentgenogram, and pulmonary function tests should be sufficient to assure a physician as well as a patient's family that nothing has been missed. Early recognition of habit cough is essential to prevent over-treatment and unnecessary morbidity.

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References

1. Bernstein L. A respiratory tic: "the barking cough of puberty." Report of a case treated successfully. *Laryngoscope* 1963; 73:315-319.
2. Baker DC, Jr. Chronic cough in children. *N Y State J Med* 1963; 63:1535-1539.
3. Berman BA. Habit cough in adolescent children. *Ann Allergy* 1966; 24:43-46.
4. Rabin CB. Disturbances of respiration of functional origin. *J Asthma Res* 1968; 5:295-308.
5. Kravitz H, Gomberg RM, Burnstine RC, Hagler S, Korach A. Psychogenic cough tic in children and adolescents. Nine case histories illustrate the need for re-evaluation of this common but frequently unrecognized problem. *Clin Pediatr (Phila)* 1969; 8:580-583.
6. Munford PR, Liberman RP. Differential attention in the treatment of operant cough. *J Behav Med* 1978; 1:289-295.
7. Weinberg EG. "Honking": psychogenic cough tic in children. *S Afr Med J* 1980; 57:198-200.
8. Rojas AR, Sachs MI, Yunginger JW, O'Connell EJ. Childhood involuntary cough syndrome: a long-term follow-up study. *Ann Allergy* 1991; 66:106.
9. Wood RE. Localized tracheomalacia or bronchomalacia in children with intractable cough. *J Pediatr* 1990; 116:404-406.
10. Lavigne JV, Davis AT, Fauber R. Behavioral management of psychogenic cough: alternative to the "bedsheet" and other aversive techniques. *Pediatrics* 1991; 87:532-537.
11. Shuper A, Mukamel M, Mimouni M, Lerman M, Varsano I. Psychogenic cough. *Arch Dis Child* 1983; 58:745-747.
12. Wolff PS. An ingenious way to treat psychogenic cough. *MCN Am J Matern Child Nurs* 1988; 13:118-120.
13. Cohlan SQ, Stone SM. The cough and the bedsheet. *Pediatrics* 1984; 74:11-15.

14. Lorin MI, Slovis TL, Haller JO. Fracture of ribs in psychogenic cough. *N Y State J Med* 1978; 78:2078–2079.
15. Gay M, Blager F, Bartsch K, Emery CF, Rosenstiel-Gross AK, Spears J. Psychogenic habit cough: review and case reports. *J Clin Psychiatry* 1987; 48:483–486.
16. 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.
17. Houstek J, Vyhnaek M, Sukova B, Copova M. [Psychogenic cough]. *Cesk Pediatr* 1983; 38:405–410.
18. Lokshin B, Lindgren S, Weinberger M, Koviach J. Outcome of habit cough in children treated with a brief session of suggestion therapy. *Ann Allergy* 1991; 67:579–582.
19. Alexander AB, Chai H, Creer TL, et al. The elimination of chronic cough by response suppression shaping. *J Behav Ther Exp Psychiatry* 1973; 4:75–80.
20. Creer TL, Chai H, Hoffman A. A single application of an aversive stimulus to eliminate chronic cough. *J Behav Ther Exp Psychiatry* 1977; 8:107–109.

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