
Case report

Psychogenic intractable sneezing: case reports and a review of treatment options

Timothy J. Lin, MD*; Clement A. Maccia, MD†; and Charles G. Turnier, MD‡

Objective: To report 2 cases of the uncommonly seen diagnosis of psychogenic intractable sneezing, to review the clinical presentation, workup, and various previous treatment modalities, and to present a unique method of treatment.

Data Sources: The literature was reviewed using a MEDLINE search of the following keywords: *psychogenic intractable sneezing*, *paroxysmal sneezing*, *factitious sneezing*, *respiratory disorders*, *conversion disorders*, *habit cough*, and *psychogenic cough*. The search was restricted to articles published from 1966 onward, although older references were cross-referenced from more recent articles.

Results: Sneezing alone can be caused by foreign substances, odors, chemical irritants, allergies, and other less common factors. Psychogenic intractable sneezing, although not a particularly common disease, occurs mainly in adolescent girls for which a cause may not be found. Patients are usually refractory to various medications and have an otherwise unremarkable extensive workup. Treatments have included corticosteroids, antihistamines, hydroxyzine hydrochloride, and decongestants among other pharmacologic agents, as well as psychotherapy. Based on the presented case reports, a trial of isotonic sodium chloride solution with suggestion therapy was able to rid the patients of their intractable sneezing.

Conclusions: Psychogenic intractable sneezing is a real disease. Although other diseases may be considered, the workup may merely include an extensive history and physical examination. Many treatments have been tried with varying success, including those that incorporate psychotherapy. A variation of suggestion therapy is offered as a unique treatment modality.

Ann Allergy Asthma Immunol. 2003;91:575–578.

INTRODUCTION

Sneezing, or sternutation, was defined in 1919 by Brubaker¹ as 1 or more spasmodic inspirations followed by a spasmodic expiration, involving a nasal and a respiratory phase. Both phases involve separate reflex mechanisms, each consisting of “afferent nerves, a central mechanism, efferent nerves and responsive organs.” In the basic sense, the sneeze reflex is caused by the irritation of nerve endings of the trigeminal nerve.² The reflex allows for mucus or other foreign objects to be dislodged from the surface of the nasal mucosa.¹ Nasal irritants initiate the nasal phase, which causes an afferent impulse to the trigeminal sensory neurons via the fifth cranial nerve. The efferent component is “carried by the autonomic portion of the seventh cranial nerve to the lacrimal glands and the vessels of the nasal mucosa via the nervus intermedius, greater superficial petrosal nerve, vidian nerve, sphenopalatine ganglion, and postganglionic palatine nerves.”^{1,3,4} The resultant effect of the nasal phase is congestion of the nasal mucosa and secretion of mucus. The nasal congestion and secretions then initiate the respiratory phase, which again

begins with an afferent impulse to the trigeminal sensory neurons via the fifth cranial nerve. The efferent component of the respiratory phase is then initiated, resulting in the activation of “brain-stem centers for inspiration, closure of the nasopharynx, and expiration.”^{1,3,4}

More recent research has focused on a “sneeze center.” In cats, a sneeze-evoking region was discovered along the ventromedial part of the spinal trigeminal nucleus and the adjacent pontine-medullary lateral reticular formation.⁵ In humans, unilateral damage to the brainstem was shown to eliminate the sneeze reflex in patients with lateral medullary syndrome.⁶ The “sneeze center” has recently been even more specifically located at the rostral dorsolateral medulla.⁷

Aside from specific neurologic deficits, other origins of sneezing have been summarized by Fochtmann.⁸ Common causes include reactions to foreign substances, odors, and chemical irritants, as well as allergies. Less common causes of sneezing include septal deviation or nasal turbinate hypertrophy,⁹ vasomotor nasal congestion associated with sexual activity,^{10,11} pregnancy and menstruation,¹² and certain autonomic reflexes such as exposure to sunlight.¹³ Finally, there was a previous case report of a patient with a parathyroid adenoma with recurrent sneezing secondary to compression of the recurrent laryngeal nerve.¹⁴

Intractable sneezing was first described in 1949 by Shilkret¹⁵ during which suggestive psychotherapeutic therapy was able to cure the patient. Since then, fewer than 50 cases

* Department of Medicine, UMDNJ–Robert Wood Johnson Medical School, New Brunswick, New Jersey.

† Department of Pediatrics, UMDNJ–Robert Wood Johnson Medical School, New Brunswick, New Jersey.

‡ Asthma Sinus and Allergy, Warren, New Jersey.

Received for publication March 13, 2003.

Accepted for publication in revised form June 2, 2003.

have been described in the literature; in most cases, psychotherapy was the most beneficial therapy, although many other treatments have been tried with varying success. Herein, we report 2 cases of the uncommonly seen diagnosis of psychogenic intractable sneezing, review the clinical presentation, workup, and various previous treatment modalities, and present a unique method of treatment. The literature was reviewed using a MEDLINE search of the following keywords: *psychogenic intractable sneezing, paroxysmal sneezing, factitious sneezing, respiratory disorders, conversion disorders, habit cough, and psychogenic cough*. The search was restricted to articles published from 1966 onward, although older references were cross-referenced from more recent articles.

CASE REPORTS

Case 1

A 8½-year-old girl presented to the clinic in April 2002 with her eighth consecutive day of uncontrollable sneezing. The patient had a past medical history significant for bronchiolitis at 4 months of age, nummular eczema, seasonal allergic rhinitis, for which the patient was taking fluticasone nasal spray and cetirizine, and chronic sinusitis, for which the patient was previously treated with various antibiotics. In addition, the patient was diagnosed as having bronchohyperactivity at an early age, for which she had been using montelukast, short bursts of prednisone, fluticasone, and albuterol at various times.

The patient had been playing softball in an enclosed grass field and subsequently developed persistent sneezing during the next day. She did not sneeze at night, however. After 2 days, the patient was seen in her pediatrician's office, during which she was sneezing approximately every 10 seconds. The sneeze was described as an abbreviated nasal cough while her eyes were open. The patient could not take anything by mouth, because this caused the sneezing to become more violent. The patient was prescribed hydroxyzine, which did not help. On the third day, she was seen by an otolaryngologist, who performed a rhinoscopy. The results of the rhinoscopy were nonrevealing, and the patient was treated for hiccups (presumably due to the atypical nature of the sneezing). The patient was given 1 mg of lorazepam, which broke the cycle of sneezing for a period. However, the sneezing returned, and the patient was then brought to the emergency department and admitted to the hospital.

During the hospital visit, the patient received intravenous dexamethasone, as well as diphenhydramine and oxymetazoline nasal spray, which was of no benefit. A surgical consultation was held, and the surgeon's impression was that the sneezing was due to seasonal allergies. Laboratory work performed at this time showed a normal complete blood cell count, except for an increased platelet count of $498 \times 10^3/\mu\text{L}$, a sedimentation rate of 22 mm/h (reference range, <20 mm/h for females), normal electrolyte levels, a slightly elevated aspartate aminotransferase level of 42 U/L (reference range, 7–40 U/L), and an elevated alkaline phosphatase level of 295

U/L (reference range, 70–230 U/L for females), which is normally seen in children.

On the eighth day of continuous sneezing, the patient was seen in our clinic. At this time, the patient was sneezing every 10 seconds and had, as previously described, an abbreviated nasal cough. The patient did not complain of any rhinorrhea, cough, shortness of breath, wheezing, nasal pruritus, eye irritation, urticaria, eczema, or dermatitis. The results of the patient's physical examination were essentially normal, with some swelling of the nasal turbinates noted. The patient's eyes, ears, nasal mucosa, and oropharynx were normal. The lungs were clear without any wheezing.

At this point, the origin of the constant sneezing was unclear; it did not seem to be allergic in nature, since the patient did not have any other typical associated symptoms and she did not respond to "allergic" treatments. Because the patient did not sneeze at night and due to the atypical nature of her sneeze, a psychosomatic origin was considered. The patient was given a isotonic sodium chloride solution nasal spray and was told that the nasal spray would "cure" her of her sneezing. After going home and using the nasal spray, the patient's sneezing remitted and did not return. Since initiation of treatment, the patient has not had a recurrence of intractable sneezing. On further questioning of the parents, it was discovered the child had been having problems in school with a particular teacher.

Case 2

A 10-year-old girl presented to a clinic in September 2002 with a 3-day history of constant sneezing. The patient was initially seen in the emergency department, during which she was prescribed prednisone (she was already taking cetirizine) and subsequently discharged. The patient did not show any improvement with the prednisone and therefore came to our clinic.

During the visit, the patient's mother described the patient as experiencing up to 20 sneezes per minute; however, the patient experienced no sneezing at night when she slept. The patient did not complain of any rhinorrhea, cough, shortness of breath, wheezing, nasal pruritus, eye irritation, urticaria, eczema, or dermatitis. Of note, the patient had switched schools only 3 days before the onset of constant sneezing.

The patient had a past medical history significant for asthma, which was diagnosed when she was 1 year old, allergic rhinitis, and allergic conjunctivitis. The patient was seen in May 2002, during which she had complaints of headache, nasal congestion, rhinorrhea, sneezing, watery pruritic eyes, occasional epistaxis, and occasional dyspnea and wheezing, triggered in particular by exposures to grass and changes in weather. At this time, the patient had pulmonary function tests performed, which showed a forced expiratory volume in 1 second of 95%, a forced vital capacity of 91%, and a forced expiratory flow between 25% and 75% of 96%. In addition, the patient was skin tested to seasonal and non-seasonal inhalants by prick testing, which showed a positive reaction to English plantain, ragweed, lamb's quarter, timo-

thy grass, and trees. Test results were negative to dust mite, cat, dog, and mold. The patient lived in a home with forced air heat, central air conditioning, and wall-to-wall carpeting and without any smokers or pets. The patient was prescribed fluticasone propionate, 100 μ g, and salmeterol, 50 μ g, inhalation powder and cetirizine (patient was previously taking mometasone, which she discontinued taking because of nasal bleeding) with good results.

The results of the physical examination during this visit were normal except for swollen turbinates. The patient's ears, eyes, nasal mucosa, and oropharynx were normal. There were no intranasal foreign bodies. Lung examination was clear without any wheezing. During the examination, the patient was sneezing every 3 to 5 seconds. The sneezing could be described as similar to a nasal cough and was more abbreviated than one would expect in a "normal" sneeze. In addition, the patient was able to keep her eyes open during each sneeze.

It was believed that this patient's sneezing was psychosomatic, and based on previous experience, a trial of isotonic sodium chloride solution was attempted. The patient was told that she would be given a nasal spray that would completely take away her sneezing after 5 minutes. After administration of isotonic sodium chloride solution, the patient continued to have constant sneezing, but after exactly 5 minutes, the sneezing ceased. Since this visit, the patient has not had a single recurrence of constant sneezing.

RESULTS

Sneezing alone can be caused by foreign substances, odors, chemical irritants, allergies, and other less common factors. Psychogenic intractable sneezing, although not a particularly common disease, occurs mainly in adolescent girls⁶ for which a cause may not be found. Patients are usually refractory to various medications and have an otherwise unremarkable extensive workup. Treatments have included corticosteroids, antihistamines, hydroxyzine hydrochloride, and decongestants among other pharmacologic agents, as well as psychotherapy. Based on the presented case reports, a trial of isotonic sodium chloride solution with suggestion therapy was able to rid the patients of their intractable sneezing.

DISCUSSION

Intractable paroxysmal sneezing has been defined as the "sudden violent sneezing of unusual frequency and duration that is generally psychogenic and is resistant to usual treatment."¹⁶ Most reported cases were not unlike the cases presented in this article for which a specific psychogenic cause could not be found. However, cases have been reported wherein a specific cause was found. These cases included an adolescent girl who began having intractable sneezing before her sexually abusive stepfather moved closer to where she was living.¹⁷ Organic causes have also been identified. A case of IgE-mediated intractable sneezing due to exposure to triethanolamine¹⁸ has been reported, as well as intractable sneezing as an element of preictal aura¹⁹ in temporal lobe epilepsy.²

In many cases, the sneeze in intractable paroxysmal sneezing is unique; it is not what one would consider a "normal" physiologic sneeze. The pseudosneeze²⁰ is "described as having an abbreviated inspiratory phase, short nasal grunting sound, and little or no aerosolization of mucosal secretions,"²¹ whereas in a "normal" sneeze, the reverse would be true. In addition, when patients pseudosneeze, they are generally able to keep their eyes open, whereas in a normal sneeze this would be difficult. A patient with pseudosneezes is usually able to sleep through the night, eat, and perform other distracting activities without any occurrence of the pseudosneezes. As with most cases found in the literature, many times a stressor in the patient's life is identified as a possible cause of psychogenic intractable sneezing.

Psychogenic intractable sneezing is many times a diagnosis of exclusion. Generally, only a thorough history and physical examination are enough to make the diagnosis. A detailed history with a good description of the sneeze is important. Questions such as whether or not the patient is sneezing at night, when eating, or during other activities should be asked. In addition, the patient (or the patient's guardian) should be asked if there have been any unusual chemical or environmental exposures. Since intractable sneezing may be a reaction to psychosocial issues, they should certainly be addressed. Many times the patient may be referred to the physician, so modalities that have already been attempted should be ascertained. Although turbinate erythema and excessive tearing are occasionally seen (as with the 2 cases presented in this article), the results of physical examination are usually unremarkable.²¹ Because organic causes of intractable sneezing have been reported in the literature, further workup may become necessary. Laboratory tests that may be performed include a complete blood cell count and allergy skin testing.²¹ Rhinoscopy and radiography may rule out any anatomic abnormality, whereas an electroencephalogram may be performed to rule out a seizure disorder.

In the literature, several treatment modalities have been tried with varying success. Besides the modalities attempted in the cases reported herein, other treatments include subcutaneous epinephrine,²² sedatives such as diazepam,²⁰ and antiseizure medications such as phenobarbital, phenytoin, and carbamazepine.⁴ By definition, for a diagnosis of psychogenic intractable sneezing to be made, the sneezing must persist despite all of the treatments listed herein. In 1992, Shapiro²³ cautioned that not all cases of intractable sneezing are psychogenic in origin. He suggested that topical anesthesia should be used first to see if the sneezing will remit.²³ In addition to pharmacologic agents, hypnosis, Amytal interview,⁸ operant conditioning, family therapy, and psychotherapy have been tried with varying success.²¹

A particular type of behavioral psychotherapy called suggestion therapy has been tried with success in habit cough (also known as psychogenic or involuntary cough).²⁴ Suggestion therapy in habit cough involves an "explanation of symptoms and repeated expression of confidence by the therapist through verbal suggestion to suppress the cough while using

a distractor, most typically dilute nebulized saline.”²¹ An aversive technique known as the bedsheet method has also been described with great success (33 of 35 children) in stopping habit cough.²⁵ This suggestion therapy involves wrapping a bedsheet tightly around a patient’s chest, which the patient is supposed to believe is supporting his or her weaker chest muscles, and commanding the patient to stop coughing. In addition, the patient is told to “stop it” if the patient attempts to cough.

Although not supported with clinical trials, the treatment presented in this article is unique to the realm of the treatment of psychogenic intractable sneezing. By presenting patients with the notion that their sneezing will disappear with the administration of isotonic sodium chloride solution, the physician uses a variation of suggestion therapy, an effective treatment in the past for psychogenic intractable sneezing¹⁵ and habit cough.²⁴ Here, the suggestion therapy does not involve repeated expressions of confidence, rather just that the isotonic sodium chloride solution will cure the sneeze. In addition, the isotonic sodium chloride solution is used not as a distractor (as in the therapy for habit cough) but as a placebo medication. Clearly, in the second case, where the patient had recently switched schools, there is a component of a “stressor” in the patient’s life. Although this was not specifically addressed, the patient was still cured of intractable sneezing. Admittedly, the presented cases did not address whether or not any nasal medication would work as a placebo and would be an interesting trial for the future.

Psychogenic intractable sneezing is a real and debilitating disease. Although a simple history and physical examination may help physicians make the diagnosis, further workup may be necessary to rule out other disease processes. Although many treatments have been tried with varying success, we hope that the unique approach presented in this article will assist in curing this confusing clinical entity.

REFERENCES

1. Brubaker A. The physiology of sneezing. *JAMA*. 1919;73:585–587.
2. Kofman O. Paroxysmal sneezing. *Can Med Assoc J*. 1964;91:154–157.
3. Birch C. Sneezing. *Practitioner*. 1959;182:122–124.
4. Schenley C. Intractable sneezing. *Arch Neurol*. 1979;36:111–112.
5. Nonaka S, Unno T, Ohta Y, Mori S. Sneeze-evoking region within the brainstem. *Brain Res*. 1990;511:265–270.
6. Hersch M. Loss of ability to sneeze in lateral medullary syndrome. *Neurology*. 2000;54:520–521.
7. Fink J. Localization of the “sneeze center.” *Neurology*. 2001;56:138.
8. Fochtmann L. Intractable sneezing as a conversion symptom. *Psychosomatics*. 1995;36:103–112.
9. Shapiro SL. Paroxysmal sneezing. *Eye Ear Nose Throat*. 1967;46:1532–1538.
10. Everett HC. Paroxysmal sneezing following orgasm. *JAMA*. 1972;219:1350–1351.
11. Mackenzie JN. Irritation of the sexual apparatus as an etiological factor in the production of nasal disease. *Am J Med Sci*. 1884;87:360–365.
12. Gallia LJ, Roscoe G. Intractable sneezing. *Trans PA Acad Ophthalmol Otolaryngol*. 1981;34:164–168.
13. Everett HD. Sneezing in response to light. *Neurology*. 1964;14:483–490.
14. Foster AH, Nichol WW. Parathyroid adenoma: a case report with unusual clinical features. *Ann Surg*. 1957;145:279–281.
15. Shilkret HH. Psychogenic sneezing and yawning. *Psychosom Med*. 1949;11:127–128.
16. Kaplan MJ, Lanoff G. Intractable paroxysmal sneezing: a clinical entity defined with case reports. *Ann Allergy*. 1970;28:24–27.
17. Aggarwal J, Portnoy J. Intractable sneezing with a specific psychogenic origin. *Ann Allergy*. 1986;56:345–346.
18. Herman JJ. Intractable sneezing due to IgE-mediated triethanolamine sensitivity. *J Allergy Clin Immunol*. 1983;71:339–344.
19. Gowers WR. *Epilepsy and Other Chronic Convulsive Diseases*. 2nd ed. Philadelphia, PA: Blakiston Co; 1901:200.
20. Bergman GE, Hiner LB. Psychogenic intractable sneezing in children. *J Pediatr*. 1984;105:496–498.
21. Butani L, O’Connell EJ. Functional respiratory disorders. *Ann Allergy Asthma Immunol*. 1997;79:91–101.
22. Weiner D, McGrath K, Patterson R. Factitious sneezing. *J Allergy Clin Immunol*. 1985;75:741–742.
23. Shapiro RS. Paroxysmal sneezing in children: two new cases. *J Otolaryngol*. 1992;21:437–438.
24. 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.
25. Cohlant SQ, Stone SM. The cough and the bedsheet. *Pediatrics*. 1984;74:11–15.

Requests for reprints should be addressed to:

Timothy J. Lin, MD

UMDNJ–Robert Wood Johnson Medical School

Department of Medicine

One Robert Wood Johnson Place

MEB 486

PO Box 19

New Brunswick, NJ 08903

E-mail: linti@umdnj.edu