A 48-year-old woman with morbid obesity was referred with complaints of snoring, daytime sleepiness, loud snoring, and witnessed apneas. She reported that her “allergies” bothered her all year long. She reported postnasal drip and nasal congestion that was worse when lying down. Previously, she had taken over-the-counter medications (nasal decongestants), but lately such medications did not appear to help. Five years ago she was referred by her primary care physician for a sleep study, and she had had a terrible experience with a mask on her face. She exclaimed, “They tried to suffocate me. I was very anxious. I couldn’t breathe.” She denied ever meeting a sleep specialist before the previous sleep study, but appeared hopeful on this visit when she said, “I hear you have newer machines and masks that work better than the ones I had tried.” She denied any fear of confined spaces or a prior diagnosis of claustrophobia.

She had hypertension and asthma and used a diuretic and two metered dose inhalers (Levalbuterol and Budesonide). She had two cats and admitted to using a down pillow and comforter. Upon questioning she reported that her home had a central humidifier and a mold problem in the damp basement.

On examination, the patient had significant nasal congestion with very little air entry when she was made to sniff with one of her nostrils occluded. Nasal examination revealed inflamed and swollen turbinates. The posterior pharyngeal wall was inflamed with a “cobblestone” appearance. She constantly sniffled while in the office. Her conjunctivae were suffused, and she constantly dabbed her eyes with a tissue. Her chest was clear to auscultation, and the rest of her physical examination was within normal limits.

How would you manage this patient who has previously failed positive airway pressure (PAP) therapy?

Disclosure Statement
Dr. Parthasarathy has indicated no financial conflict of interest.

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Aggressive Management Of Nasal Congestion Before Initiating PAP Therapy.

This clinical pearl is meant to underscore the importance and consequences of nasal congestion in patients with sleep disordered breathing, but the title clearly warrants explanation. The patient in this vignette does not go by the name “Emma,” but in his play Emma’s nose, Paul Livinston—author and playwright—isa outraged by the atrocity of medical quackery that could suggest a relationship between the nose and mental well-being.12

Emma’s Nose is the story of an atrocity and the horrific consequences of collaborative self-deception, as [Sigmund] Freud aligns himself with one of the giants of German crackpottery—the Berlin nose-and-throat specialist, Wilhelm Fliess. Based on a true story, Wilhelm Fliess operated on a patient of Freud’s. Emma. He believed that neuroses are related to the nose.2

Fliess’s misadventures with nasal surgery are entirely true, but with what we know of the association between nasal congestion, obstructive sleep apnea, and psychological well-being, one cannot help but pause and wonder about the merits of the vicious attack on Fleiss.

Patients with obstructive sleep apnea are likely to suffer from nasal congestion.3 In a large community-based sample, Young and colleagues found that participants who reported nasal congestion due to allergy were 1.8 times more likely to have moderate-to-severe sleep disordered breathing than were those without nasal congestion due to allergy.4 Moreover, there is evidence to suggest that nasal congestion due to allergies may be directly associated with lower scores in the mental health (feelings of nervousness and depression) and vitality (feel tired and worn out) domains of the Medical Outcomes Study 36-Item Short Form health survey (SF-36).4 In the latter study, Meltzer and colleagues studied a sizeable community-based sample (n=451) and compared subjects who suffered from nasal/ocular allergic symptoms with those who did not report such symptoms.3 Although, the known association between obstructive sleep apnea and psychological well-being6 was not adjusted for in the study by Meltzer and colleagues, the clinician needs to be mindful of the association between OSA, allergic rhinitis, and psychological well-being.

More relevant to our clinical case, previous studies have suggested that nasal congestion and symptoms are important reasons for abandoning PAP therapy or at least lead to poor adherence to PAP therapy.1,5 However, a systematic measurement of nasal symptoms using objective measurements or validated questionnaire tools had not been reported until recently.

In a study of 632 patients with OSA, patients who had discontinued PAP therapy reported higher nasal congestion scores than did patients who were continuing to use their PAP devices.9 After adjusting for other known confounders, patients with higher nasal congestion scores were 1.6 times more likely to abandon PAP therapy.5 But often, such nasal symptoms are attributed to PAP therapy.10,11 Two recent studies have demonstrated that the existence of elevated nasal resistance before the initiation of PAP therapy can adversely influence adherence to PAP therapy.12,13 Li and colleagues12 reported that the median cross-sectional area of the nasal passages, when categorized as large or small, could predict PAP adherence. Similarly, in a small group of patients with OSA, Morris and colleagues13 reported that cross-sectional area of the nasal passageway measured by nasal acoustic rhinometry before initiating PAP therapy could distinguish users from nonusers after an 18-month period. While such objective, subjective, or even composite methodology have not yet reached prime time for management of the individual patient, the identification of nasal conditions as a determinant for PAP adherence is gaining importance because it is a modifiable risk factor.

The deleterious effect of nasal congestion on PAP adherence can be modified by medications, devices, interfaces, or surgical interventions. In a large questionnaire-based study, prescription of medications for nasal congestion decreased the hazard ratio for self-reported discontinuation of PAP therapy threefold.9 Moreover, surgical management (radiofrequency treatment of turbinate hypertrophy) was associated with improvement in self-reported PAP adherence.14 Large randomized placebo-controlled studies of an intervention aimed at modifying nasal congestion and/or allergy with objective verification of PAP adherence are still awaited.

In our patient, intranasal corticosteroids and a bedtime antihistaminic were prescribed while she awaited a repeat PAP titration study. An intranasal antihistaminic (azelastine) was also prescribed. The patient was educated about avoidance measures she could undertake that might alleviate her nasal allergies. She was encouraged to remove down pillows and comforters, which are rich in house-dust mites (a common source of allergen) and to wash her bed linen in “hot cycle” once a week (> 130 °F) – a measure aimed at decreasing the viability of house-dust mites. She was advised not to use the built-in humidifier at her residence and was asked to maintain the relative humidity at less than 50% with the help of a dehumidifier (another measure aimed at decreasing the burden of house-dust mites and mold). The use of allergy covers for mattresses and pillows and the recruitment of a professional who could remove the mold in her basement were strongly encouraged.

House-dust mites are ubiquitous in regions with high humidity (most areas of the United States) but are usually not present at high altitudes or in arid areas unless moisture is added to the indoor air through ultrasonic or central humidifiers.16 Of course, the residential humidifiers are not to be confused with the humidifiers that are prescribed in-line with the PAP device. Mites need atmospheric moisture and human dander for survival. High levels of mites can be found in dust from mattresses, pillows, carpets, bedding covers, clothes, and soft toys. The bed is the most important source of dust mites.16 Sprays meant to denature the excrement of the dust mites (the allergen) are not recommended currently.16

The patient undertook our recommendations, and over the next 6 weeks, her nasal allergy symptom scores—evaluated by a well-validated subjective scale17,18 —decreased from 20 to 3. Clinical examination revealed a much more patent nasal passageway. She successfully underwent PAP titration with a nasal pillow circuit19 and heated humidification.20 She returned for follow-up 3 months after the initiation of PAP therapy, with evidence for adequate adherence to therapy (average nightly use of 6.2 hours). While it is possible to attribute this success to new technologies such as heated humidification and nasal pillow circuit—both aimed at decreasing nasal airway resistance and increasing patient comfort—the benefits derived from a comprehensive approach including nasal allergy medications, allergen avoidance techniques, and education cannot be overemphasized. Such a comprehensive educational and therapeutic approach may even include the use of a full face mask20 to bypass nasal obstruction that is not responsive to medical therapy or amenable to surgery.

Journal of Clinical Sleep Medicine, Vol. 2, No. 4, 2006
As for Freud’s patient, Emma died from hemorrhagic complications following nasal surgery. Let Emma’s tragic death remind us not to underestimate the nose.

CLINICAL PEARLS

1. Nasal congestion due to allergy is common in patients with sleep disordered breathing.
2. Besides nasal symptoms attributable to PAP therapy, pre-existent nasal obstruction may lead to poor adherence or discontinuation of PAP therapy.
3. Sleep physicians need to be familiar with the symptoms and “triggers” for nasal allergy.
4. Aggressive medical and surgical management of nasal obstruction may improve PAP adherence and benefit the patient who suffers from nasal allergy and obstructive sleep apnea.
5. In the history of medicine, sometimes only a fine line divides science and quackery.

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