Otologic manifestation of Samter triad

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A 49-year-old woman with a history of severe asthma, sinus polyps, and aspirin sensitivity presented with a chronically draining left-sided tympanic membrane perforation and bilateral hearing loss. She wore hearing aids bilaterally, and she said that she heard better with her left ear. She reported that her right ear would spontaneously rupture, which temporarily made her right ear her better-hearing ear; the most recent rupture had occurred 1 month earlier. She denied any otalgia or any right-sided otorrhea, but she did report daily yellow-green or red-brown left-sided otorrhea. She complained of bilateral tinnitus. She denied vertigo except when she blew her nose too vigorously.

The patient had no history of recurrent otitis media, and her family history was negative for ear disease. Her surgical history was significant for 35 myringotomies and 2 sinus surgeries; no other otologic surgeries had been attempted. She did not smoke. Her review of systems was significant for wheezing, shortness of breath, and coughing.

Microscopic examination of the right ear revealed a bulging but intact tympanic membrane, with mucoid fluid filling the middle ear space (figure). No acute inflammation was noted. On the left, thick mucoid fluid was seen in the floor of the canal; the fluid obscured the tympanic membrane. After suctioning, a posteroinferior perforation and granular changes of the anteroinferior aspect of the tympanic membrane were visible.

On tuning fork testing, the Weber test lateralized to the right and the Rinne test was negative bilaterally. The audiogram showed normal hearing up to 1,500 Hz on the right followed by a sharply downsloping profound high-frequency sensorineural loss with a notch at 4,000 Hz. On the left, bone conduction thresholds were normal up to 2,000 Hz, with a moderately severe upsloping to borderline and then sharply downsloping to severe mixed hearing loss.

The patient was diagnosed with recurrent middle ear mucoid effusion as a complication of Samter triad. She was prescribed ciprofloxacin/dexamethasone for the left ear. For the right ear, she was offered myringotomy but chose observation instead.

Samter triad, also known as aspirin-exacerbated respiratory disease, is a constellation of aspirin sensitivity,
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asthma, and nasal polypsis. Its prevalence is as high as 0.3% of the general population and 5 to 10% of asthma patients. The disease mechanism is not entirely understood, but is thought to be related to aspirin inhibition of cyclooxygenase 1, which causes an increase in leukotriene synthesis through the lipoxygenase pathway. Diagnosis is confirmed with an aspirin challenge, where provocation is induced with oral, bronchial, or nasal inhalation or with intravenous aspirin.

Patients with Samter triad tend to have more severe asthma, nasal polyps, and rhinosinusitis than do those without. Despite treatment of nasal polyps with steroids or endoscopic sinus surgery, recurrence is likely. As many as 60% of patients with Samter triad who undergo endoscopic sinus surgery will require further polypectomy within 5 years.

The most common otologic manifestation of Samter triad is middle ear mucoid effusion, although there have been case reports of aural polyps associated with Samter triad. Otologic symptoms tend to begin approximately 5 years after the onset of nasal symptoms. Obstruction of the eustachian tube by nasal polyps can certainly contribute to middle ear manifestations of Samter triad, but we suspect that the underlying pathophysiology of this disease has a direct effect on the middle ear mucosa.

It is important for otolaryngologists to be aware of the mucoid quality of these middle ear effusions, as they tend to be persistent and they do not respond well to myringotomy and tube placement, which usually results in tube obstruction. Therefore, we believe that the ideal treatment is medical, including administration of steroids or other anti-inflammatory agents such as leukotriene inhibitors. When perforations or patent ventilation tubes are present, these agents can be delivered topically. Aspirin desensitization therapy followed by daily aspirin has been effective in treating the upper and lower respiratory symptoms associated with Samter triad. We speculate that aspirin desensitization might be helpful in treating the otologic complications, as well.

References