

# Headache Medicine

A crossroads of otolaryngology, ophthalmology, and neurology.

BY PAUL G. MATHEW, MD, FAHS

Primary headaches are a set of complex pain disorders that can have a heterogeneous presentation. Some of these presentations often involve symptoms suggestive of otolaryngological and ophthalmological diagnoses. This article is the first installment of a two-part series that addresses the symptoms and diagnoses that overlap between otolaryngology and neurology.

## SINUS HEADACHE OR MIGRAINE?

Sinus headache is a diagnosis that is frequently used incorrectly by patients and physicians alike. The vast majority of patients complaining of sinus headaches actually have migraines, which can cause similar symptoms. The Sinus, Allergy and Migraine Study (SAMS) recruited 100 participants over the age of 18 with self-diagnosed sinus headaches. Eighty-six percent of them were found to have migraine or probable migraine.<sup>1</sup>

As with sinus disease, patients with migraines can present with facial pressure in the V1 and V2 distributions. Both migraine and sinus disease can have an association with seasonal and barometric weather changes. Autonomic dysfunction is usually associated with a set of hemicranial primary headache disorders known as *trigeminal autonomic cephalalgias* (cluster headache, short-lasting unilateral neuralgiform headache with conjunctival injection and tearing, short-lasting unilateral neuralgiform headache attacks with cranial autonomic symptoms, paroxysmal hemicrania, hemicrania continua). Nevertheless, migraines and sinus disease can at times involve nasal congestion, eyelid edema, rhinorrhea, conjunctival injection, lacrimation, and ptosis.<sup>1</sup>

In addition to deceptive features, migraine masquerading as sinus headache can have misleading responses to treatment. Antibiotics are often administered, and the patient feels better. This is not due to an antibiotic effect on migraine. Rather, the patient may be experiencing a placebo effect. Another possibility is that the migraine spontaneously subsided over time in typical fashion and that the patient attributed the improvement in symptoms to the eradication of an infection that did not exist. For years, even decades, patients will receive unnecessary imaging studies, otolaryngology appointments with endoscopic examinations, and courses of steroids/antibiotics for the treatment of sinus headaches that are actually migraines.

When trying to differentiate a headache truly due to sinus problems from a primary headache disorder, I apply the following loose criteria, which some of my medical students at Harvard have coined "Mathew's sinus triad." A headache involving facial/sinus pressure is likely due to sinus disease if the patient has any of the following signs/symptoms: (1) fever, (2) thick/purulent discharge, and/or (3) imaging/endoscopic visualization of active disease. If none of these features is present, the patient likely has a migraine. Conversely, features that are suggestive of migraine rather than sinus headache include disabling intensity, a throbbing quality, nausea, and vomiting. Laterality is not a good marker, because both sinus headache and migraines can cause either unilateral or bilateral pain.

## VERTIGO AND TINNITUS

Headache patients with vertigo and tinnitus frequently present for an otolaryngological evaluation. Both symptoms are highly nonspecific and can take on many forms. They can be traced back to dysfunction of the inner ear, cranial nerves, or deep structures of the central nervous system. Imaging and otoscopic evaluations are usually normal in such patients. Interictal auditory and vestibular tests are also typically normal in these patients, and abnormal results should prompt further evaluation.

There is a migraine subtype known as *basilar-type migraine*. According to criteria from The International Classification of Headache Disorders, second edition (ICHD-II), the diagnosis can only be made if there are two attacks that involve two of the following fully reversible symptoms: dysarthria, vertigo, tinnitus, hyperacusis, diplopia, visual symptoms simultaneously in both the temporal and nasal fields of both eyes, ataxia, a decreased level of consciousness, and/or simultaneously bilateral paresthesias. At least one aura symptom develops gradually over 5 or more minutes, and/or different aura symptoms occur in succession over that time period. In addition, each aura symptom lasts at least 5 but no more than 60 minutes.<sup>2</sup>

The term *basilar migraine* was coined by Bickerstaff in 1961, and it suggests that basilar artery vasoconstriction is a part of the pathophysiology of this migraine subtype.<sup>3</sup> To date, no significant evidence has indicated that posterior circulation oligemia or ischemia occurs as part of the

pathophysiology of basilar migraine. As such, *migraine with brainstem aura* is the new terminology used for this disorder in the beta version of the third edition of ICHD, which is a test version that is preceding the finalized release of ICHD-III.<sup>4</sup>

Some features can help distinguish migraine-related vertigo and tinnitus from other causes of these symptoms. The former tend to occur when a headache is present and may progress in intensity as headache pain increases. In some cases, these symptoms can occur in the absence of a migraine headache, but they tend to be accompanied by migrainous symptoms. Although nausea and vomiting usually accompany moderate to severe vertigo of any cause, photophobia, phonophobia, and osmophobia would be unusual accompaniments to nonmigrainous vertigo.<sup>5</sup> In clinical practice, adequate prophylactic treatment of migraine can often lead to improvement of vertigo, tinnitus, and/or hyperacusis. In my clinical experience, anticonvulsants such as gabapentin tend to be particularly useful for the treatment of vertigo and tinnitus that are suspected to be migrainous phenomenon.

## OTALGIA

Otalgia often prompts patients to seek an otolaryngological evaluation. Ear pain can be due to many causes, including otitis, mastoiditis, eustachian tube dysfunction, cholesteatoma, and Ramsay Hunt syndrome (herpes zoster oticus). Patients with temporomandibular disorders (TMD) can also present with ear pain.<sup>6</sup> As such, for patients who present with otalgia in isolation or in combination with headache, an examination of the external ear, an otoscopic examination, and palpation of the temporomandibular joint can provide clues to the etiology of the pain. Painful popping/clicking, limitations in jaw opening, and signs of worn dental enamel from clenching and/or grinding are all suggestive of a TMD that may be causing or contributing to ear pain.

Red ear syndrome (RES) is a rare cause of unilateral or bilateral otalgia. RES involves attacks of paroxysmal burning sensations and reddening of the external ear for a few seconds to several hours. Attacks can be spontaneous or triggered by contact, heat, cold, chewing, neck movement, or exertion. Idiopathic RES has an association with migraine and trigeminal autonomic cephalalgias. Secondary cases of RES have been associated with upper cervical spine disorders and TMD in the literature. Treatment of the associated primary headache disorder or underlying structural abnormality tends to improve the symptoms of RES.<sup>7</sup>

## CONTACT POINT HEADACHE

Contact point headache is a headache disorder that is thought to occur due to contact between the lateral nasal

wall and the septum. If such a contact point exists, surgical treatment with a septoplasty with or without a turbinectomy can lead to improvement and, at times, near resolution of the headache.<sup>8,9</sup>

Importantly, a systematic review found that the surgical treatment of contact points did not prove to be consistently effective for the treatment of headache. In addition, the majority of subjects with contact points in this review did not experience facial pain or headaches.<sup>10</sup>

Although it is speculated that septoplasty and turbinectomy can directly relieve the pain caused by a contact point against the lateral nasal wall, surgery may also have some indirect efficacy on headache treatment by reducing upper airway resistance. Such a reduction may enhance sleep quality, and poor sleep is a well-known trigger of migraines.<sup>11</sup> In clinical practice, most patients with contact point headache present with symptoms consistent with migraine or tension-type headache. Routine medical management based on headache features should therefore be pursued before considering surgical treatment.

## CONCLUSION

Numerous symptoms can be suggestive of both otolaryngological and neurological disorders. A careful history and physical examination can often lead to the correct diagnosis without unnecessary testing. In refractory or atypical cases, further evaluation should be pursued, including imaging studies, which may demonstrate findings such as intranasal contact points that may be amenable to surgical intervention. ■

*Paul G. Mathew, MD, FAHS, is a member of the Harvard Medical School faculty. He is the director of continuing medical education at Brigham & Women's Hospital, Department of Neurology, John R. Graham Headache Center, and the director of headache medicine at the Cambridge Health Alliance. He is board certified in neurology and headache medicine. Dr. Mathew may be reached at [pmathew@partners.org](mailto:pmathew@partners.org).*



1. Eross E, Dodick D, Eross M. The Sinus, Allergy and Migraine Study (SAMS). *Headache*. 2007;47(2):213-224.
2. Headache Classification Committee of the International Headache Society. The International Classification of Headache Disorders. 2nd ed. *Cephalalgia*. 2004;24(suppl 1):9-160.
3. Bickerstaff ER. Basilar artery migraine. *Lancet*. 1961;1:15-17.
4. Headache Classification Committee of the International Headache Society (IHS). The International Classification of Headache Disorders. 3rd ed (beta version). *Cephalalgia*. 2013;33(9):629-808.
5. Lempert T. Vestibular migraine. *Semin Neurol*. 2013;33(3):212-218.
6. Tuz HH, Onder EM, Kismisci RS. Prevalence of otologic complaints in patients with temporomandibular disorder. *Am J Orthod Dentofacial Orthop*. 2003;123(6):620-623.
7. Lambrou G, Miller S, Matharu MS. The red ear syndrome. *J Headache Pain*. 2013;14(1):83.
8. Rozen TD. Intranasal contact point headache: missing the "point" on brain MRI. *Neurology*. 2009;72:1107.
9. Mohebbi A, Memari F, Mohebbi S. Endonasal endoscopic management of contact point headache and diagnostic criteria. *Headache*. 2010;50:242-248.
10. Harrison L, Jones NS. Intranasal contact points as a cause of facial pain or headache: a systematic review. *Clin Otolaryngol*. 2013;38:8-22.
11. Mathew PG. A critical evaluation of migraine trigger site deactivation surgery. *Headache*. 2014;54(1):142-152.