

REFRACTORY HEADACHE WITH SYSTEMIC SYMPTOMS IN AN ESTABLISHED MIGRAINEUR

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Case History

A 24-year-old graduate student has a history of migraine headaches. She usually has one about every 6 weeks for which she uses zolmitriptan 5 mg, which is quite effective. She also has a history of allergic rhinitis, which is treated with oral antihistamines. She now presents with a severe headache, which has been present for 4 days and has not responded to the zolmitriptan as it normally does. She also has associated symptoms of decreased appetite, light sensitivity, nasal congestion, sore throat, and general malaise. She suggests that an allergy flare-up the previous week appeared to trigger this attack. She went to the emergency room where she was treated with meperidine, which provided partial temporary relief. Physical examination showed her temperature to be 99.4°F. She had slight bilateral conjunctival injection. Nasal examination showed an inflamed nasal mucosa with thick, whitish to yellow secretions. Coronal-view computed tomography (CT) scan of the sinuses showed an air-fluid level in the right frontal sinus.

Questions on the Case

Please read the questions, try to answer them, and reflect on your answers before reading the author's discussion.

- List the diagnostic considerations for this case. Are you comfortable with the impression of acute rhinosinusitis causing her pain?

- Would you do any other testing?
- How can one distinguish head pain due to sinus disease from migraine or other primary headache? Are there symptoms that may overlap?
- What are the diagnostic signs that suggest headache due to sinus disease?

Differential Diagnosis and Management Strategies

Although migraine was considered to be the initial diagnosis at the onset of the headache, this specific headache meets the 2004 International Headache Society (IHS) criteria for headache attributed to rhinosinusitis: she was mildly febrile, had purulent secretions in her nasal mucosa, and had an air-fluid level present on her sinus CT scan. Therefore, this specific headache is headache attributed to rhinosinusitis, and should be treated with appropriate antibiotics and decongestants, in a patient with coexisting migraine.

Case Discussion

Sinus headache is actually a true disorder and is associated with rhinosinusitis, which is often referred to as "sinusitis." The term rhinosinusitis is felt to be more accurate, since the condition is associated with rhinitis and purulent discharge from the maxillary or frontal sinuses. The IHS criteria suggest that headache attributed to rhinosinusitis be diagnosed

Table 28-1. Classification of Acute Sinus Headache, 1988 IHS Criteria

- A. Purulent discharge in the nasal passage, either spontaneous or with suction
- B. Pathologic findings with one or more of the following tests:
 1. X-ray
 2. CT or MRI scan
 3. Transillumination
- C. Simultaneous onset of headache and sinusitis
- D. Headache locations
 1. Acute frontal sinusitis headache: pain directly over the sinus and may radiate to the vertex or behind the eyes
 2. Acute maxillary sinusitis headache: pain over the antral area and may radiate to the upper teeth or the forehead (pain often located in the cheek, gums, and teeth of upper jaw)
 3. Acute ethmoiditis headache: pain between the eyes and may radiate to the temporal area
 4. Acute sphenoiditis headache: pain in the occipital area, the vertex, the frontal region, or behind the eyes (only observed in about 3% of sinusitis cases)
- E. Headache disappears following treatment of acute sinusitis

Adapted from Headache Classification Committee of the International Headache Society. Classification and diagnostic criteria for headache disorders, cranial neuralgias, and facial pain. *Cephalalgia* 1988;8(Suppl 7):1–96. CT = computed tomography; IHS = International Headache Society; MRI = magnetic resonance imaging.

using specific diagnostic criteria, which in turn accurately differentiate it from other headache types such as migraine.

The 1988 IHS diagnostic criteria for sinus headache are summarized in Table 28-1; the 2004 IHS criteria for headache attributed to rhinosinusitis are in Table 28-2. A simple definition includes continuous headache associated with purulent discharge (except with sphenoid sinusitis, where purulent discharge is not apparent), abnormal imaging findings, and simultaneous onset of pain and sinusitis. Features that distinguish headache attributed to rhinosinusitis from migraine headache are listed in Table 28-3.

Sinusitis affects more than 31 million people in the United States, and in 1989 accounted for 16 million office visits to physicians. The estimated expenditures for sinusitis in 1996 was \$5.8 billion (US). This included physician office visits, medications, and emergency room visits. Also included in these costs were medications used to treat the accompanying headache. Importantly, identifying which

Table 28-2. Headache Attributed to Rhinosinusitis, 2004 IHS Classification

- Diagnostic criteria:
- A. Frontal headache accompanied by pain in one or more regions of the face, ears, or teeth, and fulfilling criteria C and D
 - B. Clinical, nasal endoscopic, CT and/or MRI scan, and/or laboratory evidence of acute or acute-on-chronic rhinosinusitis
 - C. Headache and facial pain develop simultaneously with onset or acute exacerbation of rhinosinusitis
 - D. Headache and/or facial pain resolve within 7 days after remission or successful treatment of acute-on-chronic rhinosinusitis
- Notes:
- 1. Clinical evidence may include purulence in the nasal cavity, nasal obstruction, hyposmia/anosmia, and/or fever.
 - 2. *Chronic sinusitis* is not validated as a cause of headache or facial pain unless relapsing into an acute stage.

Adapted from Headache Classification Committee of the International Headache Society, 2004.

CT = computed tomography; IHS = International Headache Society; MRI = magnetic resonance imaging.

of these headaches are truly attributable to rhinosinusitis and which headaches may be migraine, probable migraine (migrainous), or tension-type headache is important in order to prescribe the appropriate medications and design appropriate treatment plans. In the United States, an estimated 28 million Americans suffer from headaches that meet the IHS diagnostic criteria for migraine. Yet, only 48% of the headache sufferers actually receive a specific diagnosis for migraine, suggesting that some migraine conditions are either not diagnosed or misdiagnosed as other headache types including sinus headache.

For a variety of reasons, patients may receive a diagnosis of sinus headache, but they may also meet the IHS criteria for migraine. In one study, patients who met IHS diagnostic criteria for migraine were screened, and 30% had not receive a specific diagnosis for their headache when seeking medical care. Additionally, 14% received a diagnosis of sinus or tension-type headache, 35% were diagnosed as migraine and sinus/tension-type/other headache types, and only 21% were diagnosed with migraine. Overall, 88% of patients presenting with “episodic recurrent sinus headache” did not have fever or purulent discharge, and actually met diagnostic criteria for migraine. These results

Table 28-3. Distinguishing Clinical Characteristics of Migraine and Sinus Headache

Migraine	Sinus Headache
Acute recurrent episodic pain lasting 4 to 72 hours, throbbing in nature	Ongoing or continuous pain, which may not be throbbing
Responds to migraine-specific medications and analgesics	May not respond to acute migraine medications; responds poorly to opioids; may require antibiotics, treatment for reduction of ostial swelling, sinus draining, and maintenance of sinus ostial patency
May be associated with rhinitis, which often is clear	May be associated with purulent discharge and rhinitis
Not associated with fever	May be associated with fever

suggest that patient- or physician-diagnosed sinus headache and migraine may present with similar profiles in many patients, including features such as sinus pressure and pain, rhinitis, and watery eyes.

Cranial autonomic symptoms (lacrimation, conjunctival injection, eyelid edema, and nasal congestion) have been reported in patients with migraine. Barbanti and colleagues studied 177 consecutive migraineurs and assessed the autonomic symptoms. They found that 81 patients (45.8%) reported ocular symptoms alone or in combination with nasal symptoms. Results from this study support the suggestion that physicians should screen for migraine diagnostic criteria in patients with autonomic symptoms that resemble sinus infections or allergies. These studies support that some of these autonomic symptoms may actually be secondary to a migraine attack.

One challenge in managing patients with headache is that some patients self-diagnose their headaches with the assumption that they know they have a specific headache type. Unfortunately, these patients may misdiagnose their headaches, and in return, perhaps mismanage their illness or convince their physicians to concur with their preconceived diagnosis and management. In a recent study by Cady and Schreiber, 47 patients were identified who had made a self-diagnosis or who received a physician diagnosis of sinus headache. After receiving a complete history and headache work-up, 98% of these subjects actually met IHS criteria for migraine or probable migraine. Additionally, most of these patients suffered high levels of headache-related disability, and 63% reported dissatisfaction with previous therapy.

The case described above presented an initial dilemma because the patient has a long history of severe migraine headaches and is no stranger to dealing with her situation. Her present headache attack is of a severe degree and possesses features similar to the migraine attacks with which she usually presents. She also has noted the triggering event of an "allergy flare" which is not uncommon for her as well. When this situation of refractory headache occurs, the diagnostic impression must take into account other possibilities including status migrainosus or secondary causes of headache.

The careful clinician in this case will take into account the presence of the associated signs and symptoms suggesting acute sinusitis (mild fever, purulent nasal secretions, reddened nasal membranes, and constitutional symptoms). The urgent-care center performing her initial evaluation overlooked these additional factors and missed a treatment opportunity. The patient tended to overlook these additional signs and symptoms as well, because she tended to focus on the severe and prevailing nature of the pain she was experiencing.

The patient received a 14-day course of oral antibiotics and symptomatic treatment with decongestants

and mucolytics. She achieved a full recovery and reverted back to her previous history of intermittent, infrequent, controllable migraines that she had previously experienced.

Selected Readings

- Barbanti P, Fabbrini G, Pesare M, et al. Unilateral cranial autonomic symptoms in migraine. *Cephalalgia* 2002;22:256–9.
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- Lipton RB, Diamond S, Reed M, et al. Migraine diagnosis and treatment: results from the American Migraine Study II. *Headache* 2001;41:638–45.
- Silberstein SD, Willcox TO. Nasal disease and sinus headache. In: Silberstein SD, Lipton RB, Dalessio DJ, editors. *Wolff's headache and other head pain*. 7th ed. Oxford (NY): Oxford University Press; 2001. p. 494–508.

Editorial Comments

A subsequent, larger follow-up study after the Cady and Schreiber pilot study compared the IHS diagnosis in 2,524 patients with self-diagnosed or physician-diagnosed sinus headache (Schreiber CP. Platform presented at American Headache Society, Seattle, June 2002). Patients were not allowed to have received a previous diagnosis of migraine, were not allowed to have ever received a triptan, and were not allowed to be obviously infected at the time of enrollment. Ninety percent of these patients met IHS criteria for migraine or probable migraine. Only 8 patients had acute rhinosinusitis. In the American Academy of Otolaryngology–Head and Neck Surgery criteria for diagnosing acute rhinosinusitis, headache is a minor factor in the diagnosis (Lanza et al. *Otolaryngol Head Neck Surg* 1997;117(Pt 2):S1–7). In the United States, most patients with "sinus headaches" have migraine, but what makes this patient different is a change in her headache pattern, warranting further work-up.

FINAL DIAGNOSIS:

Headache attributed to rhinosinusitis and coexisting migraine

