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Primary headache syndromes and sinus headache: An approach to diagnosis and management

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ABSTRACT

Chronic rhinosinusitis (CRS) and primary headache syndromes are common disease entities and headache and facial pain are common reasons for referral to otolaryngology units. Because of an association of nasal symptoms with primary headache syndromes and considerable similarities in their clinical presentations, primary headache syndromes may be misdiagnosed as sinus disease and vice versa. In this review we examine the evidence on which otolaryngologists can base clinical diagnosis and management and offer an approach to distinguishing these common clinical entities.

1. Introduction

Both chronic rhinosinusitis (CRS) and primary headache syndromes are common disease entities and headache and facial pain are common reasons for referral to otolaryngology units [1]. The majority of such patients are referred for the purposes of out ruling a sinogenic component to their symptoms. However, one of the major difficulties posed in the management of such patients, is distinguishing those with genuine sinogenic pathology from those with primary headache syndromes. The most common forms of primary headache include migraine, tension-type headache (TTH) and cluster headache (CH), and these are the types that we will address here (Table 1). The IHS-2004 classification of headaches also includes a fourth group of "other primary headaches" including primary cough headache, primary headache associated with sexual activity, exertional headache, hemicrania continua and hypnic headache [2]. Classically it is the more common forms of primary headache, such as migraine, CCH and TTH that may be misdiagnosed as sinus headache. Sinus headache can be loosely defined as pain over the sinus region of the face, particularly the maxillary sinus or periorbital area, usually associated with nasal symptoms [3]. The pain associated with sinus headache, while typically mild to moderate in nature, may manifest as a severe type pain which may be pulsatile in nature. In such instances the clinical history may mimic that of migraine. Additionally, primary headache syndromes may also have accompanying rhinogenic symptoms, thus erroneously convincing both patient and indeed family practitioner, that the underling etiology is sinogenic. Here we examine these two disease entities, sinus headache and primary headache syndromes, explore distinguishing features of each and offer an approach to evaluation and management of a clinically challenging area.

2. Primary headache syndromes; what are they?

The primary headache syndromes are very common with the prevalence of TTH alone thought to affect in the region of 30–78% of the population [2]. Included in the 2004 IHS classification of primary headaches are tension-type headache (TTH), migraine, cluster headache (CH) and other trigeminal autonomic cephalalgias, and a fourth group referred to as other primary headaches [2]. One of the problems confronting the physician is the considerable overlap in symptomatology between primary headache syndromes and headache associated with sinus disease. To add to the confusion, it is now widely accepted that a large number of patients with TTH, CH and migraine also have associated rhinogenic or nasal symptoms [4]. The association between chronic headache and nasal symptoms in the absence of sinogenic disease remains poorly understood but is thought to represent parasympathetic activation of the nasal mucosa [5].

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Table 1
IHS classification primary headache: revised 2004.

1988 classification	New additions: 2004
Migraine	Chronic migraine
With aura	Typical aura without migraine
Without aura	Persistent aura
Opthamoplegic	Abdominal migraine
Retinal	Cyclical vomiting
Childhood syndromes	New daily persistent headache
Complications	Hypercrania continua
Other	
Cluster	
Tension-type headache	

Table 2
Diagnostic criteria for secondary headaches (IHS 2004).

A	Headache with one (or more) of the following (listed) characteristics and fulfilling criteria C and D
B	Another disorder known to be able to cause headache has been demonstrated
C	Headache occurs in lose temporal relation to another disorder or there is other evidence of a casual relationship
D	Headache is greatly reduced or resolves within 3 months (this may be shorter for some disorders) after successful treatment or spontaneous remission of the causative disorder

Table 3
Factors associated with a diagnosis of rhinosinusitis. *American Academy Otolaryngology & Head and Neck Surgery*.

Major factors	Minor factors
Purulence in nasal cavity	Headache
Facial pain, pressure, congestion, and fullness	Fatigue
Nasal obstruction, blockage, discharge, and fatigue purulence	Halitosis
Hyposmia and anosmia	Cough
Fever (acute rhinosinusitis only)	Dental pain
Ear pain and fullness	

It is often this complaint of nasal symptoms, such as blockage or congestion that prompts a misdiagnosis of CRS. In 2004 the Sinus Allergy and Migraine Study concluded that primary headache syndrome patients are commonly misdiagnosed with CRS because they present to their primary care physicians complaining of symptoms classically associated with sinus disease [6].

A recent large series, multicentre study demonstrated that over half of patients fulfilling the diagnostic criteria for migraine had nasal symptomatology such as nasal congestion and rhinnorhea [7]. Furthermore, the American Migraine Study II highlighted that 42% of patients who fulfilled the diagnostic criteria for migraine had previously been diagnosed with CRS [8]. This is further compounded by patterns and distribution of pain in the primary headache disorders, which includes pain radiating to the periorbital region, jaw and midface and thus mimicking CRS. Given the considerable overlap in nerve distribution (predominantly vagal, trigeminal, and glossopharyngeal) in the head and neck region, sinus headache theoretically can produce pain at almost any head and neck site, so is often misdiagnosed in an effort to explain chronic dental, oral, otological or temperomandibular joint pain.

A closer examination of the IHS classification of secondary headache reveals a group designated as 'Headache or facial pain attributed to disorders of the cranium, neck, eyes, ears, nose, sinuses, teeth, mouth or other facial or cranial structures' [2]. While this does not provide much clarity with respect to differentiating primary headache syndromes from sinus headache the diagnostic criteria does emphasize the importance of establishing a close temporal relationship between the headache and underlying diagnosis such as infection as is often the case with CRS. This premise is of key relevance when separating primary headache syndromes from sinus headache.

3. Sinus headache and it's role in diagnosing CRS

While the facial pain and headache associated with acute forms of sinusitis is well documented, CRS as a cause of headache is more controversial. Sinus headache is classified under secondary headaches according to the most recent IHS guidelines (Table 2). The prevailing misconception in the community is that sinus headache is a common cause of headache. However, recently, the American Academy of Otolaryngology and Head and Neck Surgery (AAO-HNS) amended the criteria for diagnosis of CRS (Table 3). Interestingly, facial pain or pressure is only one of five major criteria, where at least two major features or at least one major and two minor symptoms are required to support a diagnosis of CRS. Facial pain or headache in isolation is not sufficient to warrant a diagnosis of CRS and headache is only a minor criterion and not felt to be synonymous with CRS, unless it is relapsing into the acute form [9]. This concept, that while sinogenic disease causes facial discomfort it does not cause severe headache, is further re-enforced in a recent study by Jones [10]. He notes that in their study series (1) more than 80% of patients with evidence of mucopurulent nasal secretions on endoscopy did not have associated facial pain, (2) patients with diffuse nasal polyposis do not usually complain of facial pain, nasal blockage will nearly always be the predominant symptom and, finally (3) many patients in their series who complained of headache pre-operatively continued to complain of headache post Functional Endoscopic Sinus Surgery (FESS) [10].

Initially patients with CRS are treated conservatively in the form of oral antibiotics (typically a six week course) and nasal sprays and decongestants. Primary headache patients who are misdiagnosed with CRS are unnecessarily put at risk of rhinitis medicamentosa or rebound nasal congestion from extended use of topical decongestants. If the patient fails to respond to conservative management, the decision may be made to perform a CT of sinuses to ascertain if the patient is a suitable candidate for surgical intervention in the form of FESS. CT scans are not only useful in the confirmation of sinogenic pathology but allow for planning for surgery. One must be mindful of the fact however that there is a significant incidence of mucosal abnormalities seen in completely asymptomatic patients [11]. Thus, it is important that the patient has had adequate medical treatment for the nasal and sinus condition before a CT of sinuses is conducted. The task force on rhinosinusitis reviewed a number of radiographic staging systems for CRS and found the Lund–Mackay scoring system to be the most consistent. This scoring system attributes a score of between 0 and 2 (0 = normal, 1 = partial opacification and 2 = total opacification) for each of the sinuses. In this way pre-operative CTs enable the surgeon to distinguish true sinogenic disease from primary headache syndromes [12].

Symptoms, including sinus headache, usually correlate with degree of severity on CT findings [12]. Patients with a pansinusitis, and in particular those with diffuse ethmoidal and frontal involvement, will classically complain of more severe headache and rhinogenic symptoms when compared to their mild-to-moderate counterparts. Thus, though they share similar patterns of presentation, treatment of CRS and primary headache syndromes differ considerably. Conservative management of CRS is largely directed at underlying infection and targeted relief of nasal symptoms while the main aim of both abortive and preventative treatments in primary headache syndromes is to address pain.