

SINUS HEADACHES: AN OVERVIEW

More than 90% of the population experience headaches at some time. The simplest classification is into:

- a primary headache when the cause is not known
- a secondary headache when the headache can be associated with a potential cause.

Many patients have secondary headaches associated with nasal congestion with or without rhinorrhoea, an association labelled by many patients (and by many primary care physicians) as 'sinus headaches', which may result in referral to an otolaryngologist. Current literature shows that most of these sinus headaches fulfil the International Headache Society (IHS) criteria for migraine headaches (Table I) and usually respond to antimigraine treatment.

Table I. International Headache Society (IHS) diagnostic criteria for migraine without aura

- At least 5 attacks fulfilling criteria B - D
- Headache attacks lasting 4 - 72 hours (untreated or successfully treated)
- Headache has at least two of the following:
 - Unilateral location
 - Pulsating quality
 - Moderate or severe pain intensity
 - Aggravation by or causing avoidance of routine physical activity (e.g. walking or climbing stairs)
- During headache at least one of the following is present:
 - Nausea and/or vomiting
 - Photophobia and phonophobia
- Not attributed to another disorder

This review examines the concept of sinus headaches and the appropriate diagnostic tools that can be employed to either support the diagnosis or arrive at an alternative diagnosis for which appropriate therapy can be recommended.

Rhinological source

The phrase sinus headache implies that headache or facial pain originates in paranasal sinuses or the more central nasal cavity. Sinus headaches are currently thought to be relatively rare. With regard to pain of sinonasal origin it has been postulated that variations in the anatomy of the nasal cavity result in mucous stasis and localised infection and that this infection is the cause of the pain experienced.

Acute rhinosinusitis, a group of disorders characterised by inflammation of the mucosa of the nose and paranasal sinuses lasting less than 4 weeks, is widely recognised and accepted as a cause of headache and facial pain. Chronic rhinosinusitis (CRS), a group of disorders characterised by inflammation of the nose and paranasal sinuses lasting

more than 12 weeks, is more controversial as a cause of headache and facial pain. Although the diagnosis of CRS is symptom based and may be unreliable, it is used as a unifying starting point.

In 'Adult rhinosinusitis defined' the Rhinosinusitis Task Force determined that a history consistent with CRS should include two or more major factors or one major and two minor factors (Table II). It is worth noting that headache is regarded as a minor criteria for diagnosing CRS and patients with isolated headaches or facial pain/pressure do not meet the clinical definition of CRS.

Table II. Factors associated with the diagnosis of chronic rhinosinusitis

Major factors

- Facial pain/pressure*
- Facial congestion/fullness
- Nasal obstruction/blockage
- Nasal discharge/purulence/dicoloured post-nasal drainage
- Hyposmia/anosmia
- Purulence in nasal cavity on examination
- Fever (acute rhinosinusitis only)[†]

Minor factors

- Headache
- Fever (all non-acute)
- Halitosis
- Fatigue
- Dental pain
- Cough
- Ear pain/pressure/fullness

*Facial pain/pressure alone does not constitute a suggestive history of rhinosinusitis in the absence of another major nasal symptom or sign.

[†]Fever in acute sinusitis alone does not constitute a strongly suggestive history of acute sinusitis in the absence of another major nasal symptom or sign.

Recent publications suggest that the majority of patients diagnosed as experiencing sinus headaches are actually experiencing migraine headaches. In a study of 2 991 patients in multiple centres, predominantly in primary care, it was found that 80% satisfied the complete criteria for migraine. Based on these findings, a multispecialty consensus meeting of otolaryngology, neurology, allergy and primary care recently published a series of recommendations on diagnosis and treatment of sinus headaches.

Clinical examination, endoscopy and imaging

The first step is to confirm or exclude sinusitis as a potential cause and, if present, to initiate treatment to see what effect this has on the sinus headache.

Simple clinical examination in patients with suspected sinusitis may reveal purulent-looking nasal discharge together with wet, congested nasal mucosa that may be inflamed, particularly the turbinates, but will not be able to confirm that the mucopus is originating in the sinuses.

Provided that the nasal mucosa can be decongested sufficiently to see into the middle meatus, the site of opening of the sinus ostia, nasal endoscopy will be able to demonstrate whether or not the purulent nasal discharge is originating from within the sinuses. It also permits direct assessment of the extent of inflammation and obtaining specimens for microbial culture. However, with regard to sinus headaches, even the presence of inflammatory changes or infection does not indicate with any certainty that the pain is of sino-genic origin.

Plain-film X-rays are becoming obsolete in the diagnosis of sinusitis but they may still be useful in suspected acute sinusitis to either exclude it (air-filled sinuses) or confirm it (air-fluid levels or opaque sinuses). In areas where it is the only modality available it can sometimes be helpful in suspected chronic sinusitis when either mucosal thickening of more than 5 mm or opacification of the sinus may be indicative of CRS. Since plain-film X-rays are only able to demonstrate gross sinus pathology and are unable to detect isolated ethmoid sinus disease that may be the cause of symptoms, they have a limited role in the investigation of sinus headaches.

Computed tomography (CT) scanning of the paranasal sinuses provides detailed imaging of sinus anatomy and pathology and has become the definitive imaging modality, particularly for suspected CRS. However, some studies have found no correlation between facial pain and headache and the severity of sinus disease on CT scan.

Magnetic resonance imaging (MRI) is not recommended as an alternative to CT scanning in rhinosinusitis because, despite its high sensitivity, there is a lack of specificity. Its use in the investigation of sinus headaches will be mentioned below.

Not sinus headaches, but migraine – diagnostic recommendations

- Prominent rhinogenic symptoms with headache should be evaluated carefully for ENT pathology.
- Headache with associated fever and purulent nasal discharge may well be rhinogenic in origin – acute sinusitis – and imaging may need to be considered to confirm this diagnosis.
- Headache with chronic nasal congestion and discharge may also be rhinogenic in origin – CRS and a combination of nasal endoscopy and imaging will be required to confirm this diagnosis.
- Rhinogenic symptoms associated with either a stable pattern of recurrent headaches that alter daily function or recurrent self-limiting headaches are most likely migraine. A response to a trial of migraine therapy aids confirma-

tion of this diagnosis but expectations to therapeutic intervention should be defined for the patient and evaluated by a timely follow-up visit.

- Referral to a neurologist should be considered for headache of new onset, frequent headache (> 1/week), headache with other associated neurological symptoms/signs, or headache that does not respond adequately to conventional therapy.
- MRI of the brain should be obtained for the patient who experiences:
 - a change in migraine symptoms
 - new headache over the age of 40
 - neurological symptoms/signs
 - headaches that are associated with transient visual obscurations
 - headaches triggered by changes in posture (e.g. lying to standing) or Valsalva manoeuvres (cough, strain, sneeze)
 - a history of intermittent headaches that become daily or continuous
 - severe headaches that peak within minutes (MRI angiography or venography).

Recommended treatment

- Patients with suspected or confirmed acute sinusitis should be treated with a 5-day course of amoxicillin, together with topical nasal decongestant, and scheduled for a follow-up evaluation.
- Patients with suspected or confirmed chronic sinusitis should be treated with a 10-day course of amoxicillin, together with topical nasal decongestant, and started on a course of topical nasal steroid spray to be continued for 1 month, and scheduled for a follow-up evaluation.
- Patients with non-infectious rhinogenic symptoms (e.g. allergic rhinitis) with headache as a minor complaint should be started on a course of topical nasal steroid spray to be continued for 1 month, which can be supplemented with selective antihistamines/oral decongestants, and scheduled for a follow-up evaluation.
- Patients with migraine, but no evidence of nasal/sinus infection, should be provided with a trial of migraine-specific medication and scheduled for a follow-up evaluation.

Recommended reading available on request.

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