HEADACHE

(3) FACIAL PAIN

By Andrew J. Dowson, MB BS, MRCGP

The final article of our series on headache looks at facial pain

A wide variety of structures in the head and neck can produce a painful sensation in the face (by referral). Panel 1 summarises the structures capable of causing facial pain and the possible related conditions.[1] This article focuses on sinusitis, trigeminal neuralgia, post-herpetic neuralgia and temporomandibular joint dysfunction.

ACUTE SINUSITIS

Sinusitis results from infection in one or more of the cranial sinuses.[2] It is over-diagnosed because patients and doctors often regard pain over the sinuses as being related to those structures, when the cause might be migraine or muscle contraction headache. In fact, sinusitis accounts for a relatively small proportion of headaches in adults.

Acute sinusitis (which can last from one day to three weeks) has been identified as causing head and face pain, whereas less acute or chronic forms (which last more than three weeks) have a less well-defined relationship with pain. Panel 2 shows the International Headache Society's diagnostic criteria for acute sinus headache. In primary care or community pharmacy, the International Headache Society's criterion of purulent discharge and a setting of acute febrile illness would indicate sinusitis.

The term "paranasal sinuses" encompasses the frontal, maxillary, ethmoidal and sphenoidal sinuses. These are basically cavities in bone, named after the bones in which they are situated (see Figure 1). The site of pain varies according to the location of the infection. Maxillary sinusitis pain is mostly in the cheek, gums, teeth and upper jaw, but if the infection is in the ethmoidal sinuses, pain between the eyes with tenderness of the eye, aggravated by eye movement, can occur. Frontal sinusitis causes pain in the forehead, and sphenoidal sinusitis pain is often at the vertex (crown of the head). The pain of acute sinus headache is commonly described as having a dull, aching quality which is worsened by bending. Severe complications can occur, such as meningitis or even brain abscess, but these are rare.[3]

Treatment Many patients with a presumed diagnosis of sinusitis are treated without investigation. Nasal culture is generally not undertaken. A simple skull X-ray can show evidence of sinus disease, although computed tomography scanning or magnetic resonance imaging are usually employed, particularly in specialist centres.

A broad spectrum antibiotic, together with local measures such as steam inhalation and vasoconstrictor agents, is usually

PANEL 1: STRUCTURES CAPABLE OF CAUSING FACIAL PAIN AND POSSIBLE RELATED CONDITIONS

Structures	Possible causes
Cranial bones	Osteomyelitis, multiple myeloma, Paget's disease
Neck	Cervical spondylosis
Eyes	Acute glaucoma
Ears	Disorders of the middle ear
Nose and sinuses	Sinusitis
Teeth, jaw and related structures	Teeth usually cause facial pain but rarely headache
Temporomandibular joint	Dysfunction due to bite disorder

PANEL 2: DIAGNOSTIC CRITERIA FOR ACUTE SINUS HEADACHE[1]

A Purulent discharge in the nasal passage, either spontaneous or by suction

B Pathological findings in one or more of the following tests:

- Radiographic examination
- Computed tomography or magnetic resonance imaging
- Transillumination

C Simultaneous onset of headache and sinusitis

D Headache location:

- In acute frontal sinusitis, headache is located directly over the sinus and may radiate to the vertex or behind the eyes
- In acute maxillary sinusitis, headache is located over the antral area (maxillary antra are the cavities in the cheek bones) and may radiate to the upper teeth or the forehead
- In acute ethmoidal sinusitis, headache is located between the eyes and may radiate to the temporal area (the temples)
- In acute sphenoidal sinusitis, headache is located in the occipital area (back of the head), the vertex, the frontal region or behind the eyes

E Headache disappears after treatment of acute sinusitis

Dr Dowson is director of King's Headache Service, London

the first choice. It is thought that locally acting vasoconstrictors produce some relief by shrinking inflamed nasal mucosa but, if treatment is required for more than 72 hours, oral decongestants (eg, pseudoephedrine) are more commonly used. Antihistamines do not have a major role in the treatment of acute sinusitis.

If initial treatment fails or if there is recurrent infection, specialist intervention is suggested, with neuro-imaging and even fibre-optic endoscopy. During the latter, endoscopic surgery may be used to reopen the drainage systems of the sinuses.[4] Packing of the sinus spaces may be necessary in the early post-operative phase and a high dose of antibiotics is given in order to avoid septicaemia.

The cause of most serious clinical concern is if the sphenoidal areas are affected. These structures are deep within the nasal cavity and in close proximity to the central venous system, via which infection can, and is likely to, spread. Although symptoms can vary, peri-orbital pain (behind the eyes) is common as well as frontal or temporal headache. The pain is often severe and intractable; it can interfere with sleep and may not be relieved by simple analgesics. Such presentations usually evolve rapidly over a few hours or days. Because of the risk of infection spreading, such patients should certainly be assessed by their GP and often by a specialist.[5] If symptoms occur acutely and the diagnosis of sphenoidal sinusitis is made, it is necessary to investigate early and manage aggressively to prevent complications.[6]

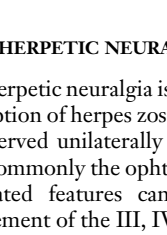
TRIGEMINAL NEURALGIA

The trigeminal nerve is the fifth cranial nerve and it has three sensory divisions; opthalmic (supplies the forehead, eyes and scalp), maxillary (supplies the cheek) and mandibular (supplies the lower cheek, lower lip and chin). Figure 2 shows the distribution of the three sensory divisions. Trigeminal neuralgia is considered to be the most common neurological syndrome in the elderly with a peak prevalence of 155 cases per million of the population.[7] The incidence ratio between women and men is three to one. The condition is nearly always unilateral, although 4 per cent of patients are said to have bilateral symptoms.

The pain is commonly described as a spasm or electric shock in one or more divisions of the trigeminal nerve and it may be provoked by triggers such as washing, shaving, talking or brushing the teeth. It can cause twitching in the facial muscles and the condition has also been called "tic douloureux" because of this. Although spasmodic pain constitutes the most characteristic finding, it is possible for patients to experience a sustained deep, dull ache as a continuous symptom. Panel 3 on page 216 shows the diagnostic criteria for this condition.

Neuralgia is thought to result from pressure or tissue damage. Perhaps the most common cause is vascular compression resulting from abnormal arterial roots near the nerve root and this can be investigated by tests such as magnetic resonance imaging. Other causes include malignancy (both dental and cranial),[6] multiple sclerosis, intracranial aneurysms and cranial arteritis.

Treatment If no specific treatable cause is identified (either surgical or medical), the general medical management for idiopathic trigeminal neuralgia would be instituted. The first drug tried is usually carbamazepine (800mg each day in divided doses is the norm), alternatives being sodium valproate, baclofen, clonazepam and, more recently, gabapentin. If medication fails to control the symptoms, surgery can be considered.[8,9] Ablative techniques such as alcohol and glycerol injections are now becoming less popular with the advent of the insertion of a sponge between the vessel and the nerve.



BO VEISLAND, MI&I/SCIENCE PHOTO LIBRARY

POST-HERPETIC NEURALGIA

Post-herpetic neuralgia is characterised by the p after an eruption of herpes zoster (shingles).[10] Typical will be observed unilaterally in a distribution of the trigeminal nerve, most commonly the ophthalmic division (see Fi 16). Associated features can include diplopia (d from involvement of the III, IV and VI cranial nerves. Infection affecting the auditory canal can also lead to weakness of the facial muscles by involvement of the VII cranial nerve. Pain often starts during the acute rash of herpes but the main problem arises if pain persists after the eruption has cleared. This is more likely to be the case in older patients. Symptoms usually include a constant, deep pain with repetitive stabs or needle prick sensations. Light touch can trigger these symptoms and can also lead to itching. The natural progression is for the pain to clear at three years in 50 per cent of patients.

Treatment A break through in the treatment of this condition came with the use of antiviral drugs during the acute eruption of pain.[10] It is now thought that if patients take antiviral drugs early in the herpes infection, it is much less likely that they will develop post-herpetic pain. In the acute phase of the rash, analgesics are often used along with calamine lotion or other topical applications to reduce local irritation. Once the rash has cleared and a definite diagnosis of herpetic neuralgia made, tricyclic antidepressants are the mainstay of treatment. Capsaicin, a treatment made from chilli peppers, can also be applied locally to the affected area. This can be done several times

PANEL 3: DIAGNOSTIC CRITERIA FOR IDIOPATHIC TRIGEMINAL NEURALGIA

A Paroxysmal attacks of facial or frontal pain which last a few seconds to less than 2 minutes

B Pain has at least four of the following characteristics:

- Distribution along one or more divisions of the trigeminal nerve.
- Sudden, intense, sharp, superficial, stabbing or burning quality
- Intensely severe
- Precipitation from trigger areas or by certain daily activities such as eating, talking, washing the face or cleaning the teeth
- Between paroxysms the patient is entirely asymptomatic

C No neurological deficit

D Attacks are stereotyped in the individual patient

E Exclusion of other causes of facial pain by history, physical examination, and special investigations

a day, care being taken not to involve any mucous membranes. Post-herpetic neuralgia can be extremely disabling for patients and, unfortunately, no surgical intervention has been shown to be particularly effective.

TEMPOROMANDIBULAR JOINT DYSFUNCTION

Dysfunction of one or other temporomandibular joints (the joints where the jaw meets the skull; see Figure 1 on page 216) can lead to pain in the upper part of the head.[11] A common cause of the dysfunction is a problem with an individual's bite. For example, the fitting of a new filling can unbalance bite and this in turn affects facial muscles.

Many patients who suffer from migraine attacks on waking have been observed by sleeping partners to grind their teeth. Further investigation of this group suggests that at least some of these will have temporomandibular joint dysfunction. Dysfunction often involves an increase in muscle activity and, at a later stage, full-blown migraine symptoms can occur. It may be that a further group suffers background low grade symptoms (muscle contraction-type headache) simply from muscle contraction activity. In one study, 69 per cent of patients prone to muscle contraction-type headache developed headache within 30 minutes of jaw clenching, as opposed to 17 per cent of controls.[12]

Treatment Maxillo-facial surgeons have studied this group of patients in detail and have concluded that bite can be adjusted by using a strategy which, in addition to the range of usual dental techniques (such as using a specially fitted gum shield at night), includes stress management programmes (in the form of audio tapes etc) and, in some cases, prophylactic medication (tricyclic antidepressants).[13] Using these approaches, patients can dramatically reduce the frequency of their headaches. The consensus is that headaches caused by temporomandibular joint dysfunction may be under-diagnosed and the employment of specific dental skills (eg, in the fitting of dental splints) may well prove to be an effective adjunct to traditional therapies for muscle contraction headache and migraine.

CONCLUSION

Facial pain can be referred from a wide variety of structures and have a wide variety of causes. Sinusitis is often over-diagnosed but, patients with high temperature and purulent discharge will often benefit from intervention with an antibiotic as well as from oral decongestants. Trigeminal neuralgia predominantly affects the older population, as does post-herpetic neuralagia. These two conditions are manifest by pain which is highly debilitating, usually requiring prescription medication. Temporomandibular joint dysfunction can lead to either muscle contraction or migraine headache, or indeed to tenderness over the affected joint. Dental intervention is usually the most important part of management. Pain from the neck upwards is most commonly caused by muscle contraction headache, migraine and chronic daily headache. However, pharmacists should be aware of other possible conditions.

REFERENCES

1. Headache Classification Committee of the International Headache Society. Classification and diagnostic criteria for headache disorders, cranial neuralgias and facial pain. Cephalalgia 1988;88:(7):1–96.
2. Schøsted-Madsen U, Stoksted P, Christensen PH, Henriksen N. Chronic headache related to nasal obstruction. J Laryngol Otol 1986;100:165–70.
3. Lew D, Southwick FS, Montgomery WW, Weber AL, Baker AS. Sphenoid sinusitis: a review of 30 cases. N Engl J Med 1983;19:1149–54.
4. Kennedy DW. Overview. Otolaryngol Head Neck Surg 1990;103:847–54.
5. Silberstein SD, Lipton RB, Goadsby PJ, Smith RT. Headache *in Primary Care*. Oxford: Isis Medical Media; 1999. pp134–140.
6. Kibblewhite DJ, Cleland J, Mintz DR. Acute sphenoid sinusitis: management strategies. J Otolaryngol 1988; 17:159–63.
7. Silberstein SD, Lipton RB, Goadsby PJ, Smith RT. Headache *in Primary Care*. Oxford: Isis Medical Media; 1999. pp160–161.
8. Zakrzewska JM. Peripheral surgery. In: Trigeminal neuralgia. Major Problems in Neurology. London: WB Saunders;1995. pp 108–55.
9. Zakrzewska JM. Posterior fossa surgery. In: Trigeminal neuralgia. Major Problems in Neurology. London:WB Saunders;1995.pp157–70.
10. Kost RG, Straus SE. Post-herpetic neuralgia — pathogenesis, treatment and prevention. N Engl J Med 1996; 335:32–42.
11. Cawson RA. Temporomandibular cephalalgia. In Handbook of Clinical Neurology. F. Clifford Rose (editor). Amsterdam: Elsevier; 1986.pp413–6.
12. Jensen R, Olesen J. Initiating mechanisms of experimentally induced tension-type headache. Cephalalgia 1996; 16:175–82.
13. Lance JW, Goadsby PJ. Mechanism and Management of Headache. Oxford: Butterworth-Heinemann; 1998. pp276–7.