

SOME OPHTHALMOLOGICAL ASPECTS OF HEADACHE

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SUMMARY

The causes of headache are briefly summarized. The ophthalmologist is often consulted about headaches being due to 'the eyes', but although interference with clear vision may occasionally cause headaches, by far the commonest cause of pain in and around the eyes is some type of neuralgia affecting the first division of the fifth cranial nerve, or one of the variants of migraine. The diagnosis of these conditions is discussed.

Headache is so frequently attributed to 'eye-strain' or other ocular causes that it may be of interest to look briefly at the question of headache in general, and to review headaches and head pains that may come into the territory of the ophthalmologist either by their ocular location or by ocular signs.

The following classification is based on that of the *Ad Hoc* Committee on the Classification of Headache.¹ It has been altered to suit the context of this article.

Tension (Muscle Contraction) Headache

'Primary' over-action (anxiety).

Secondary to eye-strain, imbalance of bite (Gogan), cervical spondylosis.

Combined with vascular headache.

Vascular Headache

Migraine—classic, common, hemiplegic, ophthalmoplegic.

Migrainous neuralgia ('cluster headache' and allied headaches).

Exertional headache.

Inflammatory—giant-cell arteritis.

Traction on Intracranial Structures

Traction of large arteries and dural compartments:

(i) with raised intracranial pressure, as in neoplasms, haematomata or abscess,

(ii) with low intracranial pressure, as following lumbar puncture.

Meningeal Irritation

Infections, haemorrhage, chemical.

Local Cranial Disorders

Inflammation of cranium or scalp.

Cranial Nerve Disorders

Compression or inflammation of cranial nerves (supra-orbital neuralgia, Gradenigo's syndrome, Raeder's syndrome).

Trigeminal and glossopharyngeal neuralgia.

Disorders of Cranial Adnexa and Cervical Spine

Eyes—as in increased intra-ocular pressure and inflammation.

Ear, nose and throat, as in sinusitis, carcinoma, vasomotor rhinitis.

Teeth.

Cervical spondylosis, and cervical trauma.

Psychogenic Headache

Miscellaneous Headaches

Of mixed, variable and uncertain origin—febrile, toxic, 'hangover', drug-withdrawal, postconvulsive, post-traumatic, loaded rectum ('constipation') or bladder.

Many of these headaches and cranial pains will never come the way of ophthalmologists, although many simple tension headaches of psychogenic origin will be referred to ophthalmologists to exclude ocular pathology. Lyle² states that there are only two types of headache associated with ocular dysfunction. These are (a) a generalized

headache associated with interference with clear vision, and (b) a localized headache involving the area supplied by the first division of the trigeminal nerve; this is better described as pain or neuralgia rather than headache. He goes on to divide the first type into two groups: (i) those with organically healthy eyes, and (ii) those with organic disease of the eyes.

OCULAR HEADACHES WITH ORGANICALLY HEALTHY EYES

Refractive errors may cause headache but it is likely that emotional factors associated with the use of the eyes are equally to blame. The anxiety associated with studying for examinations is too well known to comment on; the tensions arising from watching films, particularly in smoky or poorly ventilated cinemas, and pain from muscles of the neck, when the head is held in an abnormal posture during prolonged reading or writing, are common contributory factors.

Nevertheless, many patients do benefit by having their refractive errors corrected. Lyle² points out that hypermetropia in young people is unlikely to cause headache as they have such good amplitude of accommodation. Wolff³ maintains that myopia seldom causes headache as the sufferer gives up the attempt to achieve clear vision. He describes the hypermetropic subject as suffering from a steady non-pulsatile ache in frontal, occipital or nuchal areas, unaffected by closing the eyes but made worse by attempts at near vision.

Heterophoria, convergence insufficiency, intermittent and manifest squint are other conditions in healthy eyes which may be associated with headache.

OCULAR HEADACHES WITH ORGANIC DISEASE OF THE EYES

Acute and subacute glaucoma give rise to pain primarily in the eye itself but the pain may radiate over the side of the head and may be accompanied by nausea and vomiting which tend to distract from the ocular cause.

Herpes zoster of the first division of the fifth nerve should not give rise to much difficulty in diagnosis once the herpes breaks out, but for the preceding 24 hours it may occasion an intense pain which causes some speculation. I have seen a case where the vesicles were hidden in the hair of the eyebrow and head and which caused some difficulty in diagnosis.

Migraine with ocular signs is one of the commonest causes of severe headache which may lead to ophthalmological consultation. The visual phenomena of teichopsia, scotoma and even transient amblyopia, which precede the attack for about 20 minutes, may in themselves lead to a request for an opinion. It is important to remember that at times these symptoms may occur without headache.⁴

In ophthalmoplegic migraine the headache precedes the ocular palsy by 6-10 hours but very occasionally the headache may last for a week or more before the palsy is noted. Commonly the third nerve is affected, often only partially, but the other two ocular motor nerves may be affected individually or in unison with the third nerve.

Complete recovery in a few hours or days is the rule but after several attacks there may be permanent or very long lasting paresis. Walsh and O'Doherty⁵ suggested that the cause of the paresis was oedema of the walls of the internal carotid artery, but their angiograms are not entirely convincing. In most reported cases of ophthalmoplegic migraine no abnormality has been found on angiography.

Migrainous neuralgia, which occurs in several forms is probably better known as histamine cephalgia or cluster headache. Characteristically it is unilateral and periorbital. It occurs in bouts lasting several weeks and at intervals of months or years. It is commoner in young men than in women. The individual attacks of pain last from rather less than an hour up to 2 hours and are very severe; they frequently wake the patient at night and are accompanied by redness and watering of the eye, drooping of the eyelid (which is usually due to oedema of the lid and only rarely part of a Horner's syndrome), blocking of the ipsilateral nostril, and flushing of the same side of the face. Kunkle and Anderson⁶ found that in 90 patients with cluster headaches, 14 had miosis on the side of the pain, but in 7 of these it was only present during the attack. Ptosis was found in 6 of the 14 and in no case was there anhidrosis.

Raeder⁷ described a syndrome of miosis and ptosis without hyperhidrosis, but with pain in the region of the supply of the first division of the trigeminal nerve, which he ascribed to inflammation in the paratrigeminal area between the medial border of the Gasserian ganglion and the carotid artery just before that vessel forms the syphon. It is likely, however, that the great majority of these cases are simply examples of cluster headache.

Gradenigo's syndrome is an uncommon cause of sixth nerve palsy with pain in the ipsilateral side of the face. This is due to inflammation of the tip of the petrous bone, secondary to middle-ear disease, with involvement of the sixth nerve by thrombosis of the inferior petrosal sinus within Donatello's canal. The pain in the face is said to be due to irritation of the Gasserian ganglion by the diseased petrous bone. Careful study of the X-rays may show sclerosis of the tip of the petrous bone. Shalom⁸ points out that the onset of this syndrome may be a precursor of meningitis secondary to the petrositis.

Third nerve palsies. The commonest cause of sudden third nerve paralysis, with pain in the region of the eye, is an aneurysm of the terminal part of the internal carotid artery. In this the onset is usually dramatically sudden and angiography shows a large downward-pointing aneurysm. Usually the paralysis is permanent but in a few cases after 2 or 3 weeks there is a gradual recovery, first of the ptosis, then of the ocular movements and finally of the pupillary size. Sutherland and Hughes⁹ showed that the pupillary fibres in the third nerve ran on top of the nerve close to its origin so that pressure from above may first affect these fibres.

Other common causes of sudden painful third nerve palsies are diabetes,¹⁰ where severe pain is often a feature, and encephalitis and neuro-lues. In last-mentioned condition I have twice seen sudden third nerve palsies which mimicked those of aneurysm closely—presumably this must be due to an endarteritis of the small vessel supplying the nerve. The pain in all these conditions is deep behind the eye, spreading up over the forehead and is usually

unremitting for the first few days although one occasionally sees an isolated painless third nerve paresis in cases of aneurysm of the internal carotid.

Supra-orbital neuralgia. A form of traumatic neuralgia, is much commoner than is realized. It results in a dull ache with occasional sharp, stabbing pains in the forehead and often leads to examination of the eyes and sinuses. The only clinical findings are tenderness in the supra-orbital notch and a slight diminution to pin-prick over the supra-orbital distribution, with a preserved corneal reflex. Very often there is no history of a definite head injury, but if the patient is asked if he has ever had a 'black-eye', he may readily admit to this, not realizing that this is the original cause of his pain. The treatment either by repeated injections of novocaine into the nerve at the supra-orbital notch, or by evulsion of the nerve, is highly satisfactory.

The main sensory nerve to the eyeball is the nasociliary nerve. It sends branches to the nose, sphenoid and posterior ethmoid cells. Disease or infection of any of these structures may cause pain in the orbit. Wolff¹¹ showed that irritation of the posterior ethmoid cells caused intense pain, spreading into the upper teeth, with lacrimation, injection of the conjunctiva adjacent to the nose, and photophobia.

Anterior ethmoid neuralgia is, according to Walsh and Hoyt,¹¹ characterized by pain in the region of the supra-ciliary ridge and down the side of the nose. It ceases when cocaine is applied to the anterior part of the nasal roof but is not affected by cocaine instilled into the eye.

Nasopharyngeal carcinoma may spread along the base of the skull causing multiple cranial nerve palsies with severe pain around the orbit or elsewhere in the cranium. It is wise to remember Jefferson's dictum that there is always objective sensory loss in some of the branches of the trigeminal nerve in these cases.

Trigeminal neuralgia itself should not give rise to much difficulty—admittedly there are occasional symptomatic neuralgias of the fifth nerve in disseminated sclerosis, leukaemia and Hodgkin's disease, but these are rare. The true idiopathic type of neuralgia is unaccompanied by any objective sensory loss and never affects the orbit itself. Occasionally, however, the orbit may be a trigger area for lancinating pain over the forehead, but I know of no case where the pain has passed into the eye. Occasionally after a bout of pain in this condition the eye may be temporarily injected and in this way may provide a somewhat misleading clue.

The ophthalmologist is likely to be consulted over pain in and about the orbit; he should be able to indicate possible causes for such pain but, luckily, he will seldom find that the eye itself plays any major part in the production of painful syndromes in the cranium.

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