

HEADACHES OF NEUROSURGICAL IMPORTANCE

Headache is a banal symptom with many causes, organic and otherwise. It is probably the commonest symptom about which patients consult their doctors, or for which they are referred to neurological clinics.



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Professor Farrell was President of the Society of Neurosurgeons of SA from 1992 to 1994. He was appointed Hunterian Professor at the Royal College of Surgeons of England in 1987, and was elected Fellow of the College of Neurosurgeons of SA by peer review in 2002.

To the public, brain tumour is a sinister condition and the person with a headache may have the unspoken fear that his/her headache could be due to a tumour, providing emotional overtones to a painful condition. So, it is hardly surprising that patients want reassurance that headache is not due to an expanding intracranial mass. It cannot be overemphasised that the history given by the patient is of cardinal importance in determining whether or not headache is due to a serious intracranial cause.

Headache that has been present to the same degree day in and day out for months or years is very unlikely to be due to increasing intracranial pressure (ICP). It is headache of recent onset in a previously well individual, or in a person in whom longstanding headache changes in character, that alerts the neurosurgeon to the possibility of intracranial pathology. We have access to highly sophisticated radiological imaging that reveals intracranial anatomy and pathology in exquisite detail. However, the temptation to refer patients for costly radiological investigation should be resisted unless the history strongly suggests a serious cause of headaches.

HEADACHE IN ADULTS

Raised intracranial pressure

The common causes of raised ICP are:

- cerebral tumour, intracranial haemorrhage, abscess
- hydrocephalus
- benign intracranial hypertension (pseudotumour cerebri).

Whatever the cause, an enlarging mass reduces intracranial capacity; hence the clinical terms, a 'space-occupying' or 'space-taking' lesion.

The major features of raised ICP are:

- headache
- vomiting
- papilloedema
- drowsiness and mental change.

Headache

Headache is the commonest symptom of intracranial hypertension and has distinctive features. It may waken the patient at an early hour, or occur directly the patient awakens. At first it subsides within an hour or so. It is usually frontal or temporal and bilateral. It is often described as throbbing in nature. The headache is always intensified by any activities which raise ICP, such as exertion, coughing, sneezing, stooping, and straining at stool. It is often worse when

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the patient is lying down and may be relieved when upright. Severity gradually increases as the ICP rises – the recognition of progression is an important point in distinguishing it from headache due to other causes.

Vomiting

Vomiting, caused by increased ICP usually occurs during the night or in the early morning, but may occur at any time of the day, not necessarily coincidental with headache; it is often sudden, violent and without preliminary nausea.

Papilloedema

It is important to note that swelling of the optic discs does not invariably occur in all patients with raised ICP. Because of anatomical variation, it is absent in up to about one-third of patients with significant intracranial hypertension.

The presence of papilloedema confirms raised ICP; absence of papilloedema does not exclude it. The oft heard injunction that lumbar puncture is safe 'because there is no papilloedema' is incorrect and highly dangerous! Lumbar puncture may precipitate catastrophic and irreversible transtentorial brain herniation.

If present, papilloedema may cause blurring of vision. Blurring of vision

may also be due to diplopia, the commonest cause of which is abducens nerve paresis that is usually unilateral but occasionally bilateral.

Drowsiness and mental change

Drowsiness is the most important clinical feature of raised ICP. It may presage rapid neurological deterioration and must never be dismissed as 'sleepiness'.

A variety of mental symptoms may occur with raised ICP including intellectual deterioration, apathy, personal neglect and incontinence. Mental change occurs most commonly with tumours situated in the frontal lobe or corpus callosum; they may be produced by an expanding intracranial mass in any situation which causes increased ICP. Mental symptoms that result from increased ICP occur more often in elderly than in younger patients.

Acute intracranial haemorrhage

It might be thought that of all the causes of headache, aneurysmal subarachnoid haemorrhage would be the least liable to diagnostic error; sadly not so. The 'sentinel haemorrhage' is often unrecognised, leaving the patient at risk of further and possibly catastrophic recurrent bleeding.

Premonitory symptoms

These can be elicited in a minority of patients. Unilateral ptosis, particularly associated with orbital or supra-orbital pain, is highly suggestive of the rapid expansion of an aneurysmal sac and rupture is likely within days.

Headache

This is a constant symptom of subarachnoid haemorrhage. It is usually of such sudden onset and severity that the patient can recall the time it occurred, or his/her activity at the moment. Brief loss of consciousness is frequent shortly after the onset of headache.

Vomiting

Repeated vomiting is common shortly after the haemorrhage.

Meningeal irritation

This is evident by photophobia, neck stiffness and a positive Kernig's sign.

Aneurysmal subarachnoid haemorrhage is a neurosurgical emergency. The diagnosis is confirmed by CT brain scan. Lumbar puncture should not be done as there is evidence in the literature that release of CSF by lumbar puncture may precipitate further haemorrhage.

Head and neck trauma

A common observation is that a blow to the head will cause generalised headache after the immediate pain from the blow has subsided. Why this occurs is not clear. A concussive head injury is apt to be followed by more prolonged headache; when uncomplicated by other factors this rapidly subsides. Injuries sustained playing rugby do not produce chronic headache!

When the injury occurs in the workplace or follows a traffic accident, it is common to find that daily severe headache, preventing work, persists for 3 or more years after a minor blow. Usually the symptoms are indistinguishable from those of tension headache; when any question of compensation arises they are intractable.

Symptomatic cervical spondylosis, even when advanced, is rarely associated with chronic headache. Headache, other than from C2 entrapment, rarely accompanies lower root involvement. Irritation of the greater and lesser occipital nerves causes suboccipital, not generalised, pain unless accompanied by tension headache.

Radiological imaging, particularly MRI scans, frequently shows the presence of cervical abnormalities in asymptomatic individuals, emphasising the dangers of predicating operative decisions on diagnostic tests without

precisely matching those findings with clinical signs and symptoms.

'Whiplash injury', better designated 'neck sprain', is a modern, world-wide epidemic that results most commonly from compensable road traffic accidents. It is correctly defined as a musculoligamentous strain of the cervical spine due to hyperextension or hyperflexion. Patients suffering from an acute traumatic lesion of cervical nerve roots or spinal cord are excluded by definition; so too should be patients with an acute annular disc tear, fracture or dislocation.

Neck pain and stiffness are the common presenting symptoms within hours, or at most a day or two, after the accident. Outlook is good in the great majority of patients, unless contaminated by medico-legal issues. One of the most contentious issues relates to the so-called 'chronic whiplash syndrome' in which generalised headache, day in and day out, is a major component.

Neurological examination in these patients is invariably normal. There is no demonstrable abnormality on plain X-ray, CT and MRI scan, radionuclide studies and clinical electrophysiological studies.

In the debate regarding cause and long-term effect, the protagonists consider that 'as yet undetectable physical injury of the cervical spine' may trigger the initial symptoms of whiplash (pain) but concede that 'psychological factors may contribute to persistence of symptoms in the long term'.

In acute pain, the linkage between tissue damage and pain behaviour is fairly constant. In chronic pain it is non-existent.

HIV infection

HIV infection has reached epidemic proportions and is protean in its clinical presentation. In South Africa it is one of the most important causes of persistent headache.

Opportunistic intracranial infection is a common complication, is difficult to diagnose on clinical grounds alone, and is readily overlooked unless one is alerted to this possible cause of persistent headache of recent onset. When the suspicion arises that HIV infection is present a complaint of headache demands hospitalisation, appropriate investigation and treatment without delay.

HEADACHE IN CHILDREN

Raised intracranial pressure

The common causes of elevated ICP in children are tumours and hydrocephalus. Intracranial tumours are the most common form of solid tumour in children. Subtentorial tumours constitute 60 - 70% of all intracranial space-occupying lesions, the commonest of which are cerebellar astrocytoma and medulloblastoma.

Some of the differences in presentation between adults and children will be highlighted. Headache is less common in children than in adults. Most commonly the headache is transitory, occurs in the morning or may awake the child at night. In children under 10 - 12 years headache may cease temporarily with separation of the cranial sutures, only to recur with further growth of the tumour.

Posterior fossa tumours may cause irritation of the upper cervical posterior nerve roots or tonsillar herniation resulting in pain in the back of the head and neck. Neck stiffness and a persistent torticollis, which may be adopted to avoid diplopia, also point to a posterior fossa tumour.

Vomiting is one of the most constant signs of raised ICP in children. In tumours arising within the fourth ventricle vomiting may be an initial symptom, due to irritation of the vomiting centre in the medulla in close proximity to the tumour. Vomiting as an early symptom has an important localising

significance. Separation of the sutures may provide temporary relief.

Focal signs are frequently present. Truncal and gait ataxia indicate mid-line cerebellar involvement; horizontal gaze nystagmus is frequently observed in tumours around the fourth ventricle. Bulbar dysfunction, cranial nerve palsies and long tract signs arise from brain stem involvement.

Mental disturbances or psychiatric disorders are rarely observed in children. Drowsiness, personality change and behavioural disorder suggest hypothalamic or thalamic involvement. Changes in sleep pattern or in appetite are relatively common in frontal tumours.

IN A NUTSHELL

Headache is a common complaint but in only a minority is it of neurosurgical import.

Headache that has been present to the same degree day in and day out for months is very unlikely to be due to raised ICP.

Persistent headache of recent onset may indicate the presence of intracranial pathology.

The history given by the patient is of the greatest importance in determining whether or not headache is due to serious cause.

Raised ICP causes headache with distinguishing characteristics.

Early morning vomiting is common with raised ICP, but vomiting may occur at any time of the day and is not coincidental with meals.

In children with open sutures headache of raised ICP may cease temporarily, only to recur with further tumour growth.

Headache other than from entrapment of C2 rarely accompanies lower cervical nerve root involvement.