Current Practice

Headache in children

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Introduction

Headache is a common childhood complaint. Population-based studies have shown that 66% of all children between 5 and 15 years of age had at least one episode of headache during a 1-year period and in 22% the headache was severe enough to interfere with daily activities[1].

Categorization of headache

There are three main categories of headache in childhood viz. vascular, psychogenic and organic[2,,3]. By careful history taking and examination one could differentiate these categories to a certain extent (Table 1). Headaches can also be categorized as acute, recurrent or chronic in nature.

Table 1
Categorization of headache in childhood

	Vascular	Psychogenic	Organic
Occurrence	Periodic	Continuous	Periodic or continuous Nocturnal/early morning
Quality	Throbbing	Pressure, aching, tightness	Pressure, throbbing, aching, tightness. Sometimes localized.
Associated symptoms	Gastrointestinal. –anorexia, nausea, vomiting, abdominal pain. Visual-photophobia, blurred vision, scotoma Others-vertigo, syncope Convulsions-rare Fever- rare	Anxiety Depression	May include any symptoms listed under vascular or psychogenic headings. Evidence of infection as in sinusitis.
Family history	Yes, 90% of children	Variable	Variable
Associated signs	Pallor, visual field defects, confusion, amnesia, hemisyndromes, aphasia, ophthalmic sympathoparesis, 3rd nerve palsy (brain stem, basilar)	None	Transient or persistent neurological signs of elevated pressure. Neurological abnormalities found in 95% of tumors in the first 4-6 months of headache.

Many children present with acute headaches. These do not usually require further investigation. The causes of acute headache in 150 unselected children attending an accident and emergency department were: upper respiratory tract infections (57%), migraine without aura (18%), viral meningitis (9%), brain tumour (2.6%), ventriculo-peritoneal shunt dysfunction (2%), intracranial haemorrhage (1.3%), postictal headache (1.3%), post-concussion (1.3%) and undetermined causes (7%)[4].

In chronic headaches children present with at least 3 months' history of constant headache or a headache with a fluctuating intensity, but with no periods of complete recovery. These are rare in children but may be the presenting clinical manifestation of intracranial tumours[5].

In recurrent headaches a history of at least 6 months of recurrent episodes is common. The attacks of headache are clearly separated by periods of complete normality. In a population-based study, migraine (with or without aura) was the most

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common cause of recurrent headache in school children accounting for 77.2% of cases[1]. Other causes were: tension headache in 11.7%, non-specific headache in 9.7% and headache associated with specific illnesses such as asthma, hay fever, allergy and constipation in 1.5%[1].

Evaluation of headache

The following features in the history and examination may help the paediatrician to decide on further investigations[6].

1. Headache - recent onset, increasing severity and frequency, morning/nocturnal occurrence, awakening the patient from deep sleep, constant daily, lack of relieving and triggering factors, lack of family history of migraine, occipital or strictly unilateral location, association with projectile vomiting, made worse by straining, sneezing, coughing, exacerbated or improved by change in position.

2. Vomiting – increased severity and frequency without nausea.

3. Psychological or behavioural signs - drowsiness, irritability, change in eating habits, tantrums, anxiety, mood swings, poor concentration, recent deterioration in school performance.

4. Other suspected features – Neurological abnormalities/decreased visual acuity/seizures associated with headache / focal neurological signs developing during headache / visual problems occurring at peak of headache rather than aura./ deceleration of linear growth /age less than 6 years.

Investigations

Investigations are only required in the minority of children with chronic or recurrent headache. *Lumbar puncture* may be needed at times to rule out entities such as pseudotumor cerebri or if there is some concern about an infectious process[7]. *Electroencephalography* should be reserved for patients with alteration of mental status, loss of consciousness or entities suggestive of the epilepsy syndrome[7,8]. *Computed tomography* (CT) and *magnetic resonance imaging* (MRI) are safe, rapid and accurate methods for evaluating intracranial content if and when an intracranial disorder is suspected[7,9]. For acute evaluation of headaches, CT is performed easily and rules out most intracranial pathology. Abnormalities of the posterior fossa can however be missed on CT scan[7]. MRI is recommended for patients whose history is suggestive of a vascular event, a space-occupying lesion or posterior fossa abnormality[7,10].

Migraine

Migraine is the commonest basis of recurring headache in childhood. It is a neuromuscular syndrome that leads to a generalized vasomotor instability and vulnerability to multiple extraneous factors[11]. It is estimated that around 1 in 10 school children suffer from migraine[1]. The aetiology of migraine is not known but it has a familial tendency. Both migraine without aura and migraine with aura are inherited disorders[12]. The International Headache Society (IHS) classified migraine into 2 major forms: migraine without aura and migraine with aura[2]. Less common forms such as abdominal migraine and cyclical vomiting syndrome were also recognized and defined[2]. Criteria have been established by the IHS for the diagnosis of the various forms of migraine[2]. 75-85% of children suffer from migraine without aura[1]. Both major forms of migraine may be present in the same patient[1]. Boys and girls under the age of 12 years are almost equally affected with migraine but in children older than 12 years migraine is commoner in girls than in boys[1].

Migraine headache is typically recurrent in nature with complete recovery between attacks. Stress and anxiety are the most commonly identified trigger factors[11]. Only 10-15% of patients can identify a certain type of food, such as cheese, chocolates and caffeine-containing drinks, as a trigger factor[11]. Aura symptoms, if present, precede the onset of headache and are commonly visual in nature (blurred vision, tunnel vision, blind spots (scotomata) or zigzag coloured lines in front of the eyes)[11]. Rarely, the aura symptoms are sensory (tingling or numbness), motor (hemiplegia or speech disturbances), autonomic or non-specific[11]. During the attack of migraine the child is pale, quiet and wants to be left alone. He refuses food and drink, feels nauseated and may vomit. Light, noise, smell and exercise may aggravate pain. Dizziness, abdominal pain, visual disturbances and sensory or motor deficits may be associated[11]. Some patients describe unusual visual hallucinations or distortion of images or both called the *Alice in wonderland* syndrome[13].

Complicated migraine

- *Basilar migraine* – clinical features of migraine are dominated by transient symptoms of cerebellar and brainstem dysfunction such as vertigo, ataxia, visual field defects, motor deficits, dysphasia and confusion. These features are attributed to vascular constriction of the basilar artery[11].

- *Confusional migraine*- attacks of migraine triggered by minor head injury. Clinical features include an aura, followed by headache, drowsiness, irritability, agitation, disturbed speech, aggressive behaviour and amnesia[11].

- *Ophthalmoplegic migraine*- migraine attacks complicated by paralysis/paresis of the extraocular muscles, ptosis and pupillary dilatation but with no associated confusion or loss of consciousness[11].

- *Hemiplegic migraine* – attacks of migraine complicated by unilateral weakness, impaired speech or unilateral sensory loss[11].

Differentiation of epilepsy and migraine[8]

This is shown in Table 2.

Table 2
Differentiation of epilepsy and migraine

	Migraine	Epilepsy
Paroxysmal expression	Primary vascular	Neuronal
Principal manifestation	Headache, nausea, vomiting, pallor	Seizures
State of consciousness	Typically preserved	Typically altered
Duration	Portion of hour or more	Seconds or minutes
Aura	Typically visual	Wide range of neurological phenomena
Duration of Aura	Minutes	Seconds
Post-ictal sleep	Occasional	Common
EEG abnormalities	Low incidence	High incidence discharge
Family History	90%	Low
Onset	Characteristically gradual	Sudden
Influenced by emotion	High frequency	Low
Recognizable triggers	Moderate frequency	Low

Treatment of migraine

1. *Non medical treatment* – includes reassurance of child and parents about the benign nature of the disorder and education concerning its natural course of remissions and relapses. Children should be encouraged to identify their own trigger and relieving factors and explore their own strategies of treatment.

2. *Treatment of acute attack*- Children should be allowed to rest and lie down in a quiet environment. Early administration of analgesics is commonly associated with good results. Paracetamol and ibuprofen are the first line of treatment[11]. Domperidone, metoclopramide or prochloperazine may alleviate nausea and vomiting during migraine attacks. Concerns about possible dystonic reactions may preclude the use of metoclopramide & prochloperazine [11]. Ergotamine preparations could be used in children but can cause adverse effects such as prolonged vasoconstriction. Propranalol is not used for acute attacks in children. Sumatriptan, a selective 5 HT agonist, is effective in adults but its efficacy in children is not yet proven[7].

3. *Interval treatment* - is only indicated if acute treatment is unsuccessful and migraine attacks are frequent (more than 2 attacks per month). Propanolol was shown to reduce the frequency of migraine attacks in a double-blind placebo-controlled trial[14]. However, propanolol should not be used in children with a history of wheezing.

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