

CMEARTICLE

Headaches in children

Choon How How¹, MMed, FCFP, Wei Shih Derrick Chan², MRCPCH, CSCN

Joel and his parents came to consult you on Joel's frequent complaints of headaches in the morning. Joel had just started Primary 1 and had been experiencing headaches in the mornings for the past two months since mid-January. He used his thumbs and index fingers to form a large ring surrounding his forehead as he attempted to describe the discomfort that he experiences for 1–2 hours in the mornings. Joel's mother had a deep frown on her face and had been staring intently at you since entering the room.

WHAT IS CHILDHOOD HEADACHE?

A headache is defined as pain located above the orbitomeatal line. Headaches in children can broadly be divided into primary headache syndromes or secondary headaches. The types of primary headaches found in children are almost the same as those found in adults. The most common primary headache syndromes in children are migraine headaches, tension-type headaches and cluster headaches. Secondary headaches can occur due to common causes^(1,2) such as hunger and tiredness, and sinister causes such as life-threatening infections⁽³⁾ and brain tumours.

HOW RELEVANT IS THIS TO MY PRACTICE?

Headaches can be very commonly experienced by children of schoolgoing age.⁽⁴⁻⁶⁾ The types of headaches seen in adults can also be experienced in childhood. Common triggers of secondary headaches include sleep deprivation, congestion of the sinuses from allergic rhinitis, psychosocial stresses (e.g. from school), hunger and tiredness. Cluster headaches are not a common complaint in preschool children and such headaches seldom occur in primary school children. Migraine, while common in teenagers, is less specific in younger children. Younger children usually experience shorter (about 30 mins) bilateral headaches without aura.⁽⁷⁾ Headaches are more common in postpubescent females and in children who have a family history of headaches or migraines.

MANAGEMENT OF CHILDHOOD HEADACHES

Appropriate assessment should include characterisation of the pain experienced by the child, identification of the triggers and relief, and identification of any relevant family history. Appropriate management targets the predisposing, precipitating and perpetuating factors identified. In the case of psychosocial stressors, targeted counselling for trigger avoidance and/or strengthening of coping mechanisms may

be customised for the child. Simple over-the-counter analgesia such as paracetamol and ibuprofen can be prescribed; these medications are usually sufficient. Identification of any red flag symptoms (Table I) will warrant an immediate or urgent referral for medical attention at a hospital. Chronic headaches that have lasted for more than six months and frequent attacks (i.e. more than three attacks per week) with significant interference with school and any other activity may benefit from a referral to a pediatrician for further assessment.

Common causes of innocent headaches are tiredness (check sleeping times, and advise the child to get more rest), short-sightedness (find out when the child's vision was last checked), viral fever (temporal relationship – headache should resolve with successful treatment of the viral infection), sinusitis (address symptoms, e.g. treat with nasal sprays), and psychosocial factors such as school stress/avoidance (initiate appropriate counselling sessions). It is important for primary care providers to recognise that the children and family members might have their own interpretations and concerns regarding the symptoms experienced.⁽⁸⁾ Therefore, in the absence of red flag symptoms (Table I) and as part of holistic management, primary care providers should give a clear explanation of the clinical evaluation and address any further concerns the child or family members may have.

The following two tools may be useful in the diagnosis, and thus the management, of childhood headaches.

1. Headache symptom diary

A headache symptom diary is a diary in which the description of the pain, location, severity (including pain score, for older children), duration, timing, precipitating and relieving factors, and associated features of the headaches are recorded prospectively.⁽⁹⁾ The use of such a diary may reveal a pattern that is typical for a certain type of headache, is less subject to recall bias,⁽¹⁰⁾ and may provide important information that can be easily missed in a busy primary care consult.

¹SingHealth Polyclinics – Sengkang, ²Department of Paediatrics, Neurology Service, KK Women's and Children's Hospital, Singapore

Correspondence: Dr How Choon How, Director, SingHealth Polyclinics – Sengkang, 2 Sengkang Square, Sengkang Community Hub, #01-06, Singapore 545025.
how.choon.how@singhealth.com.sg

Table 1. Red flag symptoms that warrant an immediate or urgent referral to a hospital.

- Headaches that wake a child from sleep or occur early in the morning
- Early morning vomiting without nausea
- Worsening headaches or increased frequency of headaches
- Personality changes
- Complaints of having “the worst headache ever”
- Headaches are associated with fevers and a stiff neck
- Headaches are associated with neurological symptoms
- Headaches are associated with seizures or fainting episodes
- Headaches that follow injuries or trauma

2. Recommended diagnostic evaluations for children with recurrent headaches

In a report by Lewis et al,⁽¹¹⁾ the authors evaluated the evidence surrounding the use of investigations for children with recurrent headaches and developed a series of recommendations. These recommendations can serve as a useful guide for determining when referrals for further investigation should be made and who should be referred for further investigations. The recommendations are listed below:

- There is a lack of consensus concerning the role of diagnostic testing, including routine laboratory testing, cerebral spinal fluid examination, electroencephalography (EEG), and neuroimaging with computed tomography or magnetic resonance imaging, in the evaluation of recurrent headaches in children.
- There is inadequate documentation in the literature to support any recommendation regarding the use of routine laboratory studies or the performance of a routine lumbar puncture in the evaluation of recurrent headaches in children.
- Obtaining neuroimaging studies on a routine basis is not indicated in children with recurrent headaches and a normal neurologic examination.
- Neuroimaging should be considered in children with an abnormal neurologic examination (e.g. focal findings, signs of increased intracranial pressure and significant alteration of consciousness), the coexistence of seizures, or both.
- Neuroimaging should be considered in children who have historical features that suggest the recent onset of severe headache, a change in the type of headache, or if there are associated features that suggest neurologic dysfunction.
- EEG is not recommended in the routine evaluation of a child with recurrent headaches as it is unlikely to provide an aetiology, improve diagnostic yield, or distinguish migraine from other types of headaches.
- Although the risk of future seizures is negligible in children with recurrent headaches and paroxysmal EEG, future investigations for epilepsy should be determined by clinical follow-up.

After speaking to Joel, you identified that the headaches occurred when he was in school, consistently in the second to third hour of school, and that he feels much better during the second half of school, after recess. Your narrowed questioning of his parents uncovered that Joel had been skipping breakfast as he has been having difficulty waking up early in the morning since starting Primary 1. You also surfaced his mother's worry that Joel may have a brain tumour; she had read about this possibility on the Internet. As you pieced the information together, in the presence of Joel's parents, it was obvious that Joel was new to the school regime and was likely hungry. The introduction of regular healthy breakfasts back into his mornings was prescribed.

TAKE HOME MESSAGES

1. Headaches are common in children.
2. The types of primary headaches found in children are almost the same as those found in adults.
3. Common causes of innocent headaches among children are tiredness, short-sightedness, viral fever, sinusitis and psychosocial stressors.
4. Knowledge of red flag symptoms for headaches will help one to exclude sinister causes of headaches in children.
5. Holistic management should include providing the child and his/her family members a clear explanation of the clinical evaluation. Any further concerns that they may have should also be addressed.

ABSTRACT Headaches are common in children. Common primary headaches can also be experienced by children. The most common causes of innocent headaches among children are tiredness, short-sightedness, viral fever, sinusitis and psychosocial stressors. Consultation tasks include an attempt to diagnose the headache, the exclusion of sinister causes, and an effort to address any underlying concerns that the child and his/her family members may have. At a busy primary care consultation, the use of a headache symptom diary may provide important information for the evaluation of children presenting with chronic headaches.

Keywords: childhood headaches, child neurology

REFERENCES

1. van der Wouden JC, van der Pas P, Bruijnzeels MA, Brien JA, van Suijlekom-Smit LW. Headache in children in Dutch general practice. *Cephalalgia* 1999; 19:147.
2. Kernick D, Stapley S, Campbell J, Hamilton W. What happens to new-onset headache in children that present to primary care? A case-cohort study using electronic primary care records. *Cephalalgia* 2009; 29:1311-6.
3. Abu-Arafeh I, Macleod S. Serious neurological disorders in children with chronic headache. *Arch Dis Child* 2005; 90:937-40.
4. Barea LM, Tannhauser M, Rotta NT. An epidemiologic study of headache among children and adolescents of southern Brazil. *Cephalalgia* 1996; 16:545-9.

5. Zwart JA, Dyb G, Holmen TL, Stovner LJ, Sand T. The prevalence of migraine and tension-type headaches among adolescents in Norway. The Nord-Trøndelag Health Study (Head-HUNT-Youth), a large population-based epidemiological study. *Cephalalgia* 2004; 24:373-9.
6. Abu-Arafeh I, Razak S, Sivaraman B, Graham C. Prevalence of headache and migraine in children and adolescents: a systematic review of population-based studies. *Dev Med Child Neurol* 2010; 52:1088-97.
7. Abu-Arafeh I, Callaghan M. Short migraine attacks of less than 2 h duration in children and adolescents. *Cephalalgia* 2004; 24:333-8.
8. Lewis DW, Koch T. Headache evaluation in children and adolescents: when to worry? When to scan? *Pediatr Ann* 2010; 39:399-406.
9. Singh BV, Roach ES. Diagnosis and management of headache in children. *Pediatr Rev* 1998; 19:132-5.
10. van den Brink M, Bandell-Hoekstra EN, Abu-Saad HH. The occurrence of recall bias in pediatric headache: a comparison of questionnaire and diary data. *Headache* 2001; 41:11-20.
11. Lewis DW, Ashwal S, Dahl G, et al. Practice parameter: evaluation of children and adolescents with recurrent headaches: report of the Quality Standards Subcommittee of the American Academy of Neurology and the Practice Committee of the Child Neurology Society. *Neurology* 2002; 59:490-8.

SINGAPORE MEDICAL COUNCIL CATEGORY 3B CME PROGRAMME

(Code SMJ 201403B)

	True	False
1. Since headaches are uncommon in children, any reported headache must be referred for further evaluation.	<input type="checkbox"/>	<input type="checkbox"/>
2. Migraine and cluster headaches are not experienced by children.	<input type="checkbox"/>	<input type="checkbox"/>
3. Recurrent headaches in children need to be regarded as intracranial tumours and infections until these possibilities are excluded.	<input type="checkbox"/>	<input type="checkbox"/>
4. Common causes of secondary headaches in children include hunger and tiredness	<input type="checkbox"/>	<input type="checkbox"/>
5. Children of schoolgoing age can experience headaches secondary to sleep deprivation, sinus congestion (due to allergic rhinitis), and psychosocial stresses from school.	<input type="checkbox"/>	<input type="checkbox"/>
6. Preschool children are more likely to complain of headaches than older children.	<input type="checkbox"/>	<input type="checkbox"/>
7. Cluster headaches are common in primary school children.	<input type="checkbox"/>	<input type="checkbox"/>
8. Migraines are common in teenagers, but are less specific in younger children.	<input type="checkbox"/>	<input type="checkbox"/>
9. Migraines experienced by teenagers are often shorter in duration and without aura.	<input type="checkbox"/>	<input type="checkbox"/>
10. Headaches are more common in females and after puberty.	<input type="checkbox"/>	<input type="checkbox"/>
11. Children who have a family history of headaches and/or migraines are less likely to complain of headaches.	<input type="checkbox"/>	<input type="checkbox"/>
12. Assessment of children with headaches should include characterisation of the pain experienced and identification of the triggers and relief, and any relevant family history.	<input type="checkbox"/>	<input type="checkbox"/>
13. Appropriate management should be targeted at the predisposing, precipitating and perpetuating factors identified.	<input type="checkbox"/>	<input type="checkbox"/>
14. The presence of early morning vomiting without nausea will warrant an immediate or urgent referral for medical attention at a hospital.	<input type="checkbox"/>	<input type="checkbox"/>
15. Worsening or more frequent headaches that are of less than two months duration should be observed, with simple analgesia, for up to six months in the community for any further progression before further investigation.	<input type="checkbox"/>	<input type="checkbox"/>
16. Children with chronic headaches that have persisted for more than six months, and those who have frequent attacks of headaches (more than three attacks per week), with significant interference with their involvement in school, may benefit from a referral to a pediatrician.	<input type="checkbox"/>	<input type="checkbox"/>
17. In holistic management, the primary care provider should give a clear explanation of the clinical evaluation and address any further concerns that the child and his/her family members may have.	<input type="checkbox"/>	<input type="checkbox"/>
18. A headache symptom diary is tedious and does not add value to what can be obtained through clinical questioning during a primary care consult.	<input type="checkbox"/>	<input type="checkbox"/>
19. There is strong international consensus on the role of neuroimaging (with computed tomography or magnetic resonance imaging) in the evaluation of children who have chronic headaches lasting beyond six months and a normal neurologic examination.	<input type="checkbox"/>	<input type="checkbox"/>
20. Neuroimaging should be considered in children who have historical features that suggest recent onset of severe headache, a change in the type of headache, or if there are associated features that suggest neurologic dysfunction.	<input type="checkbox"/>	<input type="checkbox"/>

Doctor's particulars:

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(1) Results will be published in the SMJ May 2014 issue. (2) The MCR numbers of successful candidates will be posted online at the SMJ website by 24 April 2014. (3) Passing mark is 60%. No mark will be deducted for incorrect answers. (4) The SMJ editorial office will submit the list of successful candidates to the Singapore Medical Council. (5) One CME point is awarded for successful candidates.

Deadline for submission: (March 2014 SMJ 3B CME programme): 12 noon, 17 April 2014.