Childhood headache: when to investigate

Dr Amit Bali

Consultant Paediatrician with interest in epilepsy & neurology

Email: abali@nhs.net @amitkbali

Context

- Significant problem
  - Up to 25% of adolescents get a weekly headache

- Significant impact
  - School days missed
  - poor QOL (worse than some LTCs)

Straube, A., Heinen, F., Ebinger, F., & von Kries, R. (2013). Headache in school children: prevalence and risk factors. Deutsches Ärzteblatt International, 110(48), 811
Powers, S. W., Patton, S. R., Hommel, K. A., & Hershey, A. D. (2003). Quality of life in childhood migraines: clinical impact and comparison to other chronic illnesses. Pediatrics, 112(1), e1-e5..

It depends on where they're seen

- ED
  - 1% of attendances
  - 50% viral illness or minor head injury
  - 20% primary headache
  - 20% acute neurological conditions
  - But not brain tumours

- Headache clinic
  - Majority primary headache
  - 0.35% brain tumours

When to worry

- 450 people <16yrs per year diagnosed with brain tumour
- 0.03% of childhood headache, but…
- 33% of symptomatic brain tumours present with headache, but…
- 80% have headache plus another symptom

Wilne SC, Collier J, Kennedy C, Koller K, Grundy R, Walker D. Presentation of childhood CNS tumours: a systematic review and meta-analysis Lancet Oncol. 2007 Aug;8(8):685-95
http://www.cancerresearchuk.org/health-professional/cancer-statistics/childrens-cancers#heading-Zero

Red flags

- New abnormality on neurological examination
- Recent onset, severe headache
- Fixed/unusual location
- Unclassifiable headache
- Early morning headache/waking from sleep
- Abnormal growth/puberty
- Change in personality
- Deterioration in school performance

Beware:

- New persistent/recurrent headache (>4 weeks)
- Confusion/disorientation
- Children aged younger than 4 years or with communication difficulties
- A change in nature of the headache (even if known primary headache)

MRI is imaging modality of choice, in 2-4 weeks

Wilne, S., Koller, K., Collier, J., Kennedy, C., Grundy, R., & Walker, D. (2010). The diagnosis of brain tumours in children: a guideline to assist healthcare professionals in the assessment of children who may have a brain tumour. Archives of disease in childhood, 95(7), 534-539.

headsmart.org.uk

- Late diagnosis in UK
- Median time to diagnosis was 14.4 wks in 2006
- This was double figure in comparable countries
- Median time ↓ to 6.7 wks

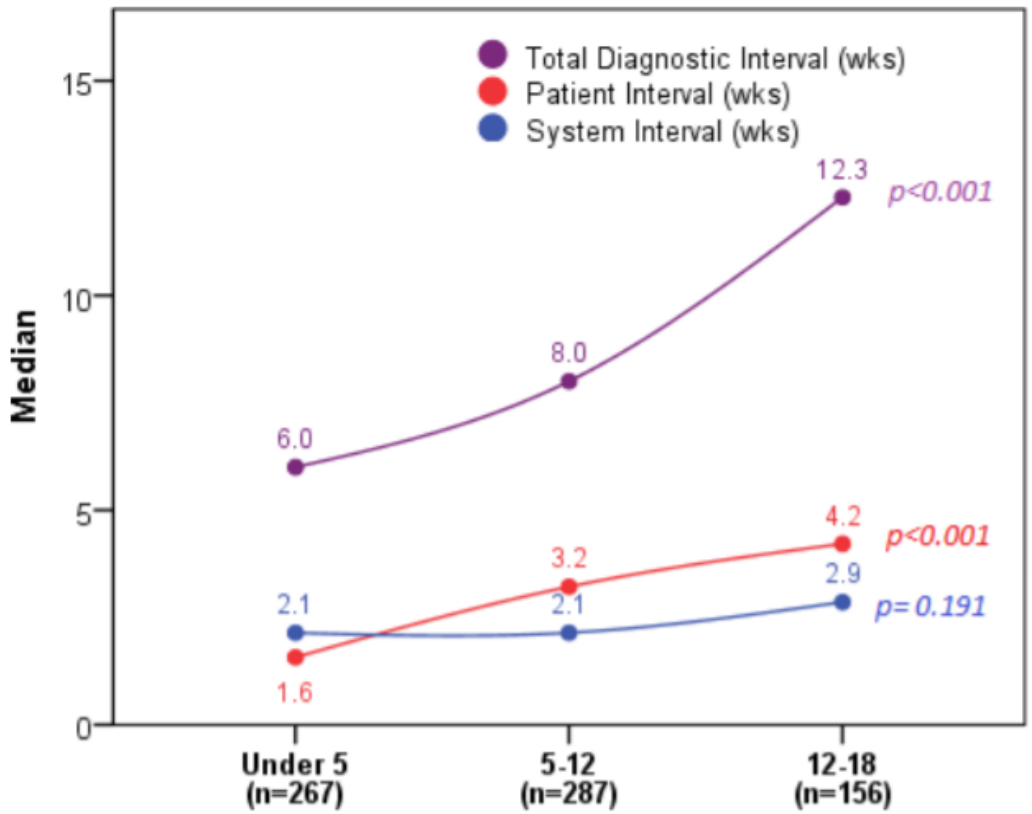

Figure 5 Total diagnostic interval, patient interval and system interval by age group.

Shanmugavadivel, D., Liu, J. F., Murphy, L., Wilne, S., & Walker, D. (2020). Accelerating diagnosis for childhood brain tumours: an analysis of the HeadSmart UK population data. Archives of disease in childhood, 105(4), 355-362.

headsmart.org.uk

HEAD SMART | EARLY DIAGNOSIS OF BRAIN TUMOURS

BABIES
UNDER 5 YEARS

- Persistent/recurrent vomiting
- Balance/co-ordination/ walking problems
- Abnormal eye movements or suspected loss of vision
- Behaviour change, particularly lethargy
- Fits or seizures (not with a fever)
- Abnormal head position such as wry neck, head tilt or stiff neck
- Increasing head circumference (crossing centiles)

If your child has one of these, see your doctor, if two or more, ask for an 'urgent referral'

CHILDREN
5 – 11 YEARS

- Persistent/recurrent headache
- Persistent/recurrent vomiting
- Balance/co-ordination/ walking problems
- Abnormal eye movements
- Blurred or double vision/ loss of vision
- Behaviour change
- Fits or seizures
- Abnormal head position such as wry neck, head tilt or stiff neck

If your child has one of these, see your doctor, if two or more, ask for an 'urgent referral'

TEENS
12 – 18 YEARS

- Persistent/recurrent headache
- Persistent/recurrent vomiting
- Balance/co-ordination/ walking problems
- Abnormal eye movements
- Blurred or double vision/ loss of vision
- Behaviour change
- Fits or seizures
- Delayed or arrested puberty

If you or your child has one of these, see your doctor, if two or more, ask for an 'urgent referral'

Otherwise…

- Is it **primary** or **secondary** (e.g. ENT, dental, etc)?
- If primary, can we classify it?

It's all about the history!

How many headache types?

- Patient may not have considered this
- Not asking now may equal not being able to treat effectively
- Separate histories for each type

Duration & timing?

- Why consulting now?
- How recent in onset?
- How frequent?
- Temporal pattern?
- How long-lasting?

Character?

- Intensity
- Nature and quality
- Site and spread
- Associated symptoms (during attack)

Underlying cause?

- Predisposing factors/triggers? (pre-attack)
- Aggravating factors?
- FH of similar headaches?

Response/ reaction?

- What do they do during headache?
- How much is activity/function limited?
- What medications have been tried? (and how often?)

Between the attacks

- Well vs residual symptoms
- Concerns/anxieties/fears

HEADACHE CLINIC

Dept of Paediatric Neurology

MY HEADACHE DIARY

Month: ____, Year: ____

Date	Day	Headache severity				Associated symptoms					Headache duration		Medications used (Acute)	Relief			Comments
		Severe	Mod	Mild	Clear	N	V	Pt	Pn	Wpa	>4 hr	<4hr		None	Mod	Good	
1																	
2																	
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1. **HIT -6 SCORE** ____
2. **No. of GP visits for headache this month** _____
3. **No. of Hospital visits for headache this month** _____
4. **No. of days unable to work/function due to headache** _____

Severe: 8-10/10, **Moderate:** 5-7/10, **Mild:** 1-4/10
N: nausea, **V:** vomiting, **Pt:** Sensitivity to light
Pn: Sensitivity to sound **WPA:** worsen with physical activity

The following questions try to assess how much the headaches are affecting day-to-day activity. Your answers should be based on the last three months. There are no "right" or "wrong" answers so please put down your best guess.

1.1. How many full school days of school were missed in the last 3 months due to headaches? (Max 92)

1.2. How many partial days of school were missed in the last 3 months due to headaches (do not include full days counted in the first question)? (Max 92)

1.3. How many days in the last 3 months did you function at less than half your ability in school because of a headache (do not include days counted in the first two questions)? (Max 92)

2. How many days were you not able to do things at home (i.e., chores, homework, etc.) due to a headache? (Max 92)

3.1. How many days did you not participate in other activities due to headaches (i.e., play, go out, sports, etc.)? (Max 92)

3.2. How many days did you participate in these activities, but functioned at less than half your ability (do not include days counted in the 5th question)? (Max 92)

Total PedMIDAS Score:

PedMIDAS Score Range	Disability Grade
0 to 10	Little to none
11 to 30	Mild
31 to 50	Moderate
Greater than 50	Severe

Classify

- Headache diary for clarity
- ICHD-3 criteria (easy to use website)
- NICE criteria (over 12s)
- When GP classifies as primary headache, no CNS tumours study of 50000

https://ichd-3.org/.
https://www.nice.org.uk/guidance/cg150
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6136128/pdf/cns-02-447.pdf

Case 1

- 8 year old girl
- 6 months of throbbing, frontal headaches
- 1-2 a month, last up to 24 hours
- Have to stop normal activities
- Also gets nausea, loss of appetite, intolerance to light and noise
- Relieved by sleep, paracetamol sometimes helps

MIGRAINE WITHOUT AURA

Case 2

- 15 year old boy
- 6 months of frontal headaches
- 1-2 a week
- Able to continue normal activities
- Relieved by paracetamol and/or ibuprofen

Tension-Type Headache (frequent)

Case 3

- 13 year old girl
- Diagnosis of migraine, managed with simple analgesia
- 6 months of almost daily headaches
- Able to continue normal activities
- New headaches not relieved by paracetamol, ibuprofen or now even co-codamol

Medication overuse headache

Investigations

- Use judiciously – can cause unwarranted anxiety
- If red flags present:
  - Significant abnormality on MRI in 0.8%
- If red flags + unclassified headache:
  - Significant abnormality in 2.9%

Management

Triggers

- Dietary:
  - Poor evidence for food triggers – in general
  - If identified in individual, then can advise restriction/avoidance
  - Caffeine is only real identified dietary trigger in literature
- Screen time
- Sleep
- Fluid intake
- Stress (especially exams)
- NB: headache diary helps in identifying/conveying triggers

Acute management of migraine

- Optimise triggers
- Rest
- Early action:
  - e.g. avoid aggravating factors
- Analgesia
  - Right dose
    - Paracetamol (up to 20mg/kg)
    - Ibuprofen (up to 10mg/kg)
  - Right route
- Beware medication overuse:
  - ≤14 days of ibuprofen or paracetamol per month
  - ≤9 days of triptans per month and ≤9 days per month of any combination
- Anti-emetic
- Triptans:
  - In combination with simple analgesia
  - The sooner the better
  - Some evidence nasal better tolerated (though unlicensed in younger)

https://n.neurology.org/content/neurology/93/11/487.full.pdf

Ongoing management of migraine

- Prophylaxis:
  - Placebo does very well(!)
  - Propranolol & topiramate both have some evidence, though mixed
  - Short-term trials probably an effective strategy
  - Amitryptiline plus CBT also has some evidence
  - Pizotifen equivalent to placebo in literature – though often used
- Psychological interventions:
  - Help with sleep
  - Identify co-morbidities
  - Manage stress
- Aim to improve function
  - Use PedMIDAS to assess impact
  - Useful RCGP school policy resource

https://headachejournal.onlinelibrary.wiley.com/doi/epdf/10.1111/head.13625
https://n.neurology.org/content/neurology/93/11/487.full.pdf

Summary

- Rarely a brain tumour, but ruling out red flags vital
  (nearly always have a red flag or neurological signs on exam)
- Good history taking will help classify primary headaches
- Lots of useful, freely available tools/resources
- Rarely need beyond simple analgesia in migraine