Pediatric Headaches

Palmer Homecoming 2017
Lora Tanis, DC, DICCP
School Nurse Request
How headaches effect our kids.

- 3 Million bedridden days per month in the US are related to headaches
- 50% of absentees from headaches average at least 2 days per month
- For almost 1 million children with migraines over 150,000 missed school days
- Prevalence of headaches in elementary students range from 31-51% as compared to high school students range of 57-82%
  

- Most frequent and reoccurring headache of childhood is migraine (including infants a few month of age)
  
  Medscape, J Ivan Lopez, MD FAAN FAHS

- 85% of children 13-15 have had headaches
  

- 75% of children suffered headaches in general by age 15yrs
  
• Frequent headaches, as with other chronic pain syndromes, can be psychologically distressing and may have major implications on the life of the growing individual.

• According to Battistutta et al, chronic tension-type headache is comorbid with psychiatric illnesses such as depression and anxiety disorders, internalization syndrome, and attention deficit and anger-control deficit in adolescents. However the relationship between the psychological condition and the headache syndrome is far from simple and has not yet been resolved.

• The clinical implication is to attend to the entire symptomatology of the child.
The Importance of History

- Onset
- Duration
- Headache
- Severity
- Associated symptoms
- Family history
- Lifestyle
- Medication/Chemical history
Headache Triggers/Think Lifestyle

- Stress/anxiety
- Dehydration
- Menstruation
- Oral contraceptives
- Lack of sleep
- Glare/visual problems
- Hunger
- Physical exertion/fatigue

- High altitude
- Epilepsy
- Foods/beverages
- Preservatives: MSG, tyramine, glutamate, caffeine, nitrates
- Drugs
**Historical Red Flags for Headaches**

**Infectious or Systemic Inflammatory Disorder**
- Fever
- Malaise
- Weight loss
- Arthritis
- Newly acquired neurological signs and symptoms
  - Vomiting
  - Balance difficulties
  - Vision changes
  - Behavioral/Cognitive changes
- Age < 6 years

**Mode of Onset (Key to Quick DX)**
- Sudden or abrupt headache that peaks in seconds or minutes requires careful evaluation to rule out subarachnoid hemorrhage, venous sinus thrombosis, arterial dissection, raised intracranial pressure, any deviation in the previous progression of the headache (1-3 wks progressively getting worse)
- Progressively waking from sleep
- HX of neurocutaneous disease (neurofibromatosis), prior malignancy, immune compromised state (sickle cell), shunts
Although the entire neurologic examination is important, a critical element is the Fundoscopic Examination

- Especially in the patient with sub-acute headaches
- Most patients with pseudotumor cerebri will have papilledema as their only neurologic abnormality!
- Don’t hesitate to refer patients for a dilated eye examination to an optometrist or ophthalmologist you trust
Fundoscopic Exam

• Neurological exam can be normal in the early stages of intracranial abnormalities.
• Fundoscopic exam abnormality can assist in early detection.
• Refer to optometrist or ophthalmologist
CHILD WITH RECURRENT HEADACHES

History and examination

Other than the presence of associated neurological signs, there is a lack of good evidence for which children require imaging.

Are neurological signs identified on examination?

CT Brain or MRI Brain

Yes

No

Other features that may warrant imaging include the following red flags:

- Any of the following red flags present:
  - <3 months duration and unresponsive to medications
  - No family history of migraines
  - Associated with confusion, disorientation or vomiting
  - Disturbs sleep or occurs immediately on waking
  - Family or past history of disorders which predispose to CNS lesions and clinical or lab findings suggestive of CNS involvement
  - Age <3 years

One or more red flags present

No red flags present

CT Brain or MRI Brain

Clinical follow up
Indications for neuroimaging

Abnormal neurological exam
Decreased visual acuity
Drop off in growth
Behavioral changes
Frequent awakening
Headache associated with seizure
Increase frequency and severity
Increased pain on awakening and positive Valsalva test (cough, sneeze, strain)
Classifications for Headaches

**Primary**
- Migraine
- Tension-type
- Cluster
- Chronic daily headaches

**Secondary**
- Medication (overuse)
- Infection
- Trauma
- Vascular
- Tumor
Helpful Historical Hints for the Migraine Sufferer

- Prior history of motion sickness, paroxysmal dizziness or vertigo
- Recurrent episodes of incapacitating HA
- Family history of migraines
- Premonitory symptoms (irritability, fatigue, change in facial expression)
- May be related to early colic (mothers with migraine a history have 2.6 greater risk of baby developing colic, suggesting that migraine may manifest as early colic) Gelfand et al

- Cyclic vomiting syndrome
- Paroxysmal torticollis
- Abdominal migraine
- 12% have migraines prior to age 7 years
Migraine Symptom

- Sensitivity to light, noise and odors
- Nausea and vomiting, stomach upset, abdominal pain
- Loss of appetite
- Sensations of being very warm or cold
- Paleness (pallor)
- Fatigue
- Dizziness
- Blurred vision
- Diarrhea (rare)
- Fever (rare)
PedMIDAS

Headache Disability. 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. How many full school days of school were missed in the last 3 months due to headaches? ________

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)?

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)? ________

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

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

6. 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)? ________

Total PedMIDAS Score ________

Headache Frequency ________

Headache Severity ________
Migraine with aura

• Visual symptoms (straight or broken lines, stars, colors, shapes)
• Sensory symptoms (paresthesia)
• Motor symptoms (hemiplegia)
• Speech and language disturbances (dysarthria, aphasia)
• Other cognitive effects (confusion, amnesia)
International Headache Society Diagnostic Criteria:
Migraine with Aura

A. At least 2 attacks fulfilling criteria B-D.
B. One or more of the following fully reversible aura symptoms:
   1. Visual
   2. Sensory
   3. Speech and/or language
   4. Motor
   5. Brainstem
   6. Retinal
C. At least 2 of the following
   1. At least 1 aura symptom spreads gradually over ≥ 5 minutes, and/or 2 or more symptoms occur in succession
   2. Each individual aura symptom lasts 5 to 60 minutes
   3. At least 1 aura symptom is unilateral
   4. The aura is accompanied, or followed within 60 minutes, by a headache
D. Not better accounted for by another ICHD-3 diagnosis, and transient ischemic attack is excluded.

• Migraine in general, but especially migraine with aura (any type [typical aura, hemiplegic migraine, basilar migraine]), seems to be associated with a slightly increased risk of ischemic stroke, but overall, the risk remains very low. Schürks M, Rist PM, Bigal ME, Buring JE, Lipton RB, Kurth T. Migraine and cardiovascular disease: systematic review and meta-analysis. *BMJ.* 2009 Oct 27. 339:b3914
THE KATIE MAY DISCUSSION

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Director, The Octagon
WHAT CAN WE LEARN FROM THIS EXPERIENCE?

■ To be alert to the dissection in progress possibility in patients that present with neck pain and headache of an unusual origin or nature

■ To explore symptoms of neck pain and headache with patients during your assessment. Learn as much as possible about the pain, the presentation, the history of it, look for unique characteristics in terms of the type of pain, intensity, how it arose etc.

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WHAT CAN WE LEARN FROM THIS EXPERIENCE?

■ Make sure your informed consent documents discuss, in language understandable to a patient, the association between chiropractic care and vertebral artery dissection.

■ Make sure your delivery of the informed consent offers the patient the opportunity to go over any questions or concerns they have with you.

■ Make sure your records reflect the informed consent discussion, maintain informed consent documents signed by patients.

■ Update your informed consent as the literature evolves.

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WHAT CAN WE LEARN FROM THIS EXPERIENCE?

- Take this as an opportunity to review the literature on the relationship between cervical spine adjusting and arterial dissection—whether that be a matter of association or causation

- Cassidy, 2008; Kosloff, 2015; Church 2016
WHAT DO I NEED TO DO DIFFERENTLY AS A D.C. IN LIGHT OF THIS CASE

- Patient history—explore headache and neck pain as fully as possible looking for:
  - Pain described as being unlike anything I have ever had before in my life, or, the worst pain I have ever had
  - A family history of aneurysm or dissection
  - Patient or family history of Marfan’s, osteogenesis imperfecta 1, Ehler-Danlos syndrome, fibromuscular degeneration, clotting disorders

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WHAT DO I NEED TO DO DIFFERENTLY AS A D.C. IN LIGHT OF THIS CASE

- Physical examination—in headache and neck pain patients in particular listen for bruits, look for neurological changes with cervical motion—active or passive,

- 5 D’s, 3 N’s and an A
  - Dizziness, diplopia, dysphagia, dysarthria, drop attacks
  - Nausea, numbness, nystagmus
  - Ataxia
WHAT DO I NEED TO DO DIFFERENTLY AS A D.C. IN LIGHT OF THIS CASE

■ If you have any concern run through a quick cranial nerve assessment, DTR and dermatomes check

■ If you think there is a possibility for concern regarding a dissection in progress refer for consultation, where the referral should be made will be directed by the severity of the presentation
WHAT DO I NEED TO DO DIFFERENTLY AS A D.C. IN LIGHT OF THIS CASE

- Review your office procedures regarding handling an emergency situation. Put those procedures in writing and review with your staff on a regular basis. Have emergency contact information at your fingertips,

- Document, document, document
6 year old female presents with chief complaint of migraine headaches

Pediatrician monthly
CT
Neurologist
Optometrist
Allergy tested
Lyme's tested
Mono tested
Family history migraine
Over the counter analgesic and ibuprofens are generally recommended. Anti-emetics for the nausea and vomiting. If analgesic are ineffective then triptans (Frova and Zomig) are used to constrict blood vessels in the brain. They provide quick relief of symptoms.
### Table 1. Pharmacologic Supplements for Chronic Migraine

<table>
<thead>
<tr>
<th>Supplement</th>
<th>Dosage</th>
<th>Uses</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Riboflavin</td>
<td>50-400 mg/d</td>
<td>Prevention</td>
<td>Higher dose found more effective in reducing number of headaches.</td>
</tr>
<tr>
<td>Magnesium</td>
<td>120 mg tid-600 mg/d</td>
<td>Prevention</td>
<td>Safe for pregnant women. Reduced number of days with headache and total pain index.</td>
</tr>
<tr>
<td>Coenzyme Q10 (CoQ10)</td>
<td>300 mg/d</td>
<td>Prevention</td>
<td>Reduced number of days of migraine headache by ≥50%.</td>
</tr>
<tr>
<td>Fish oil (omega-3 fatty acids)</td>
<td>6,000 mg/d</td>
<td>Adjunctive therapy</td>
<td>May represent beneficial adjunctive therapy, but its efficacy as a preventive agent for chronic migraine has not been proven.</td>
</tr>
</tbody>
</table>

Based on references 3,8,10.
For more chronic headaches, use of the same group of pain relievers can do more harm than good and often become less effective over time

- All abortive medications can predispose to “medication overuse headache”
Tension Headaches

- Occurs during stressful times
- Usually involve the occiput and neck regions
- Continuous pain
- No nausea, vomiting or abdominal pain
- Family hx less likely to include migraines
- Depression
International Headache Society Diagnostic Criteria: Tension-Type Headache

A. Minimum of 10 episodes and fulfilling criteria B-D.
B. Headache lasting from 30 minutes to 7 days.
C. Headache has at least 2 of the following characteristics
   1. Bilateral location
   2. Pressing/tightening (non-pulsating) quality
   3. Mild or moderate intensity
   4. Not aggravated by routine physical activity such as walking or climbing stairs
D. Both of the following:
   1. No nausea or vomiting
   2. No more than 1 of photophobia or phonophobia
E. Not better accounted for by another ICHD-3 diagnosis, and transient ischemic attack is excluded.

7 year old male presents with chronic headaches

HA’s started at age 4yrs
Pediatrician
Neurologist
MRI
Allergist
ENT
Optometrist
Cluster Headaches

- This headache usually occurs in groups or clusters. Nasal discharge, congestion, watery/red eyes are present on same side of headache.
- Pain localized to one side of the head
- Awaken from sleep
- Rare in children
Secondary Headaches

- Infection
- Trauma
- Tumor
- Medication (overuse)
Sinus Headache

HX of persistent URI
Greater than 10 days
Nasal discharge
Cough
Possible fever
Occurs in 15% of children with sinusitis
Throbbing HA, worse in the morning or same time each day
Varying head pain with position
May feel pain in the eye area
Meningitis

- Acute onset of diffuse and severe headache
- Neck pain and stiffness
- Alteration in consciousness may be present
- Sudden high fever
- Headache with nausea and vomiting

- **UNDER 2 YEARS**
- High fever
- Constant crying
- Excessive sleepiness or irritability
- Poor feeding
- Bulging fontanel, stiffness body and neck
Head trauma Headache

- Acute
- Last for months
- Vomiting
- Lethargy
- Seizures
- Dizziness
- Sleep disturbances
- Personality changes
- R/O intracranial pressure, Concussion
Preventive medications

- Antihistamines (cyproheptadine)
- Anticonvulsants (gabapentin, topiramate, valproic acid)
- Beta-blockers
- Calcium channel blockers
- Tricyclic antidepressants (amitriptyline and nortriptyline)
- Complementary medications (riboflavin, magnesium, coenzyme Q)
**Intracranial Mass Headache**

- Severe occipital HA
- Pain localized over area of mass
- Positive Valsalva
- Exacerbation of pain with head position change
- Pain worse in the morning
- Awakens child from sleep
- Projectile vomiting without nausea
- Seizures

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**Signs and symptoms of brain Tumors**

Tumors in any part of the brain might raise the pressure inside the skull. Increased pressure can lead to general symptoms such as:

- Nausea
- Headache
- Crossed eyes or blurred vision

[Source: www.chennaibrainandspine.com]
11 year old female presents with persistent headaches post surgical
HA's since 2014
Diagnosed brain tumor
Brain tumor resected
Seizure disorder post surgical
Continued HA's post surgical
**Medication Overuse Headache**

Chronic long term use of analgesics or triptans. (more than 15/10 days per month for 3 months)

Worsening migraine or tension headache that becomes a chronic daily headache

Physical/neuro examination if often normal
# Pediatric Headache: Consult and Referral Guidelines

**Child Neurology Division at Children’s National Medical Center**

<table>
<thead>
<tr>
<th>Provider’s initial evaluation may include:</th>
<th>Provider should instruct family on basic first line treatment for headache including:</th>
<th>Provider may consider testing in patients who:</th>
<th>Provider may consider initiating referral to child neurology when:</th>
<th>Provider may instruct families to bring the following to the evaluation:</th>
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</thead>
<tbody>
<tr>
<td>- Asking about common symptoms seen in primary headaches to classify them</td>
<td>- Lifestyle modification for prevention of headache e.g. hydration - sleep - 3 healthy well balanced meals</td>
<td>* Neuro-imaging if:</td>
<td>* New severe headache of acute onset</td>
<td>Headache calendar for at least one month</td>
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<tr>
<td>- Considering other common causes of headaches e.g. sinusitis - post-traumatic - allergic - ophthalmic problems - depression</td>
<td>- Abortive therapy for headaches: ibuprofen - triptans</td>
<td>- Headache &lt; 6 months not responding to lifestyle measures and first line treatment</td>
<td>* Headache with focal neurological signs or papilledema</td>
<td>Complete list of medications used for treatment of headache</td>
</tr>
<tr>
<td></td>
<td>- Preventive therapy for frequent headaches e.g. amitriptyline - cyproheptadine</td>
<td>- Headache + abnormal neurological exam</td>
<td>* Recurrent headache for 6 months not responding to standard medical treatment</td>
<td>Copies of previous testing</td>
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<td></td>
<td></td>
<td>- Absent family history of headache</td>
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<td></td>
<td>- Headache with prominent confusion or vomiting</td>
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<td>- Headache awakening child from sleep repeatedly</td>
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<td></td>
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<td>- Family history of predisposing CNS disease</td>
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<td></td>
<td></td>
<td>* Specific testing for headache plus other symptoms</td>
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<tr>
<td>Location of Pain</td>
<td>Considerations</td>
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<tr>
<td>One eye</td>
<td>Optic neuritis, glaucoma, or cluster headache</td>
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<td>Ipsilateral jaw or below the ear</td>
<td>Temporomandibular joint dysfunction</td>
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<tr>
<td>Bifrontal or bitemporal</td>
<td>Migraine (young patient), muscle contraction headache</td>
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<tr>
<td>Unilateral frontal/temporal</td>
<td>Migraine (adolescent), cluster headache, chronic paroxysmal hemicrania</td>
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<tr>
<td>Between, just above, or just behind the eyes</td>
<td>Maxillary sinusitis</td>
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<tr>
<td>Vertex pain</td>
<td>Sphenoid sinusitis</td>
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<tr>
<td>Occipital</td>
<td>Tumor, basilar artery migraine, occipital neuralgia, craniocervical junction lesion, such as Chiari malformation</td>
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</tbody>
</table>