Headache: Cause for concern? or just a pain in the neck?

Tyler Gasser, MD
Outline

● Introduction to headache
● Types of headache
  ○ Presentation
  ○ Work-up
  ○ Imaging?
● Uncommon but important etiologies
● Conclusion
● Q & A
● Break
Headaches: Introduction

- **WHO:** 47% of world population have HA
  - 1/2-2/3 of reproductive age
- **UK:** 25M lost school/work days each year for migraine alone
  - Similar number for Tension and Chronic Daily HA
- **Significant morbidity**
  - Impaired quality of life
  - Significant stressor
- **Predispose to other illnesses**
  - Depression 3x more common in those with migraine/severe HA

http://www.who.int/mediacentre/factsheets/fs277/
Headaches: Introduction

- What do patients know?
Headaches: Introduction

- I've self-diagnosed, now I can self-treat, right?
Headaches: Introduction

- Maybe I need something better...
Headaches: Introduction

Let’s consult ICD-10 (cms.gov)

<table>
<thead>
<tr>
<th>ICD-10 CODE</th>
<th>ICD-10 CODE DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>G43.C0</td>
<td>Periodic headache syndromes in child or adult, not intractable</td>
</tr>
<tr>
<td>G43.C1</td>
<td>Periodic headache syndromes in child or adult, intractable</td>
</tr>
<tr>
<td>G44.001</td>
<td>Cluster headache syndrome, unspecified, intractable</td>
</tr>
<tr>
<td>G44.009</td>
<td>Cluster headache syndrome, unspecified, not intractable</td>
</tr>
<tr>
<td>G44.011</td>
<td>Episodic cluster headache, intractable</td>
</tr>
<tr>
<td>G44.019</td>
<td>Episodic cluster headache, not intractable</td>
</tr>
<tr>
<td>G44.021</td>
<td>Chronic cluster headache, intractable</td>
</tr>
<tr>
<td>G44.029</td>
<td>Chronic cluster headache, not intractable</td>
</tr>
<tr>
<td>G44.051</td>
<td>Short lasting unilateral neuralgiform headache with conjunctival injection and tearing (SUNCT), intractable</td>
</tr>
<tr>
<td>G44.059</td>
<td>Short lasting unilateral neuralgiform headache with conjunctival injection and tearing (SUNCT), not intractable</td>
</tr>
<tr>
<td>G44.1</td>
<td>Vascular headache, not elsewhere classified</td>
</tr>
</tbody>
</table>
# Types of Headaches

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<thead>
<tr>
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<tbody>
<tr>
<td>G44.201</td>
<td>Tension-type headache, unspecified, intractable</td>
</tr>
<tr>
<td>G44.209</td>
<td>Tension-type headache, unspecified, not intractable</td>
</tr>
<tr>
<td>G44.211</td>
<td>Episodic tension-type headache, intractable</td>
</tr>
<tr>
<td>G44.219</td>
<td>Episodic tension-type headache, not intractable</td>
</tr>
<tr>
<td>G44.221</td>
<td>Chronic tension-type headache, intractable</td>
</tr>
<tr>
<td>G44.229</td>
<td>Chronic tension-type headache, not intractable</td>
</tr>
<tr>
<td>G44.301</td>
<td>Post-traumatic headache, unspecified, intractable</td>
</tr>
<tr>
<td>G44.309</td>
<td>Post-traumatic headache, unspecified, not intractable</td>
</tr>
<tr>
<td>G44.311</td>
<td>Acute post-traumatic headache, intractable</td>
</tr>
<tr>
<td>G44.319</td>
<td>Acute post-traumatic headache, not intractable</td>
</tr>
<tr>
<td>G44.321</td>
<td>Chronic post-traumatic headache, intractable</td>
</tr>
<tr>
<td>G44.329</td>
<td>Chronic post-traumatic headache, not intractable</td>
</tr>
<tr>
<td>G44.40</td>
<td>Drug-induced headache, not elsewhere classified, not intractable</td>
</tr>
<tr>
<td>G44.41</td>
<td>Drug-induced headache, not elsewhere classified, intractable</td>
</tr>
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<tr>
<td>G44.52</td>
<td>New daily persistent headache (NDPH)</td>
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<tr>
<td>G44.53</td>
<td>Primary thunderclap headache</td>
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<tr>
<td>G44.59</td>
<td>Other complicated headache syndrome</td>
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<tr>
<td>G44.81</td>
<td>Hypnic headache</td>
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<tr>
<td>G44.82</td>
<td>Headache associated with sexual activity</td>
</tr>
<tr>
<td>G44.83</td>
<td>Primary cough headache</td>
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<tr>
<td>G44.84</td>
<td>Primary exertional headache</td>
</tr>
<tr>
<td>G44.85</td>
<td>Primary stabbing headache</td>
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<tr>
<td>G44.89</td>
<td>Other headache syndrome</td>
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<tr>
<td>O29.40</td>
<td>Spinal and epidural anesthesia induced headache during pregnancy, unspecified trimester</td>
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<tr>
<td>O29.41</td>
<td>Spinal and epidural anesthesia induced headache during pregnancy, first trimester</td>
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<tr>
<td>O29.42</td>
<td>Spinal and epidural anesthesia induced headache during pregnancy, second trimester</td>
</tr>
<tr>
<td>O29.43</td>
<td>Spinal and epidural anesthesia induced headache during pregnancy, third trimester</td>
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<tr>
<td>O74.5</td>
<td>Spinal and epidural anesthesia-induced headache during labor and delivery</td>
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<tr>
<td>O89.4</td>
<td>Spinal and epidural anesthesia-induced headache during the puerperium</td>
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<tr>
<td>R51</td>
<td>Headache</td>
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Types of Headache

“The cause or type of most headaches can be determined by procuring a careful history and performing a physical examination while focusing on the warning signals that prompt further diagnostic testing.”

“If atypical features are present or the patient does not respond to conventional therapy, the possibility of a secondary headache disorder should be investigated.”
## Types of Headaches

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<th>Primary</th>
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<td>Tension</td>
<td>Post-traumatic</td>
</tr>
<tr>
<td>Migraine</td>
<td>Other illness</td>
</tr>
<tr>
<td>Cluster</td>
<td>Vascular abnormalities</td>
</tr>
<tr>
<td>Chronic daily</td>
<td>Pressure</td>
</tr>
<tr>
<td>Exertional</td>
<td>“Brain Freeze”</td>
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<td>“Hangover”</td>
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[http://www.mayoclinic.org/symptoms/headache](http://www.mayoclinic.org/symptoms/headache)
Types of Headaches

- Tension Headache
  - Most common
  - Diffuse, pressure/tightness
  - Stress
  - Tension or Migraine?
Types of Headaches

- Migraine Headache
  - Women > Men (Menstrual migraine)
  - One area, throbbing/pulsing
  - Prodrome → Aura → Attack → Postdrome
  - Headache diary
Types of Headaches

- Cluster Headache
  - Occur in patterns or clusters
    - Usually 6-12 weeks, seasonal
    - Attacks lasting minutes to hours, at night
    - Headache free remission
  - Severe, excruciating pain (red hot poker)
  - One side of head, around eye
    - Tearing, runny nose, swelling, redness
Types of Headaches

- Exertional Headache
  - Sudden onset with exertion (cough, exercise, sexual activity)
  - Typically last < 1 hour, can last days
  - Can often be prevented with medication
“Several studies have confirmed the low yield of imaging procedures for individuals presenting with isolated headache”

“In frequent conditions, performing low-yield studies is more likely to result in false-positive results, with the consequent risk of additional and unnecessary procedures.”
Should I order a scan?

The yield of positive studies in patients referred with isolated, nontraumatic headache is approximately 0.4%.

Assuming the cost of a CT scan is $400, and a magnetic resonance imaging (MRI) scan is $900, the cost to detect a lesion is $100,000 with CT and $225,000 with MRI.
Should I order a scan?

“One should not assume, however, that there is no social benefit in negative imaging studies in the setting of headache.”

“The costs of detection or screening in imaging headache are always overstated when the value of negative results is not factored into the analysis”
You still haven’t answered my question...

- ACR Appropriateness Criteria
  - 23 pages of tables, research, references
  - 16 Headache variants
  - CT, CTA, MRI, MRA, +/- contrast
  - Rated 1 through 8
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Should I order a scan?

- Chronic w/o change
- New features
- Neurologic deficit
- Suspected other illness
- Exertional/positional
- Trauma
- Any other atypical/concerning feature
OK, but which scan?

- In general, MRI is the workhorse
  - Contrast is ok for most
- Examples of Exceptions
  - Trauma → CT
  - “Thunderclap” → CT and/or CTA
  - Vascular process → CTA or MRA
- ACR Appropriateness Criteria
- Any doubt? CALL!
Isn’t this guy a radiologist?

- Fun and interesting cases I have seen...
Case 1

- 56 yo male
- “Trauma”
- Lives with brother
- Gardening together
- Argument →
  Brother using rake as weapon
- HEADACHE!
Case 2

- 48 yo male
- “Trauma, possible FB”
- HEADACHE!
Case 3

- 35 yo female
- Headache, URI
Case 3

- 35 yo female

HEADACHE!
Case 3

- Sinusitis
- HEADACHE!
Case 4

- 36 yo female
- 24 weeks pregnant
- New onset HA

- Dural venous sinus thrombosis

- HEADACHE!
Case 4, cont’d

- Dural venous sinus thrombosis
Case 4, cont’d

- Dural venous sinus thrombosis
- Several causative etiologies
  - Pregnancy, oral contraceptives
  - Dehydration
  - Coagulopathy
  - Trauma, infection
  - Malignancy & other hypercoagulable states
- Up to 50% progress to venous infarct
Case 5

- 38 yo female
- Chronic HA
  - Now focal frontal HA
  - New visual changes
Case 5, cont’d

- 2 mm R ICA aneurysm
- **HEADACHE!**
- Went for craniotomy & clipping
Conclusion

- Headache: common, mostly benign problem
- H & P
- Imaging: some cases, but not most
- Imaging: MRI most often, with exceptions
- Not sure?
Questions?

Thank you!