Diagnosis & Management of Headaches for the Non-Neurologist

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Learning Objectives

- Epidemiology of headaches
- Know the approach to the headache patient
- Know how to distinguish primary from secondary headaches
- List the 3 most common types of primary headaches and how to distinguish amongst them
- Name common, evidence-based therapies for common headaches
Scale of the Problem

- At least 10% population suffer from headache
- 1-2% suffer chronic migraine (>15 days/month)
- 4.4% per year consult GP for headache
- 20% of sickness absence from work
99% of women and 93% of men have had headache during their lifetime
25% of women and 8% of men in the United States have had migraine headache
18% of women and 6% of men have had migraine over the previous year
Prevalence is highest between age 25 – 55 years

An estimated 30 million have migraines and up to 10 million have chronic daily headache (>15 headache days per month) in the U.S.
Questions in a Headache History

- Is this your FIRST or WORST headache?
- Severity on a scale of 1 to 10?
- Do you have headaches on a regular basis?
- Is this headache similar to prior headaches?
- When did this headache begin?
- How did it start (gradually, suddenly, other)?
Questions in a Headache History

- Where is your pain?
- Does the pain spread to any other area? If so, where?
- Pain quality? (throbbling, stabbing, dull, pressure from inside, pressure from outside, other)?
- Do you have other medical problems? If so, what?
- Do you take any medicines? If so, what?
- Do any of your family members have headaches?
Physical Examination

- Purpose of the physical examination is to identify causes of secondary headaches.
- Only a minority of headaches are secondary, but this category contains the most life-threatening conditions.
Physical Examination

• Include vital signs, a complete neurologic exam (including fundoscopic exam), cardiovascular, head, and neck exam
The Neurological Exam

- Mental status
- Cranial nerve testing including
  - Pupillary responses
  - Fundoscopic exam
- Motor strength testing
- Deep tendon reflexes
- Sensory testing
- Cerebellar function
- Gait testing
- Signs of meningeal irritation (Kernig's and Brudzinski's signs)
Fundoscopic Examination

Veins engorged, run downhill to retinal surface
Blurry, indistinct margin
Feathery, flame-shaped hemorrhage in nerve fiber layer
Secondary Headaches
Secondary Headaches

- Minority of headaches
- Can be life threatening
- Usually treatable
Secondary Headaches

• Occur as a consequence of an underlying condition
  • Trauma
  • Structural lesion
  • Vascular disorder
  • Infection
Secondary Headaches

- Certain features of the history will make you suspect secondary headache

- Findings on history
  - First or worst headache ever
  - Sudden-onset headache/thunderclap headache
  - Incr. frequency & severity of usual headache
    - Atypical Aura
  - HIV +
  - History of cancer
  - History of head trauma
  - Symptoms of infection
    - Fever, nausea, and vomiting
    - Photophobia
    - Stiff neck
Secondary Headaches

• Findings on history
  • Seizures
  • Signs of raised ICP headache
    • Wakes patient from sleep or disturbs sleep
    • Valsalva or exertion triggered
  • Bland unclassifiable headache in over 50s (take proper history)
• New onset / change in headache
  • > 50 yo
  • HIV
  • Cancer
  • Thrombotic tendency
  • Post-partum
Secondary Headaches

• Physical exam will be abnormal.

• Finding on physical exam include:
  • Unilateral loss of sensation
  • Unilateral weakness
  • Unilateral hyperreflexia
  • Signs of infection
  • Head trauma
  • Papilledema
  • Changes in mental status
  • Ataxia
  • Signs of infection
Secondary Headaches

- Signs of infection
  - Fever
  - Nuchal rigidity
  - + Brudzinski sign
  - + Kernig sign
  - Petechial rash
  - Confusion/delirium
  - CSF abnormalities
Red Flags in Patient History

- Onset after age 40
  - Temporal arteritis
  - Mass lesion

- Increase frequency and severity
  - Subdural hematoma
  - Mass lesion
  - Medication overuse

- Sudden onset of headache
  - Subarachnoid hemorrhage
  - Vascular malformation
  - Mass lesion or hemorrhage into mass lesion
Red Flags in Patient History

- History of head trauma
  - Intracranial hemorrhage
  - Subdural hematoma
  - Epidural hematoma
  - Post-traumatic headache

- History of HIV or cancer
  - Meningitis
  - Brain abscess
  - Metastasis
  - Opportunistic infection
Red Flags in Patient History

- Papilledema
  - Meningitis
  - Mass lesion
  - Idiopathic Intracranial Hypertension

- Signs of systemic illness or infection
  - Meningitis
  - Encephalitis
  - Lyme disease
  - Systemic infection
  - Collagen vascular disease
Primary Headaches
Primary Headaches

• Most common type of headaches
• Have no organic cause
• Usually recurrent
• Normal neurologic exam
• Key to correct diagnosis is the history
Primary Headaches

- Differentiated by:
  - Duration
  - Frequency
  - Location
  - Severity
  - Quality of pain
Primary Headaches

- Migraine
- Tension-type
- Cluster
Migraine Headaches

• Unilateral
• Throbbing pain
• Moderate to severe
• Aggravated by movement
• 4-72 hours
• Nausea +/- vomiting
• Photophobia
Migraine Epidemiology

• Approximately 5% of men and 10-15% of women.
• First attack occurs in majority during adolescence and early 20s.
• Uncommon to occur for first time after age 40 years.
• Remission common after menopause or in fifth and sixth decades.
• 50-70% report a family history
IHS diagnostic Criteria for Migraine without Aura

A. At least 5 attacks fulfilling B-D in the absence of another alternative disorder (e.g. metabolic, vascular, substance abuse)

B. Headache lasts 4-72 h (untreated or unsuccessfully treated)

C. Headache with at least 2 of following:
   - Unilateral
   - Pulsating
   - Moderate or severe intensity (inhibits daily activities)
   - Aggravation by walking stairs or similar activity

D. During headache at least 1 of the following:
   - Nausea and/or vomiting, or
   - Photophobia and phonophobia
IHS Diagnostic Criteria for Migraine with Aura

A. At least 2 attacks fulfilling B
B. At least 3 of the following characteristics:
   - One or more fully reversible aura symptoms indicating focal cerebral, cortical and/or brainstem dysfunction.
   - At least one aura symptom develops gradually over more than 4 minutes, or 2 or more symptoms occur in succession.
   - No aura symptom lasts more than 60 minutes. If more than one aura symptom is present, accepted duration is proportionally increased.
   - Headache follows aura with a free interval of less than 60 minutes (but it may also begin before or simultaneously with aura).
Migraine Aura

• Positive Neurological Symptoms
  • Reversible brain/neurological symptoms
    • Visual flashes, spots, or zig-zag lines
    • Traveling tingling sensations
  • Gradual development over >4 minutes
  • Resolves within 1 hour

• Negative Neurological Symptoms
  • Reversible brain/neurological symptoms
    • Visual blind spots
    • Numbness
    • Speech or word finding problems
    • Trouble thinking
  • Resolves within 1 hour
Migraine – Other Symptoms

- Prodromal symptoms occur in 25-40% in the 24h prior to a headache and include mood changes e.g. elation, food cravings, thirst and excessive yawning (presumably of hypothalamic origin).

- Hypersensitivity of scalp

- Hypersensitivity to smell
Dilemmas in Diagnosing Migraines

- Visual aura
  - Only present in 15-20% of migraineurs
- Head pain can be non-throbbing
  - Only present in ~40% of patients
- Head pain can be bilateral
  - Only present in ~43% of patients
- Sinus pain and pressure, stuffiness, rhinorrhea & weather association is often present
  - Present in up to 97% of migraine attacks
- Neck pain is often present
  - Present in up to 75% of migraine attacks
Factors Associated with an Attack

- Increased incidence on weekends and holidays
- Menstrual pattern
- Reduced frequency in first trimester of pregnancy
- Stress("(often as crisis is resolving)"\n- Fasting or missing a meal
- Certain foods e.g. chocolate, alcohol, cheese
- Extreme changes in weather
Common Misdiagnosis of Migraines

- Cervicogenic Headache (30% migraine → neck pain)
- Chronic Tension Type Headache
- Eye Strain
- Dental
- TMJ dysfunction
- Sinus headache
- Hypertensive Headaches
Unusual Migraine Manifestations

• Migraine with prolonged aura – aura lasts > 60 minutes and < 7 days with normal neuroimaging.

• Status migrainosus – attack lasts > 72 h whether treated or not

• Childhood periodic syndromes – abdominal migraine and cyclical vomiting, benign paroxysmal vertigo of childhood, alternating hemiplegia of childhood (typical age onset < 18 months).

• Familial hemiplegic migraine – migraine with aura including hemiparesis with at least one affected first degree relative.
How Best to Treat Migraines?

• Non-pharmacologic Intervention
  • Correct disrupted or erratic sleep
  • Regular aerobic exercise
  • Regularly scheduled meals
  • Meditation
  • Biofeedback
  • Treat underlying sleep disorder e.g. insomnia or obstructive sleep apnea
  • Treat underlying mood disorder
Acute Drug Therapy--General Caveats

- Match agent to headache intensity
- Prescribe an adequate dose
- Consider the route
- Avoid rebound
# Specific Abortive Agents--Triptans

## Table 3 – Triptan formulations*

<table>
<thead>
<tr>
<th>Triptan</th>
<th>Tablet</th>
<th>Melt</th>
<th>Nasal</th>
<th>Subcutaneous</th>
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</thead>
<tbody>
<tr>
<td>Almotriptan</td>
<td>6.25; 12.5</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Eletriptan</td>
<td>20; 40</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Frovatriptan†</td>
<td>2.5</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Naratriptan†</td>
<td>1; 2.5</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Rizatriptan</td>
<td>5; 10</td>
<td>5; 10</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Sumatriptan</td>
<td>25; 50; 100</td>
<td>–</td>
<td>5; 10 20</td>
<td>4; 6</td>
</tr>
<tr>
<td>Zolmitriptan</td>
<td>2.5; 5</td>
<td>2.5; 5</td>
<td>5</td>
<td>–</td>
</tr>
</tbody>
</table>

*Currently available triptans. Doses are in milligrams.

†Frovatriptan and naratriptan have longer half-lives than other triptans and may be used for menstrual migraine prophylaxis or for migraine recurrence. Other drugs are shorter-acting and are to be used only in acute headache.

From Gladstein J. Top Pain Manage, 2007.10
**Triptans: Anti-migraine action**

- Relief from pain and associated symptoms
  - Cortex
  - Thalamus
  - Trigeminal ganglia
  - 5-HT$_{18}$
  - Vasoconstriction
  - 5-HT$_{10}$
  - Trigeminal Inhibition
  - Decreased pain transmission
# Triptans: Long-acting vs Fast-acting

<table>
<thead>
<tr>
<th>Triptan</th>
<th>Usual Oral Dose (mg)</th>
<th>2 Hour Response (%)</th>
<th>$T_{1/2}$ (hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Long-acting</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frovatriptan</td>
<td>2.5</td>
<td>37-46</td>
<td>26</td>
</tr>
<tr>
<td>Naratriptan</td>
<td>2.5</td>
<td>—</td>
<td>6</td>
</tr>
<tr>
<td><strong>Fast-acting</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Almotriptan</td>
<td>12.5</td>
<td>57-65</td>
<td>3-4</td>
</tr>
<tr>
<td>Eleptriptan</td>
<td>40</td>
<td>54-65</td>
<td>4</td>
</tr>
<tr>
<td>Rizatriptan</td>
<td>10</td>
<td>67-77</td>
<td>2-3</td>
</tr>
<tr>
<td>Sumatriptan</td>
<td>50/100*</td>
<td>50-61</td>
<td>2.5</td>
</tr>
<tr>
<td>Zolmitriptan</td>
<td>2.5</td>
<td>62-65</td>
<td>3</td>
</tr>
</tbody>
</table>

*While the PI states that the recommended dosage for this agent is 50 mg, common use is 100 mg.

Source: Package Inserts
Migraine Recurrence For Triptans

<table>
<thead>
<tr>
<th>Percentage of Patients</th>
<th>Almotriptan¹</th>
<th>Eletriptan²</th>
<th>Frovatriptan²</th>
<th>Naratriptan⁴</th>
<th>Rizatriptan⁵¹</th>
<th>Sumatriptan⁶²</th>
<th>Zolmitriptan⁷</th>
</tr>
</thead>
</table>

¹Frovatriptan 7%-25%
²Rizatriptan 44%-47%

# Triptans: Efficacy

## Headache Relief at 2 hours

<table>
<thead>
<tr>
<th>Sumatriptan</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SC 6 mg</td>
<td>87%</td>
</tr>
<tr>
<td>Nasal 20 mg</td>
<td>64%</td>
</tr>
<tr>
<td>Tablet 50 mg</td>
<td>60%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rizatriptan</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Tablets 10 mg</td>
<td>77%</td>
</tr>
<tr>
<td>MLT 10 mg</td>
<td>66%</td>
</tr>
<tr>
<td>Zolmitriptan Tablets 2.5 mg</td>
<td>65%</td>
</tr>
<tr>
<td>Naratriptan Tablets 2.5 mg</td>
<td>65% (4 hrs)</td>
</tr>
<tr>
<td>Amlotriptan Tablets 12.5 mg</td>
<td>65%</td>
</tr>
</tbody>
</table>

(c) 2007, Steven J. Scrivani, DDS, DMedSc
Contraindications to Triptan Therapy

- Known coronary artery disease
- Uncontrolled hypertension
- Pregnancy
- Hemiplegic or Basilar migraines
- Within 24 hours or prior use
Acute Drug Therapy

- Dihydroergotamine (DHE)
- Simple analgesics and NSAIDs
- Narcotics (e.g. codeine, hydrocodone, oxycodone, butorphanol)
What to Do When Self-Administered Therapy Fails?

- **IV DHE**
  - DHE 0.5 to 1 mg IV every 8 hours up to cumulative maximum of 3 mg
  - Migranal 1 spray in each nostril and may repeat once after 15 minutes

- **Anti-emetics**
  - Prochlorperazine (Compazine) with IV hydration
    - Often effective for aborting intractable headache
    - Adults: 10 mg IV
    - Child: 0.15 mg/kg IV
  - Metoclopramide (Reglan) 10 mg IV
    - Excellent first-line agent for migraine with nausea
  - Droperidol 0.625 to 2.5 mg IV or IM

- **IV divalproex (Depacon®)**
  - Depacon 300-1000 mg in 100 cc NS IV over 30 minutes
What to Do When Self-Administered Therapy Fails?

- Toradol 60 mg IM
- Dexamethasone 4-10 mg IV (or 8-24 mg PO)
  - Hydrocortisone or Methylprednisolone IV could be used as alternative (however Dexamethasone is preferred)
  - May prevent headache recurrence in following 48-72 hours
- Intranasal Lidocaine
  - Position patient supine with head hyperextended with tilt to 30 degrees
  - Lidocaine 4%, 0.5 ml of solution dripped into nostril on affected side over 30 seconds
- Opioids (avoid if possible)
  - Still used in 47% of emergency visits
Prophylactic Therapy—Caveats

- Prescribe a dose suitable for an adequate length of time
- Prescribe concomitant abortive medication
- Avoid analgesic overuse
- Encourage compliance
Prophylactic Therapy—Caveats

- Divalproex sodium (Depakote® ER)
- Amitriptyline (Elavil®)
- Propranolol (Inderal®)
- Other beta blockers
- Other tricyclic antidepressants
- Other anticonvulsants
  - Gabapentin (Neurontin®)
  - Topiramate (Topamax®)
    - Wt loss, paraesthesia common
    - Memory problems, 1% renal calculi
- Other Options: Botox
- Alternative stuff:
  - Feverfew + Riboflavin, Butterburr, Mg, Acupuncture
Prophylactic Therapy—Duration of Treatment?

• What duration of treatment is required to produce carry-over effect (i.e., continued suppression of headache even after the prophylactic therapy is withdrawn)?
  • The best answer is that no one really knows
  • Answer probably varies according to the specific drug and individual neurobiology.

• As a general rule, it is probably best to continue prophylactic therapy for at least another three months beyond the point where that therapy first clearly seems to be effective.
Tension Type Headaches
Tension Headaches

- Band-like, bilateral
- Tightness/pressure/dull ache
- Radiates to neck and shoulders
- Mild to moderate
- Not aggravated by movement
- 30 min to several days
Tension Headaches

- Two to three times more common in women
- Bilateral in 90%
- 10% may also suffer from migraine
- In up to 50% of patients, the headache is daily
- If associated with regular analgesic usage consider diagnosis of headache induced by chronic substance use or exposure
IHS diagnostic Criteria for Episodic Tension-type Headache

A. At least 10 previous headache episodes fulfilling B-D. Less than 180 attacks/yr
B. Headache lasts 30 minutes to 7 days
C. At least 2 of the following: pressing or tightening quality (no-pulsating), mild to moderate intensity (may inhibit but does not prohibit activities), bilateral, no aggravation by walking stairs or similar routine activity
D. Both of the following:
   ᵁ No nausea or vomiting (may have anorexia)
   ᵃ Photophobia and phonophobia are both absent (or one but not the other is present).

Chronic tension headache has same features but headache is present for at least 15 days a month during at least 6 months.
Cluster Headaches

Pain  Autonomic  Agitation
Cluster Headaches

- Severe, unilateral pain, orbitally, supraorbitally and/or temporally, lasting 15-180 minutes, occurring from once every other day to 8 times a day.
- Bouts may last weeks or months (or so-called cluster periods) and then remit for months or years (average 1/year)
- 80-90% are episodic (as above), 10-20% are chronic.
- 85% with episodic cluster headaches are males vs F>M for chronic
Cluster Headache

- Associated features – Horner’s syndrome, nasal blockage and rhinorrhea, conjunctival injection

- Alcohol and vasodilators may trigger pain during an attack
Cluster Headaches—Abortive Treatment

• Oxygen--8 L/min for 10 minutes or 100% by mask) may abort the headache if used early.
• Triptans or ergot alkaloids with metoclopramide, are first line of treatment.
  • Stimulation of 5-HT1 receptors produces a direct vasoconstrictive effect and may abort the attack.
  • Subcutaneous injections can be effective, in large part because of the rapidity of onset. A typical dose is 6 mg subcutaneously, which may be repeated in 24 hours. Nasal spray (20 mg) may also be used.
• Dihydroergotamine
  • Given intravenously (IV) or intramuscularly (IM) and may be self-administered; can also be given intranasally (0.5 mg bilaterally)
  • Dihydroergotamine tends to cause less arterial vasoconstriction than ergotamine tartrate and is more effective when given early in a cluster attack.
Cluster Headaches—Abortive Treatment

- Parenteral opiates may be used if relief is inadequate.
- Intranasal capsaicin has yielded good results in clinical trials.
  - Application of capsaicin to the nasal mucosa led to a clinically significant decrease in the number and severity of cluster headaches; nasal burning was the most common adverse effect.
- Intranasal administration of lidocaine drops (1 mL of a 10% solution placed on a swab in each nostril for 5 minutes) is possibly helpful; however, it requires a specific and, for many patients, difficult technique.
Cluster Headaches—Prophylactic Therapy

• Calcium channel blockers—most effective
  • Verpamil may be the most useful.
  • Others including nimodipine and diltiazem, have also been reported to be effective.

• Lithium
  • Effectively prevents CH (particularly in its more chronic forms)
  • There is a tendency for the effect to wane after dramatic relief is seen in the first week.

• Anticonvulsants
  • A few relatively small controlled studies have found anticonvulsants (e.g., topiramate and divalproex) to be effective in the prophylaxis
  • Mechanism of action remains unclear.
Corticosteroids are extremely effective in terminating a cluster headache cycle and in preventing immediate headache recurrence.

- High-dose prednisone is prescribed for the first few days, followed by a gradual taper.
- Simultaneous use of standard prophylactic agents (eg, verapamil) is recommended.
- Tricyclic antidepressants are NOT very helpful.
- Beta blockers may worsen bradycardia occurring during the cluster attack.
IHS Diagnostic Criteria for Episodic Cluster Headache

A. At least 5 attacks fulfilling B-D
B. Severe unilateral orbital, supra-orbital and/or temporal pain lasting 15-180 minutes untreated.
C. Headache associated with at least one of the following signs:
   - Conjointival injection
   - Lacrimation
   - Nasal congestion
   - Rhinorrhea
   - Forehead and facial sweating
   - Miosis, ptosis, eyelid oedema
D. Frequency once every other day to 8 per day.

Chronic refers to similar attacks but occurring for > 1 year without remission or with remission lasting < 14 days.
Chronic Paroxysmal Hemicrania

- Attacks with same characteristics of pain and associated symptoms and signs as cluster headache but
  - Short lasting (2-45 minutes)
  - More frequent (attack frequency 5 a day or more for more than half of the time)
  - Occur mostly in females
  - Absolute effectiveness of indomethacin (150 mg or less).
Trigeminal Neuralgia
Trigeminal Neuralgia

- Female : Male = 2:1
- Most commonly after age 40 years
- Pain affecting gums, cheek or chin as single or repeated stabs although in less than 5% forehead (CNV division 1) may also be affected
- Important characteristics are pain intensity, brevity and tendency to recur in cycles
- Pain never crosses to opposite side but may be bilateral in 3-5%.
- Majority are idiopathic although compression of trigeminal nerve by blood vessel in brainstem most likely cause (>85%).
  - Tumor or angiomas can be seen in up to 6% and <5% of patients may have MS.
  - MRI is diagnostic test of choice.
Trigeminal Neuralgia—Treatment

• Antiepileptic Medications
  • Carbamazepine
    • 100-mg tablet may produce significant and complete relief within 2 hours; effective dose ranges from 600-1200 mg/d
    • Side effects: vertigo, sedation, ataxia, diplopia
  • Gabapentin
  • Lamotrigine
  • Phenytoin

• Surgical Considerations
  • Referral to a neurosurgeon may be indicated for patients whose conditions prove refractory to medical treatment.
  • Percutaneous radiofrequency ablation of a portion of the trigeminal ganglion is commonly performed.
  • Anesthetic blocks of the trigeminal ganglion
  • Gamma knife radiosurgery
  • Less commonly performed is decompression of the region of trigeminal root entry of impinging vascular structures
Headache Induced by Chronic Substance Use or Exposure

- Occurs after daily doses of substance for > 3 months.

- Headache is chronic (15 days or more per month) and headache disappears within 1 month after withdrawal of substance.

- Ergotamine induced headache – preceded by daily ergotamine ingestion (oral ≥ 2mg, rectal ≥ 1mg).

- Analgesic abuse headache (> 100 tablets a month or aspirin or equivalent of other mild analgesics).

- Caffeine withdrawal headache – patient consumes caffeine daily and > 15 g/month. Occurs within 24 h of last caffeine and is relieved within 1 hour by 100 mg caffeine.
<table>
<thead>
<tr>
<th>High</th>
<th>Moderate to Low</th>
</tr>
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<tbody>
<tr>
<td>Acetaminophen, aspirin, caffeine</td>
<td>Dihydroergotamine mesylate</td>
</tr>
<tr>
<td>Butalbital-containing combinations</td>
<td>Long-acting NSAIDs</td>
</tr>
<tr>
<td>Short-acting opioids</td>
<td>Simple analgesics</td>
</tr>
<tr>
<td></td>
<td>Long-acting opioids</td>
</tr>
<tr>
<td></td>
<td>Short-acting NSAIDs</td>
</tr>
<tr>
<td></td>
<td>Tramadol*</td>
</tr>
<tr>
<td></td>
<td>Triptans</td>
</tr>
</tbody>
</table>

MOH = medication overuse headache

*Not FDA approved for this use.

Adapted from Smith TR et al. Drugs. 2004;64:2503-2514.
Medication Overuse Headache Management

- Bridging program
  - Give agents to get over the hump, the short time period when headaches may increase in frequency following the discontinuation of those agents that have induced the rebound.
    - Low dose of tizanidine with long-acting nonsteroidal anti-inflammatories
    - Short courses of triptans dosed a few times a day for up to 10 days at a time
    - Short course of steroids or long-acting nonsteroidal anti-inflammatories.

- Start prophylactic during the bridging period
  - Tricyclic antidepressants, SSRIs, beta- or calcium-channel blockers, anti-epileptics, or other NSAID medications.

- Give rescue therapy as needed for breakthrough severe attacks.
- Patients also need to be made aware that until they're off the offending medication completely, the preventative agents will not have a chance to fully kick in.
Other Headaches – “Normal” Headaches

- Excessive stimulation of scalp nerves e.g. wearing tight goggles, diving into cold water
- Ice-cream headache – holding very cold ice-cream in mouth or swallowing ‘cold’ ice-cream. Increased frequency in migraineurs
- Hot dog headache – eating cured meats?
- Nitrites
- MSG
- Hangover – secondary to acetaldehyde/acetate
- Fasting
- Exertion
Other ‘Non-Serious’ Headaches

- Post-herpetic neuralgia
- Occipital neuralgia
- Cervicogenic headaches
- TMJ dysfunction
- “Sinusitis”
- Low pressure headache – post lumbar puncture
Case Studies
Case #1

- 17 y.o. white female comes to your office complaining of headaches.
  - She states the headache started 2 wks ago
  - At first she thought it was her usual headache
  - This one, however, was not relieved by Tylenol or Advil
  - “Worst headache of my life”
  - Intensity 9/10
  - Constant over the past 2 weeks
  - Nondescript headache
  - Unable to go to school due to the pain
Case #1

• No significant PMHx but is taking medication for acne
  • Minocycline x 6 m
  • OrthoTricyclen x 1 m
Case # 1

- **PE:** BP: 110/70 HR:72 RR:14 T: 97.8
- **HEENT:** Funduscopic exam shows papilledema; sclerae white; PERRLA; EOMI; OP moist, w/o exudate; tongue protrudes in midline
- **Heart:** RRR w/o murmur
- **Lungs:** BCTA
- **Derm:** no rashes or petechia
- **Neuro:** CN CN III – XII grossly intact by exam; motor 5+/5+ BUE/LE; sensation intact to light touch, pinprick, vibration; DTR’s 2+/4+ BUE/LE
Case # 1

• What is significant in the history and physical?
  • Papilledema
  • Use of OCP

• What is your differential diagnoses at this point?
  • Idiopathic Intracranial Hypertension
  • Mass Lesion
  • Infection † Elevated ICP

• What tests would you order if any?
  • MRI
  • MRV
  • LP
Case # 1

- In this case the patient was sent to E.D. that same day
- She had an MRI and MRV that afternoon that was normal
- She had an lumbar puncture FOLLOWING the MRI
  - Opening pressure was markedly elevated
Case # 1

- Patient was diagnosed with idiopathic intracranial hypertension
- She was taken off both medications
- Her headache resolved
- One week f/u with neurologist revealed resolution of the papilledema
- No further LP’s were needed
Case #2

- 40-year-old man presents with a history of headache since adolescence
- Over the past two years, headaches gradually have increased in frequency and severity; daily head pain for past 6 months
- Functionally incapacitated by headache 7 days per month
Case #2

- Usual headache is of mild intensity, constant, non-pulsatile, non-lateralized, “pressure-like,” and not accompanied by nausea, vomiting, photophobia or phonophobia

- Most severe headaches last 1 to 2 days and involve pain that is pulsatile, lateralized to the left, increased by routine physical activity, and accompanied by nausea, vomiting, photophobia, and phonophobia
Case #2

• Some of these attacks are preceded by “tunnel vision” and “bright flashes” at the periphery of both visual fields
• Severe attacks typically begin with an intensification of the usual headache, with severe tightness, stiffness, pain of the left lateral neck
• Physical examination was notable only for marked tenderness to palpation at the left occipital skull base in the region of the greater occipital nerve
1. What is your diagnosis?
   a. Chronic tension type headache
   b. Mixed tension type and migraine headache
   c. Transformed migraine
   d. Probably primary headache syndrome but needs brain imaging and lumbar puncture to rule out organic disorder
2. This patient’s headaches are likely to respond to:
   a. Divalproex sodium
   b. Oral sumatriptan
   c. Left greater occipital nerve block
   d. All of the above
Case #3

- 46-year-old woman presented for evaluation and management of chronic daily headache
- Significant headaches started at 12 years of age
- Since then, she has had head pain with features characteristic of migraine with and without sensory or visual aura
- Following surgery (hysterectomy/oophorectomy) 10 years ago, her headaches became more of a problem; she has had daily headaches for 5 years
- She is functionally incapacitated by headache almost every day
Case #3

• Has been to the emergency department for headache 7 times within the last month, and called her physician 1 week prior to her initial appointment to request acute headache medication

• Past medical history is otherwise notable for borderline personality disorder, chronic anxiety/depression, and 2 hospitalizations for suicidal ideation (no attempt)
Case #3

1. The most likely diagnosis for this patient is
   a. Chronic tension type headache
   b. Idiopathic intracranial hypertension
   c. Transformed migraine with analgesic overuse
   d. Brain tumor
Case #4

- 31-year-old women with a long-standing history of episodic migraine without aura comes to see her physician for urgent evaluation of a new problem: while at work, she abruptly developed an “out-of-body” sensation and a metallic taste in her mouth.
- According to onlookers, she stared blankly and straight ahead for 45 seconds, failed to respond to questions, and swallowed repeatedly; she did not lose postural tone or exhibit tonic-clonic activity.
Case #4

• After this event, the patient appeared flustered and was confused for a few minutes
• Reviewing her past, she claimed that she may have had this experience about 12 times over the previous 13 years, though the episodes were less intense
• She reported no recent change in the character or frequency of her headache syndrome
Case #4

- The patient had about 15 headache days out of the previous 30 days; 6 of these were functionally incapacitating headaches, despite aggressive treatment with oral sumatriptan, subcutaneous sumatriptan, and oral oxycodone/aspirin.
- Her medical history is otherwise unremarkable.
- Family history: her maternal grandmother and mother have had migraine; a maternal aunt and cousin have epilepsy.
1. Her episode at work last week likely represented:
   a. Complicated migraine
   b. Panic attack
   c. Complex partial seizure
   d. A transient ischemic attack (TIA)
2. What would be your next step in management of this patient?
   a. Lumbar Puncture
   b. EEG
   c. MRI Brain
   d. Reassurance
Case #5

- 45-year-old man presents for evaluation and management of chronic daily headaches
- Experienced his first significant headaches at age 36; these headaches resolved spontaneously after 2 months but then recurred 1 year later and have been daily since then
Case #5

- The patient experiences 2 to 4 headaches each day, typically lasting 30 to 45 minutes and involving pain that is often prominent in the right eye, extending to the temple.
- Headaches are associated with tearing from the right eye as well as nasal drainage.
Case # 5

- Treatment with indomethacin, propranolol, amitriptyline, and naproxen sodium have been ineffective for headache.
- Medical history: unremarkable
1. The most likely diagnosis for this patient is
   a. Nasopharyngeal carcinoma
   b. Chronic cluster
   c. Chronic migraine
   d. Chronic paroxysmal hemicrania
Questions ?
Reference Slides
Acute Headache Management

Adult with Headache

Emergency symptoms?

Refer to appropriate on-call hospital team

- Thunderclap onset
- Accelerated/Malignant hypertension
- Acute onset with papilloedema
- Acute onset with focal neurological signs
- Head trauma with raised ICP headache (see red flags)
- Photophobia + nuchal rigidity + fever +/- rash
- Reduced consciousness
- Acute red eye: ?acute angle closure glaucoma
- **New** onset headache in:
  - 3rd trimester pregnancy/early postpartum
  - Significant head injury
    (esp. elderly/ alcoholics / on anticoagulants)
• Symptoms and signs:-
  • jaw/tongue claudication, amaurosis, scalp tenderness
  • temporal artery: prominent, tender, diminished pulse
  • other cranial nerve palsies, limb claudication
  • PMR
• Many headaches respond to high dose steroids, so do not use response as the sole diagnostic factor
• ESR can be normal in 10% (check CRP as well)
Adult with Headache

**Emergency symptoms?**
- Yes: Refer to appropriate on-call hospital team
- No: Go to next question

**Giant cell arteritis?**
- Yes: Check ESR, CRP, FBC, LFT, Prednisolone 60mg o.d. immediately, Urine and CXR
- No: Consider urgent referral to rheumatology, ophthalmology or neurology (consideration of temporal artery biopsy)

**Red flags?**
- Yes: Refer

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**Raised intracranial pressure:**
- Wakes from sleep (but not migraine or cluster)
- Precipitated by Valsalva manoeuvres (cough, straining at stool)
- Papilloedema
- Other symptoms of raised ICP headache include:
  - Present upon waking and easing once up (MOH can cause this phenomenon)
  - Whooshing pulse-synchronous tinnitus
  - Episodes of transient visual loss when changing posture (e.g. upon standing)
  - Vomiting (in context as migraine causes this!)

**New onset seizures**

**Persistent new or progressive neurological deficit**

**Increasing in severity and frequency despite appropriate treatment**

**Undifferentiated headache of recent origin and present for >8 weeks**

**Triggered by exertion**

**New onset headache (< 6 months) in:**
- >50 years old (consider giant cell arteritis); interrogate patient about previous ‘normal headaches’ as it might not be ‘new’
- Immunosuppressed / HIV / relevant history of cancer
Adult with Headache

- **Emergency symptoms?**
  - Yes: Refer to appropriate on-call hospital team
  - No

- **Giant cell arteritis?**
  - Yes: Check ESR, CRP, FBC, LFT. Prednisolone 60mg o.d. immediately. Urine and CXR. Consider urgent referral to rheumatology, ophthalmology or neurology (consideration of temporal artery biopsy)
  - No

- **Red flags?**
  - Yes: Refer
  - No

- **Migraine or tension headache?**

Primary or Secondary?
Adult with Headache

Emergency symptoms?  Yes → Refer to appropriate on-call hospital team

Giant cell arteritis?  Yes → Check ESR, CRP, FBC, LFT Prednisolone 60mg o.d. immediately Urine and CXR

Red flags?  Yes → Refer

Migraine or tension headache?  Yes → Try acute treatments

Secondary causes?  Yes → Try acute treatments

Cluster headache?  No → Refer

Prescribe acute treatment (< 10 times/month)

Suspect:-  Yes → Stop offending medication (for 2 months if MOH)

Still troublesome?  Yes → Consider urgent referral to rheumatology, ophthalmology or neurology (consideration of temporal artery biopsy)

Still troublesome?  No → No further treatment

Can you diagnose migraine or tension headache?  Yes → Refer

Prescribe acute treatment (< 10 times/month)

Secondary causes?  Yes → Try acute treatments

Still troublesome?  Yes → No further treatment

Migraine prophylaxis

a) Propranolol SR 80mg o.d. increase gradually to 240mg o.d. or maximum tolerated below that
b) If ineffective or contraind: Amitriptyline 10mg o.n. increasing by 10mg/week to ≤75mg
c) Don’t bother with pizotifen (weight gain, sedation, little benefit)
d) If above ineffective/not tolerated, try Topiramate 25mg o.d. increasing by 25mg every 2-weeks aiming for a target of 50mg b.d. NOTE: teratogenic and potential interaction with combined oral contraceptive

Tension Type Headache prophylaxis

Amitriptyline 10mg o.n. increasing by 10mg a week up to 75mg or maximum tolerated below that