MIGRAINE UPDATE
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Objectives & Disclosures

• Learn techniques used to diagnose headaches.
• Become familiar with medications used for headache treatment.

• Disclosure: I am a paid speaker for Amgen/Novardis.
Common Causes of Headache

• Primary headache
  • Pain for the sake of pain.
    • Migraine
    • Tension
    • Ice-pick (brain freeze)
    • Cluster

• Secondary headache
  • Pain due to another cause:
    • Infection (flu)
    • Head injury (concussion)
    • Bleeding in the brain or stroke
    • Tumor

Headache History

• Where is your headache (pain) located?
• Does the pain spread?
• How and when did it start?
• What is the pain like? Is it throbbing, stabbing, shooting, pressure, aching?
• When you have a headache, do you have sensitivity to light or sound? Are you nauseated? Do you have fever or chills?
• When did you start having headaches?
• How often do you have headaches?
• How long do your headaches usually last?
• What makes your headache better?
• What have you tried for your headaches?
• What makes your headaches worse?
  • Movement
  • Light
  • Sound
  • Bending over
• What triggers your headaches?
  • Weather changes
  • Stress
  • Foods
  • Odors
  • Lack of sleep
• How severe is your pain, on a scale from 0-10?
Headache Examination

- Head and neck
  - Pupils, fundoscopic exam, eye movements
  - Palpate the area of pain
  - Cranial nerves
  - Carotid auscultation (for bruits)
- Neurological exam
  - Strength, reflexes, coordination, sensation

International Headache Society (IHS) Criteria for primary Headaches

- Migraine without aura (Common)
  - 5 attacks
  - duration: 4-72 hours
  - At least 2:
    - unilateral, pulsating, moderate or severe, aggravation by activity
  - At least 1:
    - Nausea and/or vomiting
    - Photophobia and phonophobia
  - Symptoms are not suggestive of secondary headache.
International Headache Society (IHS) Criteria for primary Headaches

- Migraine with aura
  - At least 2 attacks
  - One or more fully reversible aura symptom
  - At least 3 of the following:
    - develops gradually over 5 minutes or more
    - 2 or more aura symptoms occur in succession
    - Each individual aura symptom lasts 5-16 minutes
    - At least one aura symptom is unilateral
    - At least one aura symptom is positive
    - The aura is accompanied or followed within 60 minutes by a headache
  - Symptoms are not accounted by another headache disorder.
Migraine Aura vs. TIA

AURA

- Positive visual symptoms
- gradual onset/evolution
- sequential progression
- repetitive attacks of identical nature
- flurry of attacks mid-life
- duration: 20 minutes
- headache follows 50%

TIA

- Visual loss
- abrupt
- simultaneous
- duration <15 minutes
- headache uncommon
Migraine Aura

- At least 5 attacks
- Severe, unilateral orbital, supraorbital, and/or temporal pain lasting 15-180 minutes.
- Associated with at least one ipsilateral sign:
  - Conjunctival injection, lacrimation, nasal congestion, rhinorrhea, forehead and facial sweating, meiosis, ptosis, eyelid edema
- Frequency: 1 every-other-day to 8 per day
- No suggestion of organic headache.
- May be precipitated by alcohol

IHS Cluster headaches

- At least 5 attacks
- Severe, unilateral orbital, supraorbital, and/or temporal pain lasting 15-180 minutes.
- Associated with at least one ipsilateral sign:
  - Conjunctival injection, lacrimation, nasal congestion, rhinorrhea, forehead and facial sweating, meiosis, ptosis, eyelid edema
- Frequency: 1 every-other-day to 8 per day
- No suggestion of organic headache.
- May be precipitated by alcohol
Diagnostic testing: neuroimaging and lumbar puncture

- In patients with recurrent migraine, neither CT nor MRI is warranted except in cases where:
  - recent substantial change in headache pattern
  - history of seizures
  - focal neurological symptoms or signs
- Lumbar puncture is indicated in the following circumstances:
  - the first unusually severe headache
  - “thunderclap” headache with negative CT head
  - subacute progressive headache
  - headache associated with fever, confusion, possible meningitis, or seizures
  - high or low spinal pressure suspected (even if papilledema is absent)

Treatment options: Acute pain

- First-line agents
  - Triptans
    - Sumatriptan, Rizatriptan, Almotriptan, Naratriptan, Zolmatriptan, Eletriptan, Frovatriptan
  - Dihydroergotamine (DHE)
  - Combination analgesics (ASA/caffeine/acetaminophen, and others)
- NSAIDS
  - Naproxen, Ibuprofen
Triptans - Serotonin 5HT 1b/1d receptor agonists

- Indicated for use in migraine headache.
- Use limited to about 6-9 per month.
- Expensive (except for generic forms)
- Indicated for migraine but may have benefit for other headache types
- Contraindicated in uncontrolled hypertension, heart disease, stroke.
  - Sumatriptan: 25, 50, 100 mg PO, 5&20 mg nasal, and 6 mg SQ
  - Rizatriptan 5, 10 mg PO + MLT.
  - Naratriptan 1, 2.5 mg PO
  - Zolmitriptan 2.5, 5 mg PO + ZMT + Nasal.
  - Eletriptan (Relpax) 20, 40 mg PO
  - Almotriptan (Axert) 6.25, 12.5 mg PO
  - Frovatriptan (Frova) 1, 2 mg PO

Ergotamines

- Historically useful in migraine headache.
- Less selective receptor action.
- More side-effects (nausea)
- Same contra-indications as for triptans.
- DHE-45 (dihydroergotamine) still used (intra-nasal) for migraine.
Combination analgesics

- Many over-the-counter (OTC) and prescription (Rx) preparations available.
- Effective for mild-moderate migraine.
- Inexpensive.
- Tell your doctor if you are taking any of these.

- Risk of overuse.
  - Recommend limiting use to less than 10 doses per month.
  - If using more than once per week, recommend adding on a preventive.

NSAIDs

- Over-the-counter and Rx available, multiple brands and generics.
- Ketorolac very effective but usually administered as a shot in the emergency room or clinic.
- Diclofenac 50 mg powder FDA approved for migraine
- OTC and Rx (naproxen/ibuprofen) effective for mild-moderate migraine and used in combination with triptans for moderate to severe migraines.
## Adjunctive agents

- Anti-nausea medications
  - Promethazine
  - Ondansetron
  - Metoclopramide
- Anti-cholinergics (promote sleep and decrease side-effects of other medications)
  - Diphenhydramine
  - Benztropine
- Anti-anxiety medications
  - Diazepam
  - Narcotics (high risk of overuse) – avoid

## Treatment Options: prevention

### First-line agents
- Amitriptyline
- Propranolol
- Valproic acid
- Topiramate
- Verapamil
- Candesartan

### Chronic migraine
- Onobotulinumtoxin A

### New meds:
- CGRP antagonists

### Herbal therapies
- Magnesium 400 mg BID
- Riboflavin 400 mg daily (AM)
- CoEnzyme Q10 (100 TID)
- Butterbur
- Feverfew

### Other:
- Sphenocath
- Occipital nerve block
- Capsaicin nasal spray
- Cefaly device
- Gammacore device
### Preventive agents:  
**Decrease frequency/severity of migraine**

- **Tricyclic antidepressants**
  - Amitriptyline
  - Nortriptyline
  - Aim for 50% reduction (it’s no cure).
  - Start with very small dose (10 mg) and increase slowly.
  - Common side-effects are drowsiness, dry mouth.

- **“heart or blood pressure” medications**
  - Beta Blockers
    - Use centrally acting agents. Propranolol and atenolol are preferred.
    - Low dose
    - Can make patients light-headed, depressed.
  - Calcium Channel Blockers
    - Verapamil – used less than other agents listed here.
  - Angiotensin Receptor Blockers
    - Candesartan – found recently to be effective for migraine prevention.
Preventive agents:  ------------------
Decrease frequency/severity of migraine

• Anti-seizure medications
  • Valproate
    • Not for use in women who may get pregnant.
    • Can cause weight gain, tremors, hair loss, liver enzyme elevations, decreased platelets.
  • Topiramate
    • Not for use in women who may get pregnant.
    • Can cause weight loss, tingling in the feet and hands, kidney stones.

Preventive agents

• Botox
  • Indicated for treatment of chronic migraine headache (CM).
    • CM = headaches more than 15 days per month lasting >4 hours per day
      More than 8 of these must be migraine headaches
      Expensive (@$2000 per treatment).
      Covered by insurance.
      Prior-authorization recommended.

Benefits:  when effective, decreases frequency and/or severity of migraine 50%.
Risks:  Expensive and may not work
    Pain at injection sites
    Ptosis (droopy eye)
    Nausea
    Dry mouth
### Botox injection sites

- **Monoclonal antibodies** target and block the CGRP system (calcitonin gene related peptide).
- **Erenumab** targets the receptor.
- **F and G** target the CGRP molecule.
- All given by self-administered sub-Q doses
- In order of FDA approval:
  - Erenumab aoe – monthly
  - Fremanezumab vfrm – monthly after initial loading dose
  - Galcanezumab gnlm – monthly or every 3 months.
- Letters after generic name refer to the original molecule (biologic) to differentiate from generic products which may come later.
- Prescribed through specialty or home pharmacy after prior authorization approval.

### CGRP antagonists
Conclusion:

- Migraine diagnosis is made clinically.
- Start keeping a headache diary.
- There is no test to confirm a diagnosis of migraine headache.
- Lots of migraine and headache treatments are available.