Management of Migraine Headaches

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Objectives

- Clinical characteristics of migraine headache.
- Management of acute migraine headache in the outpatient and ED setting.
- Inpatient management of status migrainosus.
- Principles of migraine prophylactic therapy.
- Review medication overuse headache and its management.
Migraine Headache

- One of the most common reasons for ED visits
- Affects 12% of the population
  - 1% have chronic migraine
- Most “sinus headaches” are migraine headaches
Pathophysiology

- Trigeminal neurovascular system
- Pro-inflammatory molecules
  - Calcitonin gene related peptide (CGRP)
  - Nitric oxide
- Cortical spreading depression
- No change in vessel caliber
- Syndrome of hypersensitivity
Diagnostic Criteria

• At least five attacks
• Headache attacks lasting 4-72 hours
• At least two of
  • unilateral location
  • pulsating quality
  • moderate or severe pain intensity
  • aggravation by or causing avoidance of routine physical activity (e.g. walking or climbing stairs)
• At least one of
  • nausea and/or vomiting
  • photophobia and phonophobia
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Acute Treatment Medications

- NSAIDs
- Triptans
- Combination therapy
  - sumatriptan+naproxen
- DHE
- Anti-emetics
NSAIDs

- ASA
- Acetaminophen
- Ibuprofen
- Diclofenac potassium
- Indomethacin
- Naproxen sodium
  - Long half life (delayed onset)
  - Lowest cardiovascular risk
Triptans

- Sumatriptan
- Rizatriptan
- Frovatriptan
- Zolmitriptan
- Almotriptan
- Naratriptan
- Eletriptan
Triptans

• Tablets
  • Combined with Naproxen sodium
  • Frovatriptan and eletriptan: longest half life
• Orally disintegrating formulations
  • Rizatriptan, zolmitriptan
• Sumatripan SC injection
  • Lowest NNT
  • Moderate to severe nausea
• Nasal spray
  • Nausea
  • Faster onset
• Transdermal sumatriptan
Dopamine Receptor Antagonists

- Metoclopramide
- Prochlorperazine
- Chlorpromazine
- Antiemetic
- Anticholinergic, Antihistamine
  - Akathisia
- Consider pretreatment with Diphenhydramine
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Status Migrainosus

- Migraine headache lasting >72 hours
  - aura status
- IV hydration
- Magnesium sulfate
  - NMDA antagonist
  - Cortical spreading depression
- IV Ketorolac
  - Similar efficacy to meperidine
Dihydroergotamine

- IM/IV injection
- Nasal spray
- 0.5-1mg q 8 hours
  - Max 3 mg/day
- Co-administer with antiemetics
- Contraindications
  - Vascular disease, severe HTN
  - Hemiplegic aura, prolonged aura
  - Thunderclap headache*
Status Migrainosus

- IV Sodium Valproate
- IV Levetiracetam
- IV corticosteroids
- Prolonged aura
  - IV furosemide
  - IV Magnesium sulfate
Special Situations

- Vascular disease
  - Naproxen sodium
  - Dopamine antagonists

- Pregnancy
  - Acetaminophen (+codeine)
  - Metoclopramide
  - Promethazine
Opioids

• Less effective than non-opioid therapies
• Associated with longer LOS
• High incidence of medication overuse and abuse
• Should be reserved for patients with contraindications to other medications
• Pregnancy

Butalbital

• Inferior to triptan-NSAID combination

Brief Communication

Opioids Should Not Be Used in Migraine

Stewart J. Tepper, MD

Opioids should not be used for the treatment of migraine. This brief review explores why not. Alternative acute and preventive agents should always be explored.

Opioids do not work well clinically in migraine. No randomized controlled study shows pain-free results with opioids in the treatment of migraine. Saper and colleagues’ 5-year study showed minimal effectiveness, with many contract violations, interfering with the therapeutic alliance.

The physiologic consequences of opioid use are adverse, occur quickly, and can be permanent. Decreased gray matter, release of calcitonin gene-related peptide, dynorphin, and pro-inflammatory peptides, and activation of excitatory glutamate receptors are all associated with opioid exposure. Opioids are pro-nociceptive, prevent reversal of migraine central sensitization, and interfere with triptan effectiveness.

Opioids precipitate bad clinical outcomes, especially transformation to daily headache. They cause disease progression, comorbidity, and excessive health care consumption. Use of opioids in migraine is pennywise and pound foolish.

Key words: opioid, migraine, narcotic, acute treatment, chronic migraine, nociception

(Headache 2012;52;S1:30-34)
Other Treatment Strategies

- Greater occipital nerve block
  - Supraorbital, supratrochlear
- Single pulse transcranial magnetic stimulation
- Non invasive vagal nerve stimulation
- Sphenopalatine ganglion stimulation
Acute Therapy

- Treatment should be initiated early in the attack
- Treatment should be stratified based on severity of attacks and other associated symptoms
  - Nausea
  - Rapid vs. gradual onset
  - Recurrence
- Avoid medication overuse
  - Opiates
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Prophylactic Therapy

• More than 4 attacks/month
  • >8 HA days/month
• Recurring disabling headaches
• Prolonged aura
  • Hemiplegic migraine
  • Brainstem aura
• Limited acute therapy options
• Reduced frequency, intensity, duration
  • Adequate trial important
Antidepressants

- **Tricyclics**
  - Amitriptyline: proven efficacy data
  - Nortriptyline, Protriptyline: less sedating
  - Muscarinic adverse effects

- **SNRI**
  - Venlafaxine

- **SSRI**
  - Conflicting evidence for efficacy
Antihypertensive Medications

- Propranolol
  - Metoprolol
  - Nadolol
  - Atenolol
- Lisinopril, Candesartan
- Verapamil
- Clonidine, Guanfacine
Antiepileptic Drugs

- **Valproate/Divalproex**
  - ER formulation
  - Teratogenicity

- **Topiramate**
  - Cleft deformity
  - Renal calculi

- **Gabapentin**
  - 1800-2400 mg/d

- **Lamotrigine**
Other Prophylactic Drugs

- Cyproheptadine
- Histamine SC
- Aspirin and NSAIDs
- Triptans
  - Frovatriptan: Menstrual migraine
Complementary Treatments

- Butterbur/Petasites
- Riboflavin
- Magnesium
- Feverfew
- CoQ -10
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Medication Overuse Headache

- >15 headache days per month
- Regular overuse of an acute/symptomatic headache treatment >3 months
- Risk varies with different medication classes
  - NSAIDs
  - Triptans
  - Highest with opioids, barbiturates
  - High incidence of treatment failure with other drugs
Medication Overuse Headache

- Start prophylactic treatment
  - Topiramate
  - Onabotulinum toxin A
- Discontinue/wean off overused medication
- Alternative acute medication
  - 2d/week
- Behavioral modification
  - Trigger avoidance
  - CBT
  - Sleep hygiene
- High rates of relapse
Choosing Wisely

American Headache Society

Five Things Physicians and Patients Should Question

1. Don’t perform neuroimaging studies in patients with stable headaches that meet criteria for migraine.
   Numerous evidence-based guidelines agree that the risk of intracranial disease is not elevated in migraine. However, not all severe headaches are migraine. To avoid missing patients with more serious headaches, a migraine diagnosis should be made after a careful clinical history and an examination that documents the absence of any neurologic findings such as papilledema. Diagnostic criteria for migraine are contained in the International Classification of Headache Disorders.

2. Don’t perform computed tomography (CT) imaging for headache when magnetic resonance imaging (MRI) is available, except in emergency settings.
   When neuroimaging for headache is indicated, MRI is preferred over CT, except in emergency settings when hemorrhage, acute stroke or head trauma are suspected. MRI is more sensitive than CT for the detection of neoplasm, vascular disease, posterior fossa and cerebrovascular lesions and high and low intracranial pressure disorders. CT of the head is associated with substantial radiation exposure which may elevate the risk of later cancers, while there are no known biologic risks from MRI.

3. Don’t recommend surgical deactivation of migraine trigger points outside of a clinical trial.
   The value of this form of “migraine surgery” is still a research question. Observational studies and a small controlled trial suggest possible benefit. However, large multicenter, randomized controlled trials with long-term follow-up are needed to provide accurate estimates of the effectiveness and harms of surgery. Long-term side effects are unknown but potentially a concern.

4. Don’t prescribe opioid or butalbital-containing medications as first-line treatment for recurrent headache disorders.
   These medications impair alertness and may produce dependence or addiction syndromes, an undesirable risk for the young, otherwise healthy people most likely to have recurrent headaches. They increase the risk that episodic headache disorders such as migraine will become chronic, and may produce heightened sensitivity to pain. Use may be appropriate when other treatments fail or are contraindicated. Such patients should be monitored for the development of chronic headache.

5. Don’t recommend prolonged or frequent use of over-the-counter (OTC) pain medications for headache.
   OTC medications are appropriate treatment for occasional headaches if they work reliably without intolerable side effects. Frequent use (especially of caffeine-containing medications) can lead to an increase in headaches, known as medication overuse headache (MOH). To avoid this, OTC medication should be limited to no more than two days per week. In addition to MOH, prolonged overuse of acetaminophen can cause liver damage, while overuse of nonsteroidal anti-inflammatory drugs can lead to gastrointestinal bleeding.
References

Thank You