Migraine & other Headaches in Primary Care

JUSTIN A. MALONE M.D.
NEUROLOGY, INC.
1705 E. Broadway
Suite 280
Columbia, MO
573-449-2141

Overview
- Migraine
- History
- Pathophysiology
- Subtypes
- Treatment
  - Abortive
  - Preventative
- Pediatric headache overview
- Short overview selected other headaches
- How to Address Headache Failures

Migraine History
- Who is first credited with references to migraine in medical writings?
  - Hippocrates, 460-370 b.c.
  - Galen, 131-201 a.d.
  - Thomas Willis, 1621-1675
  - Hubert Airy, 1838-1903

IHS Classification
- Primary Headaches
  - Migraine
  - Tension Type Headache (TTH)
  - Trigeminal Autonomic Cephalgias (TAC)
  - Other
- Secondary
  - Attributed to another disorder

Headache History
- First two questions to ask patients
  1. When did your actual headache start? (acute vs. chronic)
  2. Have you ever had this same type of headache before? (known headache pattern vs. unusual)

Headache History
- Headache
  - Location
  - Quality
  - Frequency
  - Duration
  - Aura
  - Associated Sx
  - Exacerbating
  - Relieving
- Lifestyle
  - Sleep
  - Hydration/Meals
  - Exercise
  - Food Triggers
  - Analgesic Use
**Headache History**

- Depression

*All headache patients need to be screened for primary or concurrent depression and treated accordingly.*

**Medical Comorbidities**

- Neurologic
  - Epilepsy
  - Stroke
- Psychiatric
  - Depression
  - Bipolar disease
  - Anxiety
  - Panid disorder
- Cardiac
  - Myocardial Infarction
  - Angina
  - Patent Foramen Ovale
- Other
  - Raynaud’s syndrome
  - Irritable bowel syndrome
  - Asthma
  - Other pain disorders
  - Obstructive sleep apnea

**Migraine**

- ICHD-II definition

Migraine is an acute recurrent headache characterized by episodic, periodic, and paroxysmal attacks of pain separated by pain-free intervals.

**Migraine Prevalence**

- Societal Impact
  - Annual U.S. treatment costs est. $1 billion
  - $200-$800 per migraine sufferer per year
    - 60% physician visits
    - 30% prescription drugs
    - 1% emergency visits
  - Indirect Costs (Lost Productivity)
    - Est. $700-$1200 per patient per year
  - Indirect Costs All Headaches
    - $20 billion per year

- Modern Definition

Migraine without aura
Migraine with aura
Childhood periodic syndromes
Retinal migraine
Migraine with complications
Migraine

- Four Phases
  - Premonitory or Prodromal Phase
  - Aura Phase
  - Headache Phase
  - Postdrome Phase

Most patients do not have all four phases.

Migraine Pathophysiology

Migraine Prodrome

<table>
<thead>
<tr>
<th>Psychological</th>
<th>Neurological</th>
<th>General</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>Photophobia</td>
<td>Stiff neck</td>
</tr>
<tr>
<td>Hyperactivity</td>
<td>Difficulty Concentrating</td>
<td>Food cravings</td>
</tr>
<tr>
<td>Euphoria</td>
<td>Phonophobia</td>
<td>Cold feeling</td>
</tr>
<tr>
<td>Talkativeness</td>
<td>Dysesthesia</td>
<td>Anorexia</td>
</tr>
<tr>
<td>Instability</td>
<td>Hyperosmia</td>
<td>Sluggish</td>
</tr>
<tr>
<td>Drowsiness</td>
<td>Yawning</td>
<td>Diarrhea or Constipation</td>
</tr>
<tr>
<td>Restlessness</td>
<td></td>
<td>Thirst</td>
</tr>
<tr>
<td>Restlessness</td>
<td></td>
<td>Urination</td>
</tr>
<tr>
<td>Restlessness</td>
<td></td>
<td>Fluid retention</td>
</tr>
</tbody>
</table>

Migraine Aura

- Visual
  - Scotoma
  - Photopsia
  - Geometric forms
  - Fortification pattern
  - Rotation, Oscillation, Shimmering
  - Photophobia
  - Metamorphopsia
  - Macropsia

Migraine Aura

- Sensory
  - Parasthesias
  - Olfactory
- Motor
  - Weakness
  - Ataxia
- Language
  - Dysarthria
  - Aphasia
Migraine Headache

- Unilateral 60%, Bilateral 40%
- Unilateral often changes sides
- Throbbing
- Aggravated by routine physical activity
- More frequent in the morning
- Gradual onset
- Duration 4-72 hours

Migraine Headache

- Associated Phenomenon
- Anorexia
- Nausea and Vomiting
- Gastroparesis
- Diarrhea
- Photo and Phonophobia
- Lightheadedness or Vertigo
- Blurred vision
- Nasal congestion

Migraine Headache

- Postdrome
  - Impaired concentration
  - Fatigue
  - Irritability
  - Muscle achingness
  - Anorexia and/or food cravings
  - Rare euphoria/refreshed sensation

Migraine Equivalents

- Scintillating scotoma
- Parasthesias
- Aphasias
- Dysarthria
- Hemiplegia
- Blindness
- Blurring of vision
- Hemianopsia
- Diplopia
- Transient monocular blindness
- Ophthalmoplegia
- Oculosympathetic palsy
- Mydriasis
- Confusion-stupor
- Cyclical vomiting
- Deafness
- Recurrent Stroke Deficit
- Chorea

Migraine Treatment

- Accurate diagnosis
- Patient education
  - Reassurance
  - Expectations
  - Lifestyle modification
- Abortive agents
- Prophylactic agents

Migraine Treatment

- Trigger Avoidance
  - Diet
    - Hunger
    - Alcohol
    - Additives
    - Foods
  - Hormones
    - Menstruation
    - Oral contraceptives
    - Chronobiological
    - Sleep
    - Schedule
    - Stress
Migraine Treatment

Non-pharmacological Treatment
- Exercise
- Hydration
- Regular mealtimes
- Good sleep hygiene
- Relaxation techniques
- Ice packs
- Heat packs

Pharmacological Treatment
- Based upon U.S. Headache Consortium Conclusions and Recommendations

NSAIDs
- Aspirin, naproxen, ibuprofen, and diclofenac should be used for the acute treatment of nondisabling migraine
- IV or IM Ketorlac should be considered for the acute treatment of migraine
- Aspirin, Acetaminophen, Caffeine (AAC) should be used for the acute treatment of migraine
- Isometheptene mucate, dichloralphenazone, acetaminophen combination should be used for the treatment of migraine

*Monitor and educate for medication overuse

Barbiturates
- Butalbital-containing analgesics are not recommended as a first-line therapy for the acute treatment of migraine
- There is Level-B evidence supporting the efficacy of these agents in unspecified headache syndromes
- There is a high risk of dependency, medication overuse headache, and withdrawal concerns with these agents.

Opioids
- Oral opiate and butorphanol NS are effective for use in the acute treatment of migraine, however their use should be limited and reserved for back up or rescue therapy only when other medications such as triptans or NSAIDs cannot be used.
- There is a high risk of dependency and withdrawal concerns with these agents.
- There is no evidence to support the use of meperidine for migraine

Ergots
- Ergots may be considered for the treatment of selected patients with migraine, although the magnitude of effect may be modest.
- Dihydroergotamine (DHE) NS is effective for the acute treatment of migraine and may be considered in select patients
- Risk for long term cardiac effects
- High risk of overuse headaches
Migraine Treatment
Neuroleptics and Antiemetics

- Metoclopramide PO or IM is ineffective as monotherapy for migraine
- Chlorpromazine IV and Prochlorperazine IV should be considered for migraine
- Odansetron and granisetron should not be considered for migraine

Migraine Treatment Triptans

- Triptans should be used for the acute treatment of mild, moderate, and severe migraine.
- Combination with naproxen sodium should be used in the acute treatment of migraine and offers improved clinical response over either treatment given as monotherapy.

Migraine Preventative Treatment

- Frequent headaches (>4 attacks/month)
- Contraindications to, failure with, overuse of, or intolerance to acute therapies
- Patient preference
- Frequent, very long, or uncomfortable auras
- Presence of uncommon migraine conditions, including hemiplegic migraine, basilar migraine, migraine with prolonged aura

Migraine Preventative Treatment Antiepileptics

- Carbamazepine 600-1200mg tid
- Gabapentin 600-3600mg
- Lamotrigine 100-200mg
  - Start 25mg, slow titration
- Topiramate 100-600mg
  - Start 25mg HS titrate slowly to bid dosing
- Valproate 500-1500mg/day
  - Avoid in women of childbearing age

Migraine Preventative Treatment Antidepressants

- Tertiary Amines
  - Amitriptyline 10-400mg start 10mg HS
  - Doxepin 10-300mg start 10mg HS
- Secondary Amines
  - Nortriptyline 10-150mg start 10-25mg HS
  - Protriptyline 5-60mg start 10-25mg AM
Migraine Preventative Treatment

Antidepressants

- SSRIs
  - Citalopram 10-80mg
  - Escitalopram 10-20mg
  - Fluoxetine 10-80mg
  - Sertraline 25-100mg

- Some may worsen headache
- Adjuvant in patients with depression

- SNRIs
  - Venlafaxine 37.5-300mg
  - Duloxetine 20-60mg
  - Can worsen some headaches

- Other
  - Mirtazapine 15-45mg
  - MAOIs
    - Phentolamine 30-90mg
      - Note drug and diet precautions

- Other
  - Mirtazapine 15-45mg
  - MAOIs
    - Phentolamine 30-90mg
      - Note drug and diet precautions

- SNRIs
  - Venlafaxine 37.5-300mg
  - Duloxetine 20-60mg
  - Can worsen some headaches

- Other
  - Mirtazapine 15-45mg
  - MAOIs
    - Phentolamine 30-90mg
      - Note drug and diet precautions

- SNRIs
  - Venlafaxine 37.5-300mg
  - Duloxetine 20-60mg
  - Can worsen some headaches

- Other
  - Mirtazapine 15-45mg
  - MAOIs
    - Phentolamine 30-90mg
      - Note drug and diet precautions

Beta-blockers

- Atenolol 50-200mg BID-QID dosing
- Metoprolol 100-200mg BID dosing
- Nadolol 20-160mg BID-QID dosing
- Propranolol 40-400mg BID dosing
- Timolol 20-60mg BID dosing

- Monitor blood pressure and pulse

Calcium Channel Blockers

- Verapamil 120-640mg SR QD-BID dosing
- Flunarizine 5-10mg HS
  - Weight gain

Serotonin Antagonists

- Methysergide 2-8mg BID-TID
  - Can not be taken for prolonged periods
- Cyproheptadine 12-36mg BID-TID
- Pizotifen 1.5-3mg TID
  - Weight gain and drowsiness
- Alpha-agonists
  - Clonidine 0.05-0.3mg/day
  - Guanfacine 1mg

Miscellaneous

- Lisinopril 10-40mg
- Candesartan 8-32mg
- Feverfew 50-82mg
- Petasites 50-100mg
- Riboflavin 400mg
- Coenzyme Q 150-300mg
- Magnesium 400-600mg
Halfway Home

Chronic Migraine Treatment

- FDA Approval of onabotulinumtoxin type A (BOTOX)
- Migraine lasting greater than 4 hours per day
- Present at least 14 days per month
- Interfering with quality of life
  - Family
  - Work
  - Social life

Headache Red Flags

- Head or Neck injury
- New onset of headache
- Change in headache type
- Progressively worsening headache
- New level of pain or worst ever headache
- Age >50 years old
- Other neurological symptoms
- Systemic signs such as fever, weight loss, scalp tenderness
- Secondary risk factors i.e. Cancer or HIV

Headache Yellow Flags

- Wakes patient from sleep at night
- Headaches always occur on the same side
- Prominent effect on change in position on pain

Pediatric Headache

- Migraine
- Tension-Type
- Other
**Pediatric Headache**

**Periodic Syndromes**
- Migraine
- Cyclical vomiting
- Abdominal migraine
- Benign paroxysmal vertigo of childhood
- Alternating hemiplegia of childhood
- Benign paroxysmal torticolis
- Motion/Car sickness
- Recurrent unexplained fever
- Sleep disturbances
- Night terrors
- Sleep walking
- Sleep talking

**Pediatric Headache**

**Pharmacologic Treatment**

There are **No Current FDA Approved Medications for pediatric migraine**

Several medications have been studied in pediatric populations.

**Pediatric Headache**

**Pharmacologic Treatment**

- Acetaminophen: 10-15mg/kg/dose, Q4-6hours
- Ibuprofen: 4-10mg/kg/dose Q6-8hours
- Acetaminophen + Codeine: 0.5-1mg/kg/dose Q6 hours
- Fioricet: 1 tab Q6hours
- Trimethobenzamide: 15-20mg/kg/day Q6hours
- Perchlorperazine: 0.4mg/kg/day Q6-8 hours

**Pediatric Headache**

**Abortive Treatment**

- Midrin/Duradrin: 2 caps at onset, may take an additional 1 cap per hour; >50kg max 5 caps
- Ergot: 2mgSL may repeat in 1 hour; >50kg
- Sumatriptan:
  - SQ 0.06-0.1mg/kg
  - Oral 25mg if <50kg
  - Oral 50mg if >50kg
  - Nasal 5mg if <50kg
  - Nasal 20mg if >50kg
- Almotriptan: 12.5mg, >50kg
- Zometriptan: 2.5-5mg, >50kg
- Eletriptan: 20, 40mg, >50kg
- DHE NS, as directed, >50kg

**Pediatric Headache**

**Preventative Treatment**

- Cyproheptadine: 0.25mg/kg/day, 1/3 AM, 2/3 HS
- Propranolol: 0.6-1.5mg/kg/day divide TID
- Amitriptyline: 0.1-2mg/kg/day HS
- Verapamil: 4-8mg/kg/day divide TID
- Depakote: 10-30mg/kg/day divide BID/TID
- Avoid in childbearing age
- Topiramate: 50-100mg/day divide BID

**Pediatric Headache**

**Non-Pharmacologic Treatment**

- Sleep hygiene
- Diet
- Exercise
- Relaxation/Stress reduction
Secondary Headaches

- **Historical Features**
  - Presence of systemic features
    - Fever, Night Sweats, Chills, Weight Loss
- **Risk Factors**
  - Cancer, HIV, Immunosuppressive therapy
- **Neurological signs and symptoms**
  - Hyperacute onset
  - Age greater than 50 with no headache history
  - Precipitation by valsala, positional change to upright
  - Progressive

- **Neurological signs and symptoms**
  - Hyperacute
  - Age greater than 50 with no headache history
  - Precipitation by valsala, positional change to upright
  - Progressive

- **Other**
  - Cough
  - Cerebral cyst

Thunderclap Headache

- **Secondary**
  - Vascular
    - Vasospasm
    - Aneurysm
    - Sinus thrombosis
    - Dissection
    - Hypertensive crisis
    - Stroke
    - Hemorrhage
    - Other
      - Cough
      - Cerebral cyst

- **Primary**
  - Benign cough
  - Sexual (Coital)
  - Exertional
  - Chiari
  - Primary thunderclap

When Should I Image?

- **First or Worst Headache**
- **Subacute worsening headache**
- **Progressive or new daily persistent headache**
- **Chronic daily headache**
- **Persistently unilateral headache**
- **Headache not responding to treatment**

When Should I Image?

- **New onset headache in patients with cancer or HIV**
- **New onset headache after age 50**
- **Patients with headaches AND seizures**
- **Other symptoms: fever, stiff neck, nausea, vomiting**
- **Focal neurological signs or symptoms**
- **Papilledema, cognitive impairment, or personality change**

Other Headaches

- **More Common**
  - Migraine
  - Tension
  - Type/Musculoskeletal Headache
  - Chronic Daily Headache
  - Medication overuse headache
  - Transformed migraine

- **Less common**
  - Trigeminal Neuralgia
  - Giant Cell Arteritis
  - Post concussive headache
  - Pseudotumor Cerebri

Headache Failures

- **Incomplete or Incorrect Diagnosis**
- **Missed exacerbating factors**
- **Inadequate pharmacotherapy**
- **Inadequate nonpharmacologic treatment**
- **Other factors**
Headache Failures

- Incomplete or Incorrect Diagnosis
- Undiagnosed secondary headache
- Mislabeled primary headache
- The number of headache disorders is not clear

- Missed exacerbating factors
  - Acute headache medication or caffeine overuse
  - Hormonal triggers
  - Dietary or lifestyle triggers
  - Psychosocial factors
  - Other medications
  - Obstructive sleep apnea

- Amantadine
- Calcium channel blockers
- Caffeine
- Corticosteroids
- Cyclophosphamide
- Dipyridamole
- Ethanol
- Hydralazine
- Indomethacin
- L-dopa
- OCP
- Hormone replacement

- MAOIs
- NSAIDs
- Nitrates
- Nicotinic acid
- Phenothiazines
- Ranitidine
- Sympathomimetic agents
- Theophyllines
- Tetracyclines
- Trimethoprim
- Vitamin A and D

- Medication Overuse Headache
  - Present ≥ 15 days per month
  - Overuse ≥ 3 months one or more acute/symptomatic medications
    - Ergotamine, triptans, opioids, or combination analgesic medications ≥ 10 days/month
    - Simple analgesics or any combination of ergotamine, triptans, analgesics, or opioids ≥ 15 days per month
  - Headache has developed or worsened during period of overuse

- Inadequate pharmacotherapy
  - Ineffective drug
  - Excessive initial doses
  - Inadequate final doses
  - Inadequate duration of treatment
  - Combination therapy required
  - Non-compliance

- Inadequate nonpharmacologic treatment
  - Lifestyle Modification
    - Exercise
    - Hydration
    - Regular mealtimes
    - Good sleep hygiene
    - Relaxation techniques
Headache Failures

- Other factors
  - Unrealistic expectations
  - Comorbid or concomitant conditions
  - Inpatient treatment required

Summary

- Accurate Headache History
- Treatment Plan and Appropriate Expectations
- Beware atypical or non-stereotypical headaches, and new headaches in patients over age 50
- Reassess headache failures
  - History, History, History