Migraine

Jeffrey Buyten, MD
Faculty Advisor: David C. Teller, MD
Faculty Advisor: Francis B. Quinn, MD
The University of Texas Medical Branch
Department of Otolaryngology
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Prevalence

- Familial
- Young, healthy women; F>M: 3:1
  - 17 – 18.2% of adult females
  - 6 – 6.5% adult males
- 2-3rd decade onset... can occur sooner
- Peaks ages 22-55.
- ½ migraine sufferers not diagnosed.
- 94% patients seen in primary care settings for headache have migraines

Neurology: Migraine throughout the life cycle: Treatment through the ages
Bailey’s
Common misdiagnoses for migraine:
- Sinus HA
- Stress HA

Referral to ENT for sinus disease and facial pain.
Migraineurs more likely to have motion sickness.

Half of Meniere’s patients claim to have migrainous symptoms.

BPPV
- $13 billion/year in lost productivity
- 1/3 participants in American Migraine Study II missed work in prior 3 months
Migraine Definition

- **IHS criteria: Migraine/aura (3 out of 4)**
  - One or more fully reversible aura symptoms indicates focal cerebral cortical or brainstem dysfunction.
  - At least one aura symptom develops gradually over more than 4 minutes.
  - No aura symptom lasts more than one hour.
  - HA follows aura w/free interval of less than one hour and may begin before or w/aura.

- **IHS Diagnostic criteria: migraine w/o aura**
  - HA lasting for 4-72 hrs
  - HA w/2+ of following:
    - Unilateral
    - Pulsating
    - Mod/severe intensity.
    - Aggravated by routine physical activity.
  - During HA at least 1 of following
    - N/V
    - Photophobia
    - Phonophobia

History, PE, Neuro exam show no other organic disease.

At least five attacks occur
Migraine Subtypes

- **Basilar type migraine**
  - Dysarthria, vertigo, diplopia, tinnitus, decreased hearing, ataxia, bilateral paresthesias, altered consciousness.
  - Simultaneous bilateral visual symptoms.
  - No muscular weakness.

- **Retinal or ocular migraine**
  - Repeated monocular scotomata or blindness < 1 hr
  - Associated with or followed by a HA
Migraine Subtypes

- Menstrual migraine
- Hemiplegic migraine
  - Unilateral motor and sensory symptoms that may persist after the headache.
  - Complete recovery
- Familial hemiplegic migraine
Migrainous vertigo

- Vertigo – sole or prevailing symptom.
- Benign paroxysmal vertigo of childhood.
- Prevalence 7-9% of pts in referral dizzy and migraine clinics.
- Not recognized by the IHS
- Diagnosis (proposed criteria)
  - Recurrent episodic vestibular symptoms of at least moderate severity.
  - One of the following:
    - Current of previous history of IHS migraine.
    - Migrainous symptoms during two or more attacks of vertigo.
    - Migraine-precipitants before vertigo in more than 50% of attacks.
  - Response to migraine medications in more than 50% of attacks
Migraine mechanism

- Neurovascular theory.
  - Abnormal brainstem responses.
  - Trigemino-vascular system.
    - Calcitonin gene related peptide
    - Neurokinin A
    - Substance P

- Extracranial arterial vasodilation.
  - Temporal
  - Pulsing pain.

- Extracranial neurogenic inflammation.

- Decreased inhibition of central pain transmission.
  - Endogenous opioids.
Important role in migraine pathogenesis.

Mechanism of action in migraines not well established.

Main target of pharmacotherapy.
Aura Mechanism

- **Cortical spreading depression**
  - Self propagating wave of neuronal and glial depolarization across the cortex
    - Activates trigeminal afferents
      - Causes inflammation of pain sensitive meninges that generates HA through central/peripheral reflexes.
    - Alters blood-brain barrier.
  - Associated with a low flow state in the dural sinuses.
Auras

- Vision – most common neurologic symptom
- Paresthesia of lips, lower face and fingers... 2\textsuperscript{nd} most common
- Typical aura
  - Flickering uncolored zigzag line in center and then periphery
  - Motor – hand and arm on one side
  - Auras (visual, sensory, aphasia) – 1 hr

Prodrome

- Lasts hours to days...
Clinical manifestations

- Clinical manifestations
  - Lateralized in severe attacks – 60-70%
  - Bifrontal/global HA – 30%
  - Gradual onset with crescendo pattern.
  - Limits activity due to its intensity.
  - Worsened by rapid head motion, sneezing, straining, constant motion or exertion.
  - Focal facial pain, cutaneous allodynia, GI dysfunction, facial flushing, lacrimation, rhinorrhea, nasal congestion and vertigo...
Precipitating factors

- stress
- head and neck infection
- head trauma/surgery
- aged cheese
- dairy
- red wine
- nuts
- shellfish
- caffeine withdrawal
- vasodilators
- perfumes/strong odors
- irregular diet/sleep
- light
Treatment

- Abortive
  - Stepped
  - Stratified
  - Staged
- Preventive
Abortive Therapy

- Reduces headache recurrence.
- Alleviation of symptoms.
- Analgesics
  - Tylenol, opioids...
- Antiphlogistics
  - NSAIDs
- Vasoconstrictors
  - Caffeine
  - Sympathomimetics
  - Serotoninergics
    - Selective - triptans
    - Nonselective – ergots
- Metoclopramide
Abortive care strategies

- **Stepped**
  - Start with lower level drugs, then switch to more specific drugs if symptoms persist or worsen.
    - Analgesics – Tylenol, NSAIDs...
    - Vasoconstrictors – sympathomimetics...
    - Opioids (try to avoid) - Butorphanol
    - Triptans – sumatriptan (oral, SQ, nasal), naratriptan, rizatRIPTAN, zomatriptan.
  - Limited by patient compliance.

- **Stratified**
  - Adjusts treatment according to symptom intensity.
    - Mild – analgesics, NSAIDs
    - Moderate – analgesic plus caffeine/sympathomimetic
    - Severe – opioids, triptans, ergots...
  - Severe sx treatment limited due to concomitant GI sx’s.

- **Staged**
  - Bases treatment on intensity and time of attacks.
  - HA diary reviewed with patient.
  - Medication plan and backup plans.
Preventive therapy

- Consider if pt has more than 3-4 episodes/month.
- Reduces frequency by 40 – 60%.
- Breakthrough headaches easier to abort.
- Beta blockers
- Amitriptyline
- Calcium channel blockers
- Lifestyle modification.
- Biofeedback.
Botox

- 51% migraineurs treated had complete prophylaxis for 4.1 months.
- 38% had prophylaxis for 2.7 months.
- Randomized trial showed significant improvement in headache frequency with multiple treatments.
Conclusions

- Migraine is common but unrecognized.
- Keep migraine and its variants in the differential diagnosis.