One Day at a Time: When Headaches Become Chronic

Robert Shapiro, MD, PhD
Disclosures

• Scientific/Medical Advisory Boards (since 10/12)
  – Transcept Pharmaceuticals
Chronic Headaches: Overview

- What is a “chronic” headache?
- Who gets chronic headaches?
- Chronic migraine and Tension-type headache – Causes and treatments
- Some much rarer chronic headache disorders
The Prevalence of Headache Disorders

- The **most prevalent** neurological disorders.

This year...

- 52% of Americans will experience headache
- 12% of Americans will experience episodic migraine
- 4% of Americans will have headache chronic migraine

Lifetime prevalence...

- 30% of Americans will have episodic migraine
  (43% of women and 18% of men)

Stewart et al. *Cephalalgia* 2008; 28:1170
Chronic Daily Headache: Defined

- Headaches that occur 15 or more days per month
- At least 3 consecutive months duration
- No underlying “secondary” cause identified
Initial Approach to Chronic Headaches

Detailed history and examination

Headache alarms (Red Flags) or atypical features

- Sudden onset severe HA
- Change in stable pattern of HAs
- HA with cancer, HIV, rash, etc.
- HA with focal neurological exam
- HA triggered by cough, strain, etc.
- HA with pregnancy or afterwards
1 in 25 Adult Americans have Primary Chronic Daily Headaches

... and two thirds of them are women
Chronic Daily Headache: Classification

10% New Daily Persistent Headache (NDPH)

- Chronic Cluster
- Hemicrania Continua
- Hypnic Headache

12 Million Americans this year

Scher et al *Headache* 1998;38:497
Migraine is **NOT** Headache

- Migraine is a chronic episodic state of the brain.
- Headache is a symptom of the migraine state.

  - migraine symptom patterns
    - idiosyncratic
    - stereotypic
    - evolving
  - migraine susceptibility
    - heritable
    - chronobiologic
    - stimulus-bound
Migraine Attacks: Clinical Features

Prodrome phase: ~ one third of patients, ~ hours to days
moodiness, fatigue, GI, muscle stiffness, fluid retention, yawning, cravings

Aura phase: (~ 20 % of patients): < 60 min
symptoms: visual, paresthesias, cognitive, behavioral, perceptual
sensory > motor, positive > negative, dynamic > static

Headache phase: ~4 hours to 3 days
pain: hemi-cranial, throbbing, moderate to severe
sensitivities: light, sound, odor, touch (allodynia), movement (vertigo)
autonomic: nausea (~90%), vomiting, gastric atony, sinus congestion

Recovery phase:
moodiness, fatigue, GI, muscle stiffness, diuresis
Phases of a Migraine Attack

Premonitory/Prodrome  Aura  Headache  Postdrome

Mild  Moderate to Severe

Time

Adapted from Cady RK. Clin Cornerstone;1:21-32. (1999)
Migraine Aura

Aura Features
- sensory > motor
- positive > negative
- dynamic > static

Aura Variants
- acephalgic
- hemiplegic
- retinal
- ophthalmoplegic
- abdominal
- basilar
- paroxysmal vertigo
- “Alice in Wonderland”

Speirings, Management of Migraine 7-19
Rapoport & Sheftell, Conquering Headache (1998)
1.1 Migraine without aura

A. At least 5 attacks fulfilling criteria B-D

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

C. Headache has ≥2 of the following characteristics:
   1. unilateral location
   2. pulsating quality
   3. moderate or severe pain intensity
   4. aggravation by or causing avoidance of routine physical activity (eg, walking, climbing stairs)

D. During headache ≥1 of the following:
   1. nausea and/or vomiting
   2. photophobia and phonophobia

E. Not attributed to another disorder

Chronic Migraine:
- ≥15 HA days / month
- ≥8 HA days w migraine
- ≥3 months duration
Tension-Type Headache

Chronic TT HA

A. Headache occurring on $\geq 15$ d/mo ($\geq 180$ d/y) for $>3$ mo and fulfilling criteria B-D
B. Headache lasts hours or may be continuous

C. Headache has $\geq 2$ of the following characteristics:
   1. bilateral location
   2. pressing/tightening (non-pulsating) quality
   3. mild or moderate intensity
   4. not aggravated by routine physical activity

D. Both of the following:
   1. not $>1$ of photophobia, phonophobia, mild nausea
   2. neither moderate or severe nausea nor vomiting

E. Not attributed to another disorder
Migraine / Tension-type Spectrum

Silberstein, Phys Assist 67-81 (9/1991)
Frequency of Tension-Type Headache

Chronic TTHA occurs 4X more often when episodic migraine is also present.
Migraine is Underdiagnosed

In Primary Care Providers’ offices…

- 94% of patients with “recurrent” headache…
- 90% of patients with “sinus” headache…
- 90% of patients with “tension/stress” headache…

meet diagnostic criteria for migraine or probable migraine
Migraine Disability: “Lost Days” per Three Months

<table>
<thead>
<tr>
<th>Activity</th>
<th>Chronic</th>
<th>Episodic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Missed work or school, d</td>
<td>2.4</td>
<td>0.54</td>
</tr>
<tr>
<td>≥50% Reduced productivity at work or school, d</td>
<td>10.4</td>
<td>1.7</td>
</tr>
<tr>
<td>Incomplete household work or chores, d</td>
<td>21.4</td>
<td>3.5</td>
</tr>
<tr>
<td>≥50% Reduced productivity in household work or chores, d</td>
<td>18.7</td>
<td>2.6</td>
</tr>
<tr>
<td>Missed time with family, social, or leisure activities, d</td>
<td>10.5</td>
<td>1.7</td>
</tr>
<tr>
<td>Total</td>
<td>63.4</td>
<td>10.0</td>
</tr>
</tbody>
</table>
Episodic vs. Chronic Migraine: Disability

20% of Americans with chronic migraine consider themselves to be “occupationally disabled”.

Only 37% of Americans with chronic migraine are employed full-time.

When Headache Frequency Progresses: “Chronification”

- 798 people were studied with headaches occurring ≥ 2 days per year, but an average of < 9 days per month

- One year later…
  - 91% - had no increase in headache frequency
  - 6% - headaches had increased to 9 to 14 days per month
  - 3% - developed chronic daily headache (15+ days per month)

- People with frequent headaches (9 to 14 days/month) were even more likely to develop CDH after a year

# Chronic Migraine

## Co-Morbidities

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<tr>
<th>Condition</th>
<th>Percentage</th>
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<tr>
<td>Allergies</td>
<td>60%</td>
</tr>
<tr>
<td>Sinus Disease</td>
<td>45%</td>
</tr>
<tr>
<td>Arthritis</td>
<td>34%</td>
</tr>
<tr>
<td>High BP</td>
<td>34%</td>
</tr>
<tr>
<td>Pain Disorders</td>
<td>32%</td>
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<td>Anxiety</td>
<td>30%</td>
</tr>
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<td>Depression</td>
<td>30%</td>
</tr>
<tr>
<td>Obesity</td>
<td>26%</td>
</tr>
<tr>
<td>Asthma</td>
<td>24%</td>
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<td>Heart Disease</td>
<td>10%</td>
</tr>
<tr>
<td>Bipolar</td>
<td>5%</td>
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<td>Stroke</td>
<td>4%</td>
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## Risks for “Chronification”

- Female
- Lower socioeconomic status
- Obesity
- Snoring (sleep disturbance, apnea)
- Prior head or neck injury
- Stressful life events
- Overuse of analgesics and caffeine
- Anxiety
- Depression
- “Allodynia”
- Disability
- Headache frequency
- Genetics?

*Lipton Headache 2011;51-S2:77*
## Chronic Migraine

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*Lipton Headache 2011;51-S2:77*
Principles of Therapy for Chronic Migraine

- **Acute Meds**
  - Triptans
  - NSAIDs
  - Anti-nausea meds
  - Opioids
  - Barbiturate Compounds

  Treat early, but not too often
  (not >8 days/month)

- **Preventive Meds**
  - Botox (*FDA-approved)
  - Topiramate
  - Beta blockers
  - Tricyclics
  - Calcium channel blockers

  Treat every daily

- **Behavioral**
  - Mealtimes / weight loss (if overweight)
  - Sleep/wake ‘hygiene
  - Eliminate overuse of analgesics/caffeine
  - Avoid head trauma
  - Stress management
    - Cognitive Behavioral Tx
    - Biofeedback
  - Exercise / Physical Tx
Body Weight and Chronic Migraine

Percentage of Population with Chronic Migraine

Bigal et al. *Neurology* 2007;68:1851-1861
## Sleep Problems in Women with Chronic Migraine

<table>
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<th>Baseline Sleep Problems/Habits</th>
<th>Number (N = 147)</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Tired on awakening</td>
<td>123</td>
<td>83.7</td>
</tr>
<tr>
<td>TV or reading in bed</td>
<td>116</td>
<td>78.9</td>
</tr>
<tr>
<td>Nocturia</td>
<td>103</td>
<td>70.1</td>
</tr>
<tr>
<td>Initial insomnia</td>
<td>97</td>
<td>66.0</td>
</tr>
<tr>
<td>Napping</td>
<td>93</td>
<td>63.3</td>
</tr>
<tr>
<td>Sleeping pill usage</td>
<td>76</td>
<td>51.7</td>
</tr>
<tr>
<td>Kicking/restless movements</td>
<td>63</td>
<td>42.9</td>
</tr>
<tr>
<td>while asleep</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Snoring</td>
<td>48</td>
<td>32.7</td>
</tr>
<tr>
<td>Restless legs syndrome</td>
<td>35</td>
<td>23.8</td>
</tr>
<tr>
<td>Excessive time in bed (≥9.5 hours)</td>
<td>27</td>
<td>18.4</td>
</tr>
<tr>
<td>Insufficient time in bed (≤6.5 hours)</td>
<td>27</td>
<td>18.4</td>
</tr>
<tr>
<td>Allergic to cats and sleeps with cats</td>
<td>12</td>
<td>8.2</td>
</tr>
<tr>
<td>Caffeine within 8 hours of bedtime</td>
<td>10</td>
<td>6.8</td>
</tr>
<tr>
<td>History of somnambulism</td>
<td>8</td>
<td>5.4</td>
</tr>
</tbody>
</table>

Calhoun et al. *Headache* 2006; 46:604
Behavioral Sleep Modification (BSM) & Chronic Migraine

- **BSM**
  1. Schedule consistent bedtime that allows 8 hours time in bed
  2. Eliminate TV, reading, music in bed
  3. Use visualization technique to shorten time to sleep onset
  4. Move supper ≥4 hours before bedtime; limit fluids within 2 hours of bedtime
  5. Discontinue naps

- **Sham BSM**
  1. Schedule consistent suppertime that varies <1 hr from day to day
  2. Perform acupressure as instructed for 2 minutes twice daily
  3. Record liquid consumption for 3 consecutive days
  4. Do 5 minutes of gentle range of motion exercises every morning
  5. Have 1 protein serving at breakfast

Calhoun et al *Headache* 2007; 47:1178
Behavioral Sleep Modification, Chronic Migraine

![Bar chart showing headache frequency per 28 days for BSM and Sham groups.]

** F (1, 33 = 12.42, p = .001)
* F (1, 33 = 14.39, p = .01)

Calhoun et al Headache 2007; 47:1178
Evolution of Medication Overuse Headache

Tablets / day of caffeine-containing analgesics over 10 years

Opioids and Barbiturate Compounds

Odds of Transformation of Episodic to Chronic Migraine:

Opioids – 44% higher (compared to acetaminophen)

Barbiturates – 73% higher (compared to acetaminophen)

“Take one of these every four hours. If pain persists, see another doctor.”

Lipton Neurology 2009; 72:S3
Treatment of Chronic Daily Headache with Analgesic Overuse

Mathew et al. *Headache* 1990;30:634
Botox for Chronic Migraine

Currently the only FDA-approved medication for Chronic Migraine

- 31 sites, 0.1ml / site
- Injections every 3 months
Botox for Chronic Migraine: Pooled Clinical Trial Data

Modified from Dodick et al *Headache* 2010;50:921
Timing Patterns of Chronic Headache Initiation

Chronic Migraine or Chronic Tension-Type
NDPH

Baron & Rothner Curr Neurol Neurosci Rep 2010;10:127
Consensus Clinical Characteristics of New Daily Persistent Headache

1. Gender: female predominance (gender ratio range 1.4-2.5:1)
2. Age of onset: younger in women, many 2nd-3rd decade
3. Location: bilateral in most
4. Intensity: moderate to severe in most patients
5. Pain duration: constant without pain free time
6. Associated symptoms: migrainous features are common in almost all studies
7. Recognized triggering event in <50%
8. Prevalence is likely higher in children than adults
Cluster Headache: The *Most Severe* Pain... but at least it’s short

- 1-3 excruciating attacks daily (up to 8 attacks/day)
- Attack duration typically <60 min
- 500,000 Americans, 50,000 with daily (chronic) form
- 75% men, average onset ~30 years old

- Attacks often nocturnal
- Therapy
  - Acute – oxygen
  - sumatriptan
  - Preventive – lithium
  - verapamil

3276 attacks in 18 pts

Trucco et al *Cephalalgia*. (1993)
Zaremba et al *Cephalalgia*. (2012)
Hypnic Headache: The “Alarm Clock” Headache

- A rare disorder - 225 total reported cases
- Two thirds are women
- Average age of onset is 60 years
- Short-lasting (~1 hour) bilateral moderately severe headaches sometimes with nausea (~20%).
- Headaches are strictly sleep-associated occurring at the same time each night
- 60 to 70% respond to daily lithium, topiramate, or caffeine (at bedtime)

Evers & Goadsby *Neurology* 60:905 (2003)
Hemicrania Continua: The Strictly “Sidelocked” Headache

- A rare disorder
- Two thirds are women
- Average age of onset is 30 years
- Strictly unilateral, moderate to occasionally severe headaches
- Pain is continuous while awake, without pain-free intervals
- Headaches are associated with unilateral (on headache side) blood-shot eyes, tearing, nasal congestion or runny nose, eyelid drooping, or unequal pupils
- Completely responds to indomethacin
Conclusions

Chronic headaches are...

• more common than often appreciated.
• have multiple forms.
• may cause disability.
• are often treatable.

Questions?