Botox, Trigger Point Injections, Stimulation and Other Approaches to Chronic Headache Management

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No Disclosures
Objectives

• Discuss additional ways to help the child or adolescent with intractable daily headaches

• Understand available evidence for treatment
Statement of Problem:
Migraine Headaches Are Common

- Affects 2-5% preschool age children
- Affects 1 in 10 school age children
- Affects 16-30% young women
- Typical migraine patient will have 2 attacks/month
- No totally effective treatment
Chronic Daily Headaches Are Common

- CDH defined as >15 HA days/month for > 3 months
- In Adults
  - 4% of women, 2% of men
- Wang et al (Neurology 2006)
  - 7900 middle school children age 12-14
    - 2.4% of middle school girls
    - 0.8% of middle school boys
  - 67% had migraine
  - 5% consulted neurologist
  - 5671 children aged 5-12 in Brazil
  - 2.2% of girls, 1.1 % of boys daily headache
  - 0.6% had chronic migraine
Chronic Daily Headache Prognosis

• Wang et al, Neurology 2009
  • Community based study of adolescents
  • 50% improved after 1 year
  • 75% improved after 2 years
  • 12% had chronic daily headaches 8 years latter
  • Some vacillated between chronic and episodic

• 17% sought treatment with a physician
• 4% sought treatment with a neurologist
What is Chronic Migraine?

- International Headache Society (IHS) Criteria
- Headaches > 15 days/month > 3 months
- > 8 days/month has features of a migraine
  - Unilateral (Bilateral in children)
  - Pulsating
  - Moderate or severe intensity
  - Worse with activity
  - Nausea and/or vomiting
  - Photo- or phonophobia
  - Relief by sleep
Chronic Migraine: Multiple Headache Types

• Ask patient to first describe their worse headache
  • Severe intermittent headache (migraine)
  • ? more responsive to preventives

• Then ask patient to describe what the headache is like on other days
  • Low grade daily, continuous headache
    • Pain is continuous, lower grade
    • Will often have migrainous features
    • Bothersome but not debilitating
    • Similar to Intense headaches, but less severe
    • ? More responsive to lifestyle changes, Behavior

• Are both headaches a form of migraine?
Chronic Migraine: Multiple Headache Types

- **Idiopathic stabbing headaches** are a third headache type, occurring in 2% of adolescents seen at Mayo Clinic with CM.
  - Often occurs every day.
  - The headaches are severe, stabbing or ice pick.
  - Will occur in multiple spots on their head, and will last for seconds to minutes.
  - May occur once to multiple times each day.
  - Responsive to **Indomethicin**
Does Medication Overuse Cause CM?

- Bigal, Lipton et al (Neurology 2008)
- American Migraine Prevalence and Prevention Study
- Identified 24,000 headache sufferers in the general population. This sample has been followed up with annual surveys for the diagnosis of episodic migraine and chronic migraine. As a part of the survey, subjects were asked to report the specific medications used for their most severe headaches, as well as level of satisfaction with treatment.
- This study asked if frequent medication use led to chronic headaches.
### AMPP Study and Medication Overuse

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Cross-sectional data from the American Migraine Prevalence and Prevention study.
OTC = over the counter; NSAID = nonsteroidal anti-inflammatory drugs.

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AMPP Study and Medication Overuse Headache

• Important findings are as follows:

• 1) **Opiates** are associated with migraine progression; critical dose of exposure is around **8 days per month**, and the effect is more pronounced in men.

• 2) **Barbiturates** are also associated with migraine progression. Critical dose of exposure is around **5 days per month** and the effect is more pronounced in women.

• 3) **Triptans** induced migraine progression in those with high frequency of migraine at baseline (**10-14 days per month**), but not overall.
Chronic Migraine Rx Strategy

• **Limit analgesic** use
  • Treat severe headaches
  • Continuous headaches poorly responsive to analgesics

• **Find appropriate preventive** medication
  • Amitriptyline, topiramate, propanolol (atenolol)
  • OnabotulinumtoxinA

• **Set Appropriate Expectations**
  • **Sleep needs to improve**
    • Typical adolescent needs 9.5 hours/night
    • Preventives helpful to **decrease the number of severe migraine attacks**
  • **Improve functioning** with use of CBT, biobehavioral, 504 plan (late start, access to nurses office)
What to do when nothing else works

- Question Diagnosis of Chronic Migraine
- Onabotulinumtoxin A
- Treat Co-Morbidities
- Trigger Point Injections
- Neurostimulation
- Behavioral Programs
Question Diagnosis of Chronic Migraine

• Idiopathic Intracranial Hypertension
  • Most (not all) have papilledema, >28 cm H20
  • Eye pain, visual obscurations, pulsatile tinnitus

• Hemicrania Continua
  • Unilateral Headache, autonomic features
  • Responsive to Indocin

• Occipital/Supraorbital Neuralgia
  • Positive Tinel’s sign
  • Responsive to nerve blocks, ?gabapentin

• Nummular Headache
  • Coin shaped, quarter size
  • Responsive to Botox
Onabotulinumtoxin A

- Onabotulinumtoxin A
- Aurora, Diener, Dodick et al (Cephalalgia 2010)
  - Double-blind placebo-controlled trials of 155 IU onabotulinumtoxin A has shown a decreased number of headache days (-7.8 versus -6.4 days/28) in adults with chronic migraine. Started at 20 HA days/28 at baseline.
    - $3500 per treatment, which is effective for 3 months.
    - Typically insurance preapproval needs
      - Dx of Chronic Migraine
      - Trial of > 3 Preventives
Onabotulinumtoxin A: Peds Studies

• Ahmed et al, (Pediatric Neurology, 2010)
  • Retrospective chart review of 100 IU protocol
  • Positive response in 50% patients who have failed multiple (>8) previous preventative medications.
  • Effective in other HA types, such as NDPH, nummular headache

• Other retrospective studies
  • Toronto Sick Kids
  • Cincinnati Children’s
  • Germany

• Prospective RCT funded by Allergan
  • Single dose 75 IU vs 150 vs placebo
  • Results Pending
Treat Co-Morbidities

- Sleep (67%)
- Anxiety (85%)
- Fibromyalgia and muscle pain (40%)
- Chronic abdominal pain (40%)
- Dizziness and lightheadedness (60%)
Comorbidities: Sleep, School

• Two most common triggers are Stress and Sleep
  • Migraines frequent during school year
  • Use the term “busy” rather than stress

• Lack of sleep
  • Teenagers tend to be “night owls”
  • Challenged by early school start time
  • Bidirectional effect (more HA, worse sleep)
  • 9.5 hours per night
  • “do you feel rested in the morning”

• Rx: melatonin, CBT, turn off electronics
Comorbidities: Anxiety

• 50% in Adults with Episodic Migraine
• 85% in Teens with Chronic Headache
• Generalized anxiety
• Social anxiety
  • Can interfere with school attendance
• Panic attacks
• Anticipatory anxiety of getting HA
• Rx: CBT can be very effective
  • SSRI if needed
Comorbidities: Dizzy and Lightheaded

- Migrainous Vertigo
  - Worse during migraine attack

- Orthostatic Intolerance
  - Position dependent
  - Responds to fluids, salt, exercise

- Chronic Subjective Dizziness
  - Position independent
  - Feeling “like on a boat”
  - Responds to CBT, SSRIs or SNRIs
Other Therapy Options

• Nerve Blocks
• Cefaly Antimigraine Device
• eNeura TMS
• Behavioral Treatment Programs
Nerve Blocks-Post Traumatic Headache

• Pediatric post-traumatic headaches and peripheral nerve blocks of the scalp. Dubrovsky AS, Friedman D, Kocilowicz H. Headache 2014 54:878
  • Retrospective case series of 28 patients with PTH. The therapeutic effect was good (>24 pain relief or ask for a repeat block) in 93% of patients with 71% reporting immediate complete relief of their headaches.

  • 15 patients received occipital nerve block for CPTH. Follow-up in 14 patients at 5 months postinjury, 64% reported long-term response to the occipital nerve blocks.
Nerve Blocks-SPG

• Sphenopalatine ganglion nerve blocks
  • Three devices recently came to market
    • Sphenocath, Allevio, TX360
    • Twice per week for 6 weeks

• No childhood study

• One small study in adults with CM (Headache 55:101,2015) noted relief vs placebo at 15, 30 minutes, 24 hours after treatment. It is unclear if there was long term benefit past the study period.
Stimulation- Cefaly Anti-Migraine Device

Cefaly is the perfect solution for more than half a million people suffering from migraines. It enables the use of medicines to be significantly reduced and improves the sufferer's quality of life to be markedly improved. Clinical studies have demonstrated its excellent efficacy and complete safety. Cefaly has been approved under prescription.

Cefaly is positioned on the forehead using an adjustable headpiece. Precise impulses are produced, which act on the trigeminal nerve in order to prevent migraine attacks.
eNeura Transcranial Magnetic Stimulator
Biofeedback

Biofeedback as Prophylaxis for Pediatric Migraine: A Meta-analysis
Anker Stubberud, Emma Varkey, Douglas C. McCrory, Sindre Andre Pedersen and Mattias Linde
Pediatrics 2016;138; originally published online July 26, 2016;
DOI: 10.1542/peds.2016-0675

Migraine Frequency
Attack Duration
Headache Intensity

(NNT = 2)
Interdisciplinary Pain Treatment

- Involves coordinated intervention among at least 3 disciplines usually pediatrics/anesthesia, psychology, physical medicine working in an integrated way

- An inpatient or day hospital setting

- 1-3 weeks in duration
  - Goals:
    - Improve functional status
    - Improve physical conditioning, strength, flexibility
    - Improve psychological well-being
    - Return to school full-time at the end of the 3-week program
    - Taper and discontinue the use of opioids
    - Educate the patient’s parent(s) in how to effectively parent a chronically ill child
Figure 1. Clinically-relevant changes in Function Disability (FDI).
Therapies that don’t work- Daith Piercing

• From the Hebrew word Daath (or Daith), meaning “intelligence,” or “knowledge,” and was co-invented by famous piercer Erik Dakota and a female client, who drew a connection between a conduit placed in the ear and the filtering of wisdom.
Therapies that don’t work (?)- Surgery

• Migraine Trigger Site Surgery
  • Plastic surgeon Guyuron

• Decompressive surgery of greater occipital nerve, supraorbital nerve

• Single retrospective study of 14 adolescents, after a 3 year followup, then reduction of monthly migraine days from 25 days to 5 days per month Plast Reconstr Surg 135:1700, 2015
Future Therapies: CGRP

- 37 amino acid peptide/Neurotransmitter associated with pain
- Initial studies used small molecule (talcagepant)
- Anti-CGRP antibodies being developed to used as preventive and/or acute therapy
- Positive early study in adults
  - Not 100% effective
  - $$$$$
Conclusion

• Chronic headache cause significant pain and functional disability

• There is a not a single treatment to help everyone

• Pharmacology helps, but often a more holistic approach is needed