Migraine: what is it and what matters for the patient?

Marius Birlea, MD, FAHS
Associate professor of Neurology clinical practice
University of Colorado Anschutz Medical Campus
Migraine: 6th most common disease on the planet and 2nd most disabling

Lancet Neurology, 2018; 17;954-976- GBD study

Kristin Chenoweth and Terrell Davis bond over Living with Migraine:

“You Have Somebody that Understands”

Migraine World Summit, 2019
Global, regional, and national burden of neurological disorders, 1990-2016:

Disability
What do the patients say?

Cause
• “I want to get to the root of the problem”
• “What is causing my headaches?”

Treatment
• “I want to get rid of my migraines”
• “How can I stop my migraines?”
• “I don’t want to have a headache every day”
• “I am at my wit’s end with the headaches”
• “Tried everything”

Function
• “I want to be able to work and take care of my family”

Indifference
• “I don’t know, my doctor sent me here”
What do the patients say?

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Diagnostic algorithm

- Detailed History and Examination
- Are there red flags?
- Primary Headache Disorder
- Secondary Headache Disorder
“Doctor, I have a sinus headache”
“Doctor, I have a migraine”
• 28 yo woman with hx. of migraine since age 13, had to interrupt high school at age 17-18 due to frequent and severe headaches.
• Pressure or throbbing, front-temples, with radiation to the back. Most of the days, her headaches are manageable and respond to OTC analgesics.
• High scores for impact and disability (HIT 6 and MIDAS)
• Low score for depression (PHQ9)
• Exam normal.
• Meds: Oral contraceptives, simple analgesics, Frova, rare Norco, rarely goes to ED
• Offered preventive treatment
Variable evolution

Individual trajectories of episodic and chronic migraine

Serrano et al, Journal of Headache and Pain, 2017
Phases of a migraine attack

Timeline of a Migraine Attack

Phases:
- Premonitory
- Aura
- Headache
- Postdrome

Symptoms:
- Yawning, Polyuria
- Neck Pain, Fatigue, Mood change
- Light sensitivity, Sound sensitivity
- Nausea

Brain Activation:
- Hypothalamus, Brainstem Cortex
- Cortex
- Brainstem
- Thalamus
- Hypothalamus
- Cortex Thalamus Hypothalamus

Visual changes
Numbness/tingling
Language dysfunction
Cognitive dysfunction
Brainstem symptoms

Cutaneous allodynia

Dr. Andrew Charles, UCLA
Disability during attack

Most bothersome symptom

Correlations with global attack disability

- Worse mental effort: 0.90*
- Pain: 0.88
- Photophobia: 0.85*
- Dif. thinking: 0.81
- Kinesiophobia: 0.79
- Worse physical effort: 0.75
- Phonophobia: 0.68
- Nausea: 0.59

Gil-Gouvela et al, Cephalalgia 2016
Migraine as a deficit in filtering of sensory inputs—a model

Ho et al, Nat Rev Neurol 2010
Migraine Strikes as Neuronal Excitability Reaches a Tipping Point

Mathematical model

Scheffer et al, PlosOne 2013
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Life with migraine

A) Worry About Covering the Household Expenses

B) Worry About Having Long-term Financial Security

C) Worry About Losing Job or Being Laid Off

D) Harder for Partner to Advance in His/Her Job

E) Partner Misses More Work Than He/She Should

F) Partner Had to Change Jobs/Reduce Hours

G) Partner Had to Leave Job or Pass Up Job They Would Really Like
Headache Acceptance Questionnaire (HAQ).

Instructions: Below you will find a list of statements. Please rate how true each statement is for you using the scale below.

<p>| | | | | | | |</p>
<table>
<thead>
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<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Never true</td>
<td>Very rarely true</td>
<td>Rarely true</td>
<td>Sometimes true</td>
<td>Frequently true</td>
<td>Almost always true</td>
<td>Always true</td>
</tr>
</tbody>
</table>

1. I must limit my activities to avoid anything that might trigger a headache.
2. I avoid making plans if I think I might get a headache.
3. I avoid putting myself in situations where I might get a headache.
4. My headaches keep me from trying to be productive.
5. I would gladly sacrifice important things in my life to better control my headaches.
6. I am doing my best to live a normal life with my headaches.

Scoring: Items 1–5 are reverse scored in order to obtain a total headache acceptance score. Total scores range from 6 to 42, with higher scores indicating greater acceptance of headache.
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Suicide risk in patients with migraine, migraine with comorbid depression, and migraine with comorbid depression and fibromyalgia.

![Graph showing suicide risk in different conditions.

- Migraine
- Migraine + Depression
- Migraine + Depression + Fibromyalgia

Suicidal ideation and attempt frequencies are represented. Liu et al, Neurology 2015]
What do the patients say?

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**Framework for transitions in migraine**

**Nonmodifiable:** age, female, white, low educational/socioeconomic status, genetics

**Modifiable:** attack frequency, suboptimal treatment of attacks, obesity, analgesics and caffeine overuse, sleep apnea, psychiatric comorbidities, stressful life events

- Weight loss
- “Detoxification”
- CPAP
- Decrease caffeine intake
- Treatment of other chronic pain

Abortive and preventive therapy

Behavioral treatments

Non-pharmacological treatments

*Bigal and Lipton, Neurology 2008*
Team players against migraine

- Best drug treatment
- Cognitive behavioral therapy
- Multidisciplinary treatment
- Physiotherapy
- Relaxation training
- Education
- Patient education
- Advocacy

Gaul et al, Plos One 2013
Preventive treatment: to ↓ attacks frequency/severity

Dissecting RLB Triumvirate

Regular lifestyle behavior

Yohannes et al, J Neurol 2016
## Preventive treatment: to ↓ attacks frequency/severity

<table>
<thead>
<tr>
<th>Anticonvulsants</th>
<th>Antihypertensives</th>
<th>Antidepressants</th>
<th>Anti CGRP Antibodies MIGRAINE SPECIFIC</th>
<th>Other Prescriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topiramate (Topamax, Tro.)</td>
<td>Candesartan (Atacand)</td>
<td>Amitriptyline (Elavil)</td>
<td>Erenumab (AIMOVIG)</td>
<td>Memantine (Namenda)</td>
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<tr>
<td>Gabapentin (Neurontin)</td>
<td>Metoprolol (Lopressor)</td>
<td>Nortriptyline (Pamelor)</td>
<td>Fremanezumab (AJOVY)</td>
<td>Methylergonovine (Methergine)</td>
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<tr>
<td>Valproic acid (Depakote)</td>
<td>Propranolol (Inderal)</td>
<td>Venlafaxine (Effexor)</td>
<td>Galcanezumab (EMGALITY)</td>
<td>Aspirin</td>
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<tr>
<td>Other</td>
<td>Other</td>
<td>Other</td>
<td>Eptinezumab (VYEPTI)</td>
<td>Other</td>
</tr>
</tbody>
</table>

Botox injections for Chronic Migraine (Onabotulinium toxin A)

### MIGRAINE SPECIFIC

**Supplements**
- Boswellia;
- CoQ10;
- Melatonin;
- Magnesium;
- Vitamin B2 (Riboflavin)

**Devices**
- eTNS
- Gammacore
- eTNSTranscranial magnetic stimulator, TMS
<table>
<thead>
<tr>
<th>MIGRAINE SPECIFIC</th>
<th>Non-specific pain relievers</th>
<th>Opipids/barbiturate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triptans</td>
<td>NSAIDs</td>
<td>Acetaminophen (APAP)(Tylenol)</td>
</tr>
<tr>
<td>Almotriptan (Axert)</td>
<td>Aspirin</td>
<td>APAP &amp; Oxycodone (Percocet)</td>
</tr>
<tr>
<td>Eletriptan (Relpax)</td>
<td>Chlorpromazine (Thorazine)</td>
<td>Butalbital/APAP/Caffeine (Fioricet)</td>
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<tr>
<td>Frovatriptan (Frova)</td>
<td>Celecoxib (Celebrex)</td>
<td>Cyclobenzaprine (Flexeryl)</td>
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<tr>
<td>Naratriptan (Amerge)</td>
<td>Diclofenac (Cambia)</td>
<td>Hydromorphone (Dilaudid)</td>
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<tr>
<td>Rizatriptan (Maxalt)</td>
<td>Ibuprofen (Motrin)</td>
<td>Hydrocodone/APAP (Norco/Vicodin)</td>
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<tr>
<td>Sumatriptan (Imitrex)</td>
<td>Indomethacin (Indocid)</td>
<td>Oxycodone (Oxycontin)</td>
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<tr>
<td>Treximet (Pernix)</td>
<td>Lasmiditan (Reyvow)</td>
<td>Tramadol (Ultra)</td>
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<tr>
<td>Zolmitriptan (Zomig)</td>
<td>Dihydroergotamine (DHE)</td>
<td>Tylenol/Codeine</td>
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<tr>
<td>Devices</td>
<td>eTNS (CEFALY)</td>
<td>GammaCore (SAPPHIRE)</td>
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<tr>
<td></td>
<td>eTNSTranscranial magnetic stimulator, TMS (eNEURA)</td>
<td>Nerivio (MIGRA)</td>
</tr>
</tbody>
</table>
Preventive and abortive: devices

CEFALY

TMS

GammaCore

Nerivio
THANK YOU!

Questions?
“The impact of migraine on psychological well-being of young women and their communication with physicians about migraine: a multinational study”
During the last 3 months, did you have any of the following with your headaches?*

1. You felt **nauseated** or sick to your stomach when you had a headache?

2. **Light bothered you** (a lot more than when you don’t have headaches)?

3. Your headaches **limited your ability** to work, study, or do what you needed to do for at least 1 day?

A self-administered screener for migraine in primary care / Lipton RB. Neurology. 2003
Vestibular migraine

Prodrome phase

Aura

Headache

Headache phase

Vestibular symptoms

Resolution phase

Postdrome phase

Sensory hyperexcitability

Stolte et al, Cephalalgia 2014
Preventive treatment: to ↓ attacks frequency/severity