CLINICAL PICTURE OF MIGRAINE

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Headache prevalence in population is > 90%
Background

- Migraine headache is a complex, recurrent headache disorder that is one of the most common complaints in medicine.

- In the US, more than 30 million people have 1 or more migraine headaches per year.

- Approximately 75% of all persons who experience migraines are women.
The classic migraine episode is characterized by unilateral head pain preceded by various visual, sensory, motor symptoms, collectively known as an aura.

Most commonly, the aura consists of visual manifestations such as scotomomas, photophobia, or visual scintillations (eg, bright zigzag lines).
Background

- Migraine treatment involves acute (abortive) and preventive (prophylactic) therapy

- Patients with frequent attacks usually require both

- Measures directed toward reducing migraine triggers are also generally advisable
The 2nd edition of the International Classification of Headache Disorders
(Cephalalgia 2004)

- Migraine without aura (formerly common migraine)
- Probable migraine without aura
- Migraine with aura (formerly classic migraine)
- Probable migraine with aura
- Chronic migraine
- Chronic migraine associated with analgesic overuse
- Childhood periodic syndromes that may not be precursors to or associated with migraine
- Complications of migraine
- Migrainous disorder not fulfilling above criteria
- Hemicrania continua
Patient education is key to successful long-term management.

Migraine is a chronic neurologic disorder that requires a lifestyle change at some level.
In the United States, more than 30 million people have 1 or more migraine headaches per year.
This roughly corresponds to approximately 18% of females and 6% of males.
Migraine accounts for 64% of severe headaches in females and 43% of severe headaches in males.
Approximately 75% of all persons who experience migraines are women.
The incidence of migraine with aura peaks in boys at around age 5 yrs and in girls at around age 12-13 yrs.
The incidence of migraine without aura peaks in boys at age 10-11 yrs and in girls at age 14-17 yrs.

Migraine: affecting the productive years

% prevalence

Age (years)

Male  Female

Lipton and Stewart Neurology 1993

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Epidemiology

- Before puberty, both the prevalence and incidence of migraine are higher in boys than in girls.
- In individuals older than 12 years, the prevalence increases in both males and females, reaching a peak at age 30-40 years.
- The female-to-male ratio increases from 2.5:1 at puberty to 3.5:1 at age 40 years.
- Attacks usually decrease in severity and frequency in individuals older than 40 years, except for women in perimenopause.
- Onset of migraine after age 50 years is rare.

The World Health Organization (WHO) estimates a worldwide prevalence of current migraine of 10% and a lifetime prevalence of 14%.

The adjusted prevalence of migraine is highest in North America, followed by South and Central America, Europe, Asia and Africa.

Approximately 3000 migraine attacks occur every day for each million of the general population worldwide.

According to the WHO, migraine is 19th among all causes of years lived with disability.
Worldwide prevalence of migraine

USA 15%

Chile 7%

Danmark 10%

France 8%

Slovenia 12%

Italy 16%

Switzerland 13%

Japan 8%

1-year prevalence

Migraine is still underdiagnosed

The increase incidence of migraine probably reflects greater awareness of the condition.
Migraine is a chronic condition, but prolonged remissions are common.

One study showed that 62% of young adults were migraine free for more than 2 years, but only 40% continued to be migraine free after 30 years.

The severity and frequency of attacks tend to diminish with increasing age.

After 15 years, approximately 30% of men and 40% of women no longer have migraine attacks.
Etiology

- Approximately 70% of patients have a first-degree relative with a history of migraine.

- The risk of migraine is increased 4-fold in relatives of people who have migraine with aura.

- Although no genetic basis has been identified for common migraine, it generally demonstrates a maternal inheritance pattern.

Familial hemiplegic migraine (FHM) is a type of migraine with aura that is preceded or followed by hemiplegia, which typically resolves.

Three loci have been identified in FHM:

- **FHM type 1** occurs in approximately 50% of affected families, is linked to band 19p13 or a mutation in the calcium channel gene \((CACNA1A4)\) at the 1q locus.
- **FHM type 2** is due to mutation in the sodium channel gene \(ATP1A2\) on chromosome 1.
- **FHM3** is a rare subtype of FHM and is caused by mutations in a sodium channel \(\alpha\)-subunit coding gene, \(SCNA1\).
Migraine precipitants

- Stress
- Excessive or insufficient sleep
- Medications (e.g., vasodilators, oral contraceptives)
- Smoking
- Exposure to bright or fluorescent lighting
- Strong odors (e.g., perfumes, colognes, petroleum distillates)
- Hormonal changes, such as menstruation (common), pregnancy, and ovulation
- Head trauma

Migraine precipitants

- Weather changes
- Metabolic or infectious diseases
- Physical exertion or fatigue
- Motion sickness
- Cold stimulus (e.g., ice cream headaches)
Foods containing tyramine may provoke migraine

Such foods include the following:

- Aged cheese
- Yogurth
- Sour cream
- Chicken livers
- Sausages
- Bananas
- Avocados
- Canned figs

- Raisins
- Peanuts
- Soy sauce
- Pickled fish
- Fresh-baked breads
- Pork
- Vinegars
- Beans
1. How many different types of headache had a patient in the past? Separate medical history for each type of headache!

We should focus to the main type of headache which disables a patient.

2. Time questions
   a) Why does she/he visit a doctor?
   b) How frequent she/he has a headache?
   c) When did the headaches begin?
   d) What is the duration of the headache?

3. Questions of the headaches' quality
   a) The intensity of pain?
   b) Quality of pain?
   c) Site and distribution of pain?
   d) Accompanying symptoms?

Wrong history is frequent cause for false diagnosis.
Diagnosis – ID Migraine test

Patient has \( > 2 \) headaches in last 3 months

- **positive**
  - Secondary headache - No
  - Migraine - Yes
  - Yes
  - Treatment of migraine

- **negative**
  - Secondary headache - No
  - Primary headache - Yes
  - Yes
  - Treatment according the dg.
Clinical figure of migraine

- Prodrome
  - Mood changes
  - Lethargy
  - Depression
  - Appetite
  - Normal

- Aura
  - Weakness
  - Phonophobia
  - Osmophobia
  - Light
  - Normal

- Headache
  - Nausea
  - Photophobia
  - Osmophobia
  - Loss of appetite
  - Normal

- V Postdrome
  - Vomiting
  - Deep sleep
  - Happiness
  - Balance of fluid
  - Normal
Migraine with aura

“Clasic migraine”

1 / 10

Tipical aura  5-60 min
Persistent aura  >60 min-7 days
Sudden aura  <4 min
Aura - a sign of classical migraine

- Neurological symptom
- Arising from cortex or brain steam
- Develop 5-20 min
- Last less than 60 min
Auras aren't the same for everyone, so you might also experience bright spots or flashes.

Auras are sometimes accompanied by a partial loss of vision referred to as a scotoma.

Auras commonly last 10 to 30 minutes.

A sensory aura can occur at the same time as the visual aura, directly afterward or on its own.

A sensory aura begins as a tingling in one limb or a feeling of numbness that travels up your arm over 10 to 20 minutes.

The sensation can spread to one side of your face and tongue.
Another aura causes transient speech or language problems referred to as dysphasic aura.

In the rarest of auras, the limbs and possibly the face on one side of your body might become weak; this is referred to as hemiplegic migraine.

A migraine aura usually precedes the migraine attack but can also occur during the attack.

An aura can also occur without an associated headache.
Symptoms and signs

Visual (99 %)

Negative scotomata:
- blurred or absent areas in the vision field
- tunnel vision
- even complete blindness

Positive visual problems, the most common of which consists of an absent arc or band of vision with a:
- shimmering scintillations
- sparks, or colors due to electrical or mechanical stimulation of the ocular system
- glittering zigzag lines or borders
Aura

Symptoms and signs

- **Sensory (31 %)** paresthesias (unilateral)
- **Motor symptoms (6 %)** hemiparesis (18 %) ± aphasia
- **Cognitive** cognitive disturbances
Aura

The best known visual aura is called a fortification spectrum because its pattern resembles the walls of a medieval fort.

It may start as a small hole of light or sometimes as bright geometrical lines and shapes in your visual field.

This visual aura may expand into a sickle- or C-shaped object, with zigzag lines on the leading edge.

As it moves, it may appear to grow.
Fortification spectrum
Fortification spectrum
Visual snow
Persistent migraine aura symptoms (e.g. visual snow)
Migraine without aura

“Common migraine”

9 in 10
Migraine without aura

A. At least 5 attacks
B. Duration 4 - 72 ur
C. At least 2 of the following signs of pain quality

- Unilateral headache
- Pulsating
- Moderate/severe intensity
- Aggravated by routine physical activity
Migraine without aura

Associated with at least one of

- Photophobia
- Phonophobia
- Nausea
- Vomiting
Migraine without aura

Other causes of headache must be excluded

Migraine without aura

9/10
This is migraine

Patients are completely symptom-free between attacks
Two attacks of hemiplegic migraine with prolonged aura

Lizuka T. *J Neurol Neurosurg Psychiatry* doi:10.1136/jnnp-2011-300843
Chronification of the disease

Periaqueductal gray changes

Group-wise comparison: ANOVA
*Significant difference, \( P < 0.05 \)
PAG=periaqueductal gray
R2= iron deposits in PAG


B. Zvan – Migraine 2012
Chronic migraine (CM) and episodic migraine (EM) are part of the spectrum of migraine disorders.

They are distinct clinical entities.

Those with CM demonstrate higher individual and societal burden.

Significantly more disabled than those with EM.

Have greater impaired quality of life both inside and outside the home.
The differences between episodic and chronic migraine

**EM is characterized by those with migraine who have 0 to 14 headache days per month**

**CM is headache**

- on &ge;15 days/month for 3 or more months,
- of which &ge;8 days meet criteria for migraine without aura
- and/or respond to migraine-specific treatment
- occurring in a patient with a lifetime history of at least 5 prior migraine attacks
- not attributed to another causative disorder
- and no medication overuse

The differences between episodic and chronic migraine

- The relationship between EM and CM is complex. EM progresses to CM at the rate of 2.5% per year.

- CM often remits to EM (2-year transition rate of 26%).

- Persons with CM had longer duration of headache attacks than those with EM.

- CM were more likely to experience severe pain intensity than EM.
### Symptoms profile of chronic migraine

<table>
<thead>
<tr>
<th>Patient profiles</th>
<th>CH</th>
<th>EM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Clinical characteristics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Headache frequency, $d/mo$</td>
<td>$\geq 15$</td>
<td>$&lt; 15$</td>
</tr>
<tr>
<td>Severe headache pain, $%$</td>
<td>92.4*</td>
<td>78.1</td>
</tr>
<tr>
<td>Duration of headache without medication, $mean h$</td>
<td>65.1*</td>
<td>38.8</td>
</tr>
<tr>
<td>Duration of headache with medication, $mean h$</td>
<td>24.1*</td>
<td>12.8</td>
</tr>
<tr>
<td><strong>Sociodemographics$^d$</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean age, $y (SD)$</td>
<td>47.7* (14.0)</td>
<td>46.0 (13.8)</td>
</tr>
<tr>
<td>Race,$%$ Caucasian</td>
<td>90.7</td>
<td>87.3</td>
</tr>
<tr>
<td>Women,$%$</td>
<td>78.6</td>
<td>80.0</td>
</tr>
<tr>
<td>Occupationally disabled,$%$</td>
<td>20.0*</td>
<td>11.1</td>
</tr>
</tbody>
</table>

**CH** – chronic migraine; **EM** - Episodic migraine

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Symptoms profile of chronic migraine

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<th>Patient profiles</th>
<th>CH</th>
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<tbody>
<tr>
<td>Household income, % &lt; $22,500/y</td>
<td>29.9*</td>
<td>24.9</td>
</tr>
<tr>
<td>Mean BMI, n (SD)</td>
<td>29.8 (8.3)</td>
<td>29.2 (7.9)</td>
</tr>
<tr>
<td>Resource utilization&lt;sup&gt;c&lt;/sup&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary care provider visits, %</td>
<td>48.0*</td>
<td>26.4</td>
</tr>
<tr>
<td>Neurology/headache specialist visits, %</td>
<td>23.8*</td>
<td>8.0</td>
</tr>
<tr>
<td>Comorbidities&lt;sup&gt;d, e&lt;/sup&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression&lt;sup&gt;f&lt;/sup&gt;, %</td>
<td>30.2*</td>
<td>17.2</td>
</tr>
<tr>
<td>Anxiety, %</td>
<td>30.2*</td>
<td>18.8</td>
</tr>
<tr>
<td>Obesity, %</td>
<td>25.5*</td>
<td>21.0</td>
</tr>
<tr>
<td>Cutaneous allodynia, %</td>
<td>68.3*</td>
<td>63.2</td>
</tr>
</tbody>
</table>

CH – chronic migraine; EM - Episodic migraine

Katsarava z et al. Defining the Differences Between Episodic Migraine and Chronic Migraine
Important to identify those at high risk for progression

Risk factors into two categories:

- Easily modified
- Not readily modifiable (e.g., age, female sex, Caucasian race, low educational level/socioeconomic status, and head injury)
Modifiable Risk Factors

- Obesity (defined as having BMI > 30) = a risk factor for progression of EM to CM
- Depression, anxiety, and chronic pain disorders
- Stressful life events such as divorce, moving, employment changes, or problems with children have been considered a risk factor for chronic daily headache
- Acute medication overuse: generally defined as use of medications on >10 or 15 d/month
- The consumption of caffeine
Modifiable Risk Factors

Risk-factor modification:

- decreasing headache frequency with behavioral and pharmacological treatment;
- weight loss management;
- avoiding medication overuse and caffeine consumption;
- and screening and treating depression and other psychiatric comorbidities

Is a component to optimizing care

Katsarava z et al. Defining the Differences Between Episodic Migraine and Chronic Migraine
Diagnostic teste for migraine: ID, HIT 6, MIDAS
Prophylactic treatment of Migraine

- **MIGRAINE severe and moderate disability**
  - $\leq 1 \text{x/month}$
    - acute th.
  - $\geq 2 \text{x/month}$
    - acute th + profilactic th
  - $\geq 3 \text{x/month}$
    - acute th + profilactic th + cognitive th

- **education, risk factors, lifestyle**
CM is a distinct disorder

**Tension:** pain is like a band squeezing the head

**Migraine:** pain, nausea and visual changes are typical of classic form
Conclusion

Through identification of risk factors for progression to CM, clinicians can educate patients about modifiable risk factors and can begin appropriate selected therapy in a timely manner.

As research continues to demonstrate, CM is a distinct disorder with clinico-epidemiological profiles and therapeutic response patterns different from that of EM.

Clear definition and enhanced recognition of these two diseases can better facilitate the development of therapies specifically targeted at either EM or CM.
Thank you