# Chronic Migraine and complications

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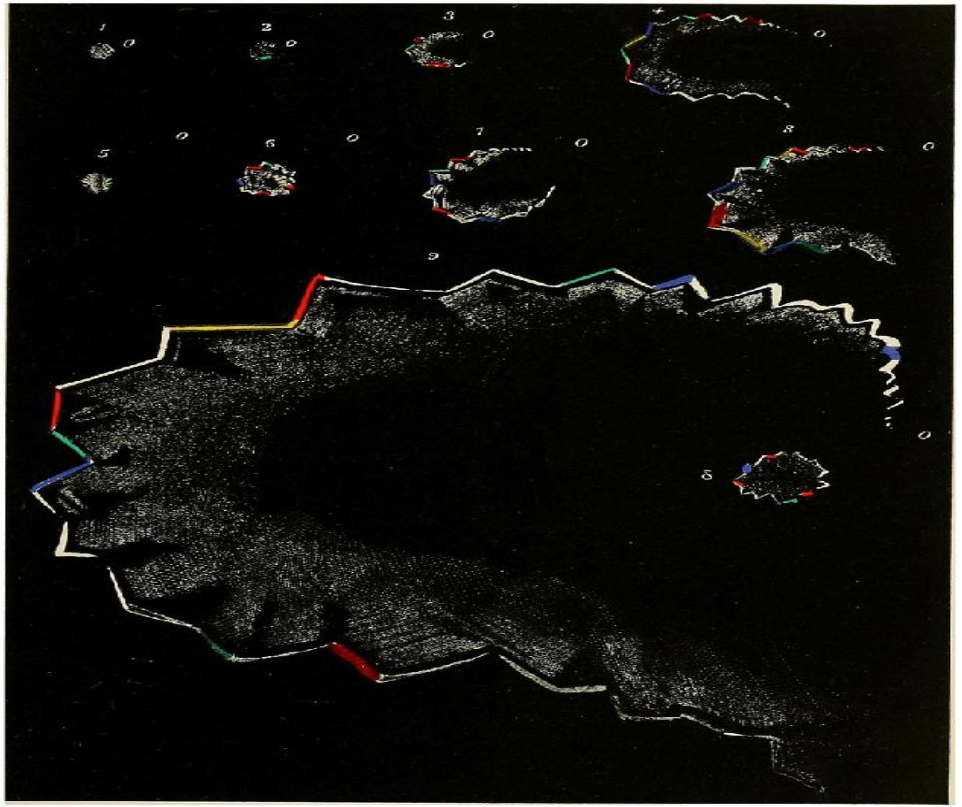
# Case

- 23-year-old lady presented to ED for 7 days history of gradual onset of **visual field defect** in the right eye.
- She also experiences **difficulties findings the right words** and slurred speech.
- These symptoms did not resolve since 7 days before.

- Daily severe headache & Persistent nausea & vomiting for a week
- She described character as a **throbbing pain** over the **left forehead** and **behind her left eye**.
- Associated with phonophobia & photophobia
- Worse with movement
- Aura

- Flashes of light and fortifications and zigzag lines
- aura symptom spreads gradually over ≥5 min
- symptoms occurred in succession
- aura symptoms lasted  more than 60 min for this time



- She has similar headaches for **10 years**, intermittent, unilateral, throbbing , occurring 2-3 times a month.

- Positive visual aura occurred < 60 mins

- Last year, headaches were more frequent: > 15 headache days per month and Migrainous attacks were > 8 days per month for > 3 months.

- prescribed **NSAIDs** to be used as needed as abortive therapy.

- She was given long acting **propranolol** at 80 mg/day as a prophylactic medication

- Usual treatment was not effective for this time

- **Neurological examination** revealed

❑ right visual field hemianopia,

❑ mild expressive aphasia and

❑ hypoesthesia of the right arm.

- Arterial blood pressure was 120/80 mmHg, heart rate was 84/min, SR and temperature was normal.

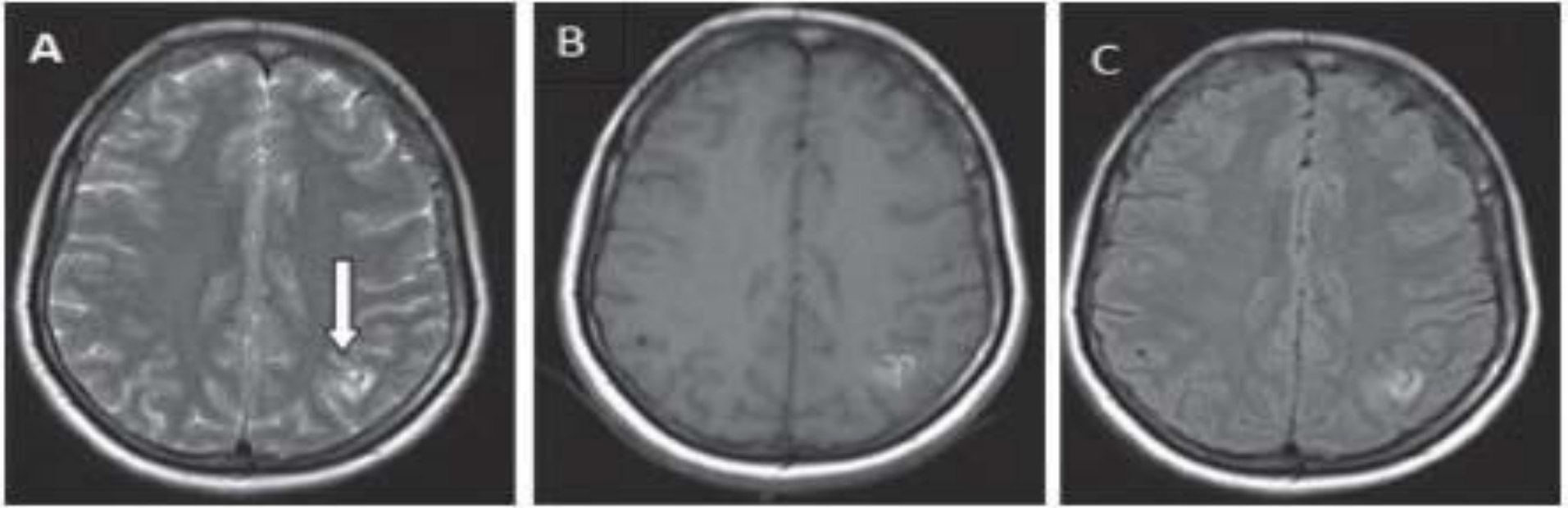
# Differential diagnosis

- Migraine with typical aura and it's complications
- Stroke
- ICH/SAH
- RCVCS/PRES
- Arterial dissection
- CVST
- AVM
- Meningitis
- leptomeningeal angiomatosis

- CT head with CTA was performed, but did not showed any signs of acute cerebral infarct, SAH, or other intracranial pathology.
- Routine blood test including CBC, ESR, CRP, D-dimer and standard biochemistry was unremarkable.
- Cerebrospinal fluid analysis was normal.
- She was diagnosed as complicated migraine.

- She was treated with intravenous analgesics and supportive therapy.
- The symptoms slowly improved over the next  few days and there was no residual neurology deficits 3 weeks later.
- MRI was performed on follow-up and showed **cortical laminar necrosis in left occipital lobe indicative of migrainous infarction**

# MRI(Brain)



- Chronic migraine is a neurologic condition associated with individual, societal, and economic burden

It's estimated that up to 148 million people in the world live with chronic migraine.

# Chronic Migraine

A. Migraine-like or tension-type-like headache on ≥15 days/month for >3 months that fulfill criteria B and C

B. Occurring in a patient who has had at least five attacks fulfilling criteria B–D for migraine without aura and/or criteria B and C for migraine with aura

C. On ≥8 days/month for >3 months, fulfilling any of the following:

- Criteria C and D for migraine without aura
- Criteria B and C for migraine with aura
- Believed by the patient to be migraine at onset and **relieved by**
- **a triptan or ergot derivative**

D. Not better accounted for by another diagnosis

**ICHD 3**. Cephalalgia **2018;** 38: 1–211. 

# Features of migraine and chronic migraine

## MIGRAINE


**Headache frequency**
0 to 14 days per month

**Diagnosis**
At least 5 migraine attacks over the course of a lifetime

## CHRONIC MIGRAINE


**Headache frequency**
15 or more days per month

**Diagnosis**
A history of 15 or more headache days a month, at least 8 with migraine characteristics, for at least 3 months

## MIGRAINE SYMPTOMS AND CHARACTERISTICS

- Headache pain on one side
- Pulsating feeling
- Moderate to severe pain intensity
- Pain that gets worse with physical activity
- Nausea and/or vomiting
- Sensitivity to lights, sounds, or smells

**SOURCE:** International Classification of Headache Disorders, 3rd edition

# Complications of Migraine

| | |
|---|---|
| Status migrainosus | • Debilitating migraine attack that lasts more than 72 hours<br>• Remissions of up to 12 hours related to medication or sleep accepted<br>• Status migrainosus can last several weeks<br>• Precipitating factors are stress/anxiety, menstruation, and lack of sleep |
| Persistent aura without infarction | • Aura symptoms that last over 1 week without evidence of infarction on neuroimaging |
| Migraine aura status | • Multiple auras (at least 2) occurring per day for more than 3 days in patients with migraine with aura |

# Complications of Migraine

| | |
|---|---|
| Migrainous infarction | • One or more migraine aura symptoms associated with an ischemic cerebral lesion on neuroimaging<br>• Infarct develops in the course of the migraine attack<br>• Aura symptoms last over 60 min<br>• Lesions mostly located in the posterior circulation<br>• Younger women are often affected |
| Migraine aura-triggered seizure | • Occurs within 1 hour after or during a migraine with aura attack |

Agostoni E, Aliprandi A. The complications of migraine with aura. Neurol Sci. 2006 May;27 Suppl 2:S91-5. doi: 10.1007/s10072-006-0578-y. PMID: 16688637.

# Other complications

- Work disability
- Loss of work
- Depression, anxiety and panic disorders
- Stroke, CVD, HT

# Risk factors for CM

## Modifiable

- Overuse of acute migraine medication,
- Ineffective acute migraine treatment,
- Obesity,
- Depression
- Stressful life events
- Caffeine intake
- Sleep disorders: insomnia, snoring, sleep apnea
- Chronic pain conditions: low back pain, neck pain, arthritis

## Non-Modifiable

- age
- female sex
- low educational status
- Head injury
- cutaneous allodynia,
- lower socioeconomic status

# Co morbidities of Chronic Migraine

- depressive disorders
- Anxiety
- post-traumatic stress disorder
- back pain, fibromyalgia & other **musculoskeletal pain** conditions)
- Hypertension & cardiovascular disease
- Allergies & asthma
- restless leg syndrome
- sleep disorders
- irritable bowel syndrome
- Epilepsy
- skin conditions
- Anemia
- Genetics- CADASIL

# Triggers

- Hormone changes in women- estrogen
- Alcohol, wine, caffeine
- Stress
- Sensory stimuli
- Sleep changes
- Weather changes
- Medications
- Foods & sweeteners
- Intense physical exertion

# Treatment of CM

- The mainstay of chronic migraine treatment is **prevention.**

- **Abortive Treatments** - non-steroidal anti-inflammatory drugs, triptans, ergotamines

- **Prophylaxis Treatments-** Topiramate, Valproic/A, propranolol/ atenolol, telmisartan, flunarizine ,amitriptyline, venlafaxine

- chemodenervation with onabotulinumtoxin A - FDA-approved preventive treatment for chronic migraine.

- CGRP receptor antagonists - erenumab, fremanezumab, galcanezumab, and eptinezumab.

- rimegepant

- lasmitidan

# Treatment of CM

- Non-medication preventive treatments

  - neuromodulation

  - cognitive behavioral therapy, biofeedback, accupuncture and relaxation treatments

  - The combination of new treatments including neuromodulation, behavioral approaches, and other interventions such as nerve blocks → more effective

- co morbidities, risk factors such as depression, anxiety, snoring, obesity, etc. and cost should be considered.

- Getting enough sleep & Drinking plenty of water

# The diagnostic criteria of migrainous infarction

## (International Classification of Headache Disorders, 3rd edition beta version) (ICHD-3β)

A. A migraine attack fulfilling criteria B and C

B. **Occurring in a patient with Migraine with aura and typical of previous attacks except that one or more aura symptoms persists for > 60 minutes**

C. **Neuroimaging demonstrates ischemic infarction in a relevant area**

D. Not better accounted for by another diagnosis

# Suggested mechanisms of ischemic stroke in migraineurs

| |
|---|
| Genetic predisposition |
| MTHFR C677T polymorphism |
| ACE–DD polymorphism |
| rs7698623 in *MEPE* |
| rs4975709 in *IRX4* |
| Endothelial dysfunction |
| Impaired endothelium–dependent vasodilation |
| Endothelial cell damage |
| Coagulation abnormalities |
| Increased PAF, vWF, prothrombin factor 1.2 (F1.2) |
| Decreased resistance to activated protein C |
| Protein S deficiency |
| Arterial dissection |
| Elevated serum elastase activity |
| MTHFR C677T polymorphism |
| PHACTR1 polymorphism (protective) |
| Patent foramen ovale (*controversial*) |
| Increased shunt amount in patients with migraine and stroke |
| Associated with juxtacortical white matter |
| Other comorbidities |
| Antiphospholipid antibody syndrome |
| Sneddon syndrome |
| Systemic lupus erythematosus |

MTHFR, methylenetetrahydrofolate reductase; ACE–DD, angiotensin–converting enzyme deletion/deletion; PAF, platelet–activating factor; vWF, von Willebrand factor.

**Journal of Stroke 2016;18(2):146-156 http://dx.doi.org/10.5853/jos.2015.01683**

# Take Home Messages

- Chronic migraine is defined as having headache on at least 15 days per month, with 8 of these having migraine symptoms, for at least 3 months.

- Treatment strategies for chronic migraine include risk factor modification, identification of triggers, co morbidity management and the use of acute and prophylactic pharmacotherapy.

- Chronic migraineurs invariably require prophylactic treatment.

# Take Home Messages

- Migraines generally don’t get worse over time, but they can lead to more serious complications.
- These complications are quite rare but careful evaluation is needed to distinguish its from other serious debilitating diseases
- Atypical or prolonged aura must be specified and demands further analysis
- In persistent aura, neuro-imaging should always be in the workup


June 29th
Chronic Migraine
Awareness
Day
#CMAware
#CMADay
#MHAM

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