



**ThinkAskLearn**  
Health Professional Education

## Headache Assessment

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### 3 kids come in all at once

- 14 year old girl with nil past history but 9/10 headache, frontal, nausea, photophobia, mother suffers from frequent headaches
- 16 year old boy with persistent headache, Had head clash in footy last week, ?LOC, Had CT at local ED. Today headache worse
- 17 year old girl presents with headache and fever for last 3/7. She has photophobia and looks pale



## Migraine is common

- Self report of 14-18 yr old – 2384 participants
  - 21.3% report migraine at some point in life
  - 9.6% had migraine within last 12 months
- Longitudinal study
  - Report migraine before age 6 – 25%
  - Report migraine between age 6-10yrs – 57%
- 1/3 have remission at puberty
- 70% have family history of headache



## Boys versus Girls

- 60% of all kids with migraine before puberty are male
- After puberty females outnumber males 3:1



The pathophysiology of migraine is currently believed to be a primary neuronal event. Patient factors (eg, genetic or metabolic and external triggers) interact to lower the brain threshold for the initiation of cortical spreading depression (CSD). The slowly propagating wave of CSD is a noxious stimulus that produces regional hypoperfusion believed to be the cause of the aura of migraine. It also diffuses to the perimeningeal vasculature producing the release of proinflammatory neurochemicals such as calcitonin gene-related peptide (CGRP). The resulting sterile, neurogenic inflammation activates first order neurons in the trigeminovascular system causing cranial vessel dilatation and the throbbing, pulsatile pain of migraine. Recent evidence also suggests that low levels of, or altered transmission of, the serotonergic system neurotransmitter 5-HT play a role in the CSD-induced activation of the trigeminovascular pathway.





## Kids with migraines also have

- Epilepsy
- Depression and anxiety
- Sleep disturbances
- Tourette's syndrome
- Asthma
- Congenital heart disease and stroke
- A higher frequency of suicidal ideation was identified in adolescents aged 13 to 15 with migraine with aura or
- High headache frequency (of any type)



## What is a migraine

- Bilateral Head Pain\*\*
  - Difficult to localise in kids
- Usually shorter duration than adults
- 2 types classified
  - Migraine without aura
  - Migraine with aura
    - Outdated terms are common and classic migraine



**International  
Headache Society**

Guideline on Headache classification 2018





## Migraine without Aura

- A. At least 5 attacks fulfilling criteria B-D
- B. Headache attacks lasting 4-72 hours\*
- C. Headache has at least 2 of the following characteristics:
  - 1. unilateral location, may be bilateral\*
  - 2. pulsating quality
  - 3. moderate or severe pain intensity
  - 4. aggravation by or causing avoidance of routine physical activity (eg, walking or climbing stairs)
- D. During headache, at least 1 of the following:
  - 1. nausea and/or vomiting
  - 2. photophobia and phonophobia
- E. Not attributed to another disorder



## Migraine with Aura

- A. At least 2 attacks fulfilling criteria B-D.
- B. One or more of the following fully reversible aura symptoms:
  - including positive features (eg, flickering lights, spots or lines) and/or negative features (ie, loss of vision)
  - fully reversible sensory symptoms including positive features (ie, pins and needles) and/or negative features (ie, numbness)
  - fully reversible dysphasic speech disturbance
- C. At least 2 of the following:
  - At least 1 aura symptom spreads gradually over  $\geq 5$  minutes, and/or 2 or more symptoms occur in succession
  - Each individual aura symptom lasts 5 to 60 minutes
  - At least 1 aura symptom is unilateral
  - The aura is accompanied, or followed within 60 minutes, by a headache
- D. Not better accounted for by another diagnosis



## Other types of headache

- Tension Headache
  - Similar to migraine ?spectrum of same disorder
  - Bandlike sensation, assoc neck and shoulder pain
  - Worse as day progresses
  - May improve with sleep
- Cluster Headache
  - Most painful of headache, Usually unilateral pain
  - Often assoc nasal congestion, rhinorrhoea, sweating, eyelid oedema,
  - Freq every other day or 8 per day



# TYPES OF HEADACHE



## MIGRAINE

**Where the pain is** - Usually on one side of your head with pressure behind one eye.

**Things that make it worse** - Pain gets worse with normal physical activity.



## SINUS

**Where the pain is** - Around your eyes, cheekbones, forehead, and bridge of the nose.

**Things that make it worse** - Leaning over, sudden movement, or exercising may make the headache worse.



## TENSION

**Where the pain is** - On both sides or all over your head.

**Things that make it worse** - Physical activity does not make headache worse.



## CLUSTER

**Where the pain is** - On one side of the face, head, or neck; does not switch sides.

**Things that make it worse** - Lying down makes it worse.

Medical Observer | Source: Everydayhealth / A.D.A.M



## Is it a migraine?



### Primary Headache

- Migraine headache
- Tension-type headache
- Cluster headache

### Secondary Headache, Serious Causes

- |   |                           |
|---|---------------------------|
| • Alcohol intoxication                                | • Malignant hypertension  |
| • Aneurysm  | • Meningioma              |
| • Brain abscess                                       | • Meningitis              |
| • Carbon monoxide poisoning                           | • Metastasis              |
| • Cerebrovascular abnormality                         | • Neuroblastoma           |
| • Cerebral contusion                                  | • Osteomyelitis           |
| • Dental infection                                    | • Sickle cell disease     |
| • Drug toxicity                                       | • Sinus tumor             |
| • Encephalitis  | • Subarachnoid hemorrhage |
| • Glaucoma  | • Subdural hematoma       |
| • Glioma  | • Substance abuse         |
| • Hydrocephalus                                       | • Temporal arteritis      |
| • Hypoglycemia  | • Trauma                  |
| • Infection (bacterial, viral, fungal, mycobacterial) | • Vasospasm               |

### Secondary Headache, Non-Life Threatening Causes

- |                                   |                                       |
|-----------------------------------|---------------------------------------|
| • Allergies                       | • Otitis                              |
| • Caffeine toxicity or withdrawal | • Poor nutrition                      |
| • Conjunctivitis                  | • Postlumbal puncture headache        |
| • Contusion                       | • Sinusitis                           |
| • Dental infection                | • Temporomandibular joint dysfunction |
| • Extraocular muscle strain       | • Vitamin A toxicity                  |
| • Glaucoma                        |                                       |



## Further investigation required

- First or worst headache ever; sudden (“thunderclap”) onset
- Increasing severity or frequency
- Change in headache character
- Awakening from sleep because of headache
- Occurring exclusively in the morning or late at night



## Further investigation required

- Headache associated with straining (cough, urination, defecation)
- Poor response to therapy
- Abrupt alteration in mental status
- Focal neurologic deficit
- High-risk populations



## Treatment in clinic

- Decrease stimulation
- Encourage headache diary
- Advocate regular routines
  - Balanced meals, sufficient fluid intake, exercise, sleep
- Discuss coping mechanisms



## Pharmacological

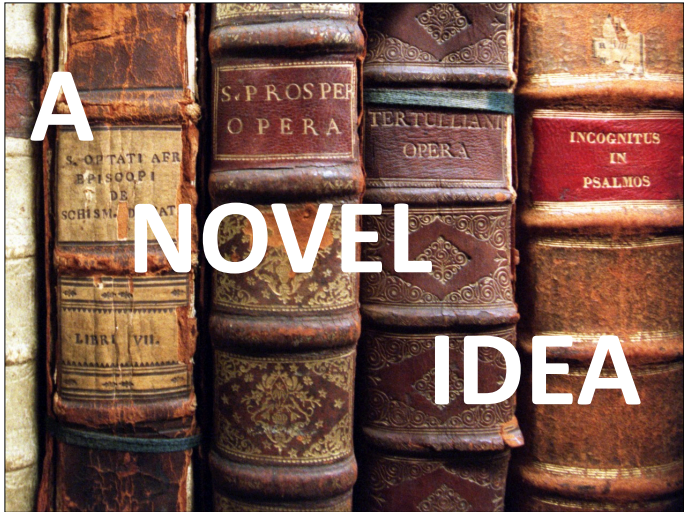
- Ibuprofen
  - A level from American Academy of Neurology
  - RCT 88 kids blinded placebo trial
  - 68% better at 2 hrs compared to 54% of paracetamol
- Ibuprofen first
- Dopamine receptor
  - Chlorpromazine (largactil)



## Pharmacological

- Sumatriptan (Imigran)
  - A level from American Academy of Neurology
  - Similar structure to serotonin
  - Vasoconstriction of dilated arteries
  - Not good if you had a stroke





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### Take Home Messages

- Migraines are complex and common
- Causes and treatments are not fully understood
- Migraine mimics serious illness
- Simple treatments can be started at school in appropriate circumstances



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