

Migraine & migralepsy in women

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Learning objectives

- Recognise clinical associations between migraine & epilepsy
- Examine differences in migraine & migralepsy between women & men
- Understand clinical features & management of migralepsy

Synopsis

- **Introduction**
- **Migraine: are women different?**
- **Migraine conundrums**
- **Clinical Importance- mechanisms, treatments & prognosis**
- **Conclusions**

Introduction –why it matters



- Most common neurological conditions:
 - Migraine: 10%+ of people/ leading cause of sickness leave
 - Epilepsy: 1%
 - 40%+ of neurological outpatients *American Headache Society, 2005*
- Migraine, epilepsy & migralepsy are confused
- Treatment works so important to get it right



What is migraine?

- A clinical entity
- Paradigm shift in definitions: useful?



From migraine in the 60s...

.. recurrent attacks of headache, widely varied in intensity, frequency & duration..

some are preceded by or associated with, conspicuous sensory, motor & mood disturbances..

IHS, JAMA, 1962.

*(& some occur without
Headache)*



To migraine post 2013

International headache society definition, III edition IHS, 2013

Five episodic headache of 4-72 hours

- **Any two of:**
 - Worsened by movement
 - Unilateral
 - Throbbing
 - Moderate or severe
- **Any one of:**
 - Nausea +/- vomiting
 - Photophobia & phonophobia



BUT....

International headache society
definition IHS, 2013,

Five episodic headache of
4-72 hours

- Any two of:
 - Worsened by movement
 - Unilateral
 - Throbbing
 - Moderate or severe
- Any one of:
 - Nausea +/- vomiting
 - Photophobia & phonophobia

*** May be bilateral or vary**

*** May be mild**

*** May be frequent or
continuous**

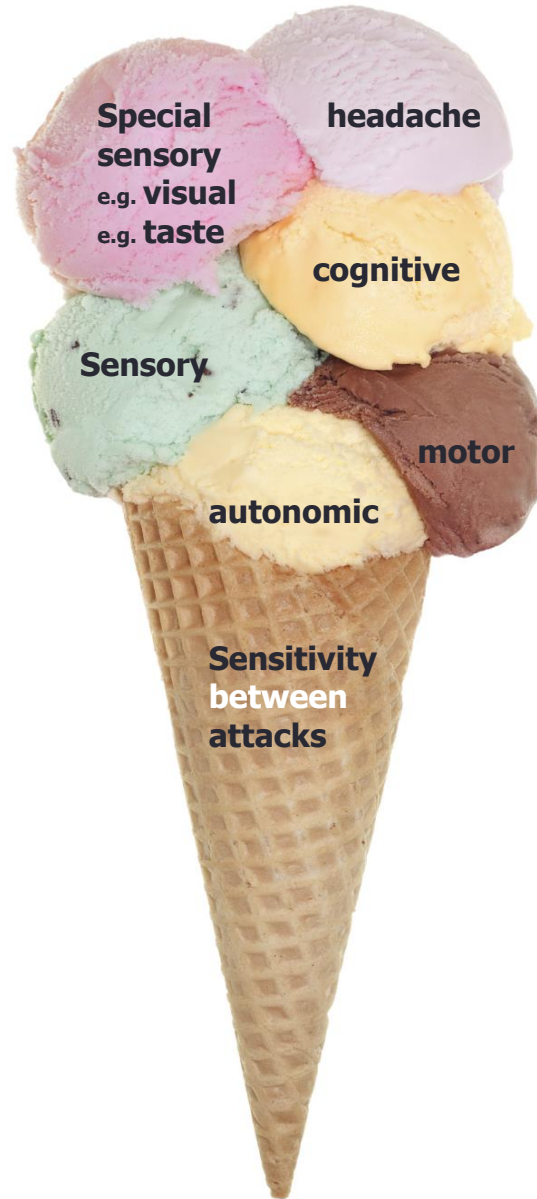
*** May be <4 or >72 hours**

**** MAY be NO HEADACHE***

**** MAY just be aura***

**** MAY be pain in limb or
abdomen***

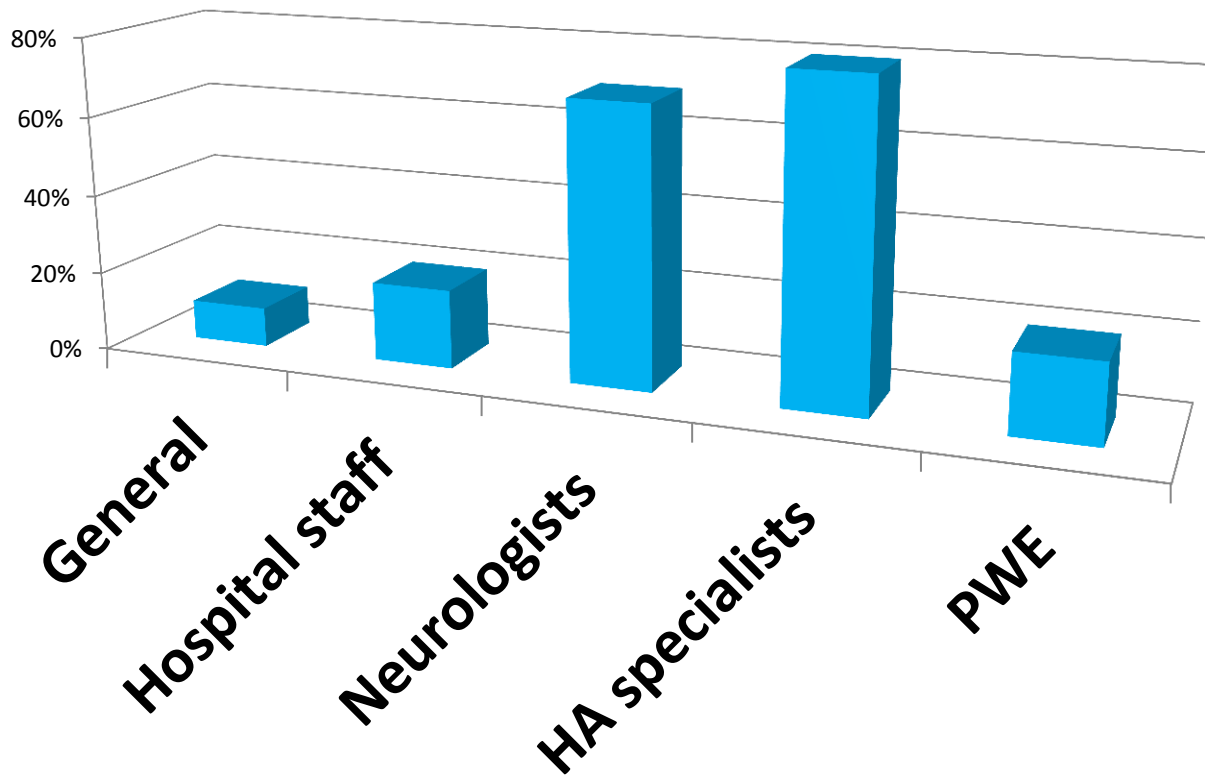
What is migraine?-The migraine ice-cream



....& all of these can be part of epilepsy...

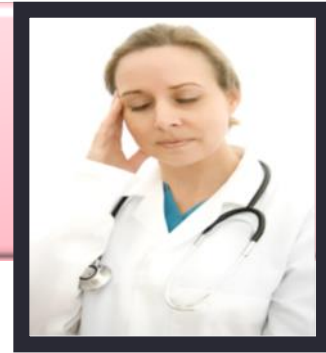
Differences -Who gets migraine?

percentage with migraine



PWE= people with epilepsy

Migraine women vs men: what is different?



Differences

INCIDENCE

STRUCTURAL

FUNCTIONAL

TREATMENT RESPONSE

Evidence

Female : male=2:1 –3:1

Russell et al 1995, Lipton et al, 2001

?thicker insula & precuneus *Maleki et al 2012*

more pain in women (men more aura?)


?oestradiol related fluctuations in
migraine onset *Macgregor, 2011*

more cutaneous allodynia in female
migraineurs *Bigal et al., 2008*

different responses eg to triptans

Ferrari et al., 2011

Epilepsy definition is simpler

- two unprovoked seizures >24 h apart Fisher, 2014
(? one unprovoked seizure plus other factors....)
- seizure: manifestation of abnormal brain electrical activity: discharge  hypersynchrony



Clinical event

eg aura (strange taste)

eg tonic clonic convulsion

Migraine conundrums

- What is it- definitions?
- Why the uncertainty?
- How frequent is it?
- Are women different?

Conundrums I: What is it?

- Gowers, Borderlands, 1907- *re migraine & epilepsy: “rare instances one affection may develop while the other goes on”*
- Lennox & Lennox, 1960-“ophthalmic migraine”(migraine with aura) is followed by epilepsy
- IHS-Migraine (aura) then epileptic seizure in next hour
- ILAE & others- not recognised

What is it? Migralepsy definition

“under-recognised”

- occurs with migraine without aura
- ***“possible extensions to its current definition”.....***

Maggioni, 2008

“doesn’t exist”

- No evidence for migralepsy
- ***shouldn’t use term***

Belcastro, 2011

Definitions: International Headache Society

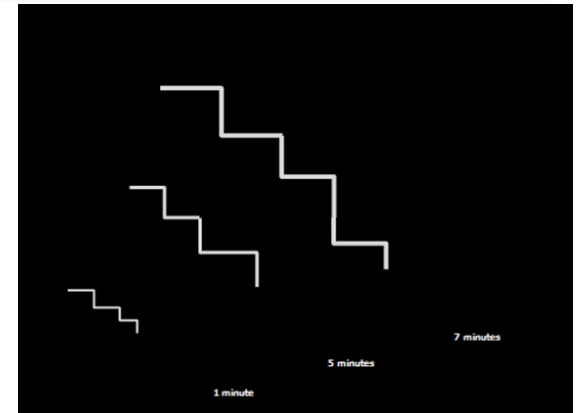
- ICHD-II, 2004; ICHD-III, 2013
 - "migraine-triggered seizure" (migralepsy) among complications of migraine (as a rare event in which a seizure happens during migrainous aura),
 - hemicrania epileptica: epileptiform discharges plus migraine headache
 - post-ictal headache: within 3hr, up to 72 hours

Migraine conundrums II- frequency

- 60-100 cases reported
- Why so few?
- Are we missing it?
- If rare & when migraine is common: why so infrequently reported?

Conundrums II - clinical uncertainty

- Case I
- 55 year old man, visual aura since 23 years, usually 2-3/year
- 20 minutes, then severe throbbing headache
- One episode of visual aura followed in 30 minutes by tonic clonic seizure



Conundrums III- clinical uncertainty

Case II

- 24 yr old student, twice monthly “tension headache “ (unilateral throbbing lies down)
- Episodes of tingling in his hand, unpleasant, spreading up his arm over 10 minutes with nausea, then tonic clonic seizure followed by severe throbbing headache

*** Painful (parietal) seizures? OR Migraine?**

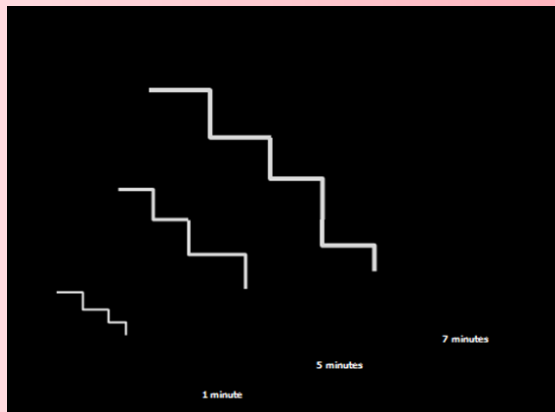
Young, Brain, 1983

Conundrums III- uncertainty- visual auras

* to **** = least to most important differentiators

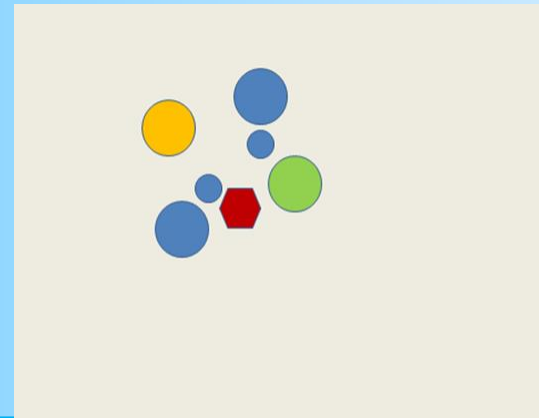
Migraine aura

- 5-30 minutes****
- gradual onset***
- gradual offset***
- black & white**
- linear (usually)*



Occipital epilepsy aura

- <3 minutes****
- rapid onset**
- rapid offset**
- coloured**
- circular (usually)*



Conundrums III- uncertainty-

- Diagnosis relies on patients'
- recollection of the event onset
- No objective tests:
- EEG can be misleading
 - does not tell you the event ONSET ie EEG changes don't always reflect onset
 - Migraine & occipital epilepsy -Panayiotoulos syndrome : non-specific inter- & ictal EEG abnormalities esp. theta or "epileptiform changes"

Conundrums III- uncertainty



A



B



- “man on the bus” phenomenon

Kasteleijn-Nolst Trenite ,2012

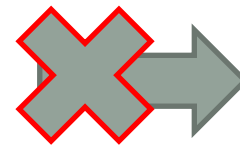
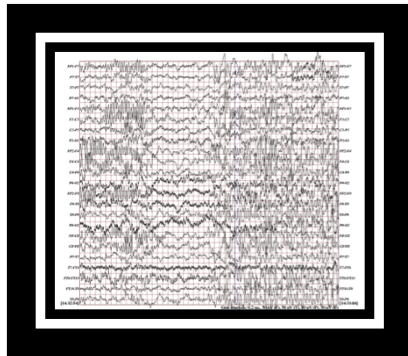
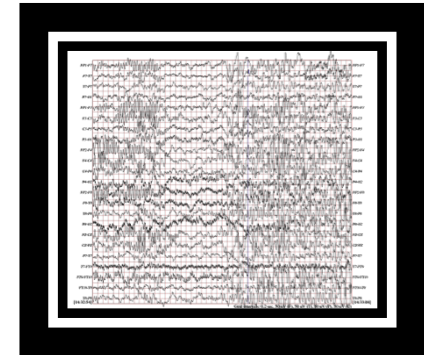
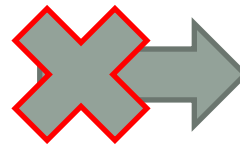
Migralepsy conundrums IV – are women different?

- Migraine: 2-3:1
- Epilepsy: IGE- 1:1, focal variable
- Migralepsy ?????

Mechanisms: direct links between migraine & epilepsy-

- Does migraine cause epilepsy or vice versa?
- Does migraine trigger epilepsy? Migralepsy
- Does epilepsy trigger migraine? Post-ictal headache

Mechanisms: Does migraine cause epilepsy or vice versa?/...NO.....



Bigal, 2003

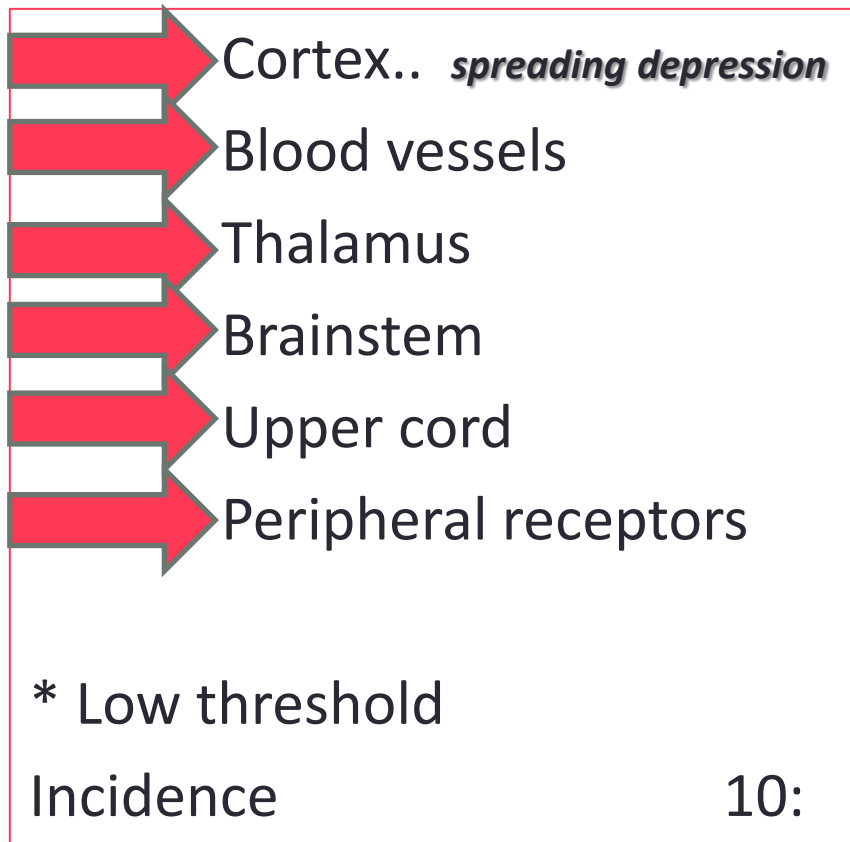
Does cortical spreading depression create seizure refractory period?

Importance – mechanisms- does epilepsy trigger migraine?

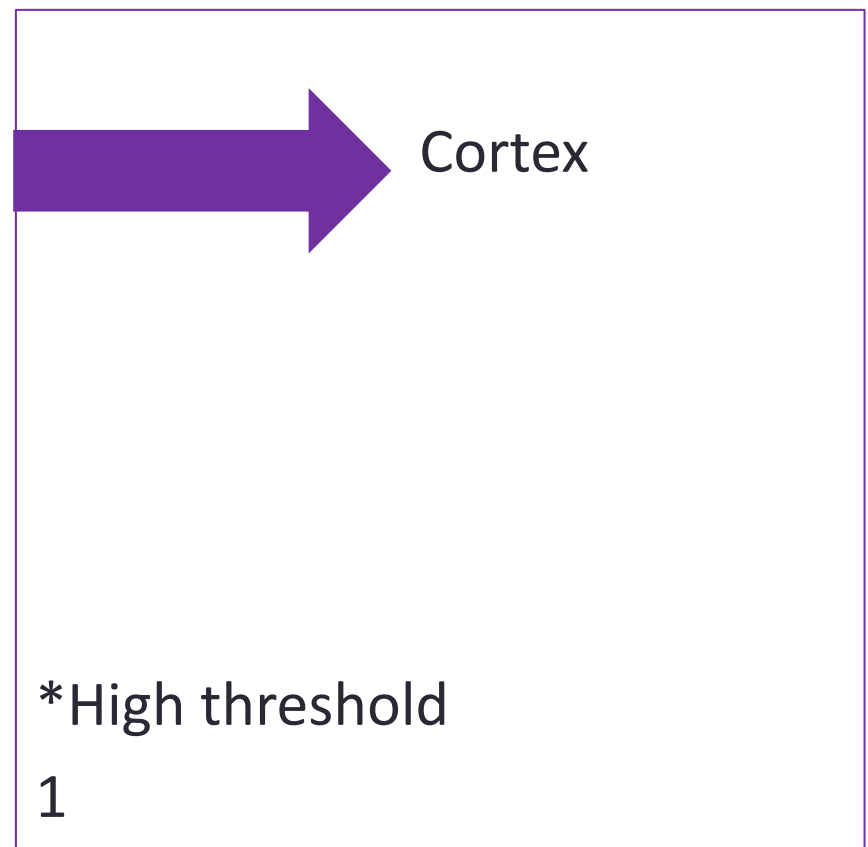
- Post-ictal headache: 44 - 70%.
 - These are migraine Schon, & Blau, 1987
 - *Most common after tonic-clonic seizures*
 - *Never after absence seizures*
 - 50-74% also suffered from inter-ictal migraine
 - 9% had pre-ictal headache as well

Triggers for migraine & epilepsy

Migraine



Epilepsy



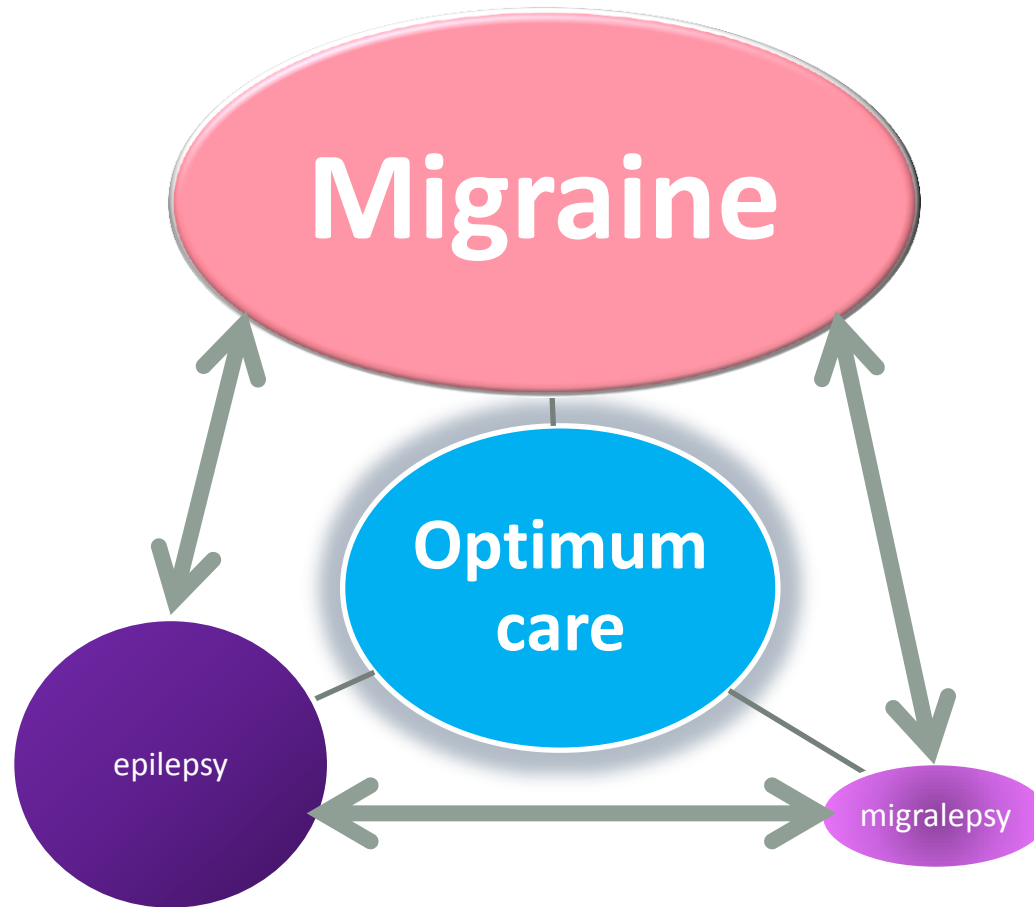
Migraine management- treatments

- Several medications work for both migraine & epilepsy-

Valproate

topiramate

Importance – prognosis



Conclusions/ key messages

- Migraine, epilepsy & migralepsy are clinical diagnoses
- Pre-ictal headache: 6%
- Migralepsy: rarely reported, **? frequently missed**
- **Migralepsy currently “migraine aura followed by sz within 1 hour”**. What about migraine without aura...
- Post –ictal migraine (epilepsy triggers migraine): >50 %
- **Treating co-existent migraine & epilepsy improves outcome**

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