Chronic Headaches and Migraines

Key learning objectives

- Understand basic definition and mechanisms of common headaches
  - Primary headaches
    - Tension-type, migraine, vascular-autonomic (cluster headache)
  - Secondary headaches
    - Chronic daily headache
    - Medication overuse, cervicogenic, post-whiplash, occipital neuralgia
    - Intracranial, facial, head and neck pathology
- Headache-orientated history and examination to construct a differential diagnosis
- Understand importance of screening for ‘red flags’ in all headache patients
  T.I.N.T: Tumour, Infection, Inflammation, Intracranial pressure, Neurovascular, Trauma
- Perform a headache-oriented physical examination
  - Cranial nerves, temporal arteries, greater occipital nerves (GONs), scalp sensation, BP, fundoscopy (papilloedema)
  - Trigeminal nerve & GON examination
  - Head & neck, ENT, orofacial TMJ & sinuses
  - Eyes (glaucoma)
- Understand ‘sensitization’ of trigeminal-cervical nucleus (V, C2-3) is key to pathogenesis of most headaches
- List the main pain-generating structures in the head and neck
- Understand migraine is a complex stress-related neurovascular-inflammatory brain disorder
- Understand migraine management involves acute symptom control and attack prevention (prophylaxis)
- Understand the concept of medication-overuse headache
- Apply a bio-medical-psycho-social-environmental approach to headaches
Introduction

- 5-10% of the population have chronic headaches
- Mainly affects females
- Major quality of life and economic burden
- In top-ten of worldwide health-related disabilities (W.H.O)

Headache classification

Type

- Primary headaches
- Secondary headaches
  - Chronic daily headaches

Timing

- Acute
- Chronic: > 15 headaches per month for more than three months

Primary headaches

- Tension-type (most common 80%)
- Migraine (15%)
  - Aura (15%)
  - Common migraine (without aura) (75%)
- Vascular-autonomic (cluster headache) (rare <1%)

Secondary headaches

- Chronic daily headache (CDH)
  - Primary or secondary headaches may be ‘transformed’ in to CDH
  - Medication overuse headache (MOH)
- Cervicogenic headache
- Whiplash-associated headache
- Occipital neuralgia
- Others e.g. sinus headache
- Pathological ‘red flags’ e.g. tumour, temporal arteritis
Primary headaches

Migraine

Introduction

- Migraine is derived from Greek word ‘hemi-crania’
- Chronic migraine defined as > 15 episodes per month
- 15% of population
- F: M (3:1); menstrual component
- Familial predisposition (Na, Ca ion channels, mitochondria, free radicals, neuro-immune)
- Complex pathophysiology (see figure 1: migraine cycle diagram)
- Concept: A form of ‘brain attack’ when overloaded, similar to a heart attack
- Stress-related neuro-vascular-inflammatory disorder
- The ‘vulnerable brain’ concept (similar to epilepsy)
Presentation

- Headache (throbbing, exploding, pressure)
- Neurological dysfunction
- Triggers: anything that may ‘overload’ a vulnerable brain
  - Stress, sensory, sleep, food, alcohol, menstruation
- Prodrome (impending ‘brain attack’): neurological, psychological
  - Aura (flashing lights, ‘zig-zag’ lines) (spreading cortical hyperactivity)
  - Vision, smell, hearing, cognition, sleepiness, cravings
- Postdrome
  - Recovery (like post-ictal state following seizure)

Diagnostic features

- Hemicranial (unilateral headache)
✓ Nausea and/or vomiting
✓ Photophobia and/or phonophobia
✓ Worse with movement (climbing stairs)
✓ Want to sleep it off (rest the brain)
✓ Functional impacts (ADLs, work)

Menstrual migraine

Abdominal migraine

- Children: 5-12 (M>F)
- Recurrent abdominal pain
- Nausea (rarely vomiting)
- Unwell, pallor, mild fever, quiet, sleepy

Tension-type-headache (TTH)

Introduction

- Most common form: 80% of headaches
- More than just cranial muscle tension
- Frequently related to psychological stress
- On a ‘spectrum’ with migraine (shared mechanisms: trigeminal sensitization & allodynia)
- Minimal neurological or functional impacts

Presentation

✓ Hatband headache
✓ Feels like a tight hat on your head
✓ Squeezing or pressure sensation
Diagnostic features

- Bilateral headache
- Minimal other symptoms
- May have mild
  - photophobia or phonophobia
  - nausea (but not vomiting)
- Doesn’t interfere too much with function

Figure 3. TTH

Vascular-autonomic headaches

(Trigemino-Autonomic-Cephalagias) (TAC)

Introduction

- Severe headaches occurring in clusters at certain times
- Main types
  - Cluster headache
  - Hemicrania
- Rare (<1% of headaches) (you won’t see many but you will remember them)
- Often causes of chronic headaches
- One of the worst pains on the planet
- M>F (3:1)
- Severe headache (suicide headache)
- Severe neurological, autonomic & functional impacts
- Associated with hypothalamic (autonomic) & circadian (sleep) dysfunction
- Shares some features with migraine

**Presentation**

- Unilateral, periorbital headache
- Clusters of attacks lasting minutes-days
- Sharp, stabbing, ice-pick headache
- *The eye of the needle*: needles in the eye or temple
- Feels like ‘brain freeze’
- Often wakes patient from sleep
- Distress, restlessness, head-banging, rocking
- Pacing the room at 3 am (compared with ‘sleeping it off’ in migraine)

**Diagnostic features**

- Hemicrania (unilateral)
- Cluster attacks
- Periorbital pain & autonomic features
  - Puffy eye: swelling, tearing, redness
- Distress, restless, pacing
✓ Major functional impacts (sleep)
✓ Photophobia, phonophobia, nausea, vomiting
✓ Diagnostic response to indomethacin (specifically) or high-flow oxygen by mask

Secondary headaches

Chronic daily headache (CDH)

Introduction

- Headache lasting most of the day for >15 days per month
- Common (5% of adults)
- May be disabling, affecting many aspects of the person’s life
- ‘Transformed’ from precursor headache (primary or secondary) then fuelled by...
- Medication overuse

![Figure 4: Transformed chronic daily headaches](image)

Main types

- Transformed migraine
- Transformed tension-type headache
- Transformed secondary headache
  - Cervicogenic headache (most common)
- Medication-overuse headache
Medication-overuse headache (MOH) (rebound headache)

Definition

- Most common form of chronic headache
- Headache associated with taking medication >15 times per month
- Rebound headache as the pain *rebounds* when analgesia wears off

Issues

- Often a missed diagnosis
- Most people with CDH have MOH
- ANY drug that affects the brain’s chemistry can cause MOH
- Only takes a few weeks to develop

Presentation

✓ Precursor headache (usually migraine)
✓ CDH
✓ Increasing frequency of headache medication or analgesic use
✓ Medications often taken to *prevent* headaches (e.g. mornings)
✓ Problems with dose control & cessation
✓ Pseudo-addiction: shopping for over-the-counter analgesics
✓ Most frequent drugs associated with MOH
  - Over-the-counter analgesics
  - ibuprofen-codeine, antihistamine-paracetamol-codeine
  - Opioids (codeine)
  - Triptans
  - Ergots
  - Others e.g. caffeine, nitroglycerin

Key message

✓ It is vital to ask about analgesic use in *every* headache patient
✓ Ask about over-the-counter analgesics
What to tell your patient

Taking any pain reliever for headaches, especially opioids (codeine), over-the-counter medications (e.g. Nurofen Plus) and migraine treatments (e.g. Imigran) to treat or prevent your headache, can quickly lead to medication-overuse headache, which makes the pain much worse. The only treatment is to stop using pain medications for about one week, which may be difficult to do without help.

Cervicogenic headache

- Neck pain-related headache (referred pain)
- Frequent due to ‘whiplash’ or arthritis
- Main structures in neck causing headache:
  - C2/3 facet joints
  - Greater occipital nerves
  - Trigger points (trapezius)

Management of chronic headaches (including chronic migraines)

Apply a bio-medical-psycho-social-environmental approach

1. Make a clear headache diagnosis.
   - Primary
   - Secondary
   - Medication-overuse
2. Exclude rare but serious ‘red flags’: T.I.N.T (<1% of cases).
Tumour, Infection, Inflammation, Intracranial pressure, Neurovascular, Trauma

3. MRI or CT head (neck) within past 2 years.

4. Review by a neurologist or pain specialist.

5. Monitor ‘character’ of headache: Worsening or changing in ‘character’, wakes at night, or confusion, drowsiness, dizziness, changes in vision, weakness in arms or legs, or vomiting.

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<th>Key patient message:</th>
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<td>‘Go to the nearest emergency department immediately if you ever experience the worst headache you’ve ever had’.</td>
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6. Ask patient to keep headache diary: Work out how often they have headaches, what might be causing them (e.g. lack of sleep, stress, foods) and medication-use.

7. Diet: Avoid caffeine, chocolate, smoking and alcohol.

8. Vitamin therapy (mainly for migraine prevention):
   - Combine any two vitamins e.g. Vitamin B2 & magnesium.
   - Review their effectiveness after 2 months (it can take that long to work).
   - Vitamin B2 (riboflavin) 200 mg once daily
   - Magnesium 500 mg once daily
   - Coenzyme Q 150 mg once daily
   - Fever few 125-200mg once daily (avoid in pregnancy/breast feeding)
   - Vitamin E, 500 IU once daily (only for menstrual migraine)

9. Migraine prevention medications: Beta-blockers (e.g. propranolol or metoprolol), Amitriptyline, Topiramate, Pizotifen, Valproate, Pregabalin, Candesartan, Verapamil or Amlodipine.

10. Chronic headaches or medication-overuse headaches: Amitriptyline or Pregabalin.

11. Avoid opioid (morphine-based) pain medications for headaches, especially codeine-based tablets and pethidine injections—they make headaches a lot worse over a short period of time and can lead to addiction.

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<td>Keep pain reliever use to an absolute minimum to avoid medication-overuse headaches.</td>
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Taking any pain reliever (even over-the-counter medications like Nurofen-plus or Panadeine) for more than a few days can cause this problem. The codeine in these medications can become habit-forming very quickly.

12. **Patient explanation:** *Medication-use headache* means the chemistry of your brain has changed to make headaches worse when you miss a dose of pain medication, so you end up taking more-and-more. The pain clinic can provide help in reducing your pain reliever use.

13. **Behavioural strategies:** Stress and anxiety worsen headaches—relaxation, mindfulness and sleep management are very effective.

14. **Exercise:** At least 40 minutes a day (e.g. walking) reduces chronic headaches and migraines.

15. **Weight reduction:** Especially if snoring, consider *(obstructive) sleep apnoea*. Sleep study to diagnose this condition.

16. **Trigger-point treatments:** Examine neck and shoulder (trapezius) muscles for *(myofascial)* trigger points, which may cause headaches, especially after ‘whiplash’. Trigger points may respond to *physiotherapy, stretching, trigger point injections, ‘dry needling’ or acupuncture*.

17. **Procedures:** If tender over occiput, *greater occipital nerve injections* with local anaesthetic and steroid, just under the skin, may help. These nerves may be blocked for longer periods of time by using electro-magnetic pulses (pulsed radiofrequency) or freezing *(cryo-neurotomy)*.

18. Other procedures include *facet joint injections in the neck* (C2/3 level) (medial branch blocks, neurotomies or pulsed radiofrequency), *Botox injections* (only for chronic migraines), or *occipital nerve stimulation with a pacemaker* (high tech and expensive).

19. Cefaly supraorbital nerve TENS machine.

20. **IMPORTANT:** There are effective **headache management programmes** available.

Check the **Headache Help** website: [http://www.headachehelp.org.au/](http://www.headachehelp.org.au/)

**Essential reading**

Management of chronic headache

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