Classifying Headaches

Over 90% of headaches are **primary headaches.**
Secondary headaches account for a small but important minority of diagnoses because the underlying conditions can be life-threatening.

Primary Headaches

- Migraine
- Tension-type headache
- Cluster headache (classified under trigeminal autonomic cephalalgia)

Secondary Headaches

- Intracranial bleeding (SDH, SAH, ICH)
- ↑ ICP (brain tumour, IIH)
- Infection (meningitis, encephalitis, brain abscess)
- Inflammatory (temporal arteritis)
- Medication side-effect (nitrates, analgesic overuse)
- Referred pain (orbit, temporomandibular joint, neck)

Red Flags

Red flags raises concern for secondary headaches ⇨ needs urgent evaluation & review!

S ystemic signs and symptoms: fever, chills, sweats, myalgia, weight loss → infection, malignancy, vasculitis

N eurological deficist: motor, sensory, speech, vision, balance, cognitive, changes in behaviour or personality → stroke, meningitis, encephalitis

O nset sudden → subarachnoid haemorrhage

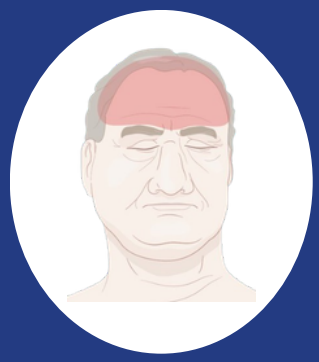
O lder age > 50 years → giant cell arteritis, tumour, stroke

PIO

1. Pattern change: new associated symptoms, change in frequency
2. Positional headache: worse when lying down
3. Precipitated by sneezing, coughing, or exercise
4. Papilloedema
5. Progressive headache and atypical presentations
6. Pregnancy or puerperium
7. Painful eye with autonomic features
8. Post-traumatic onset of headache
9. Pathology of the immune system
10. Painkiller overuse

Primary Headaches | Characteristics

Refer to ICHD-3 for diagnostic criteria of primary headaches!



	Migraine	Tension Headache	Cluster Headache
Location	Unilateral, can be bilateral	Bilateral	Unilateral
Character	Pulsating, throbbing	Pressure / tightness in head "Band around the head"	Sudden explosive pain Deep and boring
Intensity	Moderate to severe	Mild to moderate	Severe
Typical patient	Prefers to lie in quiet, dark room as routine physical activity aggravates the pain	Appears well, pain rarely disabling, not aggravated by routine physical activity	Agitated and restless
Duration	4 – 72 hours Recurrent attacks up to several times per month	30 mins – 7 days	15 mins – 3 hours Sometimes several times per day over a course of weeks. then remission for months or years
Associated symptoms	• Nausea or vomiting • Photophobia • Phonophobia • ± Aura	• X Nausea • ± Photophobia or phonophobia	Ipsilateral autonomic sx • Tearing • Conjunctival injection • Ptosis and/or miosis • Nasal congestion • Rhinorrhea • Facial flushing or sweating

Migraine | Pharmacotherapy

Acute Treatment

Initial treatment
Non-opioid analgesic

- Aspirin
- Ibuprofen
- Diclofenac potassium
- Naproxen
- Paracetamol

Nausea / suboptimal response to non-opioid analgesic →

Anti-emetics

- Metoclopromide
- Domperidone
- Ondansetron
- Prochlorperazine

Not relieved by non-opioid analgesic (± anti-emetics) →

Triptans (5-HT agonists)

- Eletriptan
- Naratriptan
- Rizatriptan
- Sumatriptan
- Zolmitriptan

Prophylaxis

- Consider migraine prophylaxis when patient needs treatment for acute migraine > 2 days/month
- Choice of drug depends on adverse effects and patient's comorbidities
- If first drug ineffective after max dose for 8–12 weeks, try another 1st-line drug

1st-line prophylactic drugs

- β-blocker: propranolol
- CCB: verapamil
- ARB: candesartan
- TCA: amitriptyline, nortriptyline
- Anti-epileptic: sodium valproate, topiramate

Avoid opioid analgesics, should only be used when other drugs are not tolerated / contraindicated!

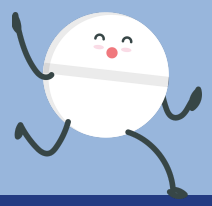
Source: eTG

Tension Headache | Pharmacotherapy

Infrequent TH

Non-opioid analgesics

- Aspirin
- Diclofenac potassium
- Ibuprofen
- Naproxen
- Paracetamol



More frequent TH

Tricyclic antidepressants

- Preventive drug
- If no response after 8–12 weeks, switch to another preventive drug

- Amitriptyline
- Nortriptyline

Alternative preventive drug

- Mirtazapine
- Venlafaxine

Cluster Headache | Pharmacotherapy

Acute treatment

Triptan

- Sumatriptan
- Rizatriptan
- Zolmitriptan

High-flow oxygen

Oxygen 100% 15L/min via non-rebreathing mask for 15-20 mins

Bridging treatment

To control cluster headache while starting a preventive drug and waiting for it to reach an effective dose

- Prednisolone x 5/7
- Naratriptan x 1/52
- Greater occipital nerve block

Prevention

Verapamil has fewer adverse effects and is recommended as the first drug to try

- Verapamil
- Topiramate
- Sodium valproate
- Gabapentin
- Melatonin

Source: eTG

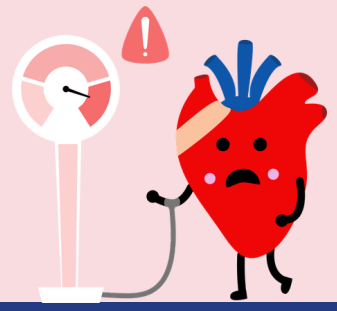
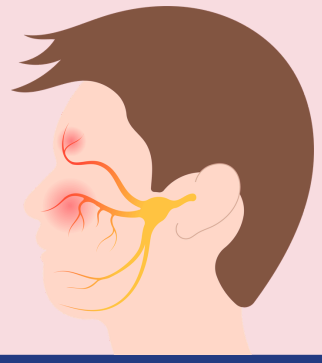
Secondary Headaches

Clinical Features	Possible Cause	Investigations
• Sudden, explosive onset of severe headache ("worst headache of my life"/ thunderclap headache) • Meningism	**Subarachnoid hemorrhage** 	• Non-contrast head CT • Clinical suspicion of SAH but CT scan is negative → lumbar puncture

• Headache:
  ○ New onset in adults >50 years old
  ○ Changed from previous patterns
  ○ Aggravated by Valsalva manouevre (coughing, sneezing, bending over) or lying down
  ○ Worse in early morning
  ○ Progressive in nature
• History of cancer elsewhere
• Focal neurological deficits
• Seizures
• Behavioural changes
	Intracranial neoplasm
	 
		• Neuroimaging: brain MRI with contrast

• Fever, headache, neck stiffness, altered mental status, photophobia	**Meningitis** 	• Lumbar puncture
• Fever, altered mental state, focal neurological deficit	**Encephalitis**	

Secondary Headaches Cont.

Clinical Features	Possible Cause	Investigations
• Overweight female of childbearing age • Headache in early morning • Headache worse when lying down • Visual symptoms (papilloedema, blurry vision, diplopira) • Pulsatile tinnitus	**Pseudotumor cerebri/ Idiopathic intracranial hypertension** 	Headache & papilloedema → suspect raised ICP ⇩ Urgent neuroimaging to exclude secondary causes of intracranial HPT → no structural aetiology found ⇩ Lumbar puncture → elevated opening pressure
• New onset headache in adults >50 years old • Scalp tenderness • Jaw claudication • Loss of vision • Systemic symptoms (fever, fatigue, weight loss) • Associated with polymyalgia rheumatica (aching & morning stiffness over shoulder and hip girdles)	**Giant cell arteritis** 	• ESR → elevated • Temporal artery biopsy

Test your Knowledge!

A 36 year old male presents with a 3-week history of headaches, typically awakening him in the early hours. They are severe, affecting the right periorbital region, last about an hour and are very distressing; he is unable to find a comfortable position. He has noticed that his right eye waters and goes red with the pain. Occasionally, he gets an attack during the day. He thinks he had something similar about 2 years ago but it disappeared after a week or so. He is otherwise well, but terrified that he has a brain tumor.

What is the likely diagnosis?

A. Cluster Headache

B. Hypnic headache

C. Migraine

D. Temporal arteritis

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