HEADACHE

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HEADACHE AND THE E.D.

- **Around 3% ED presentations due to ‘headache’**
  - Up to 1/3 of these may have a serious underlying diagnosis (though almost all of them will be *worried* about a serious underlying diagnosis!)

DIFFERENTIAL DIAGNOSIS

- **Migraine**
- **Tension headache**
- **Trauma**
- **Sinus headache**
- **TMJ dysfunction**
- **Trigeminal neuralgia**
- **Neoplasia**
- **Hypertensive headache**
- **Temporal arteritis**
- **Subarachnoid haemorrhage**
- **Carotid/vertebral artery dissection**
- **Cavernous sinus thrombosis**
- **Acute narrow angle closure glaucoma**
- **Cluster headaches**
- **Rebound headache**
- **Post LP headache**
- **Benign intracranial hypertension**
- **Meningitis**
- **Other random causes:**
  - Post-coital, exertional, cough, cold stimulus, idiopathic stabbing headache….

MIGRAINE

- **Either with or without aura (common vs. classic)**
- **More common in females**
- **Associated with family history**
- **Sequence of events:**
  1. Prodrome: variable but usually visual, +/- transient focal neurological symptoms
  2. Aura: 20% cases, usually visual
  3. Headache: unilateral in 60%, ‘throbbing’, + vomiting, diplopia, photophobia/photophonia
  4. Resolution: gradual
  5. Postdrome: limited food tolerance

MIGRAINE

- **Suggestive of benign migraine:**
  - Preciptated by menstruation
  - Improving with sleep
  - After exertion
  - Triggers such as food, alcohol

NB 20% patients with SAH have a history of migraines

MIGRAINE MANAGEMENT

- **Mild/Moderate:**
  - *Aspirin 900mg* OR paracetamol 1g and metoclopramide 10mg
- **Moderate**
  - Metoclopramide 10mg IV OR sumatriptan 6mg SC
- **Severe**
  - Chlorpromazine 25mg in 1l N saline over 30-60 minutes, repeated if necessary

Plus IV rehydration as necessary

No good evidence for effectiveness of opioids, may make things worse (rebound headache), may result in opioid abuse (5% patients with chronic headaches)

SUBARACHNOID HAEMORRHAGE

- **The main thing we are trying to exclude in a patient presenting to ED with a headache!**
- **Diagnosed in 1% patients presenting with a headache**
  - Around 20% of patients with sudden severe headache (thunderclap, worst headache ever)
- **Often difficult to diagnose**
  - Important as high overall mortality and yet patients may have normal neurological exam and look well on presentation

SAH

- **Causes:**
  - Aneurysmal
  - Non-aneurysmal SAH (15-20%)
    - AVMs
    - Trauma

- **Risk factors:**
  - Previous SAH
  - Female (2 x as common)
  - Relative with SAH (1st or 2nd degree) 20% increased risk
  - Smoking (up to 10 x increased risk)
  - Hypertension
  - Connective tissue disease
  - Anticoagulation
  - Alcohol binges

SENTINEL HEADACHE: ‘WARNING BLEED’

- Occurs in up to 40%
- Classically occurs after strenuous exercise
- Often misdiagnosed as migraine
- Usually spontaneously resolves or with simple analgesia
- Felt to represent minor haemorrhage
- Second bleed is usually catastrophic with very poor outcome

SAH: PRESENTATION

- Sudden onset of severe headache ('thunderclap', 'worst ever' – only 10% of these are SAH though!)
- May be global or occipital
- Associated with vomiting
- Transient LOC at time of bleed (due to fall in CPP)
- Neck stiffness
- Neuro signs: cranial nerve palsy (aneurysms), reduced GCS, hemiparesis, seizures
- Hypertension in 50%
- Cardiac: arrhythmias in up to 96%, ECG changes (ischaemic)

GRADING SYSTEMS

HUNT & HESS

1. Asymptomatic/mild headache (70%)
2. Moderate/severe headache (60%)
3. Altered mental status +/- mild focal neurological deficits (50%)
4. Reduced GCS +/- hemiplegia (20%)
5. Coma or decerebrate posturing (10%)

WORLD FEDERATION OF NEUROLOGICAL SURGEONS

I. GCS 15

II. GCS 13-14

III. GCS 13-14 + motor deficit

IV. GCS 7-12

V. GCS 3-6

INVESTIGATIONS

- **Non contrast CT:**
  - Sensitivity and specificity both 100% if less than 6 hours from headache onset
  - Accuracy decreases with time
- **Lumbar puncture**
  - If > 6 hours from headache onset with normal CT and no signs of increased ICP
  - Xanthrochromia present from 12 hours to 2 weeks (95% sensitivity)
    - DD traumatic tap: NOT xanthrochromia, RBCs decrease from tubes 1-4 (not reliable?)
  - Also elevated opening pressure (if measured)
- **CT Angiography**
  - 97% sensitivity and specificity for aneurysms >3mm
- **CT + CTA = 99% sensitive for SAH**
  - Balance with risks of LP (headache 40%) and of missing SAH

MANAGEMENT

- **General supportive care**
- **Cardiac monitoring**
- **Reduce ICP**
  - Head up 30 degrees
- **Nimodipine**
  - Calcium channel blocker with high affinity for cerebral blood vessels
  - Decreases risk of vasospasm, prevents secondary ischaemia
  - Significantly reduces risk of poor outcome
  - Give orally (NG) – 60mg q4 hourly for 7 days
- **Clipping/coiling – goes to POWH**

MENINGITIS

- **Most common cause is viral**
- **Bacterial causes:**
  - Neisseria meningitidis – most common in young people (group B)
  - Strep pneumoniae – most common in elderly
  - Rare causes – syphilis and TB (associated with HIV)
- **Highest prevalance– infants/young children and the elderly**
- **Strange causes:**
  - Fungal
  - Malignant cells
  - Sarcoid

PRESENTATION

- **25% bacterial meningitis present acutely within 24 hours**
- **Most viral cases present subacutely over 7 days**
- **Viral meningitis may be more mild though can often be indistinguishable from bacterial meningitis**
- **Classic symptoms**
  - Headache
  - Nuchal rigidity
  - Fever
  - Photophobia
  - May not be present in the elderly
- **Other common symptoms**
  - Vomiting, seizures (30%), focal neurological signs
- **Headache, fever and neck stiffness present in only 50%**

ASSESSMENT

- Neck stiffness
- Papilloedema – 1/3 patients with raised ICP
- Altered mental state
- Cranial nerve lesions 20%
- Evidence of extra-cranial infection
- Kernig's sign – passive knee extension in supine patient elicits neck pain
- Rash – meningococcal

INVESTIGATIONS

- **The usual – bloods, cultures, ?meningococcal PCR**
- **CXR – may have pneumonia also (50% with pneumococcal)**
- **Non contrast CT brain:**
- **Signs of increased ICP (though may still be normal)**
- **Rules out abscess or other SOL**
- **LP**

	BACTERIAL	VIRAL
Cells	Polymorphs	Lymphocytes
Glucose	Low	Normal
Protein	High	Normal

MANAGEMENT

- **Supportive care**
- **Empirical antibiotics:**
  - Ceftriaxone 4g IV daily
  - Add benzylpenicillin if concerned about listeria
  - Vancomycin if penicillin allergic
- **Steroids – reduced risk of adverse outcome and mortality, dexamethasone 10mg q6hourly IV**
- **Meningitis prophylaxis!**
  - Ceftriaxone 250mg IM (single dose)