CrackCast Episode 20 – Headaches

Episode overview:

1) List 7 life threatening causes of headaches
2) List 5 red flags on history for headaches
3) When should you perform a CT before performing a LP?
4) Describe 8 clinical findings indicative of elevated ICP

Wisecracks:

1) Describe 5 CT findings suggestive of elevated ICP
2) List 7 non-life threatening causes of headache

Rosen's in Perspective:

Epidemiology

- 90% of people in the US have headaches
- most patients visiting ED have benign headaches:
    - Tension - 50%
    - NYD - 30%
    - Migraine - 10%
    - Secondary headache - 8%
        - <1% of those with secondary headaches have life threatening causes

Pathophysiology

- ***the brain parenchyma is insensitive to pain***
- The pain sensitive areas:
    - *Meninges*
    - *Blood vessels*
    - *Tissues lining the cavities within the skull*
        - *this leads to inaccurate localization of pain
    - **most of the pain associated with h/a is mediated through **Cranial Nerve V**
        - this is then transferred back to the nucleus and then radiated throughout the various branches of the 5th cranial nerve
        - if a specific superficial structure in the head is affected (temporal artery or sinus) then the pain can be better localized
- ***headache and neck pain should be thought of as overlapping units***

Crack Cast Show Notes – Headaches – May 2016
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1) List 7 life threatening causes of headaches

1. Subarachnoid Hemorrhage
    - Up to 20-50% are missed on the first visit to physician
2. Meningitis
3. CO poisoning
4. Temporal arteritis
5. Acute angle closure glaucoma
6. Intracerebral hemorrhage
7. Cerebral venous sinus thrombosis

CO poisoning	**Infection Meningitis, encephalitis, brain abscess**	**Temporal arteritis**	**Acute angle closure glaucoma**	**Increased ICP -tumour -shunt failure**	**Cerebral venous sinus thrombosis**	**Intracranial hemorrhage**
Enclosed/confined spaces	History of sinus or ear infection	Age >50 Female	New, atypical headache	Hx of benign intracranial hypertension Potential	Sinus infection	SAH -sudden, severe -hx of SAH or aneurysm -hx of polycystic kidney disease -HTN -previous vascular lesions -young or middle aged
Multiple family members with similar symptoms	Recent surgery Immunocomp.	Hx of collagen vascular diseases	Age > 30 Hx of prev. Glaucoma	CSF or VP shunt	Hypercoagulable states	Subdural -hx of alcoholism -use of anticoagulants
Cool seasons, or nearby machinery / equipment	Extremes of age Debilitation Close living conditions (military, college) Lack of immunizations	Chronic meningitis -TB -parasitic or fungal infection	Pain increasing in a dark environment , red eye, large pupil, hazy cornea	Congenital or skull abnormalities	Post partum or peri-partum	Epidural hematoma -traumatic injury -Lucid→ somnolent -anisocoria

- According to Rosen's:
    - "The most common and consequential mistake made by ERP's: is thinking that **a single CT head clears the patient of the possibility of a SAH or other intracranial disease"**
        - Brain CT can miss 6-8% of patients with a SAH (esp. The minor GRADE 1 class)

- CT sensitivity for SAH (http://www.bmj.com/content/343/bmj.d4277)
    - Decreases by 10% for symptom onset > 12 hrs
    - Decreases by 20% at 3-5 days onset of symptoms

2) List 5 red flags on history for headaches

Nine "worrisome" features of a headache:

1. Sudden onset
2. "Worst ever headache" or "have never had a headache like this one"
3. Refractory symptoms despite treatment
4. Headache onset during exertion
5. Hx of HIV or immunocompromised
6. Altered mental status + headache
7. Meningismus
8. Unexplained fever
9. Focal neurological findings

3) When should you perform a CT before performing a LP?

Generally CT should precede LP when investigating headaches…

LP should NOT delay antibiotic administration

- LP can proceed CT in meningitis if the patient has a normal neurological exam and has no papilledema.

4) Describe 8 clinical findings suggestive of increased ICP

1. Persistent vomiting
2. Altered mental status
3. Hypertension and bradycardia
4. Bulging fontanelle
5. Diffuse, severe headache

6. Loss of venous pulsations in the eye
7. Optic disc / papilledema
8. Headache worse when lying down and worse in the morning

Wisecracks:

1) Describe 5 CT findings suggestive of ↑ ICP (realizing the CT shows evidence of 'brain shift', an indirect sign of ↑ ICP).

1. Loss of the basilar cisterns
2. Effaced sulci (gyri pushed together)
3. Decreased ventricular size (ventricular effacement)
4. Midline shift

5. Loss of grey-white differentiation

See: http://radiologymasterclass.co.uk/tutorials/ct/ct_acute_brain/ct_brain_mass_effect and http://radiologymasterclass.co.uk/tutorials/ct/ct_brain_anatomy/ct_brain_anatomy_ventricles

Thanks to Dr. Christine Hall for teaching us about the 4th ventricle!

2) List 7 non-life threatening causes of headaches

1. Tension headache
2. Cluster headache
3. Cervical muscle strain
4. Migraine
5. Post-lumbar puncture headache
6. TMJ disease / dental disease
7. Effort-dependent / coital headaches