EM Basic- Headache

Triage note- be sure that the patient isn't here for weakness or syncope which is a different workup

History- OPQRST questions

Headache red flags (concerning for subarachnoid hemorrhage (SAH))

-Sudden or gradual in onset
-Worst of life? (Ask patient "how does this compare to your other headaches?)
-Maximal at onset (worst when it started or did it gradually get worse?)
-Associated symptoms- sensitivity to light/sound, nausea/vomiting, vision changes, slurred speech, weakness, syncope, ataxia, dizzinesss, fever, neck pain
-Previous headaches/workups- previous CT/MRIs?

DOCUMENTATION- on every headache whom I am not suspecting a SAH I write "I doubt SAH/ICH given headache is not worst of life, not maximal or sudden in onset with multiple normal neuro exams"

Neuro Exam

Cranial nerves

-Pupil response, papilledema
-Extraocular movements
-Facial sensation
-Puff out cheeks
-Smile symmetry
-Shrug shoulders
-Turn head left and right, flex and extend

Upper extremity Motor strength

-Grip strength
-Push towards/away while still holding grip
-Pronator drift- palms up, arms at shoulders, close eyes
-Positive if asymmetry or if one arm falls

Fine motor and cerebellar exam

-Nose to finger- have patient touch their nose then your finger
-Rapid alternating movements- hands in lap, rapidly pronate/supinate
-Finger movements- touch 2nd finger to thumb, move to 3rd-5th fingers
-Gross sensation- check upper extremities on both sides for differences

Lower extremity motor strength

-Hip flexors- place hand above knee, have patient push upwards
-Hip extensors- place hand under thigh, have patient push downwards
-Leg extension- hold knee up, extend lower leg
-Leg flexion- hold knee up, flex lower leg
-Foot flexion- push "down on the gas pedal" with foot
-Foot extension- push "up towards your head" with foot
-Gross sensation lower extremities

Gait- very important to test

-Walk towards and away from you- look for instability
-Walk on heels and then toes
-Romberg- face away from you with palms and arms up, closes eyes, stand behind patient, swaying is ok, falling backwards is positive

Reflexes- low yield in headaches but part of a full neuro exam

Headache differential

Subarachnoid hemorrhage (SAH)- sudden onset of worst headache of life that is maximal at onset, headache with syncope, ruptured aneurysm or trauma

Bacterial meningitis/encephalitis- fever and headache, stiff neck, toxic appearing

Temporal arteritis- "Classic" presentation- 60 year old female with unilateral throbbing temporal or frontal headache with tenderness on temporal area

Carbon monoxide poisoning- cold climate with a furnace at home

Tumor or mass- neuro deficit with insidious onset

Subdural hematoma- spontaneous bleed in a patient on anticoagulation or an alcoholic patient without trauma, or a patient with major trauma

Epidural hematoma- trauma to temporal area (middle meningeal artery), lucid interval with decompensation, blown pupil

Acute angle glaucoma- older patient in a dark area then has their pupil dilated (movie theatre), non-reactive pupil

Hypertensive emergency- very elevated blood pressure in the setting of end organ damage (renal failure, stroke, intracranial bleeding, MI, aortic dissection)

Tension headache- most common discharge diagnosis, band-like pain that is non-pulsating and dull

Migraine headache- unilateral pulsating or throbbing pain, nausea/vomiting, photo/phonophobia, visual changes/aura

Cluster headache- younger male with unilateral sharp stabbing pain to the eye, associated injection and tearing, responds well to high flow oxygen

Labs
-Low yield- get a pregnancy test on females (some meds class C and D)
-If doing an LP- CBC (platelets) Chem 10 (electrolytes) Coags (coagulopathy)
-LP labs- cell count tubes 1 and 4, glucose/protein, gram stain/culture (if suspecting meningitis)

Imaging
CT head without contrast- detects acute bleeds, sensitivity about 90%, current practice is that a negative head CT is followed by an LP

Lumbar Puncture (LP)
Looking for xanthachromia (yellowish tinge of fluid from RBC breakdown) or elevated RBC count
-Usually in the 1,000s- 10,0000s with SAH but no cutoffs have ever been defined
-No cutoff below which SAH can be excluded (reported as low at 800 RBCs), "clearing" of RBCs between tubes 1 and 4 does not rule out SAH
-Best if you can get RBC counts <100 but if story is concerning, may need CTA brain (with contrast) or MRI to rule out SAH

Special populations
Pediatrics- persistent vomiting, vomiting first thing in the morning,
Elderly- low threshold to CT, be aware of temporal arteritis- elevated ESR and/or CRP need high dose steroids and urgent temporal artery biopsy to confirm diagnosis (by opthomology/general surgery), don't delay steroids

Treatment
Compazine- 10mg IV and **Benadryl** 25mg IV, can run in 1 liter of normal saline
Class C in pregnancy
PEARL- Compazine/Benadryl proven more effective in ED patients than triptans
Run this slowly to prevent akasthesia from Compazine

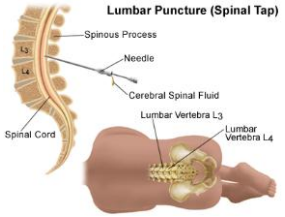
Reglan- 10mg IV, instead of Compazine/benadryl, class B in pregnancy

Toradol- 30mg IV
-Caution in older patients, those with renal failure or insufficiency
-Class C in third trimester only but generally not given to any pregnant patient,
-Don't use if suspecting subarachnoid without doing CT first (anti-platelet medication)

Decadon- 10mg IV- shown to reduce return rates in patients with migraine

How to do a LP

Consent the patient prior to meds- explain risk of bleeding, infection, worsening headache (post LP headache), nerve damage (exceedingly rare)
Lying down vs. sitting up- lying down can get an opening pressure (often not necessary in the ED), sitting up easier for the patient to hold position
-If suspecting benign intracranial hypertension (formerly psuedotumor cerebri) then get opening pressure- usually obese young white female
Find the L4/L5 interspace- level with the top of the iliac crests on the midline



Can use a retracted ballpoint pen to make an indentation
Give premedication- fentanyl 75mcg IV / zofran 8mg IV
Use non-cutting needle (whitacre)- decreased incidence of post-LP headache
Put betadine inside LP kit, put on sterile gloves, prep patient with betadine
Drape the patient- tuck one sheet into underwear, one sheet on back
Repalpate landmarks
Inject lidocaine- inject from the side superficially, angle deeper
Prep tubes- put them in order and place them open
With bevel up and stylet inserted, insert needle pointing towards umbilicus
Take stylet out after first few millimeters of skin
Advance slowly and feel for pops, stop if you hit bone, get clear fluid or blood
If you get clear fluid- collect 1 cc in each tube (1/2 cc for kids)
If you get blood- let some drops fall and see if it clears
If you hit bone- retract the needle until you are almost at the skin surface, redirect either towards the head or the sacrum by 5 or 10 degrees, try again
When done, replace the stylet, turn the needle 90 degrees and remove it
Put a bandaid on the puncture site, clean off betadine with damp cloth
TIGHTEN EACH TUBE, LABEL THEM, AND WALK THEM TO THE LAB!
Big points
1) Get a good headache history- was headache sudden or maximal at onset or worst of life?
2) Do a thorough neuro exam and walk the patient
3) If suspecting SAH, do CT and LP
4)Treatment- IV fluids, Compazine/Benadryl, toradol and decadron as adjuncts

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