



Beyond Dilaudid, Headache in the ED

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Objectives

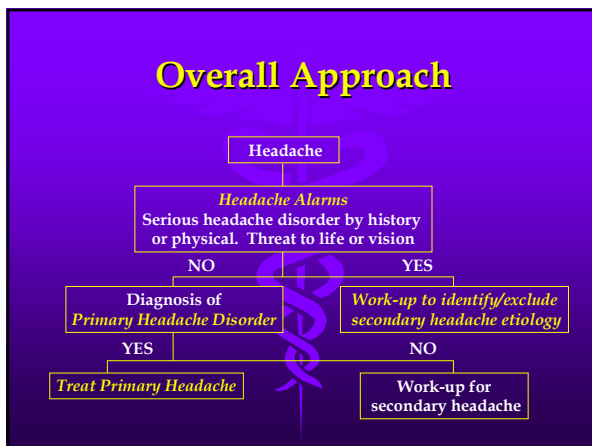
- Diagnostic approach
- Differential diagnosis
- Treatment
- Concerning headaches

Preparing the lecture

- Wife, "I can help you write it"
- Me, "You can help me write a lecture on approach to the ED patient with headache?"
- Wife, "Yes. If it's concerning do a CT, maybe an LP, call either neuro or neurosurgery, give Morphine, admit to medicine"
- Me, "What if it's not a bad headache?"
- Wife, "Then you guys don't care, give Morphine/Dilaudid then discharge"

Epidemiology

- 90% of persons in the U.S. have a headache each year
- 50% will seek medical attention
- 2% of all ED visits are for the chief complaint of headache



Pain Pathophysiology

- Pain sensitive
 - Skin
 - Fat
 - Muscle
 - Nerves
 - Large arteries at brain base
 - Dural arteries near brain base
 - Falx cerebri
 - Great venous sinuses
- Pain in-sensitive
 - Parenchyma
 - Dura over convexity
 - Arachnoid
 - Pia
 - Ependyma
 - Choroid
 - Skull

Pain Pathophysiology

- Pain is due to
 - Tension
 - Traction
 - Distention
 - Dilation
 - Inflammation

Who comes in for headache?

- Headache with history of similar headache
- Headache with history of different headache
- No history of headache with first time severe headache

The Money is in the History

- Why did the patient come to the ED?
 - First or Worst
 - Different/Severe
- How did the headache start?
 - "Thunderclap"
 - Gradual onset
- Have you had a history of previous headaches like this?
 - Severity

Pain Score

- Traditional
 - 1-10
 - Faces
- The CRAP Score
 - Canadian Relativity Adjusted Pain Score

The CRAP Score

- $CRAP = (OPS + AF)(SC)(EC)$

OPS=Old Pain Score
AF=Adjustment Factor
SC=Story Credibility
EC=Exam Credibility

The CRAP Score

- "LPT" patients (Low Pain Threshold)
 - For every point over 10 which the patient reports, subtract one. If they say their pain is a "12" then subtract 2 points and start with an 8.
 - For every visit the patient has had to your ER in the past 12 months for a painful condition that was either chronic or went undiagnosed, subtract 1 point.
 - If you push on a non-painful or uninjured area of the patient's body, the shin for example, and they say "Ouch", subtract 1 point.

The CRAP Score

- For every allergy to a non-narcotic medication that could be effective for their condition, subtract 1 point.
- If they are wearing sunglasses, subtract 1 point.
- If they still have tape or EKG lead residue on their body from a prior hospital visit, subtract 2 points.

The CRAP Score

- "HPT" patients (High Pain Threshold) you will be adding numbers to their pain score:
 - If a spouse or family member forced them to come in, add 1 point.
 - If you check their records, and every time they've come to your ER for a painful condition something was torn, broken, ischemic, or perforated, add 2 points.
 - If they have no allergies add 1 point.
 - If they are tachycardic or hypertensive add 1 point.

History

- Location of the pain
- Character of the pain
- Associated signs or symptoms

Associated symptoms

- Nausea
- Vomiting
- Diarrhea
- Sweating
- Cold hands
- Light sensitivity
- Dizziness
- Neck pain
- Sensitivity to sound
- Scalp tenderness
- Pale complexion
- Pulsating temple
- Tooth ache
- Vertigo
- Difficulty thinking - concentrating

History

- Aggravating/Alleviating factors
- Past Medical History
- Family History
- Environment

Physical Exam

- Vital signs
 - fever, hypertension, hypoxia
- Head/face
 - trauma, bruises, tenderness
- Eyes
 - conjunctiva, cornea, pupils, fundi: papilledema
- Ears
 - OM or hemotympanum
- Mouth
 - Teeth, TMJ
- Neck
 - pain/stiffness/tenderness
 - Carotid and/or vertebral bruits
- Skin
 - rash
- Neurologic
 - Mental status
 - Pupils, EOM, Visual fields
 - Focal deficits
 - Horner's syndrome
 - Ataxia

When should EP consider serious headache?

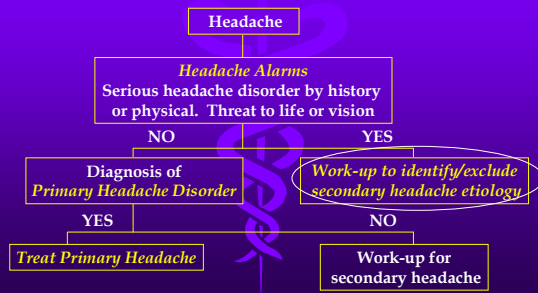
- “sick” or “not right”
- Failure to conform to innocuous pattern
- Onset in or after middle age (>50 y.o.)
- Recent/sudden onset and progressive course
- Headache occurs with exertion/coitus (doesn't count if headache starts before/instead of sex)

When should EP consider serious headache?

- Neurological symptoms – AMS, neuro deficits
- Systemic illness(fever)/meningeal irritation
- abnormal physical signs – rash, papilledema
- Significant trauma
- New onset with risk factors for HIV or cancer



Overall Approach



The Deadly Dozen

- Subarachnoid headache
- Acute closure glaucoma
- Carbon monoxide poisoning
- Preeclampsia
- Hypertensive encephalopathy
- Meningitis / encephalitis
- Temporal arteritis

The Deadly Dozen (cont)

- Cavernous sinus thrombosis
- Mass lesion/ tumor/ abscess
- Cerebral vascular accident
- Epidural/subdural
- Hydrocephalus

SAH Presentation

- “worst headache of my life”
- sudden onset
- reaches crescendo in seconds
- excruciating, “exploding” or “bursting”
- localized anywhere head, neck or back
- nausea and vomiting prominent
- 50% have syncope or coma at onset

Sentinel bleed

- "Warning" headaches
- Unusual headache
- 1-3 weeks before the major bleed
- Up to 50% of patients with SAH
- Usually occur 1-3 weeks before major bleed

Physical finding in SAH

- Nuchal rigidity most common finding
 - present 1 - 3 hours after bleed
- Altered mental status or coma
- Absence of focal neurological findings
- Hypertensive

Optimal diagnostic approach

- CT head
- False negative
 - bleed is very small
 - CT scan is performed long after the onset of symptoms
 - patient is anemic (hemoglobin < 10g/dl)
 - sub-optimal CT scan study

CT Sensitivity

CT done:	Sensitivity
Within 12 hours	>95%
After 3 days	85%
After 5 days	70%
After 7 days	50%

Lumbar Puncture

- LP must be performed if the CT is negative
- Xanthochromia may take 6 - 12 hours to develop
- LP will be 100% positive for xanthochromia for 1 - 2 weeks after the onset of the headache
- Xanthochromia is only visibly detectable by the naked eye in ~ 50% of xanthochromic-positive cases

SAH Management

- Resuscitate unstable patients - ABC's
- Control blood pressure
- Nimodipine for spasm
- Urgent neurosurgical consult

What if CT is negative?

- Consider other diagnostic possibilities that may not be readily diagnosable by CT scan
 - pseudotumor cerebri
 - cerebral venous sinus thrombosis
 - carotid artery or vertebral artery dissection

Final checklist

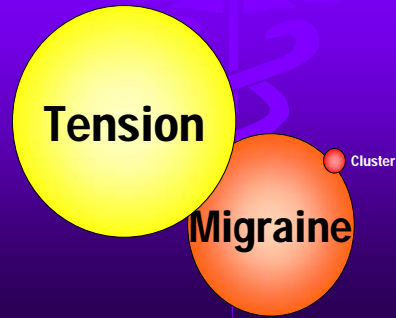
- CO Poisoning
- Temporal Arteritis
- Acute angle closure glaucoma
- Malignant hypertension
- Medical diseases

Primary Headaches

- Migraine
- Cluster headache
- Tension headache
- Chronic daily headaches



Primary Headache



Migraine Without Aura

International Headache Society Diagnostic Criteria

- **Duration**
 - 4-72 h if untreated or unsuccessfully treated
- **Pain characteristics** (at least 2)
 - Unilateral location
 - Pulsating quality
 - Moderate to severe intensity
 - Aggravation by walking stairs or similar physical activity
- **Associated symptoms** (at least 1)
 - Nausea, vomiting, or both
 - Photophobia or phonophobia
- H&P and diagnostic tests do not suggest underlying organic disease

Migraine With Aura

International Headache Society Diagnostic Criteria

- **Aura characteristics** (At least 3)
 - One or more fully reversible aura symptoms indicating focal cerebral cortical or brain-stem dysfunction
 - At least 1 aura symptom develops gradually over >4 minutes or 2 or more symptoms occur in succession
 - No single aura symptom lasts > 60 minutes
 - Headache begins within 60 minutes of aura onset
- History, physical, and diagnostic tests do not suggest underlying organic disease

Migraine Treatment

- First line:
- Sumatriptan SQ (if recent onset)
- Prochlorperazine 10 mg IV OR Metoclopramide 10mg (?20mg) plus diphenhydramine 25mg IV
 - Droperidol 2.5mg (beware of prolonged QT)
 - ABOVE + NSAIDS (ketorolac) or
 - ABOVE \pm steroids and home prednisone taper

Migraine Treatment

- Second line: (DHE may be considered second line due to significant nausea)
- Third line: narcotics

Cluster Headache

International Headache Society Diagnostic Criteria

- **Duration**
 - 15 to 180 minutes untreated
- **Pain characteristics**
 - Severe unilateral orbital, supraorbital, or temporal pain
- **Associated symptoms** (at least 1, ipsilateral to pain)
 - Conjunctival injection, Lacrimation
 - Nasal congestion, Rhinorrhea
 - Forehead and facial swelling
 - Miosis, Ptosis
 - Eyelid Edema
- **Frequency:**
 - between 1 every other day to 8/day

Cluster Treatment

- First line
 - 100% Oxygen
 - nasal lidocaine pledgets 4% on affected side
 - eye numbing meds
- Second line: migraine algorithm
- Home on prednisone taper over 1-2 weeks, start in ED

Tension Headache

International Headache Society Diagnostic Criteria

- **Duration**
 - 30 min to 7 days
- **Pain characteristics** (at least 2)
 - Pressing/tightening quality
 - Mild to moderate severity
 - Bilateral location
 - No aggravation by routine physical activity
- **Associate symptoms** (Must have both)
 - No vomiting
 - No more than one of: nausea, photophobia, phonophobia
- H&P and diagnostic tests do not suggest underlying organic disease



Tension Treatment

- Oxygen
- Sumatriptan
- Verapamil, Lithium for prophylaxis

Summary

- Headaches are common
- Most are from benign cause
- At least a dozen life or eyesight threatening causes of headache
- “rule out” these diagnoses in the ED
- H&P main tool
- CT, LP the rest

Questions????