Cephalgia

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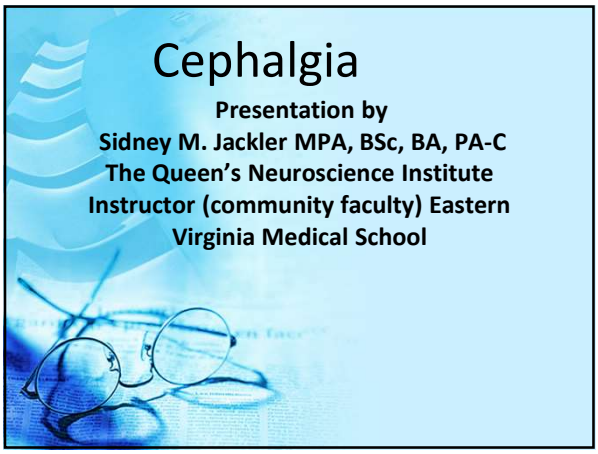

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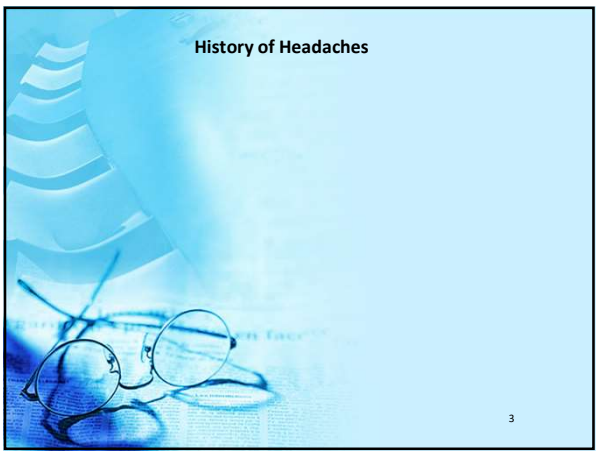
History of Headaches



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- "Different body parts are generally represented as linked to the cosmos; health is conceived as a status of the precarious equilibrium among components in a fluid system of relations; and healing mainly consists of re-establish this balance when lost"
- -Porter, 1999

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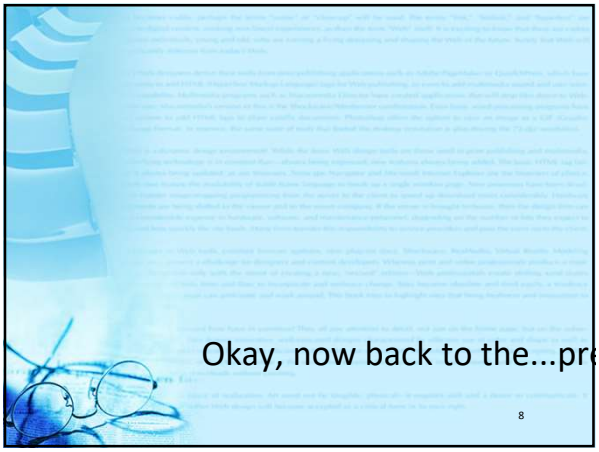

Cephalgia

- 13 million visits to primary care, urgent care and ED d/t HA- CMDT 2008
- At least 4% of all ED visits d/t HA (EMM 6th ed.)
  - Editorial: I bet its a heck of a lot more

- To further muddy the waters
  - Over 300 types of HEADACHE!!

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WHAT IS A Clinician TO DO?!?

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Do a REALLY good H&P!

Things you will want to know:

-OPQRST

- -Where does it hurt, use **1 finger** to show me!
- -Headache wake you from sleep?
- -Photo/phonophobia?
- -N/V/D/C?
- -Trauma?- if so, need to get some imaging post haste?
- -Headache diary if follow up visit
- -Aura
  - -Defn: "a subjective sensation or motor phenomenon that precedes and marks the onset of a neurological condition, particularly an epileptic seizure *(epileptic a.)* or migraine *(migraine a.)*"

http://medical-dictionary.thefreedictionary.com/aura

- -Scintillating scotoma?
  - -Defn: Flashing lights seen during migraine

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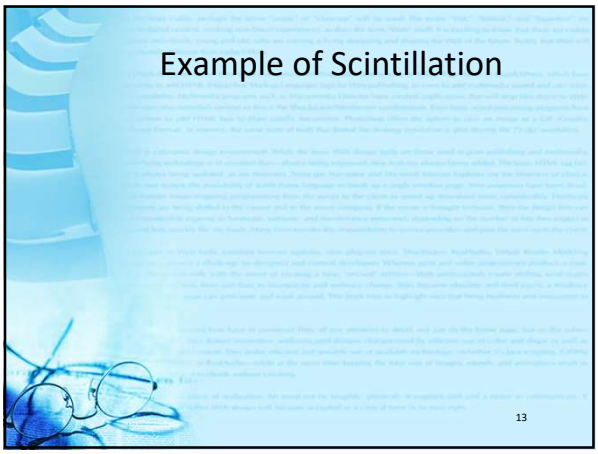
Example of Scintillation



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H & P Rant, continued

- -PMHx
  - -History of headaches?
  - -When did they first occur?
  - -What have you taken for it in the past?
  - -Other medical conditions/Medications?
  - -HTN +/- meds, thyroid issues+/-meds, previous CVA,
  - ocular problems +/- meds, musculoskeletal injury/pain, PSY issues?
- FHx
  - anyone in family with headache/migraine?
    - If so, how do they treat the headaches?

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Potential causes of headache SHx:

- Diet
  - Caffeine overload?
    - coffee, tea, soda pop
  - Foods heavy in Tyramine?
    - Wine, cheese, beer, processed meats←--sounds kinda "gouty" to me….
  - Not enough water in diet?
    - at least 5-6 pints a day
  - Usage of table salt or eating prepared meals?
  - MSG?

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Potential causes of headache

- Shx, continued
  - At least 6 hours of continuous sleep?
  - Tobacco Use?
  - Recreational Drug use?
  - Over usage of pain medication?
    - Targeting those fibromyalgia patients….yikes

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The Physical Exam

- Heart and Lungs + vitals vital vitals
  - Make sure not cardiovascular cause
  - Look for JVD, listen for bruits
- Cranial Nerves II-XII
  - Do a fundoscopic, seriously…
  - Check for retinal flash (aka Red Reflex)
  - If you state WNL, a neurologist will laugh
- Trigger points
- +/- Kernigs, Brudzinksi Sign
- Reflexes

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PE..cont

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PE..cont

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Red Reflex....ICH??

- OD: Normal
- OS: ABNORMAL (green tinge?)

PE..cont

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Trigger Points

- Occipitalis & Trapezius palpation begetting referral pain C1-C3 dermatomes

PE..cont

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So now we know all this good stuff, lets get to the medicine already.....

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Diagnosis Definitions

- Tension Headache
  - typically begins at occiput, radiates around head bilaterally like a tight vice-like band
  - generally no nausea, vomiting, aura, family history
  - patient often awakes with headache, can last for months
- Cluster Headache
  - typically severe sharp, lancinating, throbbing pain localized in or around one eye, recurrent, rhinorrhea and ptosis
  - headaches occur in clusters
  - usually 1-8 episodes/day
  - typically occur 60-90 minutes after falling asleep
  - duration of episodes 15-180 minutes

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Diagnosis Definitions Continued

- Migraine without aura (MO) diagnostic criteria
- **A.** At least five headache attacks lasting 4 - 72 hours (untreated or unsuccessfully treated), which has at least two of the four following characteristics:
- 1. Unilateral location
- 2. Pulsating quality
- 3. Moderate or severe intensity (inhibits or prohibits daily activities)
- 4. Aggravated by walking stairs or similar routine physical activity
- **B.** During headache at least one of the two following symptoms occur:
- 1. Phonophobia and photophobia
- 2. Nausea and/or vomiting
- Reference:
- 1. Headache classification committee of the IHS. Classification and diagnostic criteria for headache disorders, cranial neuralgias and facial pain. Cephalalgia 1988 8: 1-96.

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Diagnosis Definitions Continued

- Migraine with aura (MA) diagnostic criteria
- **A.** At least two attacks fulfilling with at least three of the following:
- 1. One or more fully reversible aura symptoms indicating focal cerebral cortical and/or brain stem functions
- 2. At least one aura symptom develops gradually over more than four minutes, or two or more symptoms occur in succession
- 3. No aura symptom lasts more than 60 minutes; if more than one aura symptom is present, accepted duration is proportionally increased
- 4. Headache follows aura with free interval of at least 60 minutes (it may also simultaneously begin with the aura
- **B.** At least one of the following aura features establishes a diagnosis of migraine with typical aura:
- 1. Homonymous visual disturbance
- 2. Unilateral paresthesias and/or numbness
- 3. Unilateral weakness
- 4. Aphasia or unclassifiable speech difficulty

Reference:
1 Headache classification committee of the IHS. Classification and diagnostic criteria for headache disorder cranial neuralgias and facial pain. Cephalalgia 1988 8: 1-96.

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Diagnosis Definitions Continued

- Pseudotumor cerebri
  - Dilated ventricles-cause???
- Atypical Migraine/Hemiplegic Migraine
  - Looks and smells like Stroke, but not
- Status Migrainosis
  - Migraine that has lasted over 72 hours

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Cephalgia (cont)

- Primary Causes of Headache-Vascular??
  - Migraine
  - Tension Headache
  - Cluster Headache

Courtesy of Emergency Medicine Manual 6th ed.

Cephalgia

- Secondary causes of headache
  - CNS infection
    - meningitis
    - Cerebral abscess
  - Ophthalmic
    - Glaucoma
    - Iritis
    - Optic neuritis
  - Vascular
    - SAH, Epidural & subdural hemorrhage
    - TIA/CVA
    - Hypertensive HA

Courtesy of Emergency Medicine Manual 6th ed.

Cephalgia (cont)

- Causes of Secondary HA (cont)
  - Post lumbar puncture
  - Trauma
  - Pseudotumor cerebri
  - Referred dental pain
  - Alcohol withdrawl
  - …Ad infinitum…

Courtesy of Emergency Medicine Manual 6th ed

Next sections:

1)ER Headache Recognition/Treatment

2)Medicine (in/out) Patient Recognition/management

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Emergent Headaches

- SAH
- Subdural Hematoma
- Epidural hematoma
- Mass lesion
- TIA/CVA
- Plegic HA
- Hypertensive HA
- "Unique" or "Zebra" HA
- G.O.M.E.R. headaches

SAH

- **Chief Concern (CC):**
- sudden severe persistent headache with minor bleed
- mortality with major bleed
- dizziness, orbital pain, diplopia, loss of vision, syncope (increased intracranial pressure), nausea, vomiting, photophobia, coma, pain above or behind an eye, neck stiffness
- **(HPI):**
- **sudden generalized excruciating headache that radiates into posterior neck region, maximal at onset, worsened by neck and head movements, may have preceding sentinel headache with small bleed**

Courtesy of Dynamed

SAH (Cont)

- **General Physical:**
- **altered level of consciousness, fever**
- **HEENT:**
- **may have dilated pupil, papilledema, retinal hemorrhage, ptosis, bruits over orbit**
- **Neck:**
- **meningeal irritation (meningismus, nuchal rigidity, flex neck -> flex knee)**
- **Neuro:**
- **no focal neurological signs in 39%**

Courtesy of Dynamed

SAH (Cont)

- Tests:
  - CT and consider LP
  - Note: study suggests that CT sufficient to exclude 97.5% of subarachnoid hemorrhages in patients with "worst headache", but too small to confidently recommend against lumbar puncture in patients with negative CT; 107 patients presenting to emergency department with "worst headache of their life" or headache severity 10/10, patients had CT scan and lumbar puncture if no intracranial hemorrhage on CT, SAH noted in 18 patients of whom 2 were detected on lumbar puncture and not CT, 20 patients had false positive lumbar puncture depending on definition of positive spinal fluid test; lumbar puncture had 74% specificity and 10% positive predictive value; CT estimated to have 97.5% negative predictive value, but 95% confidence intervals lead to negative predictive value as low as 91.2% (Ann Emerg Med 1998 Sep;32:297 in QuickScan Reviews in Fam Pract 1999 May;24(2):27)

Courtesy of Dynam
2009

SAH - The treatment slide

- Nimodipine (CCB) 60 mg Q4H ORAL ONLY
- Call Neurosurgery!!
- Consider:
  - **clazosentan reported to reduce angiographic vasospasm after subarachnoid hemorrhage (level 3 evidence)**

Courtesy of Dynamed
2009

Subdural Hematoma

- **History of Present Illness (HPI):**
- delayed rebleeding from undetected chronic subdural hematoma may occur weeks-months after original injury after relatively mild secondary head trauma
- **General Physical:** altered level of consciousness
- **Neuro:** gradual signs of cerebral compression (e.g. pupillary dilation), less commonly focal signs---CAUSE IS BRIDGING VEINS
- Imaging: CT adequate however….
  - MRI more sensitive than CT in identifying subdural hemorrhages of different signal characteristic

Courtesy of Dynamed 2009

Sub Dural Hematoma TX

Epidural Hematoma

- **History of Present Illness (HPI):**
  - may initially have temporary loss of consciousness then short period of consciousness (lucid interval)
  - Damage to middle meningeal artery
- Visualize with CT (Biconvex lens shaped) and call:

Mass lesion

- Headache wakes patient from sleep
- Focal neurological deficits
- Papilledema can be seen on fundoscopy

Depending on severity after CT…

- Neurology, neurosurgery and/or heme/onc should be notified.
- If worried about herniation, call neurosurgery immediately.

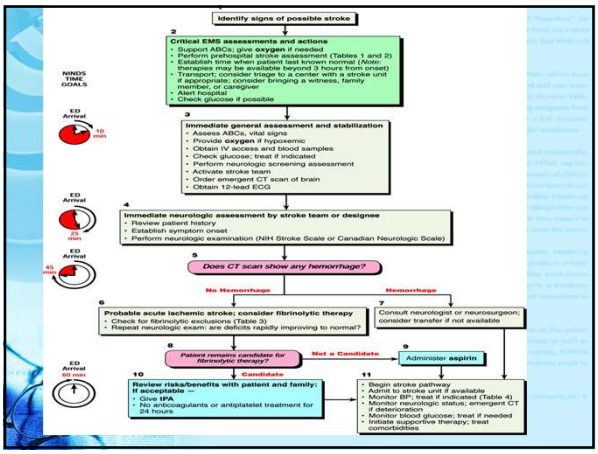
TIA/CVA

- Sudden neuromuscular deficits
- Dysarthria of voice
- Headache
- Unilateral motor paralysis
- Can wrinkle brow but face droops
- Send immediately to:

- Wait for it. . .

Doughnut of truth

- CT Scanner



If CVA/TIA symptoms with headache and neg scan

- Atypical migraine-give them some pain relief and send home to PCP/Neurologist
- Usually happens in very young and middle age + patients
- Always make sure to modify risk factors

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Plegic Migraines

- Looks like a stroke, smells like a stroke, NOT A STROKE.
- Unilateral, short lived: 5 mins-24 hours **with resolve**
- Visual aura, Happens in "Very young" and Very old
- Thought to be genetic (autosomal dominant current theory)
- Can be associated with ataxic gait
- Treatment: IV magnesium+/- AED (e.g., depakote), or Rx CCB (verapamil).

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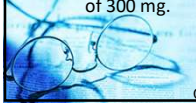
Hypertensive HA

- Urgency/Emergency
- Treat with:
- Oxygen
- Reduce MAP by 20% over 60 mins
  - Sodium nitroprusside 0.3 mcg/kg/min titrate to 10 mcg/kg/min
  - Or
  - Labetalol bolus 20-40 mg IV, repeat every 10 mins to total of 300 mg.



Courtesy of Emergency Medicine Manual 6th ed and CMDT

Other "Unique" HAs

- Sarcoidosis
- MS
- Arnold Chiari Malformation
- Zoonotic diseases
- carbon monoxide poisoning
- radon exposure
- radiation exposure
  – at this point, send to neurology!!

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Pseudotumour Cerebri

- Looks like a tumour, smells like a tumour, but NOT A TUMOUR (HA, papilledema).
- At risk: Over 40, Obese (Large BMI), chronic steroid users, Native people from Canada/Alaska)
- Treatment: Diamox (acetazolamide),or topamax (topiramate) orintracranial shunt - manage as outpatient
- Causation?

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G.O.M.E.R Headaches

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Tension Headache

- TX
  - ▪ibuprofen 200-800 mg orally 3 times daily▪
  - aspirin or acetaminophen 1,000 mg orally once or 650 mg orally every 4-6 hours as needed▪
  - acetaminophen/butabital minus caffeine (Bupap)
    - Or fioricet (butabital/acetaminophen/caffeine)
  - ▪ibuprofen 400 mg plus caffeine 200 mg orally

Courtesy of Dynamed

Cluster Headache

- TX:Oxygen in upright position for 10-20 mins
- 6 mg SC sumitriptan (do not give if patient had CVA) or Sumavel Dose pro
- 100 mcg Octreotide (safe if patient had CVA)--->synthetic somatostatin
- DHE

Courtesy of Dynamed

Migraine

- Chlorpromazine 0.1 mg/kg IV
- Prochlorperazine 10 mg IV
- Metoclopramide 10-20 mg IV
- Sumatriptan 6 mg SC
- Ketorolac 60 mg IM
- IV benadryl, Ativan
- DHE (dihydroergotamine)

Courtesy of Emergency Medicine Manual 6th ed.

In reality...

- You're probably just going to give a narcotic, and/or some Benadryl to take care of the G.O.M.E.R ("get out of my ER") headaches then send him or her back to the PCP/Neurologist. Just saying...

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Now for all you primary care/Neurologist (i.e., non ER) folks

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KEEP A HA DIARY!!

←unless your patient has a phone like this…consider a free tracking application

Headache prevention meds

- Antiepileptic Drugs (AED)
  - Topamax (topiramate)
    - slow titration (25 mg week one, 50 mg week two, 75 mg week three, 100 mg week four)
    - do not Rx if Hx of nephrolithiasis
    - Ensure the patient is not pregnant or desires to be pregnant
    - common side effects-weight loss, swelling of fingers, adv taste to soda pop (esp colas)
  - Other AEDs: Neurontin, Lyrica, Zonegran Depakote*** (***AAN recommends), Vimpat (off label usage!!)

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Sleep/Migraine prevention

- Elavil (amitryptiline) or Pamelor (nortriptyline)-Trans cyclic antidepressant
  - Start slow 10 mg Qdinner (peaks 3 hours later)
  - Adv effects: weight gain, cotton mouth, sleep, vivid dreams
  - Great for "pain syndromes" as well
- Another to consider: Desyrel (trazadone) (alpha 1/SSRI modulator)

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Sleep/Trigger Point with referral pain (cephalgia)--more preventative

- Muscle Relaxants
  - Zanaflex, baclofen, flexeril, skelaxin, robaxin, soma
    - Remind patients NO ETOH, DO NOT DRIVE /OPERATE HEAVY MACHINERY BECAUSE OF SEDATION!!!!---ITS YOUR LICENSE ON THE LINE IF YOU DON'T!!
    - Lorzone (branded)-no "sleepiness"

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Cardiac Meds (preventative for cephalgia)

- Calan (verapamil)←CCB
- Inderal (propranolol)←Beta Blocker
  - It's the "Swiss Army Knife of meds"—what else does it treat ????
  - Lit states inderal
    - Personally I've found Calan to be better
  - Advise patients of adv side effects hypotension
  - If chest pain, arrhythmia, syncope, need to stop med immediately!!!
  - **Can give low dose to patients with normal systolic blood pressure (SBP)**

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Supplements for prevention

- Not FDA approved (its a supplement!)
  - Vitamin B Complex (esp B2-riboflavin)
  - CoQ10
  - Petadolex (butterbur root)
  - Magnesium
  - "Migraeeze" supplement
  - Feverfew (?)
  - Combinations of the above?

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New (2018!)
Once a month injectable

•

Erenumab-aooe selectively targets and blocks the calcitonin gene-related peptide receptor (CGRP-R), disrupting a key component of migraine pathophysiology[1-6]

CGRP—WHAT?

- "In current hypotheses, migraine-specific triggers cause primary brain dysfunction, which causes dilation of cranial blood vessels that are innervated by sensory fibers of the trigeminal nerve to dilate.[2,3] The dilated blood vessels mechanically activate perivascular trigeminal sensory nerve fibers. Activation of trigeminal sensory nerve fibers causes a pain response to be conveyed to the brainstem (and from there to higher brain centers) and evokes release of vasoactive peptides such as substance P and CGRP from trigeminal fibers. These peptides exacerbate vasodilation and cause neurogenic inflammation characterized by vasodilation, leakage of blood vessels, and degranulation of mast cells"

Headache. 2006 Jun; 46(Suppl 1): S3–S8.

Procedures! for prevention

- Greater Occipital Nerve Block/Trigger Point
  - Use solumedrol (40 mg) and bupivicaine (0.25%)
  - Informed consent!!
    - Have patient bend over, palpate occipital nerves, clean area, bilat inject
    - Have patient bend over, palpate trapezius triggers, clean area, 6 injection spots total (refer to trigger point picture in beginning of lecture)

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Trigeminal Blockaide

- 2 % marcaine, 0.2 cc per site
- Personally I do 5 sites (2 supraglabellar/bilat, then 3 along temporalis/parietal region-bilat).

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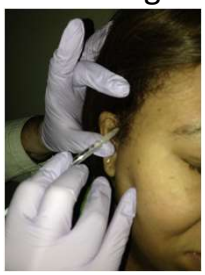
Trigeminal Nerve Block



Procedures! for prevention

- Botox
  - prevents release of ACH by poisoning Ca 2+ release at SNAP-25 Membrane
  - Order 2 bottles of 100 units-only use 155units
  - 31 injection sites (all over head and neck/trapezius)
  - FDA approved
    - Insurance Companies need 15+ days of intractable migraine lasting 4 hours and/or failed 8 different medications
    - Injections every 2-3 months, suggestion 3 trials
      - Reality: if after 2nd trial no help, stop!!

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Procedures! for prevention Lumbar Puncture

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Devices for Migraine Reduction

2013 Cerena Trascranial Magnetic Stimulator

2014 Cefaly

- TENs unit to be worn on the head 20-30 mins a day
- Trademarked "Cefaly"

2017 Gamma Core

Vagal stimulator, approved for migraine AND Cluster HA.

Spenopalatine Blockaide

Headache Abortion PROCEDURE!

- Sphenopalatine Blockaide

Migraine ABORTION

- Pain relief
  - Motrin
  - Naproxen
  - Fioricet (<--non narcotic) /Firoinal (<--narcotic)/Bupap (<--minus caffeine)
  - Cambia (new released NSAID that is POWDERED, just add 2 oz water and one satchet!)
  - Caffeine
  - **All of above can be used for patients whom have had CVAs**

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Cambia -great for college students

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Migraine ABORTION-cont

- Triptans
  - Imitrex/sumatriptan (try first with patients) 1 tab at onset, second tab 2 hours later. Side effects: flushing, SOB, chest tightness, lethargy
    - Others: relpax, maxalt, frova (long acting), amerge,treximet (triptan+naproxen), sumavel dose pro
    - Some of triptans come in formulations such as: tablet, melt away, intra nasal, injection, soon to have wearable device (more to come) , cream
  - ***Can NOT use for patients whom have had CVAs or MI***

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Zecuity ™2015
(wearable triptan)---pulled off the market in 2016 d/t rashes

Frovatriptan

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Migraine ABORTION-cont

- Stuff for the schnoz
  - migranal (ergotamine- DO NOT USE WITH CVA patients!!)
  - Stadol (habit forming)
  - Sprix (Ketoralac/toradol)-Do NOT sniff
  - Ausanil (OTC supplement, made with pepper spray)
  - Intranasal imitirex
  - Intranasal lidocaine

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Migraine ABORTION-cont

- Cafergot (ergotamine + caffeine)
  - Habit forming, and $$$$$$$$$$$$$

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Intractable migraine (4+ days)

- Try Medrol dose pack or prednisone taper!
  - Be wary of diabetic patients
  - Can cause hallucinations!!!
  - Tell patient to take on full stomach
  - If not…may need to progress to….

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Intractable migraine (4+ days)

- Time for the big guns
  - IV Solumedrol x5 days
  - IV Magnesium x 5 days
  - IV Benadryl x 5 days
  - IV Depakote x 5 days
  - IV Vimpat (off label) x 5 days
  - IV DHE x 5 days (BID)
    - pretreat with antiemetic
  - Cocktail of above-but you should be sending to neurology by now

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Intractable migraines continued

- Sometimes you just can't "cure" headaches, but you can try to improve quality of life.
  - Be realistic with your patients
  - Be compassionate
  - Procedam non nocere
    - (above all else, do no harm)

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