NEUROLOGY

Alison Ruiz PA-C

Case Presentation

- 32 y/o female present to the ER with rt monocular vision loss for the past hour. Pt states it may be improving now. Pt does not wear contacts or glasses. States she has eye pain especially when she moves her eye.
- States when she bends her neck, she gets tingling down her back.
- Denies previous episode, denies other symptoms
- Denies F/C/N/V/D

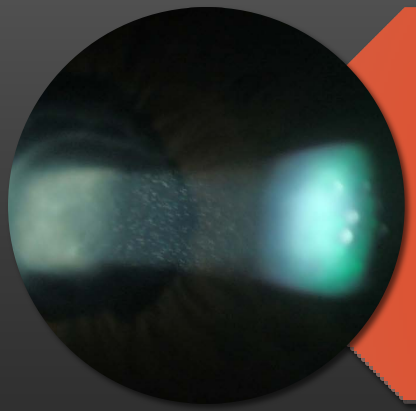
History

- PMH
  - none
- PSH
  - none
- FH
  - Lupus- mother
  - DM- Father
- SH
  - Drinks alcohol 2 per week 4-5 drinks per week
  - nonsmoker

PE

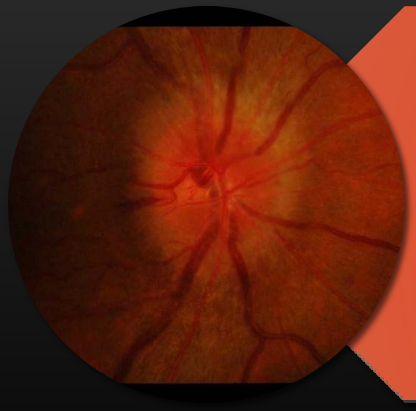
- Vitals: T 98.0, HR 90, BP 110/58, R 16, Pulse ox 100%
- Visual Acuities: 20/20 OS, 20/100 OD
- HEENT: PERRL, EOMi, TMs clear bilat, OP: clear
- Neck supple. Full rom. Tenderness with flexion
- Lungs: CTA bilat. NO W/R/R
- CV RRR s1s2 no murmurs
- Abd: soft NT ND NABS. No HSM
- Neuro: no focal neuro deficits, DTR 2+ bilat throughout, Muscle strength 5/5 UE and LE bilat, **positive Lhermitte sign**

Optho Exam



Slit lamp exam:

- Positive for cell and flare
- No uptake
- No hyphema



Fundoscopic Exam: limited in the ED

- Look for optic disk swelling
- Get MD involved

Differential Diagnosis

- Optic neuritis
- MS
- Pseudotumor cerebri
- Brain tumor
- Retinal detachment
- Iritis

Diagnostic testing

- CBC WNL
- BMG WNL
- ESR elevated
- CRP elevate
- TSH, T4 pending
- +/- LP
  - Showed increased protein levels 10mg/dl.
  - Normal cell count.
- MRI Brain
  - **There are multiple subcortical and periventricular white matter signal abnormalities, more numerous than expected for age. No signal abnormalities are seen within the corpus callosum or posterior fossa. A small focus of enhancement is suspected along the left optic nerve seen on axial images. No diffusion-weighted abnormalities are identified.**

What is the diagnosis?

- Multiple Sclerosis

MS Common Symptoms that may present to the ED

- Fatigue/Weakness
- Loss of balance, coordination, tremor or ataxia
- Vertigo
- Paroxysmal symptoms (itching, burning, twitching, Lhermitte's sign)
- Bladder urgency/retention
- Spasticity
- Paraesthesias
- Optic atrophy, blurred vision, central scotomata
- Ataxia
- Paroxysmal pain
- Dysesthetic pain

Multiple Sclerosis

- How do you treat?
  - Corticosteroid to reduce inflammation
  - Consult neuro for specific initial dosing
  - Typical dosing Methylprednisolone 0.5-1g daily for 5 days

Case presentation

- 20 y/o M brought to the ER after being found on the floor in his bedroom. Pt seemed immediately confused upon waking. He woke approximately 20 or 30 seconds after she arrived in the room. No previous episode.
- No recent URI or infection, No trauma.
- No F/C/N/V/D
- Denies pain except for his tongue.

History

- PMH: none
- PSH: none
- FH:
  - HTN- mother
  - DM- mother
  - Gastric Cancer- paternal grandfather
- SH:
  - Nonsmoker
  - Admits to alcohol use
  - Denies drug use

Physical Exam

- Alert and oriented times 3. NAD.
- Vitals: BP 130/79, HR: 90, R: 18, T: 99.0, Pulse ox: 100%
- HEENT: 0.5cm hematoma to the occiput. No bleeding. PERRL EOMi. TMs clear bilat without hemotympanum
  - OP: clear. Tongue sts and ecchymosis to the left anterior portion
- Neck: supple full rom. Nontender
- Lungs: CTA bilat. NO W/R/R
- CV RRR S1S2. No murmurs
- Abd: soft NT ND NABS.
- Ext: ecchymosis over rt shin otherwise WNL
- Neuro: Pt is fatigued, but responding to all your questions. Does not remember the incident. CN II-XII grossly intact. No focal deficits. Pronator Drift WNL, finger to nose WNL, DTR patellar tendon, brachioradialis, triceps, biceps, achilles 2+ and equal bilat. Muscle strength 5/5 through out bilat.

Differential

Diagnostic Testing

- CBC-WNL
- BMG-WNL
- Drug screen-cocaine
- Urinalysis-WNL
- CT head-NML
- EKG-NML

Most likely diagnosis?

Seizure disorders

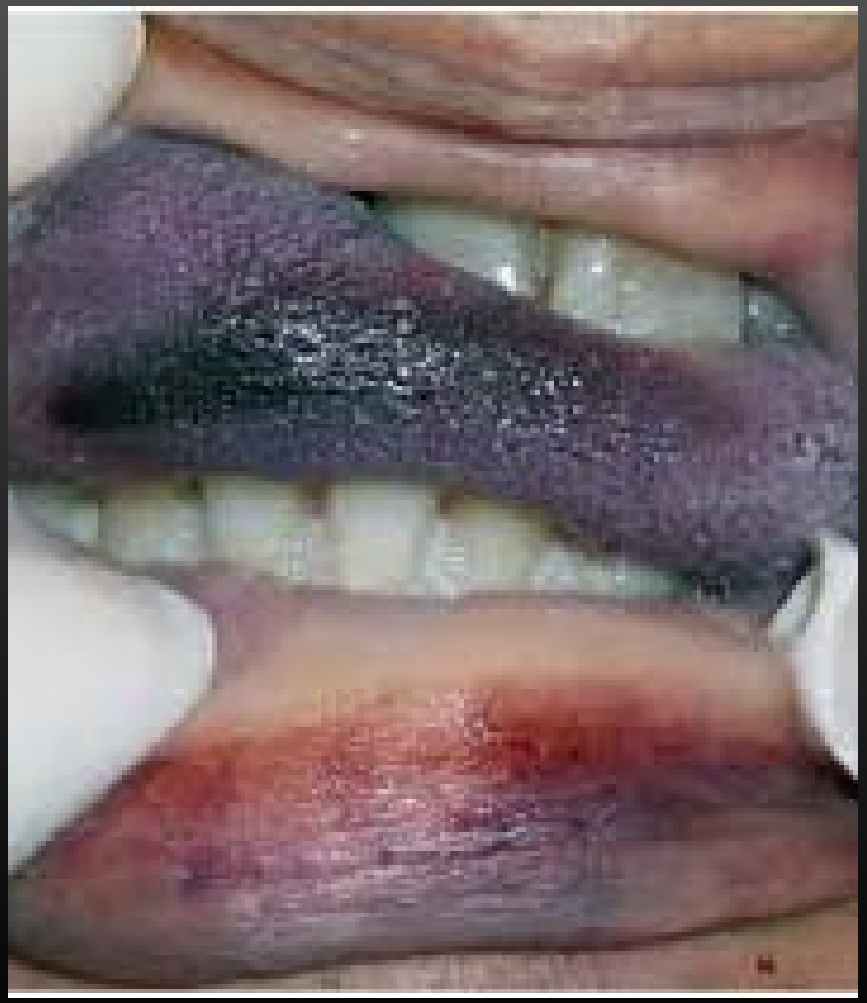
- 1-2% of all ER visits
- Abnormal, excessive activity of the CNS
  - Generalized
    - Involving both hemispheres with LOC
  - Focal Partial
    - Only involve one hemisphere
    - Simple partial
      - Cognition is not impaired
    - Complex partial
      - Cognition is imparted

Presentation

- Witnessed seizure activity OR
- Found down on the floor, wakes up confused
- Postictal state after seizure activity
- Typically last 1-2 minutes.
  - Time may be variable however

Physical findings

- Confusion
  - Usually resolves while in the ED
- Evidence of Trauma
  - Tongue trauma
  - Urinary or bowel incontinence
  - Minor head trauma



Physical Findings continued

- Todd’s paralysis
  - Mimics a stroke
- https://www.youtube.com/watch?feature=player_detailpage&v=UYG4bj4Lkkc

Physical Findings

- Tachycardia
- Diaphoresis
- Tremulousness
- Anxiety

Differential Diagnosis Seizure

- Epilepsy (Primary Seizure)
  - Likely to have seizure if
    - Noncompliant with medication
    - Sleep deprived
    - Emotional stress or physical stress
- Secondary Seizure
  - Hypoglycemia
  - Hyponatremia
  - Alcohol withdrawal
  - Trauma
  - Drug/Toxins
  - Tumor
  - Infection
  - Eclampsia

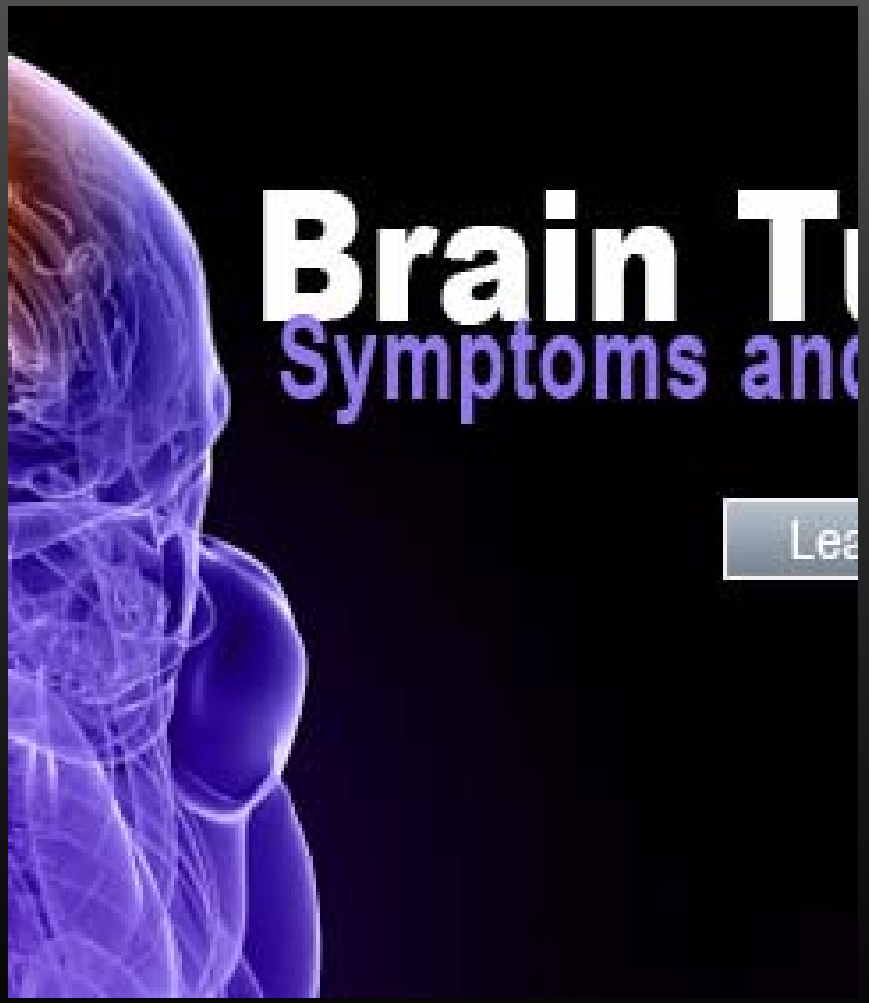
Diagnostic Testing

- **New Onset Seizures**
  - BMG
    - Hyponatremia
    - Hypoglycemia
  - Pregnancy test
  - CBC
    - WBC (looking for infection)
  - Tox screen
- **Recurrent Seizures**
  - Check levels of seizure medications
    - Ie phenytoin, carbamazepine, phenobarbital, Keppra
  - +/-Urinalysis
  - Pregnancy test

- Outpt work up of new onset seizure pts
  - MRI
  - EEG
  - Also done is pt's with status epilepticus and is done emergently!!!!!!
- EKG
  - May see changes
    - WPW
    - Torsades de Pointes
    - Long QTc, short QTc
    - Widening QRS
      - NS channel blockade with cyclic antidepressants, lidocaine, anticholinergics
      - Brugada syndrome

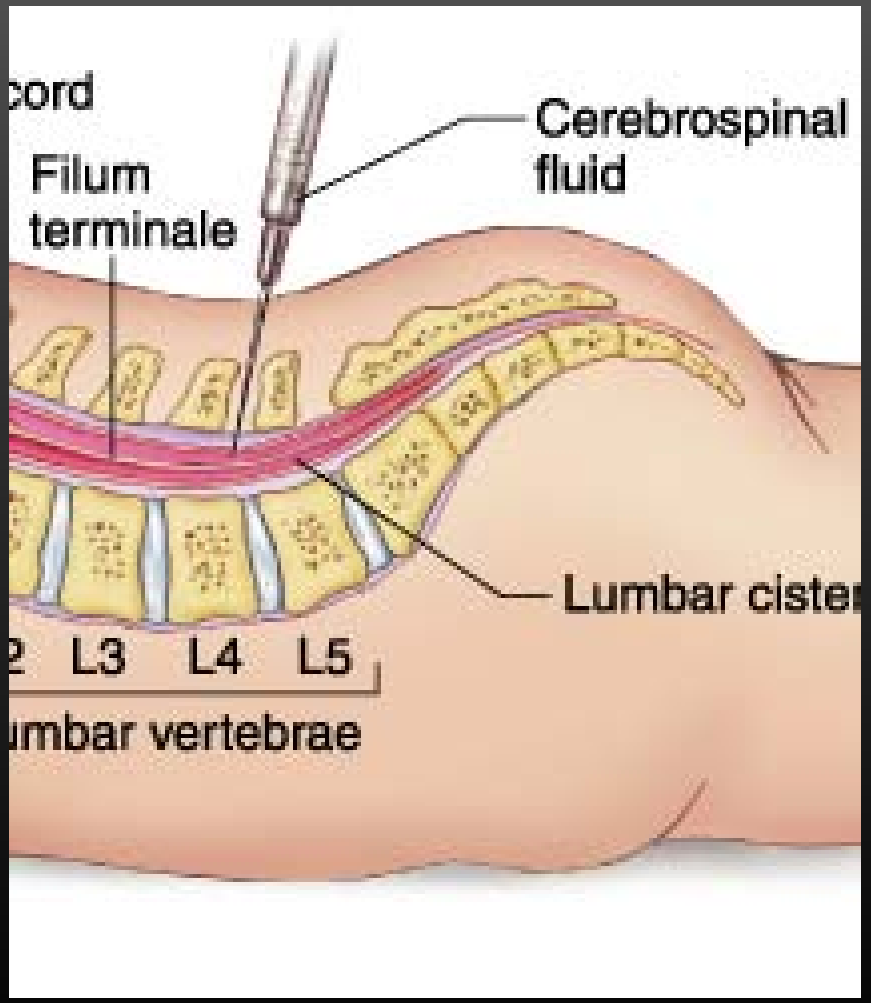
CT scan

- Required New Onset Seizure
  - R/o Lesion
- Recurrent Seizure
  - Only require CT head if
    - New type seizure
    - Increased frequency
    - Significant trauma
    - Fever
    - Prolonged postictal time
    - Neuro deficit
    - Status epilepticus



LP

- In all patients with status epilepticus
- Severe headache
- Fever
- Persistent altered mental status (AMS)
- Immunocompromised pts
- **CT prior to LP**



Drugs of Abuse That Cause Seizures

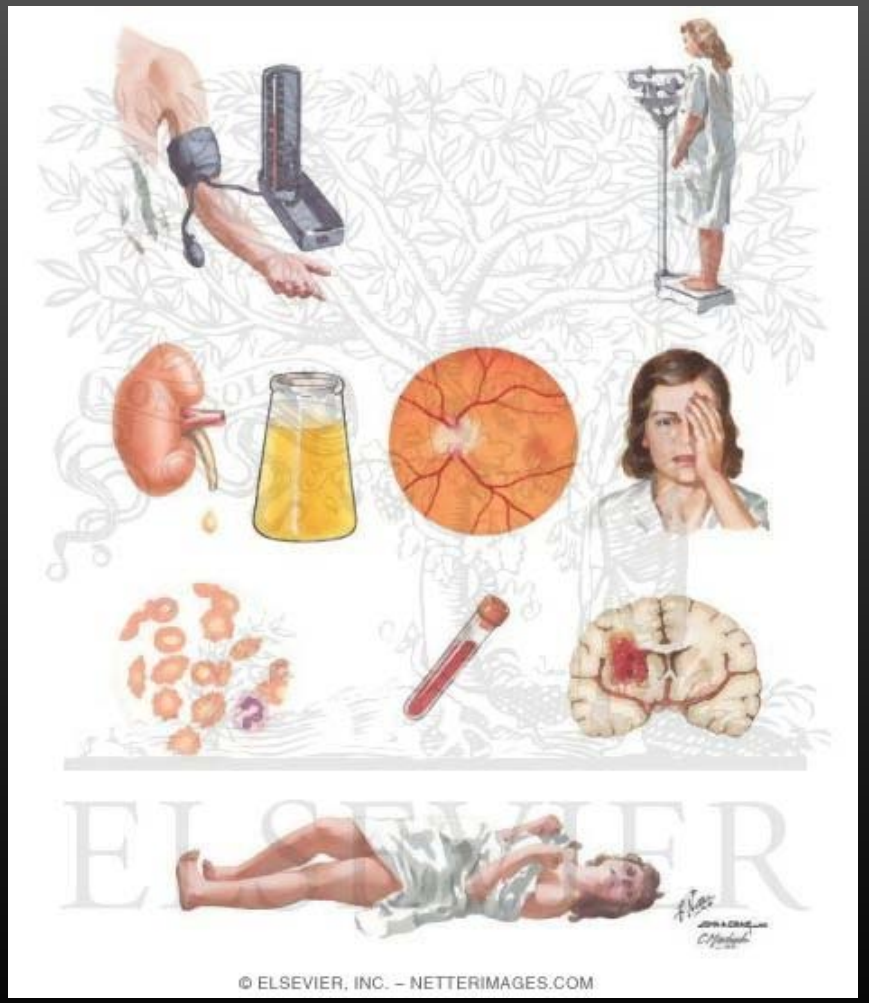
- Decrease in GABA activity
- Cocaine
  - Most commonly abused that causes seizures
  - Benzos control
  - CT Scan is necessary to r/o bleed
  - Ice packs to cool pt if they are hyperthermic
  - IV fluids to prevent rhabdomyolisis
- Ecstacy
  - Present from “rave parties”
  - Tonic-clonic seizures
    - Due to hyponatremia
  - Causes transient SIADH
  - Treat with fluid restriction and boservation

Alcohol Withdrawal

- Delirium tremens
- AMS
- Tremulousness
- Anxiety
- Abnormal vitals
  - Tachycardia
  - HTN
  - Hyperthermia
  - Tachypnea

Eclampsia

- Check for pregnancy in all females seizing
- Pregnant women with seizure disorders
  - may have more frequent seizures during pregnancy
- Other signs
  - Vision complaints
  - Edema face, hands and feet
  - Proteinuria
  - HTN



Toxins

Isoniazid

- Does not respond to Benzos or barbituates
- Treat with pyridoxine

TCA

- Use activated charcoal
- IV benzodiazapenes
- Bicarbonates for TCA OD

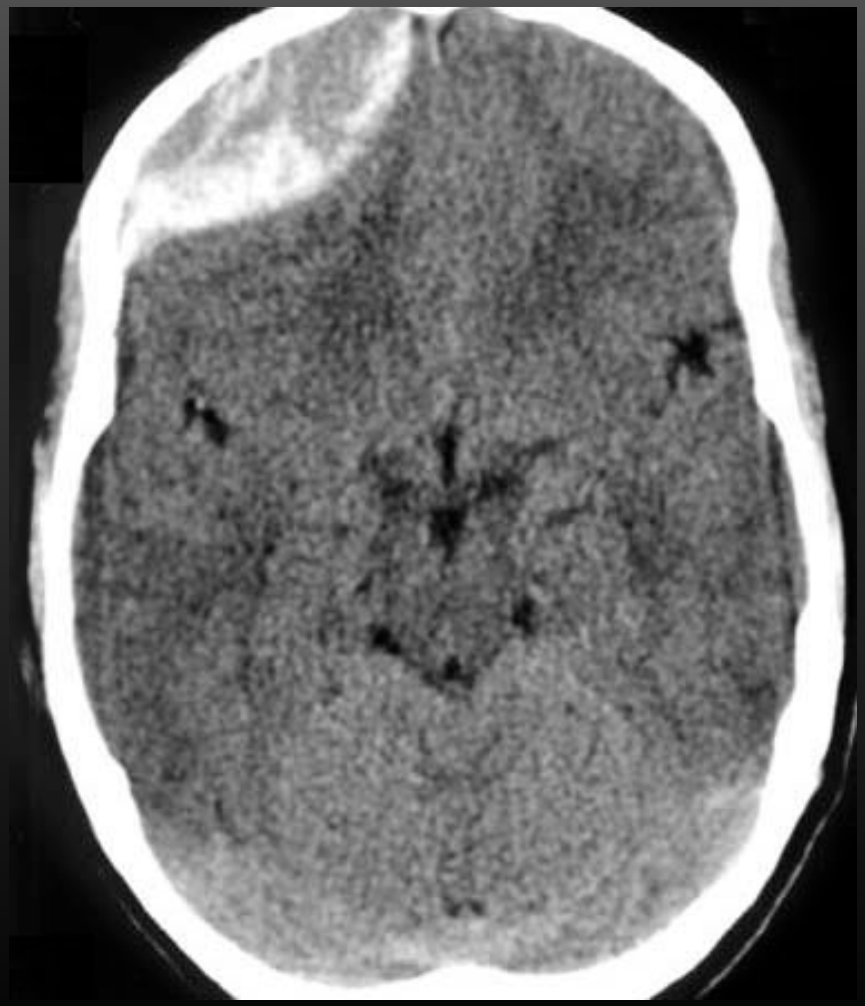
OD of Methylxanthines

- Caffeine, Theophylline
- Usually seizure are short
- Treated with Benzos

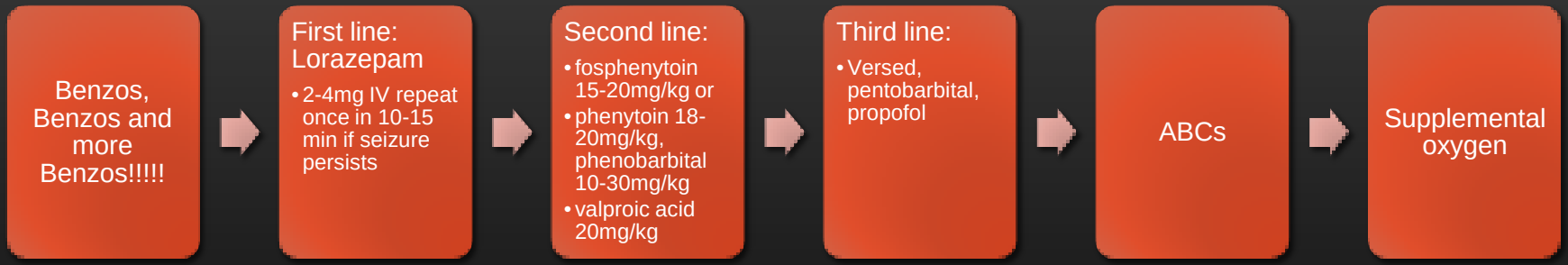
Trauma

Head injury

Intracranial hemorrhage



Treatment

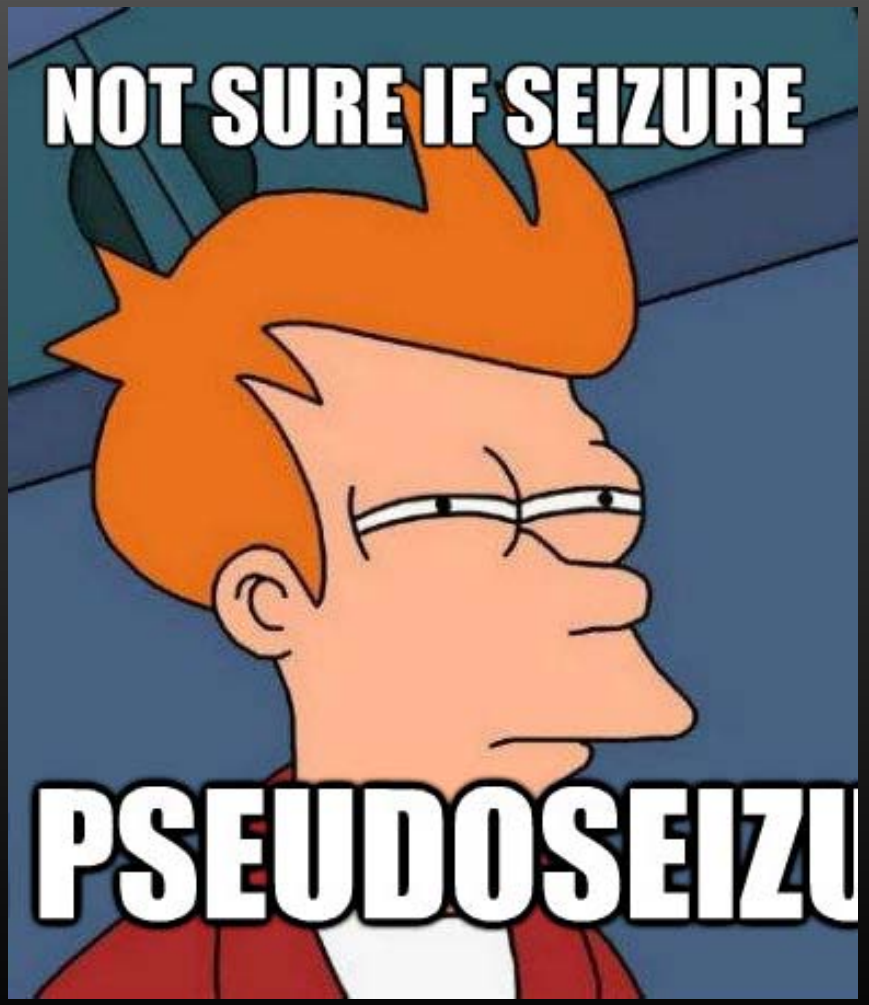

Benzos, Benzos and more Benzos!!!!!
First line: Lorazepam
• 2-4mg IV repeat once in 10-15 min if seizure persists
Second line:
• fosphenytoin 15-20mg/kg or
• phenytoin 18-20mg/kg, phenobarbital 10-30mg/kg
• valproic acid 20mg/kg
Third line:
• Versed, pentobarbital, propofol
ABCs
Supplemental oxygen

Disposition

- All pt with seizure must have outpt follow up usually with neurologist
- New onset seizures need further work up!
  - MRI, EEG
- Avoid risky behaviors until seizures are controlled
  - Swimming, cooking by fire, driving etc

Identifying Pseudoseizure

- Clues to diagnosing
  - Rhythmic controlled shaking activity
  - Ability to talk and follow commands during seizure
  - Recall of a seizure (if it involves both sides of the body)
  - No postictal period
  - Eventually you can confirm it with an EKG



Status Epilepticus

- Continuous seizure > 30 minutes or
- 2 or more seizures in a row without a return to baseline
- A prolonged postictal period may indicate ongoing seizure activity
- Treatment should be early and aggressive admin of IV anticovulsaants
  - fosphenytoin 15-20mg/kg or
  - phenytoin 18-20mg/kg, phenobarbital 10-30mg/kg
  - valproic acid 20mg/kg
  - Lastly
    - Versed, pentobarbital, propofol

References

- CDEM curriculum2013 Seizure and Status epilepticus