Seizures

EMERGENCY MEDICINE COURSE
José A. Rubero, M.D., F.A.C.E.P.
Associate Professor
Seizure:
SHAKE WITH eL SPOC

- Salicylates
- Hypoxia, HA
- Anticholinergic
- Karbon Monoxide
- EtOH withdrawal
- Withdrawal
- INH, Infection of CNS
- Theophylline and TCA’s, trauma
- Hypoglycemia, Hyponatremia

- eLead Li, local anesthetics
- Strychnine and sympathomimetics
- PCP, phenothiazines, pseudoseizure, and propoxyphene
- Organophosphate
- Camphor, cholinergic, CN
1. Which of the following is the treatment of choice for status epilepticus?
   a. Benzodiazepines
   b. Phenytoin
   c. Valproic acid
   d. Phenobarbital
   e. Carbamazepine
42 y/o male that was BIBA after he was found in the back of 7–11
PMHx: none
Meds: none
No trauma
Seeing in the ED multiple times
VSS
PE: WNL
Meds given but not working
Alcohol withdrawal

- AKA
- AMS
  - Reduction or cessation
- DT’s
  - “pink elephants”; grabbing things on the air
- Treat
  - Banana bag, thiamine
  - benzodiazepines
42 y/o male that was BIBA intubated
PMHx: none
Meds: none
No trauma
Seeing in the ED multiple times
Sent to Lakeside multiple times
Meds given but not working
ABG
- pH = 7.12
- pCO2 = 20
- pO2 = 98
- HCO3 = 8
- O2sat = 89%
Non-cardiogenic edema
- NaHCO3 drip
- Hemodialysis with charcoal filter
42 y/o male that was BIBA
PMHx: HIV
Meds: none
No trauma
Meds given but not working
INH Overdose

- Vitamin B6
42 y/o male that was BIBA
- Confused, agitated
- Lethargic
- Hemiplegic

PMHx: DM

Meds: insulin

No trauma

Meds given but not working
"CIRCUMNAVIGATE THE ENTIRE GLOBE IN ONE NIGHT?"

GET OFF! MINE!

MINE! BRUTE!

HYPOGLYCEMIA: The Ugly Reality!
Hypoglycemia

- D50W
2 y/o male that was BIBA intubated
PMHx: none
Meds: none
No trauma
Found with severe respiratory distress/failure
Medications not working
42 y/o male that was BIBA after found unresponsive
PMHx: none
Meds: none
No trauma
He was working in a house as a carpet cleaner
Meds are not working
Carbon monoxide from the cleaning unit built up inside the garage. The deadly gas entered the open door into the townhouse where two carpet cleaners were working.
CO poisoning

- O2
- HBO
42 y/o male that was BIBA
PMHx: none
Meds: none
No trauma
Sweating, vomiting, miosis
Meds are not working
He was working in a house killing…. 
Organophosphates

- DUMBLESS
- Atropine
- 2-PAM
42 y/o female that was BIBA after found unresponsive; she complained of throbbing HA

PMHx: none
Meds: none
No trauma
Meds are not working
SAH

- Neurosurgery
- Nimetop
- Run for it
22 y/o female that was BIBA after found unresponsive; she complained of leg edema

PMHx: none
Meds: none
No trauma
Meds are not working
VS
- HR 98
- RR 18
- BP 201/110

She looks pregnant
Eclampsia

- MgSO4 now !!!!!!!
  - 4 gms first
  - Check for ..... (Undecipherable)
    - Reflexes
- Labetalol, Cardene, hydralazine, methyldopa
- C-section
Seizures

- Episodic alteration in motor activity, behavior, sensation, or autonomic function
- Epilepsy
  - Indicates recurring seizures without a simple discernible and reversible cause
- Any aura?
- Onset, progression
- Incontinence
- Focal, generalized
- Awake or not
- Missed medications
- Pregnant?
- Staring spells
Differential

- Syncope
  - Dizzy, diaphoresis, nausea, “tunnel vision”
  - Aware that will go to faint, can describe the onset
  - No postictal
- Pseudoseizures
- Hyperventilation syndrome
- Migraines
- Movements disorder
  - Dystonia, chorea, myoclonic jerks, tremors, tics
  - No LOC
- Narcolepsy
Seizures

- Partial Seizures (begins focally)
  - Simple Partial Seizures
    - Involve one body area.
    - No LOC.
    - Can progress to generalized seizure.
  - Complex Partial Seizures
    - Characterized by auras.
    - Typically 1–2 minutes in length.
    - Loss of contact with surroundings, LOC.
Seizures

- Generalized Seizures
  - Tonic–Clonic
    - Aura
    - Loss of Consciousness
    - Tonic Phase
    - Hypertonic Phase
    - Clonic Phase
    - Postseizure
    - Postictal
  - Absence
  - Pseudoseizures
  - Infantile spasm
Seizures

Assessment

- Differentiating Between Syncope & Seizure
  - Bystanders frequently confuse syncope and seizure.

<table>
<thead>
<tr>
<th>Table 3-2</th>
<th>DIFFERENTIATION BETWEEN SYCONE AND GENERALIZED TONIC-CLONIC SEIZURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syncope</td>
<td>Seizure</td>
</tr>
<tr>
<td>Usually begins in a standing position</td>
<td>May begin in any position</td>
</tr>
<tr>
<td>Patient will usually remember a warning of fainting (feeling of weakness or dizziness)</td>
<td>May begin without warning or may be preceded by an aura</td>
</tr>
<tr>
<td>Jerking motions usually not present</td>
<td>Jerking motions present during unconsciousness</td>
</tr>
<tr>
<td>Patient regains consciousness almost immediately on becoming supine</td>
<td>Patient remains unconscious during seizure, remains drowsy during postictal period</td>
</tr>
</tbody>
</table>

José Rubero, MD, FACEP (copyright)
Seizures

- **Patient History**
  - History of Seizures
  - History of Head Trauma
  - Any Alcohol or Drug Abuse
  - Recent History of Fever, Headache, or Stiff Neck
  - History of Heart Disease, Diabetes, or Stroke
  - Current Medications
    - Phenytoin (Dilantin), Phenobarbital, valproic acid (Depakote), or carbamazepine (Tegretol)
  - Physical Exam
    - Signs of head trauma or injury to tongue, alcohol or drug abuse
First Seizure

- CT
- MRI
- EKG
- EEG
- Labs
Seizures

Management
- Maintain the airway.
- Administer high-flow oxygen.
- Establish IV access.
- Treat hypoglycemia if present.
- Do not restrain the patient.
  - Protect the patient from the environment.
- Maintain body temperature.

José Rubero, MD, FACEP (copyright)
Seizures

- **Management**
  - Position the patient.
  - Suction if required.
  - Monitor cardiac rhythm.
  - Treat prolonged seizures.
    - Anticonvulsant medication
  - Provide a quiet atmosphere.
Seizures

- Status Epilepticus
  - Two or More Generalized Seizures
    - Seizures occur without a return of consciousness.
  - Management
    - Management of airway and breathing is critical.
    - Establish IV access and cardiac monitoring.
    - Administer 25g 50% dextrose if hypoglycemia is present.
    - Administer 1–2mg lorazepam IV.
    - Cerebyx, Keppra
    - Phenobarbital; intubate for airway protection
Seizures

Treatment

- First line treatment for active seizures
  - Benzodiazepines
- Grand mal, complex seizures
  - Phenytoin, phosphophenytoin, phenobarbital, carbamazepine, valproic acid
- New medications
  - Keppra, Lamictal, Neurontin, Trileptal, Topamax
- Petit mal ( absence ) seizures
  - Valproic acid, ethosuximide
Infection

- Meningococcemia
- Herpetic encephalopathy
- Cysticercosis
  - *Taenia solium* (pork tapeworm)
  - PZA
- Toxoplasmosis
- Cryptococcus
- *Naegleria fowler*
  - Ampho B
CNS

- GBM
- Lymphoma
Seizure and child

- 2% of the USA population have some form
- Newborn
  - Sepsis, metabolic, drug withdrawal, hypoglycemia
- Infant
  - Specially post trauma, cyanosis, pallid breath-holding spells (sudden cry followed by prolonged inhalation or exhalation, resulting in no air exchange)
  - Drug intoxication
- Adolescent
  - PCP
A previously healthy 18-month-old child presents with a less than 5 minute, generalized seizure. The child has had URI symptoms and had a fever to 102°F at the time of the seizure. The child is back to normal at this time, smiling and playful. Which of the following is indicated?

- a. LP
- b. CT of head
- c. CBC
- d. None of the above
All of the following are true regarding pediatric febrile seizures except:

- a. Occur in 2–5% of children
- b. Children between six months and five years are most commonly affected
- c. Generalized seizure
- d. Is predictive of future epilepsy
- e. Seizure lasts less than 15 minutes
Febrile seizures

- Unique and common in childhood
- Usually is simple but it can be complex
- Usually between 3 months old and 5 y/o
- Usually last less than 10 minutes and there is no postictal focal neurologic deficit
- Usually cause by rapid rise in temperature
- 3–4% of children can have seizures
  - 30–40% can recur if first seizure before 1 y/o
  - Siblings
Febrile seizures

- First seizure before 1 y/o
  - Should do bacteremic w/u, antibiotic, admit
  - Consider LP if lethargy
- Du!!
  - Treat the fever
- No AED’s
  - Only if complex, constant
    - Give phenobarbital