

## The Neurologic Emergencies Debate: Case Studies in Seizures and Stroke

June 17, 2005



Sponsored by an unrestricted educational grant from UCB Pharma

### Panelists

- Andy Jagoda, Mount Sinai: Moderator
- Steve Huff, University of Virginia
- Brad Bunney, University of Illinois at Chicago
- John Decerce, University of Florida, Jacksonville
- James Meschia, Mayo Clinic Jacksonville

### What is your background

- a. Emergency medicine
- b. Neurology
- c. PA
- d. Nurse
- e. Other

### Do you feel comfortable with your neurologic exam?

- A. Yes
- B. No

### Case 1:

#### ALS call to medical control: 9 pm

- “We have a 36 year old drunk found on the street”
- No known trauma
- Intermittently seizing for the past 10 minutes.
- ETA is 20 minutes.
- What should we do?

### History and physical

- History: None available.
- Prescriptions for depakote, clonidine, isoniazid in his pocket
- BP 180 / 90, P 110, RR 20, POx 96% RA
- Head atraumatic
- Pupils 2 mm with tonic deviation to the right
- Mouth with blood from ? tongue laceration
- Moving all four extremities

### Question 1

Would you recommend that the patient be put in a cervical collar?

- a. Yes
- b. No

### Incidence of Seizures

- 10% of all pediatric ambulance calls.<sup>1</sup>
- 5% of all ambulance calls received by a 911 center in Cleveland, Ohio.<sup>2</sup>

### Question 2

Do you recommend empiric dextrose?

- a. Yes
- b. No

### Emergency Department Adult Seizure Etiology

- Only 50% with known final diagnosis
- Acute symptomatic ~50% of ED seizures
- 44% with prior seizure history
- 40% alcohol related
  - ½ of these are alcohol withdrawal
- Medication noncompliance ~30%

### ED Adult New Onset Seizure Etiology

#### Young adults

- Traumatic brain injury
- Alcohol abuse / withdrawal
- Illicit drug use
- Brain tumor
- Metabolic
  - Hypoglycemia
- Pregnancy

#### Older adults

- Cerebrovascular disease
- Brain tumor
- Alcohol withdrawal
- Metabolic disorders
  - Uremia
  - Liver failure
  - Electrolyte abnormalities
  - Hypoglycemia
- Subdural hematoma

### Question 3

EMS is unable to secure an IV. Which of the following do you recommend?

- a. Rectal diazepam
- b. IM diazepam
- c. IM midazolam
- d. IM fosphenytoin

#### Question 4

Where should this patient be transported to?

- a) Closest hospital
- b) Trauma center
- c) Stroke center

#### 9:30. Arrives in ED

Vital signs unchanged. Rectal temp – 99° F Blood sugar 160. 20 g IV established in the right hand. Patient begins having a generalized tonic clonic seizure. What would you order?

- a. Diazepam 5 mg IV
- b. Lorazepam 2 mg IV
- c. Phenytoin 20 mg / kg IV over 20 min
- d. Fosphenytoin 20 PE / kg over 10 minutes
- e. Valproic acid 20 mg / kg IV over 5 min
- f. Other

#### 9:40. Patient continues to seize

Which of the following is your next interaction:

- a. Phenytoin 20 mg / kg IV over 20 min
- b. Fosphenytoin 20 PE / kg IV over 10 min
- c. Valproic acid 20 mg / kg IV over 5 min
- d. Phenobarbital 20 mg / kg
- e. Pyridoxime (B<sub>6</sub>) 5 gm

#### 9:55. Patient continues to seize

Nurse notes that phenytoin infusion has infiltrated into the hand. What do you recommend?

- a. Stop the infusion and administer the rest IM
- b. Continue infusion but apply warm compresses to promote absorption
- c. Inject HCO<sub>3</sub> into the site to buffer the infiltration
- d. Stop the IV, elevate the hand, call risk management



10:45. Patient continues to intermittently seize without regaining consciousness

What is your third line agent for managing patients in status epilepticus?

- a. Phenobarbital 20 mg / kg
- b. Valproic acid 20 mg / kg
- c. Midazolam drip 5 mg / hour
- d. Pentobarbital 5 mg / kg
- e. Propofol 5 mg / kg
- f. Paralyze and intubate

11:00. Decision is made to intubate the patient using RSI

Which of the following premedications would you use?

- a. None
- b. Lidocaine
- c. Lidocaine plus fentanyl
- d. Lidocaine plus fentanyl plus a defasciculating dose of vecuronium

13:00 No additional medications given; patient remains unresponsive

Would you request a STAT EEG on this patient?

- a) Yes
- b) No

Are you able to obtain a STAT EEG in your ED

- a) Yes
- b) No

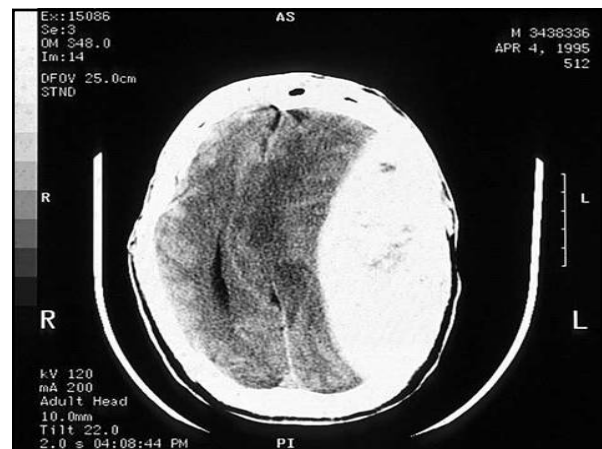
### Nonconvulsive Status Epilepticus

- NCSE vs SCSE
  - Prognosis worse with SCSE
- Clinical characteristics
  - Mild cognitive deficits to coma\*
- Incidence: 14% after CSE\*\*
- Diagnosis: Clinical and EEG
- Treatment

\* Tomson. *Epilepsia* 1992;33:829-835  
\*\* DeLorenzo. *Epilepsia* 1998; 39:833-840

14:45. Patient returns from radiology

Medical student reads the CT as "abnormal"



Patient is transported to a hospital with neurosurgical capabilities. One year later, the patient has right sides weakness, significant behavioral and cognitive dysfunction.

- Family sued EMS, nurse, and physician for negligence
- Was EMS negligent to not have taken the patient to a trauma center?
- Was nursing negligent to allow intravenous phenytoin through a 20 gauge hand IV
- Was the physician negligent:
  - Delay in controlling the seizure
  - Delay in obtaining the diagnostic CT?