Advanced Pediatric Emergency Medicine Assembly

March 23-26 2015
New York, NY

Must Know Neurologic Disorders in Children

A child is brought to ED in status epilepticus. What are management strategies after the use of benzodiazepines? This expert will discuss a management approach to seizures in children and will review other neurologic disease you don’t want to miss.

OBJECTIVES

- Outline cause of seizures in children and develop management algorithm for status epilepticus.
- Describe common and uncommon neurologic disorders in children including ADEM, cerebellar ataxia, tumors, and PANDAS.

3/23/2015
5:00 PM-5:30 PM
Grand Ballroom
MO-15

DISCLOSURES:
(+) No significant financial relationships to disclose
Pediatric Neurologic Emergencies

Emily Rose, MD FAAP FAAEM FACEP
Assistant Professor of Clinical Emergency Medicine
Keck School of Medicine of USC
LA County + USC Medical Center
Los Angeles, CA
Status Algorithm?
Meds?
No IV access?

Status Epilepticus
Benzodiazepines [First Line]

Second Line
Phenytoin/Fosphenytoin
Phenobarbital
Levetiracetam
Valproic Acid

Third Line?
Benzodiazepines

- **Lorazepam** (0.1 mg/kg) IV
  - 4-6 hours

- **Midazolam** (0.1-0.3 mg/kg) IV
  - 0.2-0.5 mg/kg buccal
  - 20 minutes

Second Line Agents (20 mg/kg)

- Phenytoin/Fosphenytoin
- Phenobarbital
- Levetiracetam
- Valproic Acid

Try One, Then Choose Second Option
Refactory Status

SECURE THE AIRWAY

• Midazolam drip (0.05-2 mg/kg/hour)
• Pentobarbital (5-15 mg/kg bolus, then 0.5-5 mg/kg/hour)
• Propofol (2 mg/kg bolus, then 1-15 mg/kg/hour)
• Ketamine (0.5-2 mg/kg/hour)
Why?

Glucose—Rule of 50

\[
\begin{align*}
5 \text{ mL/kg} & \quad 10 \text{ W} \\
2 \text{ mL/kg} & \quad 25 \text{ W} \\
1 \text{ mL/kg} & \quad 50 \text{ W}
\end{align*}
\]

= 50
Hyponatremia

ACTIVE seizure:
3% NaCl
5 mL/kg over 20 Min

NO seizure:
Give over one hour

Hypocalcemia

10% Calcium Gluconate
0.3 mL/kg over 5-10 Min
INH Toxicity?

**Pyridoxine** (vit B₆)
(70 mg/kg, max 5 grams)

- Initiate treatment early
- Don’t be afraid to use the IO
- Check the glucose
- Consider underlying etiology

Status Epilepticus
Status Epilepticus

Benzodiazepines [First Line]

Phenytoin/Fosphenytoin
Phenobarbital
Levatiracetam
Valproic Acid [Second Line]

Third Line

FOCAL NEUROLOGIC DEFICITS
Ataxia

- Infection
- Toxin
- Trauma
- Tumor
- Stroke
- Demyelination Conditions
Neuro Exam

Sit?
Grab Objects?
Fine Motor Skills?
Speech?  Gait?
Back to the 3 y/o...

Previously Normal
Sudden Onset
Recent Illness

Cerebellar Findings

Acute Cerebellar Ataxia

Focal Encephalitis

50% Pediatric Ataxia
Acute Cerebellar Ataxia

Truncal Unsteadiness
Distal Motor Difficulty

Another 3 y/o...
CC: Walking Funny
not using right arm

Multifocal CNS Demyelination
Acute Disseminated Encephalomyelitis (ADEM)

Multifocal CNS Demyelination

CVA
CVA

MORE common than Brain Tumors

Childhood Mortality: Top 10

Stroke DDX

Todd Paralysis  Migraine  Encephalopathy
Hypoglycemia  Brain Tumor  Inborn Errors of Metabolism
NON-ACCIDENTAL TRAUMA  Postinfectious Cerebellitis
Seizure  Idiopathic Intracranial Hypertension
Demyelination  Meningitis  Ingestion
10 y/o boy...

CC: Walking Funny
Back Pain

Transverse Myelitis
FOCAL
Spinal Cord Inflammation
Transverse Myelitis

- Clear Sensory Level
- Bilateral Symptoms
- Urinary Retention

Guillain-Barre Syndrome

- Symmetric Ascending Paralysis
- Peripheral Nerve
- ↓DTR
**SUMMARY**

- **ACA**: Cerebellar
- **ADEM**: CNS White Matter
- **TM**: Spinal Cord
- **GBS**: Peripheral Nerves
other diagnoses to consider...

CNS Tumors

Headache
Vomiting
Focal Neurologic Findings
New Complaint of “Acting Funny?”

PANDAS
Pediatric Autoimmune Neuropsychiatric Disorder Associated with Streptococcal Infections
**PANS**: Pediatric Acute-Onset Neuropsychiatric Syndrome

- New proposed term w/o prior GBS infection
- Stay tuned…
Poor Feeding
Lethargy
Decreased Tone
Constipation
Eye Paralysis
Infantile Botulism

- Poor Feeding
- Lethargy
- Decreased Tone
- Constipation
- Eye Paralysis

SUMMARY

- Status Epilepticus
- Focal Neurologic Findings
Image References

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Text References

Thank you!

emilyros@usc.edu