Pediatric Seizures

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objectives

• Know seizure language
• Know seizure types
• Learn evaluation
• Learn evidenced intervention
• Learn events in the ED
Match game

1. Seizure
2. Epilepsy
3. Febrile seizure
4. Postictal period
5. Status epilepticus

A. Most common seizure type in children
B. Sz more than 5 minutes
C. Period of decreased mental status after seizure
D. Uncontrolled brain electrical activity
E. Medical condition in a patient that cause recurrent sz
Match game

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Seizure classification

(focal)
Febrile Seizures

• Most common pediatric seizure
• 2-5% children
• Mechanism?
• High risk if under or no immunization
More facts

- 4-8 per 1000 children < age of 6
- 3-5 % children has 1 episode by 5 yrs
- 30% with additional sz
- 3-6 % of those will have epilepsy
- Most seizures are self limited!
- Require medical evaluation for source
Status epilepticus

- Continuous sz > 5 min
- Worse outcome with > 30 min sz
- H/o epilepsy risk factor
- Higher long term morbidity
- Mortality 2-5%
- Need immediate sz cessation intervention
Children with history of sz

- Likely medication related
- Parents or caregivers are familiar with sz
- Special needs patients (at risk)
- Need medical evaluation
Causes
Causes

- Provoked
  - Infection
  - Trauma (consider NAT)
  - Metabolic
  - Toxic exposure
  - Fever
  - Vascular
  - Oncologic
- Unprovoked
  - <20% identifiable
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• Unprovoked

• <20% identifiable
Clinical Findings in Sz

- Changes in behavior
- Stiffening
- Loss of tone
- Abnormal eye movements/eye deviation
- Drooling/frothing
- Rhythmic twitching or jerking
- Bitter /metallic taste
- Purposeless movements
- Eye lid fluttering
- Sudden fall(s)
- Teeth clenching
- Temporary stop in breathing
Important Sz History

- Warning signs
- Head/eyes/lips/tongue
- Start location and progression
- Consciousness
- Duration
- Apnea, loss of bladder and bowel
- Events after the Sz
- Back to baseline
Other history

- Known risk factors or
- Other medical conditions
- Recent symptoms
- Developmental history
- Medications/toxin exposures
- Family history
Brief but complete exam

- Mental status
- Vital signs
- Complete head to toe examination
- Comprehensive neuro exam
Intervention goals

- PAT and ABC
- Protect and no harm to patient
- Stop the seizure
- Reassure yourself and family
Intervention approach

Recommendation: initial intervention (ABC first)

- If seizing, check Glucose

- Capillary versus venous

- If < 60, dextrose IV or Glucagon IM if <60

- Transport if < 60
Recommendation: intervention

- If Glu > 60 & still seizing, Versed buccal/IN
- Need for IV
- If IV
  - Valium* or Ativan at 0.05-0.1 mg/kg IV
  - Versed at 0.1 mg/kg IV
- Allow Tx without on line direction if status
Buccal administration
IO versus IV

- Time to skin
  - 12.7 vs 24.9 sec

- Vascular access time
  - 16.9 vs 62.7 sec
Postictal state

- 5-30 minutes after sz has stopped
- Drowsiness
- Confusion
- Nausea
- HTN
- HA
- disorientation
- Todd’s paralysis
- Subclinical seizure
Is the patient still seizing? (Non-convulsive status)

- Stiffness
- abnormal resp
- Non-variable heart rate

Consider treatment
- Follow protocol
- If long transport time
- If ABC are stable
Helping parents

- Explain seizure versus epilepsy
- Seizure ≠ epilepsy ≠ intellectual disability
- Information on what to do if sz again
- Support and assist process all info
Additional work up in the ED

• Sz cessation:
  ABCDEF

• Full evaluation for source
Additional work up in the ED

- Sz cessation: ABCDEF
- Full evaluation for source
  - Blood work
  - Urine tests
  - Imaging
  - Spinal tap
  - EEG
- Anti-seizure meds
- Admit
Take home points

• Most are brief and benign
• PAT and ABCDEFG
• If in status, need immediate cessation
• Know recommendation / protocol
• Most need ED evaluation
• Search for etiology

2. Sources: http://pediatrics.aappublications.org/content/127/2/389.full.pdf and http://pediatriccare.solutions.aap.org/chapter.aspx?sectionId=56754849&bookId=1017&resultClick=1#56780691


4. CNS Drugs. September 2015, Volume 29, Issue 9, pp 741–757| Cite as A Common Reference-Based Indirect Comparison Meta-Analysis of Buccal versus Intranasal Midazolam for Early Status Epilepticus
Types of seizures

• Partial: affects part of the brain
  – Simple: focal, but conscious
  – Complex: impaired consciousness

• Generalized: whole brain / both hemispheres
  – Convulsive: tonic or clonic
  – Nonconvulsive: alteration in consciousness (petit mal, now called absence)
Cases and causes

A. Hypoglycemia
B. Trauma
C. Idiopathic
D. Febrile
E. Sub therapeutic medication
Case 1

• 5 mo old boy had 10 minute seizure

A. Hypoglycemia
B. Trauma
C. Idiopathic
D. Febrile
E. Medication non-compliant
Case 2

- 2 year old boy with ear infection had 3 minute tonic clonic seizure

A. Hypoglycemia
B. Trauma
C. Idiopathic
D. Febrile
E. Medication non-compliant

ED events
Case 3

- 5 YO boy while getting ready for bed had a 5 minute Tonic Clonic Sz

A. Hypoglycemia
B. Trauma
C. Idiopathic
D. Febrile
E. Medication non-compliant

ED events
Case 4

• 5 yo girl with diabetes had 3 minute sz

A. Hypoglycemia
B. Trauma
C. Idiopathic
D. Febrile
E. Medication non-compliant
Mucosal Atomizer Device
Case 5

• 15 YO with known seizure disorder on keppra had 7 min typical seizure

A. Hypoglycemia
B. Trauma
C. Idiopathic
D. Febrile
E. Medication non-compliant

ED events