Unprovoked Seizures in Children

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- We highlight an approach to the work up and disposition of a first-time pediatric afebrile seizure.
- Definitions:
  - Seizure: a transient occurrence of signs and symptoms due to abnormal excessive neuronal activity in the brain.
  - Epilepsy: at least 2 unprovoked seizures that are more than 24 hours apart.
- The last revision of seizure terminology was in 2017.
  - Focal: originating from one part of the brain.
  - Generalized: originating from the whole brain at once.
  - Awareness: has the patient lost awareness or not
    - This subsequently led to descriptions like “focal, aware” or “focal, unaware.”
  - Described largely by what type of motor features are present.
    - Generalized, tonic-clonic with loss of awareness, or a focal seizure with myoclonic jerks
- Differentiating seizure from possible mimics.
  - The biggest feature of recurrent seizures is that they look the same every time they occur.
  - Other important features include:
    - Presence of awareness
      - Most seizures result in decreased awareness.
      - To sort out whether the patients are aware or not, pediatric neurologists advise clinicians to do something the child cannot ignore, such as giving them a “wet willy.”
    - Motor activity
      - Describing specific body movements during the event (head, eyes, etc).
    - Incontinence and tongue biting
      - Can occur with generalized seizures, but do not occur with other types of seizures.
- **Seizure mimics are most common in babies and toddlers.**
- Seizure mimics that are probably not concerning:
  - Breath-holding spells

        - Fairly common.
        - Can actually have a seizure after a breath-holding spell (makes the distinction between the two challenging).
        - The story of a breath-holding spell should be that the child gets upset, cries, holds their breath, turns blue, passes out and then may or may not have some focal neurologic activity, like twitching.
    - Tics: involuntary movements that can be suppressed
        - Episodes wax and wane, and are often brought on by excitement or stress.
        - Difficult to determine in younger children because you need to have a history to suggest this might be present.
        - If you ask a child "can you stop this from happening?" often they can for a period of time, but then they feel uncomfortable and want to do it again.

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- The work up of the first-time, unprovoked, non-febrile seizures can generally be deferred to the outpatient setting as long as the patient has recovered to their baseline behavior and neurologic exam. **If they haven't recovered to baseline, the child needs to be admitted.**

- Diagnostic testing
    - Lumbar puncture should be done if:
        - Age < 6 months (because the exam is not reliable for CNS infection)
        - Age 6-12 months: the decision is not as straightforward, and there are varying options.
        - Older than 12 months: we can count more on concurrent symptoms like fever, altered mental status, multiple seizures, or rash to guide the decision. It can be considered if there are other signs that the child has an infection.
    - MRI
        - Mostly done to rule out a tumor.
        - The vast majority of the time, it won't change anything we do in the ED. So if the child is normal and clinically well-appearing, this can be deferred to the outpatient setting.
    - CT
        - Generally not useful unless there is concern for increased intracranial pressure or if there is any history of trauma.
        - Can be considered in non-accidental trauma.
        - If the child is < 12 months, the exam is less reliable so it would be reasonable to get a CT.

- EEG
  - Not very helpful in the ED unless the child is suspected to be in status epilepticus.
  - In terms of EEG, the neurologist will wait 1-2 weeks before getting an outpatient EEG because in the first 1-2 days after the seizure, the EEG will have nonspecific slowing.

- Therapy
  - Anti-epileptic medication
    - Once a child has had one seizure, the risk of having another one is approximately 40-45%.
    - **More than half the time there will not be another seizure, thus medications are not necessary.**
    - The risks of waiting to see if another seizure happens is pretty low, and there is no evidence to suggest waiting for another one would be harmful.
    - **Once a child has had a second seizure, the risk of having another one goes up to 80%. In this case, it is recommended that medications be started.**
    - There is an option to send patients with a first-time seizure home with a rescue medication (such as intranasal midazolam or rectal diazepam for younger kids).
      - Instructions to family regarding rescue medications are that they should use the medications for any seizure lasting more than 5 minutes.

- Discharge instructions should include activity restrictions.
  - Pools are a safety risk and baths cannot be taken without 100% supervision. Showers are recommended.
  - Teenagers should be warned to be careful with heights.
  - Bicycle riding with a helmet is probably reasonable, but the child should have supervision.
  - Patients with seizures should avoid driving.