First time unprovoked nonfebrile seizure assessment

Children's℠ Healthcare of Atlanta

Clinical practice and referral guideline for neurology

The recommendations in the following guideline do not indicate an exclusive course of treatment. The intent is to build a multifaceted system of care for pediatric patients and provide a framework for clinical decision making.

Health history is key in determining if a seizure has occurred and if it is the first episode. History should be as detailed as possible and given from a reliable observer. This will help determine what further evaluation is necessary.

Documentation should include:

History

- Age
- Family history of seizures
- Developmental status
- Behavior
- Health at seizure onset (fever, illness, exposures to illness, sleep)
- Past medical history
- Precipitating events other than illness (trauma, toxins, ingestions)

Seizure characteristics

Detailed description of all aspects of the seizure, including:

- Aura (subjective)
- Behavior (mood or behavior changes prior to onset)
- Vocal symptoms (cry, speech changes)
- Motor symptoms including but not limited to:
  - Head or eye movements
  - Posturing
  - Automatisms (lip smacking, finger rolling)
  - Jerking
  - Stiffening
- Generalized or focal movements
- Respiratory symptoms (change in pattern or cyanosis)
- Autonomic symptoms (drooling, incontinence, pallor, vomiting)
- Decrease or loss of consciousness
- Duration of the seizure

Symptoms following seizure

- Amnesia
- Confusion
- Lethargy
- Sleepiness
- Headaches
- Muscle aches
- Transient focal weakness
- Nausea or vomiting

In addition a complete physical exam, a complete neurologic exam should be performed and documented.

Laboratory Evaluation

For patients younger than 6 months of age there is some evidence to support laboratory screening in the absence of specific suggested features. For patients older than 6 months of age routine lab screens are not recommended for first nonfenrile seizures without suggestive history or symptoms. Suggested lab screens include serum electrolytes including calcium and magnesium.

Lab tests should be ordered based on the patient's clinical characteristics and history such as vomiting, diarrhea, dehydration or persistent abnormal mental status. Perform a:

- Toxicology screening if there is any concern for drug exposure or abuse
- Lumbar puncture if case suggests meningitis or encephalitis

Electroencephalogram

An EEG is recommended as part of the evaluation for all children with a first-time unprovoked nonfebrile seizure to determine seizure classification and epilepsy syndrome.

Diagnostic imaging

The goal of the initial imaging is to try to classify the seizures as focal or generalized.

Many generalized seizures have focal onset, which is often missed, but is frequently associated with focal epi's on an EEG and thus will be classified as focal seizure with 2nd generalization.

Emergent neuroimaging is indicated for children with persistent postictal neurological deficits or for abnormal mental status persisting for several hours after the seizure. Request an urgent neurology consult.

Nonemergent imaging is indicated in children with abnormal development and/or a history of abnormal neurological examination if neuroimaging has not been done before. Nonemergent imaging is an MRI of the brain.

After the second seizure or focal seizure, a nonemergent MRI is always indicated. Children of all ages are possible candidates for neuroimaging.

Diagnosis

Identify the diagnosis.

- Dx1 seizure type: focal or generalized
- Dx2 epilepsy syndrome (remote): can be either symptomatic or genetic
  - Symptomatic: Focal lesion on imaging, intellectual disability, neurological abnormality, etc.
  - Genetic (presumptive): Absence, juvenile myoclonic, benign rolandic epilepsy, positive family history, etc.

Recurrence

It is difficult to predict if a child will have a second seizure. Many children will not have a recurrence. Risk for seizure recurrence for developmentally normal children with normal imaging and EEG is 33 percent. Risk of seizure recurrence with an epileptiform EEG generally exceeds 70 percent.

Treatment

If the first seizure is status epilepticus (a seizure that lasts at least five minutes), consider initiating anticonvulsant therapy. Physicians may consider providing a prescription for rectal Diastat to be used for subsequent seizure lasting longer than five minutes. Remember to provide the guardian with seizure first-aid education, instructions on how to use Diastat and directions to call 911 the first time Diastat is given.

- The protocol for Diastat AcuDial is based on both age and weight
  - Age 2-5: 0.5 mg/kg
  - Age 6-11: 0.3 mg/kg
  - Age 12+: 0.2 mg/kg
- Doses are available in 2.5 mg intervals, so dosages should be: 2.5, 5, 7.5, 10, 12.5, 15, 17.5 or 20 mg
- Diastat cannot be in doses larger than 20 mg for any age
- There is a smaller Diastat tip (4.4 cm) for smaller children (the larger tip is 7 cm)
- The syringes are available in 2.5 mg, 10 mg and 20 mgs (the pharmacist should lock the syringe at the appropriate dose, green ring will appear when this is done)

Referral is indicated for:

- Prolonged, focal or second seizures or developmental delay/neurodevelopmental disability
- Findings on initial workup indicating underlying etiology or true epileptic syndrome (developmental delay, abnormal neurological exam, abnormal neuroimaging or abnormal EEG)
- Patient or parental anxiety

Documentation of medical history and physical including all indicated laboratory, neuroimaging and neurodiagnostic studies should be provided to the consulting physician.

References
Practice Parameter: Treatment of the child with a first unprovoked seizure: Report of the Quality Standards Subcommittee of the American Academy of Neurology and the Practice Committee of the Child Neurology Society. D. Hirtz, A. Berg, D. Bettis, C. Camfield, P. Camfield, P. Crumrine, W. D. Gaillard, S. Schneider and S. Shinnar. Neurology 2003: 60:166-175.
Practice Parameter: Evaluating a first nonfebrile seizure in children: Report of the Quality Standards Subcommittee of the American Academy of Neurology and the Practice Committee of the Child Neurology Society. D. Hirtz, S. Ashwal, A. Berg, D. Bettis, C. Camfield, P. Camfield, P. Crumrine, R. Elterman, S. Schneider and S. Shinnar. Neurology 2000: 55:616-62

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This guideline was developed through the efforts of Children's Healthcare of Atlanta and physicians on the Children's medical staff in the interest of advancing pediatric healthcare. This guideline is a general guideline and does not represent a professional care standard governing providers' obligation to patients. Ultimately the patient's physician must determine the most appropriate care.

If your patient has an emergent or life-threatening condition, stop and call 911 or send him to the nearest hospital emergency department.