

# Pediatric Clips

**NURSING**

## Febrile seizures

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Pediatric Nursing Clips by Pediatric Advanced Practice Nurses at Dayton Children's provides quick reviews of common pediatric conditions.

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### CASE STUDY

Joey is a 20-month-old who presents, via squad, to the emergency department (ED). His father reports Joey woke up from his nap this afternoon and started shaking all over. Joey's father called 911. When medics arrived, they noted Joey was in his dad's arms asleep and had no noted respiratory distress. They transported Joey to the ED. The nursing assessment in the ED reveals a well-developed 20-month-old who is sleeping but arousable. When aroused, Joey hugs his dad tightly

and hides his face from the nurse. Joey's skin is pink and hot, his breath sounds have upper airway congestion but good aeration, and his capillary refill is less than two seconds.

His initial vital signs show a rectal temperature of 39.6, pulse of 180, respiratory rate 49, blood pressure 92/60 and an oxygen saturation of 98% on room air. Dad states that Joey has had a two day history of cough and congestion. Dad has been treating Joey with a cool mist vaporizer and has been suctioning his nose

and mouth with a bulb syringe when needed. Dad denies Joey having a fever with this illness until now and states no significant medical history. Dad describes the shaking as lasting two to three minutes and involving Joey's entire body. Joey didn't seem to recognize Dad and was not able to control his movements during the shaking. Following the shaking, Joey fell asleep. Dad denies any color changes or respiratory distress during the episode.

### CASE DISCUSSION

#### DEFINITION AND HISTORY

Febrile seizures are seizures that occur in children aged 6 months to 5 years who have febrile illness but no underlying central nervous system infection. Febrile seizures are classified as simple or complex. Simple febrile seizures are those that last less than 15 minutes, occur once in a 24-hour period, are generalized and occur in a child with no previously diagnosed neurologic problems. Conversely, complex febrile seizures have one or more of the following characteristics: they last longer than 15 minutes, occur more than once in a 24-hour period or within the same illness, are focal in nature or occur in a patient that has a known neurologic problem, such as cerebral palsy.<sup>1</sup>

Febrile seizures are the most common type of seizures in children. Three to five percent of children in North America and Western Europe experience at least one episode of febrile seizure before 6 years of age. Children who experience febrile seizures are usually 6 months to 5 years of age; the

peak occurrence is in children 18 to 24 months.<sup>2</sup>

Febrile seizures do have a familial predisposition in a percentage of cases (24 percent).<sup>3</sup> Studies are ongoing to determine if there are specific genes that might play a role in this familial predisposition.

#### PATHOPHYSIOLOGY

The etiology of febrile seizures is unclear. Some data suggest there is enhanced neuronal excitability (which is exacerbated by fever) during normal brain maturation. Other studies suggest it may not be the fever itself that causes a febrile seizure but that the neuronal excitability results in seizure activity and fever.<sup>3</sup> There is also some confusion as to whether the seizures are triggered by the height of the body temperature or by the action of the temperature rising.

#### DIAGNOSING/TREATMENT

Presenting symptoms would be seizure activity and fever greater than 38.4 in a child aged 6 months to 5 years.

History should include:

- Description of the seizure including duration, type and frequency in 24 hours
- Neurologic status before and after the seizure
- Family history of afebrile and febrile seizures
- Prematurity/neonatal hospitalizations
- Parents' impression of the patient's development, and the relationship of the seizure to the fever.<sup>3</sup>

Lab studies should be directed at finding the source of the fever which is especially important if no source is apparent on physical exam. Lab studies that may be indicated include electrolyte levels, blood glucose, complete blood count, blood culture, urinalysis, urine culture and/or chest radiograph. EEG and CT scan are not indicated for simple febrile seizures.

If the child has a complex febrile seizure, the LIP should consult neurology. Rectal diazepam is effective in the acute management of seizures and is

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indicated for prolonged attacks (lasting longer than 10 minutes) when acute medical care is not accessible.<sup>3</sup> Several studies have shown that valproic acid and phenobarbital reduce the recurrence of febrile seizures compared to placebo, but both medications are associated with significant adverse effects. Since children who experience simple febrile seizures usually have an excellent prognosis, the risk of long-term antiepileptic therapy outweighs the minor risks associated with simple febrile seizures. Antipyretic medications are indicated to reduce the fever, but there is no evidence that antipyretics will prevent another febrile seizure.<sup>1</sup>

Advice for parents of children with febrile seizures should include education. Letting them know that recurrences are unlikely and the risk of brain damage and later epi-

lepsy are very rare will help them cope with this diagnosis.<sup>4</sup> Further education should emphasize the treatment for febrile seizure including protecting the airway and keeping the child in a safe environment.<sup>3</sup> Also, parents/legal guardians should be instructed that if their child's tonic-clonic seizure lasts longer than five minutes, or she/he experiences any respiratory distress during a seizure, an ambulance should be called.<sup>4</sup>

## REFERENCES

1. Steering Committee on Quality Improvement and Management, Subcommittee on Febrile Seizures. Febrile Seizures: Clinical Practice Guideline for the Long-term Management of the Child with Simple Febrile Seizures. *Pediatrics*. Available at [www.pediatrics.org](http://www.pediatrics.org). Accessed December 2008.
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4. Waruiru, C. & Appleton, R. Febrile Seizures: An Update. *Archives of Disease in Childhood*. 2004; 89, 751-756.

## FEATURED NURSE SPECIALIST



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