

Mackenzie Gabler, M.D.

Block 4 CAT

Question: What is the rate, time, and cumulative probability of early recurrence of febrile seizures and what are the risk factors for early recurrence?

Jeong JH, Lee JH et al. "Rate of and risk factors for early recurrence in patients with febrile seizures." *Pediatr Emerg Care*. 2014 Aug;30(8):540-5.

Background: Febrile seizures (FS) are defined as seizures that occur in children 6-60mon old with a fever and no intracranial infection, metabolic disease, or a previous febrile seizure. They are the most common seizure disorder in children who present to the ED. ED evaluation focuses on finding a source of fever and differentiating between FS and other seizure types. Children with FS generally undergo ED observation or hospital admission; however, the American Academy of Pediatrics does not specifically address an adequate observation period and no strict guidelines exist for when to admit versus observe. In addition, there is a paucity of literature addressing the rate of and risk factors for FS recurrence.

Methods: This was a retrospective chart review of patients who presented to tertiary care pediatric ED with FS between Jan. to Dec. 2011. Using convenience sampling, they looked at children age 6-60mon using codes for FS defined as seizures with body temperature (BT) of above 38C at home or in ED. Excluded patients included: patients with status epilepticus (>30min), meningoenephalitis, need for mechanical ventilation or ICU care, any previous seizure disorder, developmental delay, focal neurologic deficit, or increased ICP symptoms. Investigators recorded seizure type (generalized or nongeneralized) and duration (>or< 15min), BT on ED arrival and discharge, anticonvulsant therapy in first FS, any history of FSs, any seizure disorder in first-degree relatives, and cause of fever. The investigators then determined which patients had early recurrence of FS, defined as within 7 days of first FS, by reviewing charts and by calling families. Primary outcomes were the rate of, time to, and cumulative probability of early recurrence of FS in the same febrile illness as well as to identify risk factors for early recurrence.

Results: Over one year, 463 patients visited the ED for FS. Of them, 83 had a non-FS, 42 met exclusion criteria, and 110 had missed data or a new febrile illness and were excluded. Of the included 228 patients, 40 (17.5%) had early recurrence and 188 did not. The median time to early recurrence was 6.0hrs. Most FS recurred within 24hrs (90%) and the cumulative probability of early recurrence was 8.8% at 6 hrs, 12.7% at 12 hrs, and 15.8% at 24 hrs. Males accounted for 53.1% of early recurrence and the mean age was 20.8 months with the most common illness being upper respiratory illness. Admission rate for early recurrence was 47% verse 6.9% for non-early recurrence. Overall, the only significant risk factors for early recurrence were type and duration of seizures. The relative risk was 2.2 for nongeneralized seizures and 3.8 for seizures >15minutes.

Discussion: According to researchers this is the first study to look at cumulative probability and risk factors for early recurrence of FS. Other studies looked at recurrence in admitted patients or within 24hrs of FB, whereas this study included sufficient time for the duration of the febrile illness (7 days). In addition, other studies have investigated risk factors for the next febrile illness, which according to this study differs from the risk factors for recurrence in the same illness. According to this study, most recurrent seizures occur in the first 24hrs and are more frequent in patients with nongeneralized and longer (>15min) seizures and the researchers suggested that patients with these risk factors might need longer observation (24hrs). Of note, patients with early recurrence did not show any complications associated with recurrent seizures.

Limitations: This study had several limitations. First, researchers relied on good histories from caregivers/EMS such as type and duration of seizure. In addition, being a retrospective study, there was likely intrinsic bias; for example, most early recurrence FS patients had labs drawn while non-early recurrence did not. Finally, 53 of 338 patients that met criteria were lost to follow-up.

Bottom Line: Most early recurrence of febrile seizures occurred within 6 hrs (67.5%) and almost all within 24hrs (90%). Patients with first FS that is nongeneralized or is longer than 15min have a greater risk of recurrence and might benefit from 24hrs observation. More studies my help determine the benefit of observation and admission for febrile seizures.
