

Most babies with uncomplicated febrile seizures can avoid spinal tap

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When babies develop a fever high enough or abrupt enough to cause a seizure, frightened parents often rush them to the emergency room, where their workup frequently includes a lumbar puncture (spinal tap) to rule out bacterial meningitis. Now, in the largest study to date, researchers at Children's Hospital Boston find that this uncomfortable procedure is probably not necessary in well-appearing children who have had a simple febrile seizure. Findings are published in the January issue of *Pediatrics*.

Simple febrile seizures - a generalized seizure lasting no more than 15 minutes and not recurring within 24 hours - are common in infants and young children, affecting 2 to 5 percent of children 6 months to 5 years old. "This means we might see at least one case per day in the emergency room," says Amir Kimia, MD, of Children's Division of Emergency Medicine and the study's first author. "When it's a first event, it's pretty scary for parents - they usually call 911."

Current American Academy of Pediatrics recommendations, issued in 1996, call on physicians to consider doing a lumbar puncture in children 12 to 18 months old with a first simple febrile seizure and to "strongly" consider lumbar puncture for infants 6 to 12 months old. But when Amir and colleagues reviewed the medical charts of 704 babies seen at Children's emergency department for a first simple febrile seizure between October 1995 and October 2006, they found no cases of bacterial meningitis in either age group.

Of the 704 babies, 271 (38 percent) underwent lumbar puncture. Of these, 10 babies (3.8 percent) were found to have an elevated white-blood-cell count in their cerebrospinal fluid, indicating a possible viral infection, but no pathogen was identified in cerebrospinal fluid cultures, and no patient was diagnosed as having bacterial meningitis.

This is the first large-scale study to focus specifically on 6- to 18-month-olds, who are considered to be at highest risk for bacterial meningitis. The findings are consistent with those of previous small-scale studies in this young age group and studies that included children up to age 6.

Lumbar puncture requires local anesthesia and often sedation. "It is a safe procedure with an extremely low rate of complications," says Kimia. "But it's a needle and it's not fun. We're trying not to do it unless it's absolutely necessary."

Physicians had already started to question its need, as evidenced by declining rates of lumbar puncture over the 11-year study period. One major reason is that rates of bacterial meningitis have greatly declined because of the introduction of vaccines against *H. influenzae* and pneumococcus, the two major pathogens that cause meningitis, in 1990 and 2000, respectively. "Bacterial meningitis in vaccinated babies is a rare disorder, luckily, in our part of the world," says Kimia.

Simple febrile seizures in babies tend to run in families and are believed to be a reflection of the immaturity of the brain in dealing with rapid changes in temperature. Some researchers believe the speed of the change may be more important than the height of the temperature - even a rapid rise from 99 to 101 degrees Fahrenheit can trigger a seizure in susceptible children, Kimia says.

However, the researchers caution that their findings don't necessarily extend to patients with complex febrile seizures, patients with

concerning symptoms or signs, or patients who have an underlying illness.

"Lumbar puncture should be considered based on clinical presentation, rather than being done routinely," says Kimia. "If a child appears very ill, is lethargic, fussy, non-responsive, has neurologic symptoms, or has certain clinical signs (such as a certain type of rash or a bulging fontanelle), lumbar puncture should be considered no matter how old the child is."

Kimia hopes the findings will reassure anxious parents. "We have a hard time convincing parents in the ER that their child doesn't need a workup," he says. "Some, traumatized by the seizure, are convinced their child was about to die. But if their child is running around in our ER and is smiling and happy, lumbar puncture is probably not indicated."

Source: Children's Hospital Boston

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