



New Perspectives on a First Afebrile Unprovoked Seizure in a Child

A recent study offers new insight into risk of recurrence and the benefits of EEG and MRI studies.

A first afebrile, unprovoked seizure in a child is understandably a significant source of concern. Among the numerous questions parents may pose to the neurologist are queries about the risk of seizure recurrence. Estimates of recurrence risk vary depending on trial design and across different patient populations. Although it's sometimes impossible to determine with certainty whether a particular child will experience seizure recurrence, new data¹ suggest that EEG findings offer limited assistance in assessing recurrence risk in children but note that MRI abnormalities can identify some high-risk patients.

Historical Perspective

Data regarding the risk of seizure recurrence in children are limited. Shinnar et al's prospective study of 407 children followed for a mean of 9.6 years from the time of their first unprovoked seizure determined that the cumulative risk of a second seizure was 29 percent, 37 percent, 43 percent, and 46 percent at one, two, five, and 10 years, respectively.² After a second seizure, the risk of subsequent seizures was greater than 50 percent even in the lowest risk group. Based on the observation that most patients who experience a second seizure experience further seizures, researchers noted that "two seizures are a sufficient epidemiological criterion for the definition of epilepsy."

Another prospective study involved 217 children 14 years old and younger with one or more unprovoked seizures.³ Among patients experiencing a first epileptic seizure, the five-year Kaplan-

Meier estimate of recurrence was 64 percent. Symptomatic seizures were associated with greatest risk for recurrence. The recurrence risk was 96 percent at two years, compared with 46 percent for idiopathic/cryptogenic seizures.

To shed more light on the risk of recurrence and assess the benefit of EEG or MRI in predicting recurrence risk, Todd M. Arthur, MD, Assistant Professor in the Division of Neurology at Cincinnati Children's Hospital, and colleagues studied 150 children age six to 14 years with a first afebrile, unprovoked seizure who are participating in an ongoing prospective study of new onset seizures in childhood. This cohort included children with normal physical and neurological examination who had undergone EEG and MRI studies of the brain.

The seizure recurrence rate was 66.4 percent. While abnormal EEG was not associated with recurrence at nine, 18, or 27 months, a significant MRI abnormality (found in 16 percent of patients) was associated with recurrence at nine months but not at 18 or 27 months.

Clinical Implications

Based on the findings of his study, Dr. Arthur says there is no clear indication that neurologists should change the recommendations for imaging outlined in the AAN practice parameter for evaluating a first nonfebrile seizure in children.⁴ Although abnormal EEG had no association with seizure recurrence, Dr. Arthur points out, "Our study population had a fairly high percentage of patients with seizure recurrence and a fairly high percentage of patients with an abnormal

EEG, so finding a difference may have been difficult."

Noting that "EEG is still only a tool at the end of the day," Dr. Arthur says, "the clinician still needs to decide the best tool for the job."

He adds, "Clinical situations are complex, and clinical judgment should still be the determining factor in the decision to obtain an EEG. For instance, the EEG after a first staring seizure may suggest it was complex partial, or it may show a risk for a primary generalized epilepsy (absence)." For the patient with a complex partial seizure a "wait and see" approach may be indicated, but the patient with primary generalized epilepsy "may be assumed to have already had prior seizures and advised to start treatment."

"You must account for the developmental history of the child, as well as other risk factors for seizures," Dr. Arthur maintains.

The study concludes that in a first seizure, "it is not wise to make a blanket statement to obtain neuroimaging on all children," Dr. Arthur says. "Clinical judgment is still key in the decision to obtain imaging. We have no reason to contradict the practice parameter based on our results." He adds, "After the second seizure (diagnosed epilepsy) we did feel the MRI could add important clinical information."

Dr. Arthur offers a caution: "Bear in mind, in our paper, our patients were normally developing children, so the results cannot be generalized to all children with a new-onset seizure."

The study has led to new questions, he says. "First, are these significant abnormalities the actual cause of the epilepsy?"

This may be answered on an individual basis if any of these children undergo epilepsy surgery for intractable epilepsy.”

Another question he says, “Do these significant abnormalities have prognostic value for the severity of the epilepsy or do they predict intractability? Longer follow-up may tell us if these patients with sig-

nificant abnormalities have a higher risk for developing intractable epilepsy or otherwise have a more complicated course.” **PN**

1. Arthur TM, deGrauw TJ, Johnson CS, et al. Seizure recurrence following a first seizure in neurologically normal children. *Epilepsia* 2008 Oct;
2. Shinnar S, et al. Predictors of multiple seizures in a cohort of children prospectively followed from the time

of their first unprovoked seizure. *Ann Neurol*. 2000 Aug;48(2):140-7.

3. Ramos Lizana J, Cassinello Garcíá et al. Seizure recurrence after a first unprovoked seizure in childhood: a prospective study. *Epilepsia*. 2000 Aug;41(8):1005-13.

4. Hirtz D, Ashwal S, et al. Practice parameter: evaluating a first nonfebrile seizure in children: report of the quality standards subcommittee of the American Academy of Neurology, The Child Neurology Society, and The American Epilepsy Society. *Neurology*. 2000 Sep 12;55(5):616-23.

New Checklist Guides Discussions for Women with Epilepsy

Managing epilepsy in female patients can present unique challenges, depending on the woman's age and circumstances. Issues associated with potential fetal effects of AEDs are prominent among women of childbearing age, while concerns about the effects of AEDs on bone health tend to come into focus as patients age. Steven Karceksi, MD addressed AEDs and bone health in the August issue (p. 10) and pregnancy registries in the October issue (p. 17). Both “Epilepsy Essentials” columns are available on-line at practicalneurology.net.

A new resource from the American Epilepsy Society may help clinical neurologists direct patient conversations about these issues and ensure women receive comprehensive counseling.

A Discussion Checklist

Released in September, the “Physician Discussion Checklist for Women with Epilepsy” prepared by the American Epilepsy Society Practice Committee outlines key discussion for women at various stages of life. These include:

- All Women, Adolescents, and Pre-teens during Reproductive Years
- Women Planning to Conceive
- Pregnant Women (see text at right)
- Women in the Post-partum Period
- Women Beyond Childbearing Years.

While you are well aware of the various issues facing women at each phase and the need to provide accurate education, the handy two-page guide may be useful to ensure that you cover all key points. It can also be used within the patient's record to

document discussion and record pertinent information. For example, space is provided to name the patient's obstetrician and record the date of consultation with her/him.

To download a printable version of the Checklist for free, visit www.aesnet.org and click patient tools.

The checklist may also be used to prompt patient questioning so that lingering questions can be addressed during the clin-

ical encounter. The physician checklist is adapted from “Checklist for Discussions with Your Doctor,” a patient resource available at epilepsy.com. By directing patients to this patient resource, you may permit them to more actively monitor their AED therapy as they age and permit them to play a greater role in decision-making by recognizing some of the potential short- and long-term effects of treatment.

Questions for Pregnant Women

Excerpted from the AES Physician Discussion Checklist (aesnet.org):

Note: Confirm the diagnosis of epilepsy and seizure type. In all discussions, emphasize the balance of all risks and the goal of controlling seizures

For patients who never received pre-pregnancy planning:

- For patients who never had pre-conception counseling, discussion of AEDs and multiple AEDs on outcome, risks of AEDs vs. Seizures, Timing of major malformations to first trimester.
- Possible teratogenic effects compared to people not taking an AED
- Possible change in AED therapy (only in consultation with neurologist)

Review of pregnancy management by trimester:

First Trimester

- Have high resolution ultrasound first and second trimester
- Continue folic acid
- Changes in serum AED concentration in pregnancy and need for close monitoring of blood levels, serum levels of once per month recommended during pregnancy.
- AED management with severe emesis

Second Trimester

- Continue folic acid
- Changes in serum AED concentration in pregnancy and need for close monitoring of blood levels, serum levels of once per month recommended during pregnancy

Third Trimester

- Vitamin K recommendations for mother before delivery and for baby
- Changes in serum AED concentration in pregnancy and need for close monitoring of blood levels, serum levels of once per month recommended during pregnancy

Labor and Delivery

- Need to bring AEDs to the hospital during labor and to take regular doses.