Critical Review Form
Prognosis

Risk of Intracranial Pathologic Conditions Requiring Emergency Intervention after a First Complex Febrile Seizure Episode among Children, *Pediatrics* 2006; 117: 304-308

Objective: **"To determine the likelihood of significant, space-occupying, intracranial, pathologic conditions requiring emergency intervention in a well-defined, large group of pediatric patients presenting to the emergency department (ED) with a first complex febrile seizure. " (p. 305)**

Methods:

Using a previously prospectively collected database of children six months to five years of age presenting to a single tertiary care university hospital between March 1999 and July 2002, the authors retrospectively abstracted those with a febrile seizure defined as a convulsion concurrently with home or ED temperature ≥ 38.3°C in the absence of prior afebrile seizures or CNS infection. From these febrile seizures, they identified those with a complex febrile seizure as defined by at least one of the following: duration ≥ 15-minutes, multiple episodes, or focality (motor, speech or vision deficits after the seizure). Exclusion criteria included prior neurosurgery, chronic medical illness, recent head trauma, or significant neurologic disorder.

Patients were identified by EM Fellows, EM Attendings or research assistants, as well as surveillance of ED log books. At the time of the ED visit, physicians were asked to complete a detailed neurological exam form. Children could be enrolled via phone for up to one week after their ED evaluation. Parents or guardians answered a standardized questionnaire at the time of enrollment about seizure quantity, duration, and focality.

The primary outcome was "clinically important, intracranial, pathologic condition requiring emergency neurosurgical or medical intervention". (p. 305). Such interventions included craniotomy, biopsy, intracranial pressure monitor, or VP shunt.

Guide		Comments
I.	**Are the results valid?**	
A.	**Was the sample of patients representative?** *In other words, how were subjects selected and did they pass through some sort of "filtering" system which could bias your results based on a non-representative sample. Also, were objective criteria used to diagnose the patients with the disorder?*	• During the 3-year study period, 293 children presented after first febrile seizure including 79 (27%) complex, though 8 were excluded from analysis (2 unprovoked, 4 developmentally delayed, 2 lost to follow-up). • Among the 71 analyzed, the mean age was 1.6 years with 51% male and 56% Hispanic, 14% African-American. • 79% were described as well-appearing, 3% as ill-appearing. • Anti-convulsants were administered to 14%. • LP was performed in 10%, though none had meningitis. • 3% (two patients) were intubated and 13 patients (18%) were admitted.
B.	**Were the patients sufficiently homogeneous with respect to prognostic risk?** *In other words, did all patients share a similar risk from during the study period or was one group expected to begin with a higher morbidity or mortality risk?*	Given exclusion criteria, probably. Although the meanings of "chronic medical illness" or "significant neurologic disorder" are vague and could be widely extrapated.
C.	**Was follow-up sufficiently complete?** *In other words, were the investigators able to follow-up on subjects as planned or were a significant number lost to follow-up?*	"For patients for whom telephone follow-up assessments were completed, the median time to interview was 22.4 months." (p. 306)

D.	**Were objective and unbiased outcome criteria used?** Investigators should clearly specify and define their target outcomes before the study and whenever possible they should base their criteria on objective measures.	"CT scans were obtained at the discretion of the treating emergency medicine physician and were read by attending pediatric radiologists". (p. 305) "Cranial MRI studies were completed within 1 week after the febrile seizure if the patient was enrolled in the prospective febrile seizure study and were read by a neuroradiologist with expertise in epilepsy". (p. 305) "Two epileptologists independently reviewed the patient's medical record, the guardian questionnaire, and the ED neurologic examination data collection form (when available), to classify the seizure as simple or complex". (p. 305). They agreed on 78/79 seizure classifications after their first review.
II.	**What are the results?**	
A.	**How likely are the outcomes over time?**	• 65% underwent neuroimaging and the remainder had the primary outcome determined by follow-up interview. • None of the 71 patients demonstrated a significant intracranial pathologic condition requiring emergency intervention.
B.	**How precise are the estimates of likelihood?** *In other words, what are the confidence intervals for the given outcome likelihoods?*	The 95% one-sided CT reported for the primary outcome is (0-4%).
III.	**How can I apply the results to patient care?**	
A.	**Were the study patients and their management similar to those in my practice?**	The volume, illness severity, and management of these patients seem similar to SLCH.

B.	**Was the follow-up sufficiently long?**	No follow-up for those immediately imaged, though review of hospital records should have identified those with significant intracranial pathology.

C.	**Can I use the results in the management of patients in my practice?**	Excluding those with prior neurosurgery, significant neurological disorder or chronic medical illness, well-appearing children with first complex seizure associated with fever have rare incidence of significant intracranial pathology so CNS imaging can safely be deferred.

Limitations

1) **Poorly defined "chronic medical illness" and "significant neurological disorder".**
2) **Only 65% had CNS imaging and surrogate outcome measure (questionnaire) was not validated.**
3) **No follow-up for those with emergent imaging.**

Bottom Line

Excluding those with prior neurosurgery, significant neurological disorder or chronic medical illness, well-appearing children with first complex seizure associated with fever have rare incidence (0%, 95% CI 0-4%) of significant intracranial pathology so CNS imaging can safely be deferred.