

# PEDIATRIC NEUROLOGY BRIEFS

## A MONTHLY JOURNAL REVIEW

J. GORDON MILLICHAP, MD, EDITOR  
JOHN J. MILLICHAP, MD, ASSOCIATE EDITOR

---

Vol. 28, No. 3

March 2014

---

### SEIZURE DISORDERS

#### **RISK FACTORS FOR EPILEPSY AFTER FEBRILE SEIZURES**

Investigators from Aristotle University of Thessaloniki, Greece, identified prognostic factors for subsequent epilepsy in a prospective study of 501 children with a first febrile seizure (FS). Patients were followed for a median of 5.3 years. Age at onset of FS ranged between 3 months and 5 years old (median age at onset 23 months +/- 12 months). Viral infection was the cause of the fever in 88.6% cases; bacterial infections were associated in 10.4%, and immunizations in 1%. EEG at the first episode of FS was pathologic in 105 (21%) of 501 children; 58 had generalized S/W complexes, 32 had focal epileptiform discharges (mostly centrotemporal and occipital); and 15 showed nonepileptiform abnormalities; epilepsy occurred in 4 patients with abnormal EEGs.

Epilepsy occurred in 27 (5.4%) of 501 FS patients. A median of 30 months (range 6 – 42 months) elapsed between the time of first FS and occurrence of epilepsy. Of 221 children with a first FS recurrence, 23 (10%) developed epilepsy; of 106 with a second FS recurrence, 19 (18%) had later epilepsy. Significant prognostic markers for subsequent epilepsy were as follows: 1) positive family history of epilepsy, especially maternal, 2) complex FS, 3) focal FS, 4) Todd paresis, 5) short duration of fever before FS, 6) late age at onset of FS (>3 years), and 7) multiple FSs (4 or more). Multiple FS increased the risk of epilepsy 10 times, positive family history of epilepsy 7.3 times, age at onset of FS after third year of life 3.8 times, and complex FS 3.6 times. Focality at the first and second FS recurrence increased the risk of epilepsy about 9.7 and 11.7 times, respectively. From the third FS recurrence and beyond, only focality of FS continued to have prognostic value. (Pavlidou E, Panteliadis C. Prognostic factors for subsequent epilepsy in children with febrile seizures. *Epilepsia* 2013 Dec;54(12):2101-7).

---

PEDIATRIC NEUROLOGY BRIEFS © 1987-2014, ISSN 1043-3155 (print) 2166-6482 (online), is published monthly and covers selected articles from the world literature. The Editor is Pediatric Neurologist and the Associate Editor, Pediatric Epileptologist and Neurologist at the Ann & Robert H. Lurie Children's Hospital of Chicago; Northwestern University Feinberg School of Medicine, Chicago, IL. PNB is a continuing education service designed to expedite and facilitate the review of current scientific information for physicians and other health professionals. Apply to [PediatricNeurologyBriefs.com](http://PediatricNeurologyBriefs.com) for Subscriptions (12 issues, January-December). Digital Edition PDF: \$72; Print + Free Digital: \$96 within US/UK, \$128 outside US/UK. Institutions: Digital Edition IP Access \$188, Print + Free Digital \$228. Mailing address for subscription: Pediatric Neurology Briefs Publishers, PO Box 11391, Chicago, IL 60611

COMMENTARY. A review of the World literature concerning febrile convulsions found 37 reports dating from 1929 to 1964, totalling 5,576 patients with febrile convulsions; a mean of 20% had frequent recurrence of afebrile seizures or epilepsy (range, 2.6% - 100%), and a mean of 27% had electrographic seizure discharges (range, 3% - 86%) [1]. The wide variations in incidence of epilepsy are explained by differences in diagnostic criteria and selection of patients. Those with short febrile seizures were mainly in prospective studies and rarely developed spontaneous seizures, whereas patients with complicated febrile seizures had often presented at a later age with epilepsy, and 17% had records of brain injury at birth [2]. In a prospective study of 110 unselected FS patients followed for ~2 years by the author, spontaneous nonfebrile seizures occurred in 17%, they were recurrent in 12%, and were frequent in 4% [3]. The duration of the FS, a factor not analyzed specifically in the Pavlidou study, and abnormal EEG were most predictive of subsequent epilepsy.

In 1706 children in the US who had experienced at least one FS and were followed to the age of 7 years, epilepsy developed in 2%. In children whose first seizure was complex febrile, epilepsy developed at a rate 18 times higher than in children with no febrile seizures. In patients with simple FS, epilepsy developed in 11 per 1000 (1.1%) [4].

In a UK national population based study of 14,676 children, 398 (2.7%) had at least one FS. The first FS was simple in 80% and complex in 20%. Epilepsy developed in 9 (2.3%), at a rate similar to that in the US [5]. The early recognition of a heightened susceptibility to epilepsy in a child with FS should lead to the introduction of seizure precautions and EEG surveillance at intervals.

#### References.

1. Millichap JG. Febrile Convulsions. New York: Macmillan; 1968.
2. Lennox MA. J Pediatr. 1949 Oct;35(4):427-35.
3. Millichap JG, et al. Neurology. 1960 Jul;10:643-53.
4. Nelson KB, Ellenberg JH. N Engl J Med. 1976 Nov 4;295(19):1029-33.
5. Verity CM, Golding J. BMJ. 1991 Nov 30;303(6814):1373-6.

## EPILEPSY COMORBIDITIES

Investigators at Children's Hospital of Pittsburgh, PA; UCLA; and Univ Wisconsin, Madison, WI, draw attention to the lack of attention to comorbidities in the treatment of epilepsy. Comorbidities include depression, anxiety disorders, ADHD, interictal psychosis, autism, and suicidal behavior. Despite studies that demonstrate the frequency of cognitive, psychiatric, linguistic, and social problems, the translation of research data to clinical practice is frequently hindered by limited access to critical cognitive and psychological evaluations and counseling. The NINDS Epilepsy Benchmarks and other national initiatives emphasize the need for comprehensive care for patients with epilepsy, yet there is a continuing lack of interest in support of these goals. (Asato MR, Caplan R, Hermann BP. Epilepsy and comorbidities – What are we waiting for? *Epilepsy Behav* 2014 Feb;31:127-8).

COMMENTARY. ADHD is a common comorbidity of epilepsy, occurring in one of 5 children with epilepsy [1]. Quality of life was impaired twofold in children with epilepsy complicated by ADHD-inattentive subtype (ADHD-I), and fourfold with