

# PEDIATRIC NEUROLOGY BRIEFS

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### SEIZURE DISORDERS

#### DIAGNOSTIC VALUE OF EYE OPENING IN INFANTILE SEIZURES

The significance of eye opening and closure during paroxysmal events in infants was examined by a retrospective review of video electroencephalograms of 91 seizures recorded in 69 infants at the Epilepsy Center, Children's Memorial Hospital, Chicago, IL. Infants were awake at the onset of paroxysms in 65 (71.4%) and asleep in 25 (27.5%). Eyes were open sometime during the seizure in 85 (93.4%) cases and closed throughout the event in only 6 (6.6%). Seizures in those with persistent eye closure were unclassified spasms in 3, partial clonic in 2, and generalized myoclonic in 1; these patients had severe neurologic encephalopathy, infections, or West syndrome, consistent with a diagnosis of epilepsy. The majority of infants with seizures have eyes open at some time during the event, and apart from a minority with severe neurologic disorders, infants with persistent eye closure during a sudden paroxysmal event are very unlikely to be diagnosed with epilepsy. (Korff CM, Nordli DR Jr. Paroxysmal events in infants: persistent eye closure makes seizures unlikely. *Pediatrics* October 2005;116:e485-e486). (Reprints: Christian M Korff MD, Epilepsy Center, Box #29, Children's Memorial Hospital, 2300 Children's Plaza, Chicago, IL 60614).

**COMMENT.** This report may provide a useful simple aid in the diagnosis of nonepileptic paroxysmal events in infants. The study was triggered by a perceptive resident's observation that an infant's eyes were closed throughout a paroxysmal event in a case presented on pediatric intake rounds, a finding considered unusual for an epileptic seizure.

In response to my question regarding the mechanism of eye opening during seizures and whether it could be related to frontal lobe or brain stem excitation, Dr Nordli answered as follows: "I am not sure, but the eye opening is probably not a direct ictal feature, but rather in keeping with a more diffuse alerting response to seizures."

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The differential diagnosis of nonepileptic paroxysmal events in infants and young children includes breath-holding spells, gastroesophageal reflux, hypocalcemic tetany, shuddering attacks (Barron TF et al. **Neurology** 1992;42:258-259; **Ped Neur Briefs** Feb 1992), hyperekplexia (Tohier C et al. **Arch Dis Child** 1991;66:460-461; **Ped Neur Briefs** May 1991), and syncope. Paroxysmal symptoms involving the eyes, sometimes misdiagnosed as seizures, include tonic upgaze of infancy (Ouvrier R, Billson F. **Brain Dev** 2005;27:185-188; **Ped Neur Briefs** April 2005;19:32), paroxysmal ocular downward deviation (Yokochi K. **Pediatr Neurol** 1991;7:426-428; **Ped Neur Briefs** Feb 1992), spasmus nutans, and opsoclonus-myoclonus syndrome. (For further case reports of epileptic and nonepileptic paroxysmal events in infants, see **Progress in Pediatric Neurology I-III**, PNB Publishers, 1991, 94, & 97).

## BENIGN INFANTILE CONVULSIONS

The clinical features of 58 patients with benign infantile convulsions (BIC), seen at the Department of Pediatrics, University of Bologna, Italy, over a 20 year-period (1983-2003), are reviewed retrospectively, with reference to both familial and nonfamilial cases. Seizure onset was between 4 and 24 months, with an average age of 10 and 11 months for girls and boys, respectively. The first seizure occurred before 1 year of age in 36 (62%) patients and during the second year in 22 (38%). The earlier age of onset was more prevalent in familial (BFIC) compared to nonfamilial (BNFIC) cases: of 17 BFIC patients, 13 (76%) were younger than 1 year at onset whereas of 41 BNFIC cases, 23 (56%) had seizures before age 1. In both familial and nonfamilial patients, seizures were in clusters, twice a day or more for 1 to 4 days, and sometimes recurred after 1 to 8 weeks. Seizure patterns were changeable among different children and also for individuals: psychomotor arrest, deviation of eyes, or hypertonia, with cyanosis. The EEG pattern during a seizure was variable but mainly focal spike and sharp wave discharges, central-parietal-temporal in location, and often followed by rapid generalization. Antiepileptic medications were prescribed in 80% of patients before 1990 and in only 30%, later. Seizures in clusters might prompt treatment, especially in BNFICs. Treatment is often withheld in familial cases, when the diagnosis and benign course are more obvious. A normal interictal EEG is not always indicative of a conclusive diagnosis. Only molecular studies will distinguish benign familial neonatal-infantile seizures (BFNIS) that overlap clinically with BNFIC. (Franzoni E, Bracceschi R, Colonnelli MC et al. Clinical features of benign infantile convulsions: Familial and sporadic cases. **Neurology** October (1 of 2) 2005;65:1098-1100). (Reprints: Dr Emilio Franzoni, Via Massarenti 11, 40138 Bologna, Italy).

COMMENT. BFIC is a heterogeneous genetic disorder, with linkage to chromosomes 19q, 16p12-q12, and 2q24, and having no chromosome-related phenotypic differences. (Malacarne M et al. **Am J Hum Genet** 2001;68:1521-1526). BFIC and BNFIC have similar electroclinical findings and prognosis. In the above study, BFIC cases had an earlier onset than those with BNFIC, an observation that may be helpful in diagnosis.