

SEIZURE DISORDERS

FACTORS AFFECTING RECOVERY OF CONSCIOUSNESS AFTER SEIZURES

Linear regression analysis was used to determine factors that influenced recovery time in 90 children aged 1-16 years (median age 6 years) treated for seizures with impairment of consciousness at Leeds General Infirmary, UK. In a total of 41 patients with complete coma scores, median time for full recovery of consciousness was 38 min. In patients with febrile seizures, median recovery time was 18 min, significantly shorter than for seizures of other etiologies ($P<0.05$). Recovery times were 1.35 hrs for idiopathic seizures, 1.25 hrs for remote symptomatic seizures, and 4.57 hrs for acute symptomatic seizures. Patients treated with benzodiazepines had significantly longer median recovery times (3.46 hrs) than those not receiving benzodiazepines (0.47 hr); $P<0.05$. Factors not affecting recovery time included age, sex, seizure type and duration. (Allen JE, Ferrie CD, Livingston JH, Feltbower RG. Recovery of consciousness after epileptic seizures in children. **Arch Dis Child** Jan 2007;92:39-42). (Respond: Dr JE Allen, Department of Paediatric Neurology, Leeds General Infirmary, Great George Street, Leeds, West Yorkshire, LS1 3EX, UK).

COMMENT. Children with febrile seizures generally recover consciousness in less than 30 min. If recovery of consciousness after a seizure takes >1 hr, an acute symptomatic etiology should be suspected.

Why do seizures cause loss of consciousness? is addressed by Blumenfeld H and Taylor J of Yale Univ (**Neuroscientist** 2003;9:301-310; Blumenfeld H. **Prog Brain Res** 2005;150:271-286). Abnormal increased activity in fronto-parietal association cortex and related subcortical structures is associated with loss of consciousness in generalized seizures. Decreased activity in these same networks may cause loss of consciousness in complex partial seizures. Absence seizures impair focal, not generalized corticothalamic networks; they may result from a temporary suspension of "working memory circuits" in the frontal lobe (Niedermeyer E. **Clin Electroencephalogr** 1994;25:86-93; *idem* **Ital J Neurol Sci** 1999;20:7-15). Normal conscious processing requires a dynamic balance between the two extremes of excitation and inhibition.

Various behavioral disturbances masquerade as "loss of consciousness" during a seizure, according to Gloor P, in a review of consciousness as a neurological concept in epileptology (**Epilepsia** 1986;27 (Suppl 2):S14-S26). These include aphasia, absent voluntary movements, ictal or postictal amnesia, and hallucination.

NONCONVULSIVE SEIZURES IN CRITICALLY ILL CHILDREN

All patients <18 years admitted to the ICU at Columbia University Medical Center, New York, between June 1, 2000 and April 30, 2004, and considered critically ill, regardless of etiology, underwent continuous EEG (cEEG) for detection of nonconvulsive seizures (NCSz) in the evaluation of unexplained diminished consciousness. Of 117 children monitored with cEEG, 44% had seizures and 39% had NCSz. Of patients with seizures, 73% had only NCSz, and 23% had status epilepticus (NCSE in 89%). The timing of NCSz was

immediate after initiation of cEEG in 15%, within 1 hour in 50%, and within 24 hours in 80%. Patients with clinical seizures prior to cEEG had NCSz more frequently than those without (83% vs 17%). NCSz were most common in patients with periodic lateralized epileptiform discharges (PLEDS) [73%], absence of background reactivity on cEEG [65%], any periodic discharges [65%], and absence of sleep architecture [50%]. (Jette N, Claassen J, Emerson RG, Hirsch LJ. Frequency and predictors of nonconvulsive seizures during continuous electroencephalographic monitoring in critically ill children. *Arch Neurol* Dec 2006;63:1750-1755). (Respond: Nathalie Jette MD MSc, Foothills Medical Centre, Department of Clinical Neurosciences, 1403-29th St NW, Calgary, Alberta, Canada T2R 1R8).

COMMENT. Nonconvulsive seizures are common during cEEG in critically ill children, especially in those with clinical seizures before cEEG initiation. Patients with PLEDs should be monitored for at least 24 hours to exclude NCSz.

HEART RATE CHANGES OF LIMITED VALUE IN DETECTION OF NEONATAL SEIZURES

Heart rate changes were studied during 169 seizures in 14 neonates with severe birth asphyxia at the Erasmus MC-Sophia Children's Hospital, Rotterdam, The Netherlands. Changes were detected during 21 seizures (12.4%) in 8 patients; heart rate was increased in 4, decreased in 1, and both patterns were observed in 3 patients. Diminished or absent beat-to-beat variability ("stable baseline HR"), recognized as a poor prognostic sign, was associated with a nonsignificant trend toward increased mortality. Heart rate monitoring is of limited sensitivity for detecting postasphyxial neonatal seizures. (Cherian PJ, Blok JH, Swarte RM, Govaert P, Visser GH. Heart rate changes are insensitive for detecting postasphyxial seizures in neonates. *Neurology* Dec 2006;67:2221-2223). (Reprints: Dr PJ Cherian, Erasmus MC, Department of Clinical Neurophysiology, University Medical Center, Dr Molawaterplein 40, 3015 GD Rotterdam, The Netherlands).

COMMENT. Heart rate changes during seizures involve connections between the cerebral hemispheres and brain stem autonomic regulatory centers. Unlike adults with ictal heart rate and blood pressure changes, of value in differentiating pseudo- from epileptic seizures (Opferk C et al. *Neurology* 2002;58:636-638; Laroia N. *Neurology* 2006;67:2101), the connections that govern autonomic dysregulation are insensitive in the neonate with postasphyxial seizures.

ATTENTION DEFICIT AND COGNITIVE DISORDERS

EFFECT OF ROLANDIC SPIKES ON ADHD IMPULSIVE BEHAVIOR

The association of Rolandic spikes with the neuropsychological profile of children with attention deficit hyperactivity disorder (ADHD) was studied in a total of 48 patients at JW Goethe-University, Frankfurt/Main; and Central Institute of Mental Health, Mannheim, Germany. Sixteen children with ADHD and Rolandic spikes (RS) were compared with 16