reported in 19 studies between 1933-1963 17% showed evidence of possible brain injury caused by trauma or anoxia as an antecedent of febrile seizures. The evidence for brain injury at birth was often presumptive and equivocal, but the agreement among figures quoted in the 19 series of patients was remarkable. (Millichap JG. Febrile convulsions. New York: MacMillan, 1968).In reports that analyzed complicated cases compared to those having febrile seizures alone the incidence of birth injury was not significantly changed by this arbitrary division of patients. Trauma or anoxia at birth was a frequent finding in the history of the febrile convulsive disorder and was implicated with equal frequency in patients with simple febrile seizures and those with complex febrile seizures. In the present NIH study the antecedents of complex febrile seizures were not distinguished from those of simple febrile seizures. The authors indicate that some relationships not uncovered in the study of the total cohort of febrile seizures might emerge in an analysis of clinically defined subsets.

PREDICTORS OF RECURRENT FEBRILE SEIZURES

The results of 14 published reports were analyzed to evaluate the strength of association between proposed risk factors and recurrence of febrile seizures in a metaanalytic review from the Departments of Pediatrics and Epidemiology and Public Health, Yale University School of Medicine, New Haven, CT; Montefiore Medical Center, The Albert Einstein College of Medicine, Bronx, New York; and Columbia University College of Physicians and Surgeons, New York, NY. Young age at onset (less than one year) and a family history of febrile seizures each distinguished between groups with approximately a 30% versus a 50% risk of recurrence. Family history of afebrile seizures, focal, prolonged, and multiple seizures were associated with an inconsistent or only a small increment in risk of recurrence. Only one of five indications for anticonvulsant prophylaxis as defined by the 1980 NIH Consensus Developmental Conference was consistently predictive of a recurrence of febrile seizures. (Berg AT et al. Predictors of recurrent febrile seizures: A metaanalytic review. J Pediatr March 1990; 116:329-337).

COMMENT. The risk factors and indications for long term phenobarbital prophylaxis of febrile seizures need to be reconsidered. Therapeutic guidelines may be helpful but the decision to treat must be made on an individual basis. Greater reliance on parental education and intermittent therapy should lessen the necessity for long term therapy with potentially toxic medications.

BIOMAGNETOMETRY IN SEIZURE LOCALIZATION

Biomeganetometry was discussed at the 75th Annual Meeting of the Radiological Society of North America. Unlike ultrasound, CT, and MRI (which provide anatomic information) and PET (metabolic information), biomagnetic imaging provides spatial and temporal data on the electrical activity of the brain. It may help locate the foci of

epileptic seizures and show locations for language, auditory and visual processing. Unlike the EEG which is crude and looks at ripples in the water, biomagnetometry shows the stone and the source of the ripples (Dr. Harwood-Nash, Toronto). EEG signals travel through many types of tissue with varying degrees of electrical resistance and consequent distortion. The magnetic flux generated by neurons are not distorted by bone or other biologic tissues, they are picked up and converted to electrical signals by detection coils, amplified, filtered and processed for display on a computer screen to show spatial distribution and time evolution of the electrical activity being scanned. The information is presented graphically superimposed over a single plane MRI image so that correlations with the anatomical structures can be made. In 15 of 40 patients with epilepsy who received biomagnetic scans and underwent surgery for the removal of epileptic foci, there was good correlation between EEG and biomagnetometry mapping of the epileptic foci. (Sato S. Bethesda, MD). (Skolnick A. Biomagnetometry provides a new compass for exploring the brain and heart. JAMA Feb 2, 1990; 263:623-627).

COMMENT. Biomagnetic Technologies (BTi), a San Diego company, has installed more than 50 seven channel machines and announced the availability of a 37 channel biomagnetometer at the RSNA November 1989 meeting. Siemen's expects to install its first 37 channel system (Krenikon) in West Germany and three at research centers in the U.S. A large area, 7-channel, magnetometer (SQUID) was used to preoperatively determine the sites of epileptic foci in two patients with intractable temporal lobe seizures and results are reported from the Department of Neurosurgery, Kuopio University Hospital, Finland. Preop localization agreed with electrocorticogram and depth electrode operative recordings. (Tiihonen J et al. Ann Neurol March 1990; 27:283-290).

EFFECTS OF BRIEF SEIZURES ON LEARNING

The effects of frequent brief seizures on learning, memory, and behavior in the young animal were studied at the Department of Neurology, Children's Hospital, Harvard Medical School, Boston, MA; and Veterans Administration Medical Center and Medical College of Georgia, Augusta, GA. Three groups of animals were used: Group 1 immature genetically epilepsy prone rats (GEPRs) subjected to 66 audiogenic stimulations; Group 2 GEPR littermates handled and placed in the sound chamber but not stimulated; Group 3 genetically epilepsy resistant rats (GERRs) who received audiogenic stimulations but had no seizures. Tests for learning, memory and behavior, using the T-maze, water maze, open field activity test, home cage intruder test and handling test, were investigated after three weeks of stimulations. Compared with GERRs and control GEPRs, experimental GEPRs performed less well in the T-maze and water maze tests of learning and memory. They also differed in behavior and activity level. The study demonstrated that frequent brief seizures in immature animals results in significant detrimental changes in learning, memory, activity level,