

# PEDIATRIC NEUROLOGY BRIEFS

## A MONTHLY JOURNAL REVIEW

J. GORDON MILLICHAP, M.D., F.R.C.P., EDITOR

---

Vol. 6, No. 5

May 1992

---

### LEARNING DISORDERS

#### **REACTION TIME AND ATTENTION IN EPILEPSY**

Reaction time, attention and impulsivity in 112 children with epilepsy (4.5-13 years) were studied using a computerized test at the Division of Neurology, Children's Hospital Los Angeles, Los Angeles, CA. Measures included simple reaction time, forced choice reaction time, choice reaction time with distraction, variability of speed of response and errors of omission and commission. Compared to controls, children with epilepsy were significantly slower, more variable and made more omission errors but not commission or impulsive errors. Reaction times showed a negative correlation with IQ but were not related to seizure severity or duration of seizure disorder. Differences related to treatment history were small although patients with less total exposure to antiepileptic medications tended to perform better than those with greater total exposure. A small unmedicated group did not differ from patients on antiepileptic drugs on the day of the test, however. (Mitchell WG et al. Reaction time, attention, and impulsivity in epilepsy. *Pediatr Neurol* Jan/Feb 1992; 8:19-24). (Correspondence: Dr. Mitchell, Neurology Division, Box 82, Children's Hospital Los Angeles, Los Angeles, CA 90054.)

**COMMENT.** The authors conclude that the slowed reaction times and inattention demonstrated by epileptic patients were not primarily a result of the seizures or treatment. The names of the specific anticonvulsants were not included. A slowed motor speed may contribute to a relatively low performance IQ score.

Absence seizures may complicate learning disabilities and the diagnosis may be overlooked when using routine EEGs. Borkowski WJ, Jr. et al. at the Alfred I. duPont Institute, Wilmington, DE have demonstrated the value of 24 hour sleep deprivation in the activation of spike and wave discharges in the EEG in 8 of 9 learning impaired

---

PEDIATRIC NEUROLOGY BRIEFS (ISSN 1043-3155) ©1992 covers selected articles from the world literature and is published monthly. Subscription requests (\$36 US or £21 annually; add \$12 (£7) for airmail outside North America) may be sent to: **Pediatric Neurology Briefs - J. Gordon Millichap, M.D., F.R.C.P. - Editor**, P.O. Box 11391, Chicago, IL 60611, USA. The Editor is a Professor at Northwestern University Medical School and Children's Memorial Hospital. His consulting practice in Neurology of Children and Young Adults is located at 211 E. Ontario, Suite 1175, Chicago, Illinois, 60611 (telephone: (312) 943-0934).

children with a history of absence seizures (Clinical EEG April 1992; 23:62-64).

### **PERCEPTUAL MOTOR AND SENSORY INTEGRATIVE THERAPY FOR LEARNING DISABILITIES**

The effects of sensory integrative therapy (SI), perceptual motor training (PM) and no treatment (NT) were compared in 103 children with learning disabilities at the Department of Paediatrics, Division of Neurology and Department of Rehabilitation Medicine, Hospital for Sick Children, University of Toronto, Canada. After a total of 72 1-hour sessions for 3 hours per week the PM treated subjects showed significant gains over the other 2 groups, primarily in gross motor performance, but without any accompanying carry over into functional activities such as copying ability, printing readiness, attention or organizational skills. SI treated subjects showed improvement in motor planning. Neither therapy resulted in improvement in cognitive, language or academic performance, attention or self-concept. (Humphries T et al. A comparison of the effectiveness of sensory integrative therapy and perceptual-motor training in treating children with learning disabilities. J Dev Behav Pediatr Feb 1992; 13:31-40.) (Reprints: Tom Humphries, Ph.D., Child Development Clinic, Hospital for Sick Children, Toronto, Ontario, Canada M5G 1X8.)

**COMMENT.** Although the claim that occupational therapy may directly improve higher level academic, language, and cognitive performance has not been supported by these studies, perceptual motor and sensory integrative therapy appears to have positive effects on motor planning and gross motor functioning. The possible value of these refinements of motor performance in effecting functional ability awaits further evaluation.

### **SLEEP DISORDERS AND NEUROPSYCHOLOGICAL ABNORMALITIES**

The IQ and neurodevelopmental quotients of 17 of 32 children with congenital central hypoventilation syndrome were determined at the Departments of Pediatrics and Psychology, Rush-Presbyterian-St. Luke's Medical Center, Chicago, IL. Sleep hypoventilation was severe in all cases, with an alveolar carbon dioxide pressure of  $62 \pm 2.5$  mm Hg and a hemoglobin saturation of 65%. Seizures were associated in 72%, pulmonary hypertension in 78% and mild cerebral atrophy in 40%. All patients were hypotonic or had major motor delays. Autopsy performed in 6 cases showed diffuse central nervous system astrocytosis, gliosis, and atrophy but no brain-stem abnormality. The IQ and developmental quotients varied from greater than the 85th percentile to less than the 5th percentile, with verbal and performance discrepancies. The data support a diffuse central nervous system process but the possible effects of transient hypoxemia on neurodevelopmental test results could not be definitely determined (Weese-Mayer DE, Silvestri JM et al. J Pediatr March 1992; 120:381-7 and 388-93). (Reprints: Dr. Weese-Mayer, Department of Pediatrics, Rush-Presbyterian-St. Luke's Medical Center, 1653 West Congress Parkway, Chicago, IL 60612.)