

LEARNING AND BEHAVIOR DISORDERS

LOW IQ, UBOs ON MRI, AND NEUROFIBROMATOSIS I

The relationship between cognitive impairment and unidentified bright objects (UBOs) on the MRI in children with neurofibromatosis 1 (NF-1) was studied at the Kennedy Krieger Institute, and the Johns Hopkins University, Baltimore, MD. The data set included WISC-R-derived FSIQ for 20 pairs of children (NF-1 and unaffected sibling of NF-1); a "lesion count" for number of locations in which UBOs were seen; and the ratio of total volume of UBOs divided by total brain tissue volume. The number of locations occupied by UBOs accounted for IQ lowering in children with NF-1, whereas the total UBO volume was not associated with a discrepancy of IQ of NF-1 patients compared to their unaffected siblings (D-SIQ). The child's age, familiarity, or summed UBO volume did not strengthen the regression model based on number of UBO locations. The mean discrepancy (D-SIQ) for the NF-1 affected children was 13 points. The mean number of UBO-occupied locations was 3, with basal ganglia the most frequent site. (Denckla MB et al. Relationship between T2-weighted hyperintensities (Unidentified Bright Objects) and lower IQs in children with neurofibromatosis-1. Am J Med Genet 1996;67:98-102). (Reprints: Martha Bridge Denckla MD, The Kennedy Krieger Institute, 707 North Broadway, Suite 501, Baltimore, MD 21205).

COMMENT. In this study, the number of locations occupied by UBOs correlated with the lowering of IQ in children with neurofibromatosis-1. Previous studies have provided conflicting findings, some showing significant correlations between a lowered IQ and the presence of UBOs, and others failing to demonstrate a significant relation between intelligence and the number or location of T2 weighted foci in the brain. (see Ped Neur Briefs Jan 1996;10:3-4).

IQ correlated with UBOs in thalamus. A most recent paper from the University of Texas MD Anderson Cancer Center, and the UTMS, Houston, TX, reports that hyperintensities located in the cerebral hemispheres, basal ganglia, brainstem, or cerebellum show no correlation with neuropsychological functioning, whereas hyperintensities in the thalamus were significantly correlated with a lowered IQ. Mean scores for IQ, memory, motor, distractibility, and attention performance in children with UBOs in the thalamus were significantly lower than scores for those with UBOs located elsewhere. The presence or absence of UBOs and the number of UBOs were not significantly correlated with IQ. (Moore BD et al. Neuropsychological significance of areas of high signal intensity on brain MRIs of children with neurofibromatosis. Neurology June 1996;46:1660-1668). (Reprints: Dr Bartlett D Moore III, Division of Pediatrics (Box 87), UTMD Anderson Cancer Center, 1515 Holcombe Blvd, Houston, TX 77030). Location, location, location is the crucial factor!

Somatic mosaicism in neurofibromatosis-1 is reported from the University of Florida, Gainesville, FL, and may possibly explain the discrepancies in patient selection and results of the above studies. (Colman SD et al. Am J Hum Genet March 1996;58:484-490).

NEONATAL VIRAL MENINGITIS AND NEURODEVELOPMENT

The neurodevelopmental outcome of 16 young infants with viral meningitis diagnosed under 3 months of age and a control group of 13 infants was evaluated at the Children's Hospital Medical Center, and University of Cincinnati, Ohio. Subtle but significant deficits were found in the meningitis

group involving the receptive component of the Receptive-Expressive Emergent Language Scale (REEL), all subsections of the Preschool Language Scale (PLS), the Revised Peabody Picture Vocabulary Test (PPVT-R), and the verbal comprehension/language-processing section of the Stanford-Binet. These deficits were recognized by 3 years of age, but required specific quantitative testing by a psychologist or speech and language pathologist for their detection. (Baker RC et al. Neurodevelopmental outcome of infants with viral meningitis in the first three months of life. Clin Pediatr June 1996;35:295-301). (Reprints: Raymond C Baker MD, OSB 4, Children's Hospital Medical Center, 3333 Burnet Avenue, Cincinnati, Ohio 45229).

COMMENT. Children with enteroviral meningitis in early infancy should be monitored carefully for impairments of language development, particularly receptive language. Those with recognized deficits should receive increased language stimulation in the home prior to enrollment in school.

IN UTERO COCAINE EXPOSURE AND INFANT BEHAVIOR

The effects on neurobehavior in 20 infants with prenatal exposure to cocaine, alcohol, marijuana, and cigarettes, compared to 17 infants exposed to alcohol and/or marijuana and cigarettes without cocaine and 20 drug-free infants, were assessed using the Neonatal Intensive Care Unit Network Neurobehavioral Scale at Brown University School of Medicine, Women and Infants Hospital, Providence, RI. Cocaine-exposed infants showed increased tone and motor activity, more jerky movements, startles, tremors, back arching, and signs of central nervous system and visual stress than unexposed infants. Visual and auditory following responses, and birth weight and length of cocaine-exposed infants were also reduced. (Napiorkowski B, Lester BM et al. Effects of in utero substance exposure on infant neurobehavior. Pediatrics July 1996;98:71-75). (Reprints: Barry M Lester PhD, Women and Infant's Hospital, 101 Dudley St, Providence, RI 02905).

COMMENT. Meconium testing was used to confirm lack of illicit drug use in the unexposed group. Positive meconium or urine assays were found in 5 women who had denied prenatal drug use. Urine toxicology can detect cocaine within 1 to 4 days of last use. Cocaine-exposed infants had neurobehavioral changes especially involving increased tone and motor activity. Synergistic effects of cocaine with alcohol and marijuana could not be ruled out.

Dose-related effects of cocaine on 3-week neurobehavior were demonstrated in a study at Children's Hospital, Boston, MA. Comparing 38 heavily exposed infants, 73 lightly exposed, and 94 unexposed, after controlling for covariates, a significant dose effect was observed, heavily exposed infants showing poorer regulation of arousal and greater excitability at 3-week examination but not in the first few days of life. (Tronick EZ et al. Late dose-response effects of prenatal cocaine exposure on newborn neurobehavioral performance. Pediatrics July 1996;98:76-83). (Reprints: Edward Z Tronick PhD, Children's Hospital, 300 Longwood Ave, Boston, MA 02115).

Since regulation of arousal and attention are important to learning, infants exposed to cocaine in utero may be expected to show decreased developmental scores and to have attention deficit disorders in childhood. (Ped Neur Briefs Feb 1996;10:9-10).