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NEONATAL DISORDERS

ACUTE INTRAUTERINE ASPHYXIAL ENCEPHALOPATHY

A clinical-imaging syndrome of acute near-total intrauterine asphyxia is described in 11 term infants followed at Evanston Hospital, and Northwestern University Medical School, Chicago, IL. Neonatal encephalopathy with signs of brainstem dysfunction were severe in 4 patients and moderate in 7. Development of cognitive function and head size were unaffected in the less severe cases. Brain imaging showed lesions in the thalamus, basal ganglia, and brainstem, with sparing of the cerebral cortex and white matter. Systemic organs showed only subtle signs of injury. The pattern of distribution of injuries correlated with the metabolic rates of the organs involved. The brain and especially subcortical nuclei, tissues with higher metabolic rates, sustained greater damage than nonbrain organs having lower metabolic needs. This acute syndrome is in contrast to a more chronic, less severe intrauterine asphyxia in which the cerebral hemispheres and other organs are more vulverable. (Pasternak JF, Gorey MT. The syndrome of acute near-total intrauterine asphyxia in the term infant. Pediatr Neurol May 119;18:391-398). (Respond: Dr Pasternak, Division of Neurology, Evanston Hospital, 2650 Ridge Ave, Evanston, IL 60201).

COMMENT. Correlation of brainstem nuclear pathology with rates of tissue metabolism and blood flow has been demonstrated in monkey fetuses exposed to total asphyxia for varying time periods. Those exposed for 18 min showed a more widespread brain injury than fetuses exposed for 15 min. Structures with the highest blood flow rates are most vulnerable. Depression of brain metabolism by barbiturates or hypothermia extends the duration of brain tolerance to effects of asphyxia. Selective brainstem damage occurs after acute total asphyxia whereas the cerebral cortex and subcortical white matter are predominantly affected by prolonged partial asphyxia (Gluck L. (ed) Intrauterine Asphyxia and the Developing Brain. Chicago, Year Book Publ, 1977;p45).

The above NW University clinical study, correlating neurological signs with brain imaging abnormalities, supports previous laboratory findings, and demonstrates the brain stem dysfunction typical of an acute, in contrast to more

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prolonged, intrauterine asphyxia in the term infant. According to Volpe JJ (Neurology of the Newborn, 2nd ed, Philadelphia, Saunders, 1987), the localization of hypoxic-ischemic encephalopathy in the infant is generally more diffuse than in asphyxiated animals, and selective brainstem injury is rare and frequently fatal. (See Progress in Pediatric Neurology I. PNB Publishers, 1991;p334).

EEG IN DIAGNOSIS OF PERIVENTRICULAR LEUKOMALACIA

The specificity and sensitivity of positive rolandic sharp waves (PRSW) on serial EEGs for the diagnosis of periventricular leukomalacia (PVL) in premature infants was studied in 83 newborn cases (11% of 765 premature infants) treated at the Hopital Antoine Beclere, Assistance Publique/Hopitaux de Paris, Clamart, France. All prematures underwent repeated ultrasound scanning and EEGs during the first weeks of life. Those showing persistent hyperechoic periventricular densities on ultrasound had MRIs performed. Of the 83 with PVL, 65 had cystic PVL. PRSW were present in 55 cases, and EEG abnormalities preceded the ultrasonic detection of cystic PVL. PRSW were specific markers for both cystic and noncystic PVL, and PRSW sensitivity was dependent on gestation age, with higher frequency (88%) in infants of 28-32 weeks than in those born before 28 weeks (32%). (Baud O, d'Allest A-M, Lacaze-Masmonteil T et al. The early diagnosis of periventricular leukomalacia in premature infants with positive rolandic sharp waves on serial electroencephalography. J Pediatr May 1998;132:813-817). (Reprints: Anne-Marie d'Allest MD, Service de Reanimation et Pediatrie Neonatales, Hopital Antoine Beclere, Assistance Publique/Hopitaux de Paris, 157, rue de la Porte de Trivaux, 92 141 Clamart, France).

COMMENT. Positive rolandic sharp waves on the EEG are specific for the development of periventricular leukomalacia and subsequent neurologic impairment in premature infants.

Outcome predictive value of neonatal assessment of preterm infants. Clinical assessment in the intensive-care unit was used to predict normal or abnormal motor outcome at 6 years, in a study of 153 infants followed in the Department of Perinatal Medicine, King George V Hospital, Sydney, Australia (Lacey JL, Henderson-Smart DJ. Assessment of preterm infants in the intensive-care unit to predict cerebral palsy and motor outcome at 6 years. Dev Med Child Neurol 1998;40:310-318). Neonates were classified according to the absence, transient occurrence, or persistence of atypical signs, including jitters, asymmetric tonic neck reflex, hypotonia, or hypertonia. Absence of atypical signs predicted normal development for 62% of 116, whereas one or more atypical features predicted major motor dysfunction in 7 of 11 infants.

Retinopathy of prematurity and autistic disorder. Blindness due to retinopathy of prematurity was strongly associated with autistic spectrum disorders in a controlled population-based study of 27 children at the University of Stockholm, Sweden (Ek U et al. Relation between blindness due to retinopathy of prematurity and autistic spectrum disorders: a population-based study. Dev Med Child Neurol 1998;40:297-301). The association was probably mediated by brain damage, independent of the blindness per se.

SCOLIOSIS IN SPASTIC CEREBRAL PALSY

The natural history and risk factors for progressive severe scoliosis were evaluated in 37 institutionalized spastic cerebral palsy patients followed at the Department of Orthopaedic Surgery, Shinshu University School of Medicine, Matsumoto, and at Centers in Nagano, Japan. Scoliosis started before age 10 yrs and