

# PERIPHERAL NERVE CONDUCTION ABNORMALITIES IN CHILDREN EXPOSED TO ALCOHOL IN UTERO

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**Objective** We performed a longitudinal study of nerve conduction velocity to determine the effect of prenatal alcohol exposure on the peripheral nervous system.

**Study design** We studied 17 children exposed to >2 oz of absolute alcohol/day prenatally and 13 unexposed children, identified prospectively from a cohort of pregnant women screened during prenatal care. Nerve conduction assessment was done on the median, ulnar, peroneal and tibial nerves during the newborn period and between 12 and 14 months of age.

**Results** At both assessments the alcohol-exposed subjects had significantly slower ulnar motor nerve velocity ( $P = .007$ ), smaller proximal ( $P = .018$ ) and distal amplitude ( $P = .051$ ). They also showed reduced tibial nerve velocity ( $P = .06$ ) and a decrease in distal amplitude.

**Conclusions** This study demonstrates that prenatal alcohol exposure is associated with abnormalities in nerve electrical properties, and that the pattern is different from that seen in adults. Electrophysiologic abnormalities in peripheral nerves should be added to the problems found in children of alcohol abusing mothers. (*J Pediatr* 2004;144:338-43)

Clinical and experimental data have shown that consumption of alcohol during pregnancy can have severe teratologic effects on the human fetus. The more severe manifestations of prenatal alcohol exposure, termed fetal alcohol syndrome (FAS) include dysmorphic facies, pre- and postnatal growth restriction, and behavioral and cognitive dysfunction.<sup>1</sup>

Alcoholic peripheral neuropathy in adults has been recognized for more than 200 years; nevertheless, little attention has been given to possible effects of alcohol exposure in utero on the developing peripheral nervous system. Prenatal alcohol exposure affects the sensory nervous system. Both visual and auditory evoked potentials were abnormal in infants exposed prenatally to alcohol. The general findings suggest that alcohol exposure delays development of sensory neural systems.<sup>2</sup> Despite this evidence of alterations in central sensory neural systems, to our knowledge there have been no studies of the effect of alcohol on the developing peripheral nervous system.

We performed a longitudinal study of alcohol-exposed and unexposed newborns to determine whether prenatal alcohol exposure damages the developing peripheral nervous system.

## METHODS

### Subjects

The infants included in this study were term neonates evaluated in a prospective study of the effects of prenatal exposure to alcohol on offspring of heavy drinking mothers in Chile—The NICHD—University of Chile Alcohol In Pregnancy Study. The infants were classified into two groups, those exposed to alcohol in utero, and unexposed controls. Alcohol exposure was identified prenatally by screening, generally at the first prenatal visit. Those suspected of heavy drinking had a follow-up home visit to confirm their drinking status. These visits identified 101 women who were drinking at least 2 oz of absolute

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FAS Fetal alcohol syndrome