

# PEDIATRIC NEUROLOGY BRIEFS

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### TOXIC DISORDERS

#### MINT TEA (PENNYROYAL) EPILEPTIC ENCEPHALOPATHY

Severe epileptic encephalopathy and fulminant liver failure with cerebral edema in two infants given tea brewed from home-grown mint plant leaves are reported from the Departments of Pediatrics and Neurology, University of California, Davis Medical Center, Sacramento. The 1st case, an 8-week-old Hispanic boy failed to awaken the morning after developing fever and mild respiratory symptoms on the day before admission. His eyes were rolled back and he was hypotonic and hypoglycemic. He had hepatomegaly, gastrointestinal bleeding, and multiple organ failure. Generalized seizures developed on the 2nd day, and he died on the 4th day after admission. Tea brewed from a mint plant had been given by the mother for colic and congestion. Autopsy findings revealed hepatocellular necrosis, hemorrhagic renal necrosis, adrenal hemorrhage, cerebral edema, and necrosis and vacuolation of midbrain. The 2nd case, a 6-month-old Hispanic boy had a generalized tonic-clonic seizure following a 1 day illness with fever and vomiting. On admission, his serum glucose was 7 mg/dL, pupils were dilated and minimally reactive, and he had a coagulopathy and metabolic acidosis, gastrointestinal bleeding, and petechiae over the lower limbs. The liver was enlarged and liver function tests markedly abnormal. CT showed a straight sinus hemorrhage. Generalized seizures recurred on the 7th day, the EEG showed persistent epileptiform activity, and he developed a spastic rigidity. At discharge 2 months later, liver enzymes remained elevated, and a muscle biopsy showed myopathic changes. Tests for an infectious cause were negative. Serum collected at admission contained 25 ng/ml of pulegone and 41 ng/ml menthofuran. (Bakerink JA, Gospe SM Jr, Dimand RJ, Eldridge MW. Multiple organ failure after ingestion of pennyroyal oil from herbal tea in two infants. *Pediatrics* Nov 1996;98:944-947). (Reprints: Dr Marlowe W Eldridge, Section of Critical Care Medicine, Department of Pediatrics, University of California, Davis Medical Center, 2516 Stockton Blvd, Sacramento, CA 96817).

COMMENT. Most mint teas are nontoxic, but some home-grown mint

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plants used to brew home-made teas may contain pennyroyal oil, a highly neurotoxic and hepatotoxic agent. When mistakenly given to infants as a remedy for colic and other minor ailments, the chemical metabolites of the oil, pulegone and menthofuran, can deplete tissue enzymes and lead to multiorgan failure. The liver and brain are particularly vulnerable, and symptoms of mint tea poisoning include coma and convulsions. Other manifestations are cerebral edema, metabolic acidosis, hypoglycemia, gastrointestinal bleeding, and intravascular coagulopathy. Treatment consists of gastric lavage, activated charcoal, and N-acetylcysteine to replace hepatic glutathione depleted by the toxin. Hispanic parents especially, who frequently treat infants with home-grown herbs, should be warned of the hazards of certain mint plants. This report alerts physicians to the potential toxicity of mint teas and the inclusion of herbal remedies in the differential diagnosis of infantile epileptic encephalopathy.

## **PRENATAL COCAINE AND INFANT BEHAVIOR**

The Brazelton Neonatal Behavioral Assessment Scales (BNBAS) were administered to 23 infants exposed to cocaine in utero and 29 nonexposed infants recruited from the low-risk nursery, Wayne State University Hospital, Detroit. Cocaine exposure was determined by quantitative analysis of the infant's meconium stool. Exposed infants performed less well than controls on 6 of the 7 BNBAS clusters, particularly in tests for autonomic stability. A dose-response relationship was evident, with a negative effect of meconium cocaine concentration on motor, orientation, and regulation of state. (Delaney-Black V, Covington C, Ostrea E Jr et al. Prenatal cocaine and neonatal outcome: evaluation of dose-response relationship. Pediatrics Oct 1996;98:735-740). (Reprints: Virginia Delaney-Black MD, Children's Hospital of Michigan, 3901 Beaubien, Detroit, MI 48201).

COMMENT. Significant adverse behavioral effects may be demonstrated in neonates born to cocaine addicted mothers. Quantitative determination of cocaine exposure by meconium analysis is essential, since screening by history alone is found to be inadequate.

Three additional studies of the effects of prenatal cocaine on neurobehavior are summarized as follows. The Brazelton NBAScale, used at the Western Psychiatric Institute, University of Pittsburgh, showed impaired scores in motor maturity and tone, autonomic instability, and an increased number of abnormal reflexes on the 2nd day postpartum, but not at day 3. (Richardson GA et al. The effects of prenatal cocaine use on neonatal neurobehavioral status. Neurotoxicol Teratol Sept/Oct 1996;18:519-528). Heavy cocaine exposure early in pregnancy was related to faster responsiveness on an infant visual expectancy test but poorer recognition memory and information processing in 464 inner-city, black infants tested at 6, 12, and 13 months in the Psychology Department, Wayne State University, Detroit, MI. (Jacobson SW et al. New evidence for neurobehavioral effects of in utero cocaine exposure. J Pediatr Oct 1996;129:581-590). The motor development of 28 infants exposed to cocaine in utero compared to that of an unexposed group followed from birth through 15 months at Boston University, Department of Physical Therapy and Child Development Unit, Children's Hospital, Boston, showed impairments in performance at 4 and 7 months of age but not at 15 months. However, all infants, both exposed and unexposed, were motor impaired when compared to norms, a reflection of the effects of poverty and malnutrition in inner-city infants. (Fetters L, Tronick EZ. Neuromotor