

## VASCULAR DISORDERS

### EARLY ARTERIAL ISCHEMIC STROKE IN PREMATURE INFANTS

Presentation, clinical course, and outcomes for 23 premature children with arterial ischemic stroke before 44 weeks gestational age are reported from Riley Hospital for Children, Indianapolis, IN. Infants were born between 23 and 35 weeks gestational age; 10 (43%) were male, and 5 (22%) were part of twin pregnancies. Presentation at 1-4 days (median 1 day) was a respiratory difficulty or apnea in 83%. Seizures occurred at onset in 7 (30%), poor feeding in 6 (26%), and abnormal tone in 5 children (22%). All had imaging studies suggestive of stroke within the first 44 weeks gestational age, and confirmed by MRI in 18 children. The middle cerebral artery was most commonly affected; 10 had small branch middle cerebral infarcts, and the remainder had infarcts affecting various arteries and territories. Intraventricular hemorrhage occurred in 12, and white matter injury (periventricular leukomalacia and/or hypoxic-ischemic encephalopathy) in 12. Prothrombotic disorder was diagnosed in 7 of 9 tested. NICU stay ranged from 14-365 days (median, 63 days). One child died at 123 days, and all 22 survivors had disabilities, including cerebral palsy in 17 (77%), epilepsy in 10 (45%), and cognitive impairment in 17 (77%). (Golomb MR, Garg BP, Edwards-Brown M, Williams LS. Very early arterial ischemic stroke in premature infants. *Pediatr Neurol* May 2008;38:329-334). (Respond: Dr Meredith R Golomb, Pediatric Neurology, Indiana University School of Medicine, 575 West Dr, Building XE 040, Indianapolis, IN 46202).

COMMENT. The authors refer to the paucity of reports of very early arterial ischemic stroke in premature infants, the additional neurologic disorders complicating prematurity, and the limitations of cerebral imaging in fragile prematures. Presenting symptoms of ischemic stroke (respiratory difficulties, apnea and seizures) are common presenting signs of respiratory distress syndrome, intraventricular hemorrhage, and periventricular leukomalacia in the neonate. The incidence of cerebral palsy, epilepsy, and cognitive impairment in this cohort of premature infants was higher but not significantly different from that in a previously reported study of term infants with perinatal stroke. (Golomb MR et al. *Pediatr Neurol* 2007;37:245-249).

In a review of recent developments in childhood arterial ischemic stroke, Amlie-Lefond C and associates (*Lancet Neurol* May 2008;7:425-435) from Medical College of Wisconsin; University of Sherbrooke, QC, Canada; and University of California, San Francisco, estimate incidence rates in neonates at 1 per 5000 livebirths. Arteriopathies (dissection, moyamoya, vasculitis, focal stenosis) account for 80%, more than half have long-term sequelae, and 6-19% have recurrences. Inflammatory reactions triggered by infections play an important role in the pathophysiology of arteriopathies. Varicella zoster virus infection and stroke has been reported frequently, secondary reactivation of the virus is also associated, and stroke following varicella vaccination is reported in 2 children. Varicella zoster virus replication in the CNS is confirmed by PCR or antibodies in the CSF. Treatment is not well defined and includes antipyretics for fever and aspirin antithrombotic.