

# PEDIATRIC NEUROLOGY BRIEFS

## A MONTHLY JOURNAL REVIEW

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Vol. 25, No. 10

October 2011

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### VASCULAR DISEASES

#### NEONATAL CEREBRAL SINOVENOUS THROMBOSIS

Researchers at the Universities of Toronto and Calgary, Canada performed a retrospective case-control study of infants with neonatal cerebral sinovenous thrombosis (CSVT) recruited in the SickKids Children's Stroke Program, Jan 1992-Dec 2006. Blinded neuroimaging review by 2 experts quantified superior sagittal sinus (SSS) compression and head position. Case (n=55) and control (n=90) patients had similar ages and delivery modes. SSS compression occurred in 43% cases and 41% controls (without CSVT and undergoing imaging). SSS compression was significantly associated with CSVT and with greater mean angle toward head flexion ( $p<0.001$ ). Among CSVT cases, neonates with and without compression had comparable risk factors and outcome. Optimizing head position and/or preventing mechanical SSS compression may improve outcome. (Tan M, deVeber G, Shroff M, et al. Sagittal sinus compression is associated with neonatal cerebral sinovenous thrombosis. *Pediatrics* Aug 2011;128:e429-e435). (Respond: Adam Kirton MD, Calgary Pediatric Stroke Program, 2888 Shaganappi Trail NW, Calgary. E-mail: [adam.kirton@albertahealthservices.ca](mailto:adam.kirton@albertahealthservices.ca)).

COMMENT. This study shows an association between superior sagittal sinus (SSS) compression and neonatal CSVT. The authors hypothesize that a lower degree of head flexion in children with CSVT may be explained by greater hypotonia in neurologically impaired neonates leading to a more extended head position. Factors contributing to CSVT include 1) stasis of blood flow, 2) injury to vessel wall, and 3) hypercoagulability (Virchow's triad). SSS compression and restricted head flexion, mechanisms proposed in the above study, differ from most previous investigations of CSVT. Male gender is also associated with CSVT, and a multifactorial process is proposed.

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**Cerebral venous thrombosis may mimic extraaxial hemorrhages** on unenhanced head CT, and hemorrhagic venous infarctions may be misinterpreted as parenchymal contusion, leading to an incorrect diagnosis of primary traumatic brain injury in infants. (Krasnokutsky MV. *Am J Roentgenol* 2011;197(3):W503-7).

## ENCEPHALOPATHIES

### **EARLY HYPOTHERMIA AND OUTCOME OF ACUTE ENCEPHALOPATHY AND ENCEPHALITIS**

Outcome of acute encephalopathy/encephalitis was compared in children treated with early or delayed cooling in a study at St Mary's Hospital, Fukuoka, and other centers in Japan. Children between 1 month and 14 years old, cared for at pediatric intensive care units at 10 Japanese tertiary centers, Jan 1997–July 2008, were retrospectively enrolled. Eight centers provided therapeutic hypothermia within 48 h of diagnosis. Of 43 children, 27 had a preceding viral infection, and 17 were influenza. Acute necrotizing encephalopathy was diagnosed in 8 children, hemorrhagic shock and encephalopathy syndrome in 5, and acute encephalopathy with refractory seizures in 16. The incidence of unfavorable outcome for children cooled after 12 h of diagnosis was invariant with normothermic children but was significantly higher compared with children cooled within 12 h. Younger age <18 months and marked elevation of serum lactic dehydrogenase (LD) greater than the 75<sup>th</sup> percentile were associated with severe disability or death after 12 months. Neurologic outcome evaluated using Pediatric Cerebral Performance Scale at 12 months was dependent on the CT findings of cerebral edema, serum LD levels and Glasgow Coma Scale at admission. (Kawano G, Iwata O, Iwata S, et al. Determinants of outcomes following acute child encephalopathy and encephalitis: pivotal effect of early and delayed cooling. *Arch Dis Child* October 2011;96:936-941). (Respond: Osuke Iwata, Department of Paediatrics, Kurume University School of Medicine, 67 Asahmachi, Kurume, Fukuoka, 830-0011 Japan. E-mail: [oiwata@orbix.uk.net](mailto:oiwata@orbix.uk.net)).

COMMENT. Early cooling in children with acute encephalopathy/encephalitis may be neuroprotective, whereas delayed cooling after 12 h of initial neurologic signs is likely to be deleterious.

**Whole-body hypothermia for newborns with HIE.** Researchers in Australia, New Zealand, Canada, and US determined the effectiveness and safety of moderate whole-body hypothermia (33.5C for 72 hours) commenced within 6 hours of birth in 110 term and near-term newborns with HIE. Compared to standard care in 111 infants, infants treated with hypothermia had a reduced risk of death or major sensorineural disability at 2 years of age: 51.4% infants in the hypothermia group and 66.3% in the control group died or were disabled (p=0.03). Mortality rate decreased and survival rate without disability increased. (Jacobs SE, Morley CJ, Inder TE, et al. *Arch Pediatr Adolesc Med* 2011;165(8):692-700). (Respond: Susan E Jacobs MD. E-mail: [suejacobs@thewomens.org.au](mailto:suejacobs@thewomens.org.au)).