

## CONGENITAL CNS MALFORMATIONS

### **FETAL MRI IN PRENATAL DIAGNOSIS OF CNS ABNORMALITIES**

The value of fetal MRI (fMRI) compared to ultrasound in the prenatal detection of CNS abnormalities and impact on counseling were determined in 25 pregnant women examined at University of Dusseldorf, Germany. Examination time was 27 to 51 minutes (41.8+/-6.1 min). Results were correlated with postnatal MRI, ultrasound and clinical follow-up. fMRI was performed 3-10 days after ultrasound between gestational week 22 and 34 (GW 26.1+/-3.6). Abnormalities suspected on fetal ultrasound were confirmed by fMRI in 8 cases. These included 2 cases of aqueductal stenosis hydrocephalus, and 1 each of hemimegalencephaly, microlissencephaly, ventriculomegaly, schizencephaly, brain tumor, and corpus callosum agenesis. Additional diagnoses or exclusions of suspected findings were established in 13 cases. The exclusions were corpus callosum agenesis in 4 cases and myelomeningocele, vermian aplasia, aqueductal stenosis, and Dandy-Walker malformation in 1 case each. Diagnoses were completely revised by fMRI in 4 cases. Postnatal MRI confirmed the fMRI findings in 11 patients. The quality of fMRI is technically comparable to postnatal MRI, and surgical treatment options are better defined than with ultrasound alone. (Messing-Junger AM, Rohrig A, Stressig R, Schaper J, Turowski B, Blondin D. Fetal MRI of the central nervous system: clinical relevance. **Childs Nerv Syst** February 2009;25:165-171). (Respond: AM Messing-Junger. E-mail: [m.messing@Asklepios.com](mailto:m.messing@Asklepios.com)).

COMMENT. fMRI is superior to fetal ultrasound in detection of congenital CNS abnormalities. In institutions with trained professionals, fMRI is recommended in addition to ultrasound in patients with suspected pathologies that may require surgical interventions and parent counseling.

### **FUNCTIONAL MRI OF SENSORIMOTOR CORTEX IN PRETERM INFANTS**

Functional MRI (fMRI) findings in a group of 5 pre-term infants were correlated with a unilateral passive forearm extension/flexion to relate the functional data to structural and behavioral data, in studies at the University of Bonn, Germany; and University Medical Center, Groningen, Netherlands. Measurement of blood oxygen level-dependent (BOLD) responses in the sensorimotor cortex showed bilateral activation during unilateral passive sensorimotor stimulation. The prevailing hemodynamic response was a negative blood oxygenation level-dependent signal. Positive blood oxygenation level-dependent response or failure to activate the sensorimotor cortex was found in patients with abnormal brain structural and behavioral problems. (Heep A, Scheef L, Jankowski J, et al. Functional magnetic resonance imaging of the sensorimotor system in preterm infants. **Pediatrics** January 2009;123:294-300). (Respond: Axel Heep MD. E-mail: [axel.heep@ukb.uni-bonn.de](mailto:axel.heep@ukb.uni-bonn.de)).