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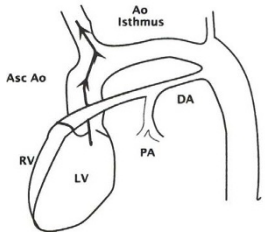
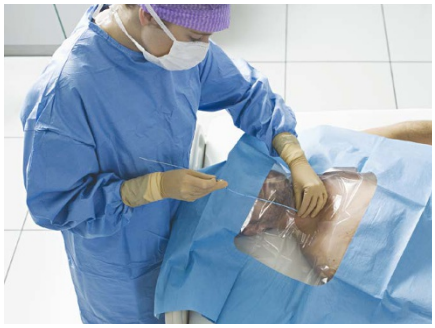
Cardiovascular malformations and brain growth



Cerebral development may be impaired in fetuses with congenital heart defects, particularly hypoplastic left heart syndrome and aortopulmonary transposition. In his Integrated Mechanism Review, Rudolph proposes that cerebral development might be adversely impacted by reduced glucose delivery instead of reduced oxygen. **See page 172**

Ultrasound-guided CVC insertion



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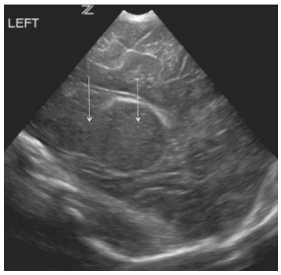
Literature regarding ultrasound (US)-guided central venous catheter (CVC) placement in children remains limited and conflicting. Lau and Chamberlain's meta-analysis examined the efficacy and safety of US-guided CVC placement among pediatric patients. Eight randomized clinical trials involving 760 patients were analyzed. US guidance of CVC insertion increased success rates by 31.8% and decreased the mean number of attempts required. A trend toward a decrease in the risk of accidental arterial puncture with the use of US-guided CVC insertion was also observed. **See page 178**

Brain imaging in encephalopathy

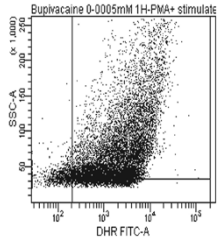


Tann and colleagues evaluated cranial ultrasound (cUS) scans of term infants with and without neonatal encephalopathy from a national referral hospital in Kampala, Uganda. Major evolving brain injury was reported in 21.2% of cases vs 1.0% of controls, and a major abnormality seen on early cUS indicated a significantly higher risk of neonatal death; the case fatality among those with a major abnormality was 53.9%. In this low-resource setting, there was no evidence of established antepartum insult, but in a high proportion of encephalopathic infants, early cUS imaging showed evidence of evolving brain injury. **See page 190**

Genetics of opiate addiction and ADHD

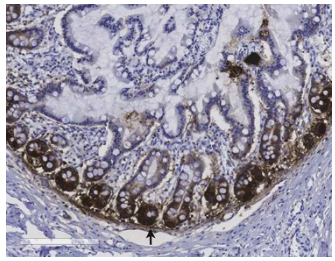
Polymorphisms in certain genes have been linked to attention deficit hyperactivity disorder (ADHD) and susceptibility to opiate addiction. Ornoy *et al*. investigated genetic markers that might predict susceptibility to ADHD and/or opiate addiction in opiate-addicted parents and their children. They examined the DNA of 64 heroin-addicted parents taking methadone and that of their children who had or had not been exposed to opiates prenatally. The results showed that serotonergic and dopaminergic risk alleles seem to be related mainly to opiate dependence, with no influence on the occurrence of ADHD. **See page 228**

Local anesthetics and fetal neutrophils



Whether local anesthetics exert anti-inflammatory effects in fetal and newborn systemic neutrophils is unclear. Billert and coauthors assessed the effects of bupivacaine and lidocaine on the respiratory burst of cord blood neutrophils *in vitro* compared with adult cells. Whole cord blood and control adult blood samples were incubated with bupivacaine and lidocaine. After one hour of incubation, the anesthetics decreased the respiratory burst in whole cord blood and adult neutrophils in a similar manner. **See page 258**

Paneth cells in the developing gut



Little is known about the perinatal development of Paneth cells (PCs) during gestation and its relationship to necrotizing enterocolitis (NEC). Heida and colleagues investigated when PCs arise and when they become immune-competent during gestation. They performed semiquantitative assessments of PC numbers in samples of ileum tissue of fetuses and infants. The number of immune-competent PCs increased significantly starting at 29 weeks of gestation, which corresponds to the peak incidence of NEC at a postmenstrual age of 29–33 weeks. **See page 306**