

Clippings

□ Acute Lung Injury (ALI) and Acute Respiratory Distress Syndrome (ARDS) as defined by the North American European Consensus Committee (NAECC) have not been applied systematically to the pediatric population. A prospective study of the risk factors associated with mortality in 328 children with ALI showed that (1) the initial severity of oxygenation defect, as measured by the $\text{PaO}_2/\text{FIO}_2$ ratio; (2) the presence of nonpulmonary and non-central nervous system (CNS) organ dysfunction; and (3) the presence of CNS dysfunction were independently associated with mortality and prolonged mechanical ventilation. Although 28% did not require mechanical ventilation at the onset of ALI, 46% of them eventually required intubation for worsening ALI. The study concluded that initial severity of arterial hypoxemia in children correlates well with mortality and a significant proportion with ALI/ARDS can be identified before endotracheal intubation is required. (*Am J Resp Crit Care Med* 2005; 171: 995-1001).

□ Analgesics for children with acute abdominal pain are often withheld for fear that they might mask physical examination findings but this viewpoint has been challenged recently in a prospective, randomized, double-blind, placebo-controlled trial where 104 children (4 to 15 years) with abdominal pain of less than 7 days' duration were screened, and 63 children with pain scores of 5 or higher on a 10-cm visual analog scale were randomized to receive either buccal oxycodone or normal saline placebo. The two groups were evaluated with regard to pain intensity difference, presence or absence of abdominal guarding, and diagnostic accuracy. The summed pain intensity difference was significantly greater in the oxycodone group ($p = 0.04$) and the diagnostic accuracy increased from 72% to 88% in the oxycodone group but remained at 84% in the placebo group. The

authors concluded that early administration of buccal oxycodone provides a significant pain relief to children with acute abdominal pain, without adversely altering the clinical signs or obscuring the surgical diagnosis. (*Arch Pediatr Adolesc Med* 2005; 159: 320-325).

□ Ischemia-reperfusion injury of tissues associated with free-radical-induced injury in newborns may correlate with the severity of Hypoxic Ischemic Encephalopathy (HIE). Antioxidants, which form the primary endogenous defense against such injury, were studied in cerebrospinal fluid (CSF) of new-borns with HIE. The activities of antioxidant enzymes [superoxide dismutase (SOD), glutathione peroxidase (GPX), and catalase (CAT)] were measured within first 72 hours in 30 full-term asphyxiated and 7 full-term non-asphyxiated neonates. Activity of SOD in CSF was significantly higher in infants with HIE ($p < 0.05$) but that of GPX and CAT were higher but not statistically significant ($p > 0.05$). The study found that both duration and severity of HIE modulate elevations of enzymatic activity as an adaptive response to excessive free radical production in CSF and these patterns may be useful for diagnostic and prognostic purposes. (*Biology Neonate* 2005; 88: 87-91).

□ About 1.1 million neonates die in developing countries due to pneumonia, sepsis and meningitis, with most deaths occurring at home. A community field trial was conducted in 39 villages in Gadchiroli, India to develop simple clinical criteria that allow health workers (HWs) to identify neonates with potentially fatal sepsis. Initially, trained HWs visited all neonates at home 8 times during the first 28 days of life, recording signs and outcome. An independent neonatologist assigned the cause of death and 31 signs as predictors of 43 sepsis deaths among

3567 neonates were evaluated. The results showed that simultaneous presence of any 2 of 7 signs (reduced or stopped sucking; weak or no cry; limbs becoming limp; vomiting or abdominal distension; baby cold to touch; severe chest indrawing; umbilical infection) predicted sepsis and death with sensitivity 100%, specificity 92%, positive predictive value 27.2% and negative predictive value of 100%. Any 1 of the 5 maternally observed danger signs (reduced sucking, drowsy or un-conscious, baby cold to touch, fast breathing and chest indrawing) gave 100% sensitivity and identified 23.9% neonates for seeking care. The criteria identified 10.6% of the neonates in the community as suspected sepsis, at a mean of 5.4 days before death and for every 4 presumptive cases treated, one potentially fatal case would also be treated by this approach. (*Pediatr Infect Dis J* 2005; 24: 335-341).

□ Three-quarters of preschool children in India are anemic and a cost-effective strategy for iron supplementation could be helpful for decreasing its prevalence. A rural community-based study of the effectiveness of daily versus biweekly iron-folic acid (IFA: 20 mg elemental iron and 0.1 mg folic acid/tablet - 2 tablets/dose) on change in hemoglobin (Hb) levels of preschool children (3-6 years) showed that adherence in biweekly and daily regimes was 89.05 per cent vs. 63.5 per cent and after 1 year, the mean Hb rise in daily and biweekly regime was 1.063 g/dl (SD: 1.6; $p=0.000$) and 1.053 g/dl (SD: 1.73; $p=0.001$), respectively. Overall reduction in point prevalence of anemia was 65.7 per cent in daily vs. 56.1 per cent in biweekly regimen ($p=0.0047$) and the authors concluded that both forms are effective but there is better adherence and lower drug costs associated with biweekly IFA administration. (*J Trop Pediatr* 2005; 51: 67-71).

□ Magnetic Resonance Imaging (MRI) provides a good assessment of the white matter damage in association with Hypoxic-Ischemic Encephalopathy. A study done to correlate

hypoxic-ischemic white matter damage on neonatal MRI with MRI appearance and neurological outcome at the age of 1.5 years showed that there was a moderately-good to good agreement between the general, motor, and visual neonatal and follow-up MRI scores and they provided a good prediction of the three neurological outcome measures (developmental delay, cerebral palsy, and cerebral visual impairment). The 32 patients with normal neonatal MRI scores were neurologically normal at 1.5 years on all three outcome measures, whereas 8 patients with seriously abnormal neonatal MRI scores were neurologically abnormal at 1.5 years on all three outcome measures. Their sensitivity, specificity, and predictive values were high, with little difference between the three MRI scores. (*Neuropediatrics* 2005; 36: 78-89).

□ Significant renal abnormalities may occur in children with Acute Lymphocytic Leukemia (ALL), which may affect the outcome of the disease itself. A study done to determine the frequency of electrolyte disturbances at diagnosis and their relationship with leukemic status before and after chemotherapy in patients with ALL showed that renal leukemic involvement was detected in 32 patients who had also presented with hyper-phosphatemia or hyperuricemia and patients with electrolyte disorders at diagnosis were less likely to have tumor lysis syndrome during induction chemotherapy. Hypocalcemia and hyponatremia at the time of diagnosis were found to be significant initial risk factors for renal scan abnormalities and microproteinuria, respectively ($P<0.05$) and these patients should undergo renal scanning during the late therapy period. (*J Pediatr Hematol Oncol* 2005; 27: 202-206).

□ Bloodstream infections (BSIs) have high attributable morbidity and mortality in the critical care setting and a retrospective review to identify factors that significantly contribute to immediate as well as eventual mortality in patients with bloodstream infections at a pediatric intensive

care unit (PICU) showed that having an underlying malignancy or immunodeficiency was the only independently significant predictor of eventual mortality for BSI and those with infection-related mortality more likely had Gram-negative bacteremia and/or fungemia, were older and had inadequate initial empiric antibiotic treatment at the time BSI was diagnosed. The authors concluded that targeted and aggressive early interventions should guide the empiric treatment of BSIs, whereas prolonged broad spectrum treatment should be minimized to avoid the emergence of resistant pathogen organisms. (*Pediatr Infect Dis J* 2005; 24: 309-314).

□ The use of High Dose Epinephrine (HDE) in cardiopulmonary arrest is still controversial and a multicenter randomized controlled trial was done to determine if HDE used during out-of-hospital cardiopulmonary arrest refractory to prehospital interventions improves return of spontaneous circulation, 24-hour survival, discharge survival, and neurological outcomes. A total of 230 patients with cardiopulmonary arrest due to "medical" or "traumatic" causes brought to 7 pediatric emergency departments were assigned to receive HDE (0.1 mg/kg for the initial dose and 0.2 mg/kg for subsequent doses) or SDE (0.01 mg/kg). Among medical patients, 25% experienced return of spontaneous circulation in the HDE group as compared with 15% in the SDE group ($P = 0.14$); and 17% of HDE patients and 8% SDE patients survived at least 24 hours ($P = 0.14$). Nine survivors to discharge received HDE, and 2 received SDE ($P = 0.21$) and there were no long-term survivors among the trauma patients. The authors concluded that HDE does

not improve or diminish return of spontaneous circulation, 24-hour survival, long-term survival, or neurological outcome compared with SDE in out-of-hospital cardiopulmonary arrest. (*Pediatric Emergency Care* 2005; 21: 227-237).

□ Randomized, prospective, controlled, double-blind trial comparing the efficacy of theophylline, terbutaline, or theophylline combined with terbutaline treatment in critically ill children with status asthmaticus who are already receiving continuous nebulized albu-terol and intravenous corticosteroids showed that there were no differences in clinical asthma score over time, length of pediatric intensive care unit stay, or incidence of adverse events between the three groups who received theophylline plus placebo (group 1), terbutaline plus placebo (group 2), or theophylline and terbutaline together (group 3). With the exception of a higher incidence of nausea in children in group 3, and the median hospital cost of medication and theophylline blood levels being significantly lower in group 1 compared with groups 2 and 3 (\$280 vs. \$3,908 vs. \$4,045, respectively, $p < 0.0001$), there were no significant difference between the three groups. The addition of theophylline to baseline therapy should be considered for use early in the management of critically ill asthmatic children. (*Pediatric Critical Care Medicine* 2005; 6: 142-147).

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