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NEONATAL ENCEPHALOPATHIES

OUTCOME PREDICTION RULE FOR NEONATAL HYPOXIC-ISCHEMIC ENCEPHALOPATHY

A prognostic model for term infants with postasphyxial hypoxic-ischemic encephalopathy (HIE) based on clinical and laboratory predictors available at age 4 hours was developed at Mount Sinai Hospital and Hospital for Sick Children, Toronto, Ontario. Inclusion criteria were (1) an Apgar score of <5 at 5 min, metabolic acidosis (base deficit >16 mmol/L), or delayed onset of breathing >5 min; (2) need for mechanical ventilation at birth; and (3) moderate to severe encephalopathy including altered state of consciousness and/or seizures. Exclusion criteria included encephalopathies associated with preterm birth, congenital abnormalities, inborn errors of metabolism, viral infection, birth trauma, and prenatal injury. The model was validated for severe adverse outcome, defined as death or severe disability (severe cerebral palsy, developmental delay, sensorineural deafness, or cortical blindness, singly or in combination). Of 302 infants with known outcomes, 204 had severe adverse outcome. Six independent predictors of outcome were identified: administration of chest compression >1 min, age at onset of respiration >30 min, base deficit >16, administration of epinephrine, seizure or coma before age 4 h, and cesarean delivery. Using 3 of the most significant predictors (chest compression, onset of respiration, and base deficit), the severe adverse outcome rate was 93%; it was 76% with any 2 predictors, 64% with 1 predictor, and 46% with none of the 3 predictors present. A sliding scale of probabilities could be used for outcome prediction and necessity for neuroprotective therapy. (Shah PS, Beyene J, To T, Ohlsson A, Perlman M. Postasphyxial hypoxic-ischemic encephalopathy in neonates. Outcome prediction rule within 4 hours of birth. *Arch Pediatr Adolesc Med* July 2006;160:729-736). (Respond: Dr Prakesh S Shah, Department of Paediatrics, Mount Sinai Hospital, Room 775A, 600 University Ave, Toronto, Ont, Canada M5G 1X5).

COMMENT. Postasphyxial HIE occurs in 1 to 2 infants per 1000 live term births (Low JA et al. 1997). A prediction model to determine outcome is important in the selection of patients for neuroprotective therapies such as hypothermia. The presence of 3 specific outcome predictor variables (chest compression, delayed onset of respiration, and base deficit) within 4 hours of birth is associated with a risk of severe adverse outcome in 93% of infants with HIE, while the absence of these 3 variables reduces the probability of a poor outcome to 46%. This prognostic model may complement EEG criteria for selection of cases.