

### Submitted by Esmot Ara Begum

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**INTRODUCTION:** Kangaroo care (KC) has been thought of as an important intervention for improving the care of low birth weight infants; however, the physiological effect of KC is still controversial.

**OBJECTIVE:** The aim of this study was to investigate physiological responses during KC.

**METHODS:** Sixteen low birth weight (<1600 g) infants with gestational ages of 24 to 32 weeks were studied. Heart rate (HR), respiration rate, pulse oxygen saturation (SpO<sub>2</sub>), and regional cerebral oxygenation (rSO<sub>2</sub>) were obtained in 3 periods continuously: before, during, and after KC. Spectral analysis was performed. Total amplitude, the power of low-frequency (LF; 0.06–0.10 Hz) band, high-frequency (HF, 0.15–0.40 Hz) band, and the ratio of LF/HF were calculated. Three groups were compared by analysis of variance.

**RESULTS:** Significant differences were not observed during KC in terms of mean HR, SpO<sub>2</sub>, and rSO<sub>2</sub>. By amplitude, these parameters were significantly decreased during KC ( $P < .001$ ) and increased after KC ( $P < .001$ ). The power of LF or HF was either significantly decreased during KC in HR, SpO<sub>2</sub>, and rSO<sub>2</sub> ( $P < .05$ ); however, the ratio of LF/HF was increased during KC in HR, whereas the ratio was decreased in rSO<sub>2</sub> ( $P < .05$ ).

**CONCLUSIONS:** These results suggest that KC influences the stability of rSO<sub>2</sub> as well as HR and SpO<sub>2</sub>. Discrete results in the LF/HF ratio of rSO<sub>2</sub> may indicate that KC has different effects on rSO<sub>2</sub> associated with cerebral function.

### AMNIOTIC FLUID TRANSFORMING GROWTH FACTOR $\beta$ AND THE DEVELOPMENT OF NEONATAL CHRONIC LUNG DISEASE

#### Submitted by Hiroyuki Ichiba

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**INTRODUCTION:** Chorioamnionitis can initiate fetal lung injury and result in neonatal chronic lung disease

(CLD). Although neonates with CLD have higher amniotic fluid concentrations of proinflammatory cytokines, overexpression of transforming growth factor  $\beta$  (TGF- $\beta$ ) also seems to be important in the pathogenesis of neonatal CLD.

**OBJECTIVE:** Our goal was to investigate how TGF- $\beta$  is related to fetal lung injury induced by chorioamnionitis.

**METHODS:** Forty-four amniotic fluid samples were obtained at delivery from preterm infants (median gestational age: 28 weeks; median birth weight: 908 g). TGF- $\beta$  and interleukin 6 (IL-6) concentrations in amniotic fluid were measured with enzyme-linked immunosorbent assays.

**RESULTS:** TGF- $\beta$  concentration in amniotic fluid correlated with IL-6 concentration ( $P < .0001$ ). Both TGF- $\beta$  and IL-6 concentrations in amniotic fluid increased with increasing histologic severity of chorioamnionitis (each  $P < .0001$ ). Coexisting presence of neonatal CLD and histologic chorioamnionitis was associated with significantly higher amniotic fluid TGF- $\beta$  and IL-6 concentrations than presence of neonatal CLD without histologic chorioamnionitis or absence of both (mean TGF- $\beta$  level: 454.3 vs 119.2 vs 151.8 pg/mL [ $P < .0001$ ]; mean IL-6 level: 5.14 vs 0.99 vs 1.64 ng/mL [ $P = .0005$ ]). Both TGF- $\beta$  and IL-6 concentrations in amniotic fluid correlated with duration of neonates' need for oxygen administration (each  $P < .0001$ ).

**CONCLUSIONS:** Amniotic fluid TGF- $\beta$  may be important in chorioamnionitis-induced fetal lung injury that results in neonatal CLD.

### AGE-RELATED SERIAL PLASMA CITRULLINE LEVELS IN PRETERM NEONATES

#### Submitted by Hariklia Ioannou

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**INTRODUCTION:** Citrulline is a nonessential amino acid that is synthesized almost exclusively in the small intestine. In adults and children with short-bowel syndrome, citrulline has served as a reliable index of the remaining small intestine length. Citrulline is also a precursor of arginine, the role of which is crucial for neonatal metabolism and growth.

**OBJECTIVE:** We sought to determine serial plasma citrulline levels of preterm neonates to assess levels in accordance with age and intestinal maturation, which may serve as a baseline in the event of intestinal abnormalities such as necrotizing enterocolitis (a devastating complication in this age group).

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