

Maternal Pulse Oximetry Perfusion Index And Adverse Neonatal Respiratory Outcome After Elective Caesarean Delivery.

De Felice C., Leoni L., Tommasini E., Pede O., Tonni G., Del Vecchio A., Ladisa G., Latini G. 2006; *Proceeding from the Annual Congress of European Academy of Paediatrics.*

Background and Aims

No reliable maternal predictors of adverse neonatal outcome at ELCS are known to date.

Methods

The value of maternal pulse oximetry [perfusion index (PI), pulse rate (PR), and oximetry (SpO₂)] monitoring during the elective cesarean section (ELCS) in identifying newborns with adverse respiratory outcome was assessed in a prospective casecontrol study. ELCS was subdivided into 9 phases. Analysis of pulse oximetry-derived signals, systolic (sys-BP), diastolic (dia-BP) and differential (diff-BP) blood pressure were recorded during the ELCS in 44 healthy mothers as a function of neonatal morbidity. Maternal arterial and newborn cord blood gas analysis and placental histology were performed.

Results

Significant variations in PI ($p < 0.0001$), PR ($p < 0.0001$), SpO₂ ($p < 0.0001$), sys BP ($p < 0.001$) and dia BP ($p < 0.001$) were observed. 13.6% of newborns showed early postnatal complications and increased illness severity scores ($p < 0.0001$). In 4/6 cases a subclinical chorioamnionitis was evidenced. Their mothers showed significantly decreased PI ($p < 0.0001$), and SpO₂ ($p < 0.0001$), increased PR ($p < 0.0001$), with increased sys-BP ($p = 0.0039$) and diaBP ($p = 0.0331$) as compared to controls. A maternal PI ≤ 2.15 during the pre-anesthesia phase of the ELCS showed N% 94.9% sensitivity (95% CI: 82.6-99.2) and 70.2% specificity (95% CI: 60.4-78.8) in identifying cases from controls (AUC = 0.881, SE: 0.028; 95% CI: 0.816-0.929; $p < 0.0001$).

Conclusions

Our findings indicate that a decreased PI value occurring in the pre-anesthesiology phase of the ELCS is a maternal predictor of increased neonatal morbidity, and is significantly related to subclinical placental inflammatory disease. These observations suggest the feasibility of a noninvasive pulse-oximeter prenatal screening of high risk newborns in ELCS.