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CORRELATION BETWEEN FETAL DOPPLER INDICES AND NEONATAL ACID-BASE STATUS AT BIRTH IN HEALTHY APPROPRIATE FOR GESTATIONAL AGE TERM FETUSES.

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Objectives: To evaluate the correlation between maternal and fetal Doppler waveforms and acid-base status at birth in healthy appropriate for gestational age (AGA) term fetuses.

Methods: Prospective observational cohort study in singleton pregnancies with scheduled cesarean section above 37 +0 weeks' gestation. Fetuses with estimated birthweight or fetal abdominal circumference \leq 10th centile, fetal abnormalities or aneuploidy were excluded. Umbilical artery pulsatility index (UA PI), middle cerebral artery PI (MCA PI), cerebroplacental ratio (CPR), normalized umbilical vein blood flow (nUV) and mean uterine arteries pulsatility index (Ut PI) were assessed. Multiples of the median (MoM) were calculated to adjust for gestational age. The acidbase status at birth was assessed by arterial and venous umbilical cord blood samples. Oxygen pressure (pO₂), pH, carbon dioxide pressure (pCO₂), base excess (BE), standard bicarbonate (SBC), oxygen saturation (O₂ sat.), lactate, fetal oxygen delivery and fetal oxygen uptake were recorded and correlated with Doppler measurements using Pearson correlation. $P < 0.05$ was considered significant.

Results: The study population included 48 fetuses. Median birthweight was 3295g (IQR 3120g-3550g). No patient showed signs of clinically overt maternal hypotension during spinal anesthesia. A significant negative correlation was found between Ut PI, arterial pH ($r=-0.3704$, $p=0.001$) and venous pH ($r=-0.3751$, $p=0.009$) and between the UA PI, arterial pH ($r=-0.3194$, $p=0.03$) and venous pH ($r=-0.3263$, $p=0.02$). The other acid-base parameters were not significantly associated with Ut PI or UA PI. Birthweight, MCA PI, CPR and nUV did not correlate with acid-base status at birth.

Conclusions: Acid-base status at birth in healthy appropriate for gestational age (AGA) fetuses delivered at term by Cesarean section reflects placental perfusion.

KEYWORDS: Doppler ultrasound, Placental blood flow.