

Assessment of normal materno-fetal circulation using umbilical and uterine artery pulsatility index

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Objective

To describe fetal and uteroplacental blood flow in healthy pregnancies by using parameters describing actual haemodynamic changes in both mother and fetus.

Methods

Umbilical artery (UA) pulsatility index (PI) is less reliable in detecting adverse perinatal outcome in third trimester. We would like to establish a parameter as sensitive as cerebroplacental ratio (CPR) that would include maternal circulation. Uterine artery (UtA) flowmetry is a considerable predictor of placental dysfunction. Investigators studied uterine artery and middle cerebral artery (MCA) ratio with ambiguous results. Data were collected prospectively and only healthy singleton pregnancies were included. All parameters UA, MCA, UtA PI were examined three times by one examiner.

Results

Data were obtained from 118 pregnancies all of them resulting in deliveries without complications of term newborns with normal pH. The mean gestational age at inclusion was 33, 5 weeks (SD 3, 3) and that at delivery 38 (SD 1. 4). Mean UA PI was 0. 93 (SD 0. 15), mean MCA PI was 1. 76 (SD 0. 30), mean UtA PI was 0. 74 (SD 0. 21). Cerebroplacental Doppler Ratio (CPR) and Cerebrouterine Doppler Ratio (CUR) (fig 1) were calculated.

Conclusion

We comprised CUR reference ranges for healthy Czech population. There is a significant correlation of CUR and gestational age. Further data collection will continue. In further plan we would like to apply these reference ranges in management of small for gestational age fetuses.

