EP02.02

The effect of placental location on uterine artery Doppler measurements

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Objectives: Optimum uterine blood flow is of pivotal importance needed for adequate implantation of the embryo and further development of the fetus. We hypothesise distribution of blood supply to the pregnant uterus is not uniform and dependant on placental location.

Methods: A total of 62 singleton pregnancies reporting at the Prenatal Diagnostic Centre of the MUMC+ between September 2012-February 2018 and having their placenta located on either the right or left side of the uterus, were evaluated retrospectively. Experienced sonographers determined the location of the placenta in relation to the midline. Left and right uterine artery (UtA) pulsatility index (PI) were measured using a 4-8 mHz abdominal transducer. Percentiles of the PI corrected for gestational age (GA) were calculated offline. A minimum of two measurements per patient was performed during all pregnancy trimesters. Statistical analysis was performed using Student T-test.

Results: In total, 184 uterine artery measurements were recorded between 10-38 weeks of gestation. The placenta was located right-sided in 77 cases (41.6%) and left-sided in 107 cases (58.4%). Mean left UtA-PI with a left-sided placenta was 1.1±0.6, compared to 1.4±0.7 with a right-sided placenta (p=0.002). Mean right UtA-PI with a left-sided placenta was 1.3±0.6, compared to 1.1±0.5 with a right-sided placenta (p=0.006). Furthermore, if we used the UtA-PI percentiles to correct for GA, differences remained statistically significant. Mean left UtA-PI showed in both left- and right-sided placenta a decrease of 0.04/week, compared to a mean right UtA-PI decrease of 0.03/week in both left- and right-sided placenta. No significant differences were found in birthweight or gestational age at delivery between right- or left-sided placentas.

Conclusions: These findings indicate a raised resistance in contralateral uterine arteries when compared with their ipsilateral counterparts in case of placenta laterality. Further research is needed to answer the principal question if this finding is already a preconceptional occurrence leading to placental laterality.

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IVF culture media in relation to placental vascularisation

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Objectives: There is substantial evidence that artificial reproductive techniques (ART)-pregnancies have a higher risk on impaired placentation, leading to adverse pregnancy complications and perinatal outcomes. The aim of this study was to investigate if culture media influences impaired placentation, displayed by 3D power Doppler measurements.

Methods: A cross-sectional study between October 2017 and March 2018 at the Maastricht University Medical Centre was conducted on 30 ART-pregnancies in which Vitrolife (VG5, n=21) and Continuous Single Culture product (CSCM, n=9) were used. Inclusion criteria were singleton pregnancy (naturally conceived, IVF or ICSI), maternal age ≥18 years and body-mass-index (BMI) <35kg/m2. 3D power Doppler measurements were performed by two trained ultrasonographers at 12 weeks of gestation using a 4-8 MHz abdominal transducer (VolusonS10, GE Healthcare). Using predefined settings, 3D power Doppler images at umbilical cord insertion (UCI) and in peripheral (P) parts of the placenta were obtained. Vascularisation Index (VI) was calculated offline, using VOCAL. Mann-Whitney U test was used for statistical analysis.

Results: Both study groups were comparable for maternal age, BMI and gestational age. Pregnancies originating from VG5-medium showed no significant difference in placental vascularisation compared to those originating from CSCM-medium at 12 weeks of gestation: UCI-VI 0.64±0.7% vs. 0.52±0.8% (p=0.374) and P-VI 0.70±1.1% vs. 1.47±1.6% (p=0.363). At 16 weeks of gestation UCI-VI was 0.98±0.9% vs. 3.73±5% (p= 0.560) and P-VI 0.98±0.9% vs. 3.73±7% (p=0.245).

Conclusions: Placental vascularisation at 12 and 16 weeks of CSCM-originated pregnancies showed promising results although no significant differences with VG5-cutlures embryos were observed so far. Future results of this research may reveal promising results for culture media on influencing vascularisation in early placentation, and improve clinical results.

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Placental lesions and uterine artery PI in early and late pre-eclampsia

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Objectives: To compare the uterine artery PI and the placental histopathological lesions in early and late pre-eclampsia.

Methods: In an observational prospective study uterine artery PI were measured and the placenta were examined histopathologically in 64 pregnant women, 32 with early onset pre-eclampsia and 32 with late onset pre-eclampsia. The differences were compared between two groups.

Results: Mean gestational age was 28.48±2.17 in early onset PE, and 34.91±0.19 in late onset PE (P<0.001). Mean UtA PI was 1.18±0.19 in early PE and 1±0.19 in late PE (P<0.039). Increased prevalence of both villous (37.8% versus 15.2%, (P=0.033)) and vascular placental lesions (58% versus 24.2%, (P=0.006)) were seen in early PE compared with late PE.

Conclusions: In early onset pre-eclampsia uterine artery PI was higher and placental lesions were more prevalent.

EP02.05

Placenta previa and low-lying placenta: is placental edge thickness a reliable predictor of perinatal outcomes?

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Objectives: Previous studies have suggested that placental edge thickness (ET) is a predictor of adverse outcomes for patients diagnosed with low-lying placenta (LLP) and placenta previa (PP). Thick placentas have significantly higher rates of APH and emergency Caesareans before 36 weeks gestational age (GA), as well as lower birth weight and NICU admissions. We aimed to validate this hypothesis and evaluate whether routine 3rd trimester assessment of ET would improve perinatal decision-making and delivery planning by predicting maternal and neonatal outcomes for patients with LLP or PP.

Methods: Retrospective observational study with 39 patients diagnosed with PP and LLP in 3rd trimester. Only 12 cases remained diagnosed as LLP or PP at delivery. Transvaginal scan images