

Methods: A prospective cohort study for the period 2012–2016 conducted at the University Hospital Maichin Dom which included 140 patients with IUGR, 84 of whom with pre-eclampsia and fetuses growth restriction and 56 patients with restriction due to placental insufficiency. Healthy controls from 100 patients. Growth restricted fetuses defined by abdominal circumference <10th percentile and umbilical artery PI >95th percentile. Arranged by gestational weeks in three groups - 26-31+6, 32-35+6, >36 gestational week studied sonography (BPD, HC, AC, FL, EFW) and Doppler study. Sensitivity, specificity, positive and negative odds ratios were calculated for each categorical value.

Results: Totally 32 are the fetuses delivery with pH<20 and BE<-12 mmol/l and Apgar score from 4-6 at the fifth minute. The absent diastolic flow in umbilical artery has a sensitivity 60.3%, specificity 84.6%, PPV 18%, NPV 97.4%, OR 84, $p<0.007$, a reversed a-wave of the ductus venosus has a sensitivity 75%, specificity 39.4%, PPV 10.5%, NPV 94.3%, OR 1.9, $p<0.334$.

Conclusions: According to the Doppler examination the absent diastolic blood flow in the umbilical artery and the reverse a-wave of Ductus venosus are with the highest prognostic value for fetus delivery with IUGR with pH<7.20 and BE<-12 mmol/l.

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Third trimester placental 3DPD quantification is feasible only for non-posterior placentas: first results from the prospective EVUPA study¹

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Objectives: Biomarkers, such as PLGF and SFIT1, offer a high predictive value for pre-eclampsia (PE) outcomes but functional imaging of the placenta remains challenging. 3D power Doppler (3DPD) is promising and the EVUPA study aimed to evaluate its clinical value in the third trimester. However, the intra- and interobserver reproducibility of placental 3DPD in the third trimester had first to be evaluated by calculating intraclass correlation coefficients (ICC).

Methods: 3DPD acquisitions were performed in 112 women after 30WG¹. ROI, i.e. the placenta, were manually traced with the VOCALTM software (30° steps) by the two observers (PG and OM) and the VI, FI & VFI were calculated. A 3-steps protocol was applied:

1. each observer independently attempted to trace ROI twice and a first round of ICC were calculated;
2. technical endpoints were identified to improve reproducibility when manual tracing was feasible;
3. a second round of independent tracing and ICC calculation was carried out.

Results:

1. 53 placentas were first analysed, and ICC were <0.4;
2. Two technical endpoints had a major influence over ICC: a clear identification of the ROI was possible only for non-posterior placentas and the region of the umbilical cord implantation had to be excluded;
3. 31 placentas could be analysed applying the consensual method. ICC were 0.98, 0.87 and 0.93 for VI, FI and VFI respectively (intraobserver) and 0.94, 0.7 and 0.92 (interobserver).

Conclusions: Despite encouraging previously reported data in the first and second trimester, 3DPD appears to be inapplicable in

routine during the third trimester. Reproducibility of 3DPD indices measurements was however excellent in very specific conditions: non-posterior placentas and experienced observers applying a consensual tracing methodology. Thus, 3DPD could be further evaluated as a research tool for functional imaging of the *in vivo* human placenta in normal and impaired pregnancies in the third trimester.

REFERENCE

1. Duan J *et al.* EVUPA. *BMJ Open*. 2016.

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Doppler surveillance across gestation and adverse perinatal outcomes in late onset fetal growth restriction

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Objectives: Evaluate Doppler parameter changes across gestation and their association with adverse perinatal outcome in late-onset fetal growth restriction (FGR).

Methods: Multicentre retrospective study which included non-anomalous singleton pregnancies complicated by late-onset FGR (32+0-36⁺⁶), as defined either by abdominal circumference (AC) or estimated fetal weight below the 10th percentile for the gestation or by a reduction of the longitudinal growth of the AC by over 50 percentiles compared to 2nd trimester anomaly scan, followed between 2014 and 2019. Ultrasound (US) follow-up included the weekly UA pulsatility index (PI) assessment, MCA PI, CPR, UCR and UtA PI. Doppler findings were compared between fetuses with and without adverse outcomes including stillbirth, obstetric intervention due to intrapartum distress, neonatal acidemia, birthweight <3rd percentile, transfer to neonatal intensive care unit (NICU) and composite adverse perinatal outcome (CAO), which was defined by the combination of at least two adverse perinatal outcomes.

Results: 468 cases were included. Doppler evaluation showed a lower CPR / higher UCR between 32 and 36 weeks in cases with CAO, while NICU admission was associated with lower CPR / higher UCR between 32 and 36 weeks and higher mean UtA PI between 32 and 35 weeks, compared to cases with no NICU admission. No difference in evaluated Doppler parameters was observed between 36 and 37 weeks (figure 1).

Conclusions: At 32–36 weeks, CPR/UCR & mean UtA PI were associated with adverse outcomes, however no differences were demonstrated beyond 36 weeks.

Supporting information can be found in the online version of this abstract

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Impact of antenatal corticosteroids on umbilical artery Dopplers in growth-restricted twin pregnancies

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Objectives: Assess the impact of antenatal corticosteroids (ACS) on umbilical artery Dopplers (UAD) in fetuses from twin pregnancies