Cardiovascular function in late-onset small for gestational age fetuses

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Methods

- Prospective case-control study (between 32 and 41 weeks)
- **2D-STE analysis**: n=154 lo SGA fetuses and n=139 healthy fetuses (mean GA: 36 weeks)
  - Offline analysis using the original acoustic frame rate. One heart cycle was selected by anatomical M-Mode
  - Longitudinal peak systolic strain (LPSS) and strain rate (LSR) of the left (LV) and right (RV) ventricle
- **Reproducibility analysis**: B-Mode, M-Mode (TAPSE, MAPSE), (Tissue-) Doppler imaging
  - Two independent observers (experienced vs. advanced) using intraclass correlation coefficients (ICCs)

**Objectives**

- To evaluate subclinical signs of cardiac remodeling in late-onset (lo) SGA using 2D speckle tracking echocardiography (STE)
- To assess interobserver variability of most frequently used cardiovascular function indices

**Results**

- **2D-STE analysis**: For 2D-STE analysis good quality of an apical four-chamber view in 101 controls (73%) and in 117 (76%) SGA
  - No significant difference regarding LPSS and LSR between late-onset SGA (BW 3-10th centile), FGR (BW <3rd centile) and control fetuses for both ventricles
  - **Reproducibility analysis**: n=33 lo SGA and n=37 healthy fetuses at 35.7 ± 2.7 weeks
  - Good reproducibility for most of the echocardiographic parameters
  - Moderate reproducibility: LV MPI
  - Poor reproducibility: Aortic IMT

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**Table 1**: 2D-STE indices (lo SGA vs. Controls)

**Table 2**: Reproducibility of fetal cardiovascular function echocardiographic parameters

**Conclusions**

- LPSS and LSR values for both ventricles showed no significant difference between late-onset SGA, FGR and control fetuses
- Measurement of fetal cardiovascular function is technically achievable