

## Fetal Doppler parameters as predictors of fetal cardiac function in late-onset fetal growth restriction (FGR): a prospective study

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**Objective.** The aim of the study was to evaluate the relationship between fetal Doppler parameters and functional echocardiography in a population of late-onset growth restriction fetuses (LFGR).

**Materials and Methods.** A single center prospective study including a consecutive series of non-anomalous singleton pregnancies with suspected LFGR. During routine follow-up, the assessment of fetal Doppler (umbilical artery (UA) and middle cerebral artery) was performed. Moreover, two-dimensional clips of the four-chamber view of the fetal heart were prospectively collected. The cohort population was divided into two groups: LFGR with normal UA Doppler (Group I) and LFGR with UA > 95<sup>th</sup>P (Group II). One dedicated operator effected a speckle tracking functional echocardiography with TomTec GmbH software.

Correlation between Doppler parameters and the fetal cardiac indexes was described with cross-sectional analysis.

**Results.** 17 cases fulfilling the eligibility criteria were included, and 61 cross-sectional measurements were analysed. A significantly higher Ejection Fraction (EF) (60 vs 55.1,  $p = 0.03$ ) and Left Ventricle (LV) circumferential strain (-31 vs -25.7,  $p = 0.04$ ) was found in group I compared with group II. A sub-analysis on a selected population of fetuses with a weight between the 3<sup>rd</sup> and the 10<sup>th</sup> percentile at birth was also performed. A significantly reduced LV global longitudinal strain (-18.6 vs -21.9,  $p = 0.01$ ), LV global radial strain (-31.1 vs -47.5,  $p = 0.003$ ), LV global circumferential strain (-24.4 vs -31.6,  $p = 0.03$ ) and EF (52.5 vs 60.2,  $p = 0.004$ ) was reported in Group I compared with Group II.

**Conclusions.** In a population of LFGR fetuses, a relationship was demonstrated between the UA Doppler and the left ventricular function.