Cardiac dysfunction in fetal growth restriction (FGR) measured by means of myocardial performance index (MPI)

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Introduction:
• FGR is associated with fetal cardiac global dysfunction as an adaptive mechanism of the cardiovascular system.
• This is f.e. measurable by pulse wave doppler derived MPI (Hernandez-Antrade et al. 2012).
• The myocardial dysfunction results in increased MPI values (Crispi F et al. 2015).

Methods
• prospective case control study
• n=22 severe FGR and n= 16 AGA (appropriate for gestational age) 24-39 weeks of GA
• left mod MPI = (ICT+IRT)/ET ( fig 1)

Results
• significant increased MPI in FGR fetuses versus AGA fetuses (fig 2a)
• no correlation between cerebro-placental-ratio (CPR) </> 1 and MPI (fig 2b)
• demografic data for mothers did not differ between the groups
• fetal measurements: increased PI UA (pulsatility index of umbilical artery)
• neonatal outcome: increased morbidity in FGR group: lower birth weight, gestational age and APGAR at childbirth, higher need for NICU

Conclusion
• These findings confirm previous studies reporting clear evidence of cardiovascular dysfunction in FGR.
• MPI is a noninvasive marker of global myocardial function and a sensitive tool for detection of early fetal cardiac dysfunction.
• These data show a possible adaptive cardiac remodelling even before blood redistribution due to hypoxemia (pathologic CPR) occur.