Fetal cardiac function in pregnancies complicated by fetal growth restriction undergoing induction of labour

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DOI: 10.36129/jog.2022.S28

Objective. To investigate fetal cardiac function in fetuses with late fetal growth restriction (FGR) prior to the induction of labour with mechanical.

Materials and Methods. Prospective multicenter study including singleton pregnancies complicated by late FGR and SG. Left and right sphericity index (SI), myocardial performance index, mitral (MAPSE) and tricuspid annular valve displacement were compared between the two groups. Analysis was stratified according to the occurrence of adverse perinatal outcome defined as the sum of cesarean section for fetal distress, abnormal acid base status and admission to neonatal intensive care unit.

Results. Four hundred and five pregnancies were included. Adverse perinatal outcome was detected in 21% of pregnancies. There was no significant difference in the maternal and pregnancy characteristics between the two groups. Fetuses with late FGR experiencing adverse perinatal outcome in labor had a lower median left (1.48, IQR 1.35-1.67 *vs* 1.527, IQR 1.26-1.17 *vs* , $p < 0.001$) and right (1.19, 95%CI 1.16-1.27 *vs* 1.36, IQR 1.12-1.43, $p = 0.003$). Fetuses with FGR experiencing adverse perinatal outcome also showed an impaired MPI compared to those having uncomplicated vaginal delivery, mainly due to the higher isovolumic relaxation time (67.1 ± 5.2 *vs* 51.4 ± 1.8, $p < 0.001$). Finally, fetuses with FGR had longer TAPSE (6.9 ± 0.2 *vs* 5.2 ± 0.2, $p < 0.001$) and MAPSE (5.8 ± 0.7 *vs* 4.6 ± 0.1, $p < 0.001$) compared to SGA fetuses.

Conclusions. Assessment of fetal cardiac function can predict the occurrence of adverse perinatal outcome in pregnancies undergoing IOL for late FGR.