Fetal cardiac function in pregnancies complicated by fetal growth restriction and small for gestational age

Marina **Piergianni** *, Martina **Mercaldi**, Francesca **Di Sebastiano**, Danilo Italo Pio **Buca**, Marco **Liberati**, Francecso **D'Antonio**

Center For High-Risk Pregnancy and Fetal Care, Department of Obstetrics and Gynecology, University of Chieti, Chieti, Italy.

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Objective. To investigate fetal cardiac function in fetuses with late fetal growth restriction (FGR) and small for gestational age (SGA).
Materials and Methods. Prospective study including singleton pregnancies complicated by late FGR and SGA according to the recently published Delphi consensus. Left and right sphericity index (SI), myocardial performance index, mitral (MAPSE) and tricuspid annular valve displacement were compared between the two groups. T-test and Mann-Whitney U test were used to analyze the data.
Results. Sixty-seven fetuses with FGR and 111 SGA were included in the analysis. There was no significant difference in the maternal and pregnancy characteristics between the two groups. Fetuses with late FGR had a lower median left (1.42, IQR 1.25-1.61 *vs* 1.57, IQR 1.46-1.68 *vs*, $p < 0.001$) and right (1.23, 95%CI 1.17-1.37 *vs* 1.46, IQR 1.33-1.59, $p < 0.001$). Fetuses with FGR also showed an impaired MPI compared to SGA, mainly due to the higher isovolumic relaxation time (65.3 ± 4.2 *vs* 42.4 ± 2.3, $p < 0.001$), while there was no difference in the ejection time and isovolumic contraction time between the two groups. Finally, fetuses with FGR had longer TAPSE (6.2 ± 0.3 *vs* 5.7 ± 0.6, $p < 0.001$) and MAPSE (5.6 ± 0.4 *vs* 4.2 ± 0.3, $p < 0.001$) compared to SGA fetuses.
Conclusions. Fetuses with FGR have a sub-optimal cardiac function compared to those with SGA.