EP20.02 - Customized reference ranges for umbilical artery Doppler fluximetry according to estimated fetal weight: a prospective longitudinal study

Angelo Sirico¹², Kurt Hecher¹, Gerhard Schön³, Janina Goletzke¹, Anke Diemert¹

1. Obstetrics and Fetal Medicine, University Medical Center Hamburg-Eppendorf, Hamburg, Germany. 2. Neurosciences, Reproductive and Dentistry Sciences, University of Naples Federico II, Naples, Italy. 3. Medical Biometry and Epidemiology, University Medical Center Hamburg-Eppendorf, Hamburg, Germany.

Objectives: The aim of our study was to establish reference ranges for umbilical artery (UA) Doppler parameters according to estimated fetal weight (EFW).

Methods: Data from 549 women participating in the PRINCE study, a prospective low-risk population-based cohort study, were used. UA pulsatility index (PI) and resistance index (RI) values were allocated according to EFW centiles into three groups: small for gestational age (SGA) <10th centile; appropriate for gestational age (AGA) and large for gestational age (LGA) >90th centile. Fitted regression modeling was performed to evaluate the different distribution of UA Doppler parameters according to the ultrasound gestation week, different EFW groups, fetal sex, week at delivery, the interaction effect of EFW group and ultrasound gestation week and the cluster effect due to repeated measurements in the same patient.

Results: We included in our analysis data on 1575 scans performed between 2011 and 2018. Mean UA-PI and UA-RI values in the LGA group were lower than in the AGA and SGA groups (p<0.001). Longitudinally established percentiles of Doppler indices to EFW groups were calculated.

Conclusions: Different reference ranges for UA Doppler parameters according to EFW groups may be useful to not overestimate the risk of fetal distress in constitutionally small fetuses and to highlight increased Doppler resistances in LGA fetuses at values that are considered normal for current published reference ranges.