Early third trimester maternal cardiac morphometry in high-risk pregnancies of placental insufficiency

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DOI: 10.36129/jog.2024.S59

Objective. To compare maternal cardiac morphometry at 27-28 weeks in high-risk pregnancies according to the development of late PE or SGA.

Materials and Methods. A cohort of high-risk pregnancies meeting RCOG criteria was constructed.

Maternal echocardiography was performed at (27+0 -28+6weeks). Parasternal long axis, apical 4-chamber and 5-chamber views were evaluated. SBP, DBP and MAP were measured. Left atrium and Left ventricle (LV) volumes were estimated using an image analysis platform, blindly to the perinatal outcomes.

SGA was defined as a BW < 10th centile according to local curves and PE according ISSHP guidelines.

Three non-exclusive groups were defined: group 0 with no PE nor SGA; group 1 with PE (± SGA); and group 2 with SGA (± PE). Group 0 was compared to group 1 and group 2. The differences between groups were paired-wisely analysed by quantile regression of the median, adjusted by maternal height.

Results. 350 pregnancies were included: 22 pregnancies with PE (± SGA) and 59 pregnancies with SGA (± PE). Mean maternal age was 35.5 years (SD 5.2) and mean pre-pregnancy BMI 24.6 kg/m^2 (SD 5.3). Mean GA at the examination was 28.1 (SD 0.86). Non-exclusively, twelve patients (3.4%) had chronic hypertension and 9 (2.6%) maternal heart disease.

In SGA group, left atrium diastolic volume and LV diastolic volume were significantly lower (16.3 *vs* 19.0 ml, p = 0.00456 and 128.3 *vs* 143.6 ml, p = 0.00624, respectively) and LV end-diastolic diameter was smaller (4.3 *vs* 4.6 cm; p = 0.0007).

Conclusions. At 27-28 weeks, high-risk pregnancies subsequently developing late SGA showed smaller volumes of the left heart.