Longitudinal changes of systemic vascular resistances in pregnancies complicated by hypertensive disorders and/or foetal growth restriction

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Objective. To study the longitudinal trend of maternal systemic vascular resistances (SVR) in pregnancies complicated by hypertension (HDP) and/or foetal growth restriction (FGR).

Materials and Methods. Singleton pregnancies were enrolled at the first trimester screening. SVR was assessed by USCOM® at each trimester of pregnancy. After the follow-up at delivery, our population was divided, according to the complications in chronic hypertension (CH), HDP with appropriate for gestational age foetuses (HDP-AGA), HDP associated with foetal growth restriction (HDP-FGR), isolated FGR (i-FGR). The control group was recruited among uneventful pregnancies of this cohort. We performed a longitudinal Bayesian multivariate mixed effects model, corrected both for pre-gestational BMI and gestational age at diagnosis.

Results. In this cohort of 519 patients, we observed 24 cases of CH, 19 HDP-AGA, 3 HDP-FGR, 12 i-FGR. The SVR of these cases were compared with 40 randomly selected controls. The SVR showed the same longitudinal trend in all groups, with an average decrease (-164.9, 95%CI -214.3 to -113) from the first trimester to the second, and a smaller difference between the first and the third trimester (-54.4, 95%CI -105.5 to -2.6). This trend of SVR was similar in i-FGR and controls, while SVR was higher and comparable in HDP-AGA and CH. The HDP-FGR showed the highest mean increase (+549.7, 95%CI 252.8-856.2) compared with controls.

Conclusions. The trend of SVR during pregnancy is the same in physiological pregnancies and in those complicated by HDP and/or FGR. The HDP-FGR group has the highest values starting from the first trimester.