

EP07.38 Longitudinal Changes in Maternal Hemodynamics in Pregnancies with Small for Gestational Age and Preeclampsia

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Background

Small for gestational age (SGA), and preeclampsia (PE) are both strongly associated with maternal cardiac maladaptation. However, the longitudinal dynamic changes of maternal hemodynamics when these two pathological conditions coexist remain insufficiently elucidated.

Objective

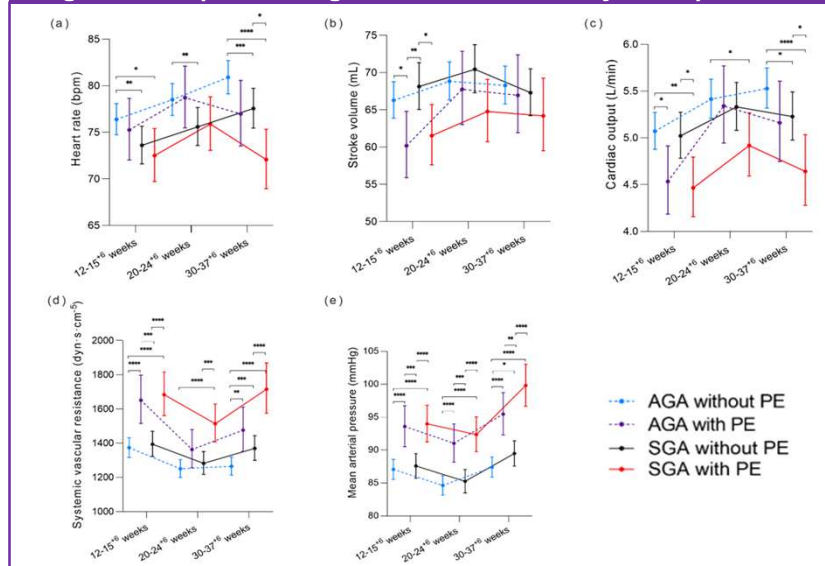
To investigate the hemodynamic alterations across three trimesters in subgroups stratified by PE and SGA and explore the interaction between PE and SGA.

Methods

This prospective longitudinal study included 1144 Chinese women with singleton pregnancies. They were categorized into four groups: appropriate for gestational age (AGA) without PE (n=840), AGA with PE (n=43), SGA without PE (n=204), and SGA with PE (n=57). Maternal hemodynamic parameters, including CO, SV, SVR, MAP, and HR, were measured at three visits (12–15+6, 20–24+6, and 30–37+6 weeks).

Linear mixed-effects models were used to compare dynamic hemodynamic profiles, adjusting for specific confounding variables. Estimated marginal means were calculated, and pairwise comparisons were performed with holm correction.

Figure 1. Temporal changes of maternal hemodynamic parameters



Conclusion

- Both SGA and PE are associated with maternal cardiovascular abnormalities:
SGA -- persistent low HR and high SVR in late pregnancy;
PE -- low CO in early pregnancy and persistent high SVR.
- Women with SGA and PE exhibit a persistent hypodynamic, high-resistance hemodynamic profile throughout pregnancy.

Results

- Compared with **AGA without PE**, **AGA with PE**: SV ↓ and CO ↓ in the 1st trimester; SVR ↑ and MAP ↑ throughout pregnancy;
SGA without PE: CO ↓, SVR ↑ and MAP ↑ in the 3rd trimester; HR ↓ throughout pregnancy;
SGA with PE: HR ↓ and CO ↓ in the 1st and 2nd trimester; SVR ↑ and MAP ↑ throughout pregnancy.
- Compared with **AGA with PE**, **SGA without PE**: SV ↑ and SVR ↓ in the 1st trimester; MAP ↓ throughout pregnancy;
SGA with PE: no difference in all parameters.
- Compared with **SGA without PE**, **SGA with PE**: SV ↓ in the 1st trimester; HR ↓ in the 3rd trimester; CO ↓, SVR ↑ and MAP ↑ throughout pregnancy.

CO, cardiac output; SV, stroke volume; SVR, systemic vascular resistance; MAP, mean arterial pressure; HR, heart rate.