

Predicting the risk of persistent postpartum hypertension using clinical and peripartum echocardiographic findings

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Objective

To assess the effectiveness of clinical pregnancy-related data and maternal transthoracic echocardiographic (TTE) indices in predicting persistent postpartum hypertension after hypertensive disorder of pregnancy (HDP).

Methods

In a longitudinal prospective study, women with a pregnancy affected by HDP were recruited between February 2019 and August 2021. Patients with pre-existing chronic hypertension before pregnancy were excluded. All participants underwent peripartum and postpartum cardiovascular assessments, including a BP profile and TTE. The postpartum outcome was persistent hypertension (blood pressure $\geq 140/90$ mmHg and/or the use of anti-hypertensive medication) from three months after giving birth. Univariable and multivariable analyses assessed the association between clinical and echocardiography factors and persistent hypertension.

Results

211 HDP women had both peripartum and postpartum cardiovascular evaluations. At postpartum follow-up, 70 out of 211 (33.2%) remained hypertensive. Compared to normotensive women, women with persistent hypertension were older, more likely to be Afro-Caribbean, overweight, and had elevated mean arterial pressures (MAP) across pregnancy. Moreover, they showed significantly higher cardiac remodelling (higher left ventricular mass (LVM) and relative wall thickness (RWT)), lower E', higher E/E' and lower global longitudinal strain (GLS) than normotensive women at their peripartum assessment. When echocardiographic findings were adjusted for maternal characteristics, LVM, RWT and early GLS rate remained associated with persistent postpartum hypertension. A prediction model combining clinical (maternal age and first-trimester MAP) and echocardiographic (LVMI >75 g/m², RWT >0.42 and E/E' >7) data showed excellent discrimination in identifying women with HDP who had persistent postpartum hypertension (AUC 0.85, 95% CI 0.79-0.90).

Conclusion

Cardiovascular screening in the peripartum period with maternal characteristics and echocardiographic indices could effectively identify those women with HDP who will present with persistent hypertension at six months postpartum. After external validation, this tool could identify women who would most benefit from aggressive primary cardiovascular prevention through intensive BP monitoring and/or pharmacological strategies.