Combined predictive model of birthweight at diagnosis of early and late-onset pre-eclampsia

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Aim
To analyze the combined predictive role of uterine artery (UtA) Doppler, maternal characteristics and fetal biometry for estimation of birthweight in patients with diagnosis of pre-eclampsia (PE).

Methods
Retrospective cohort study of patients with fetal ultrasound and UtA Doppler assessment at diagnosis of global (g-PE), early-onset (e-PE) and late-onset PE (l-PE) and complete perinatal outcome. Maternal characteristics were obtained before ultrasound and stored at a dedicated database. Fetal biometry and Doppler values were expressed as z-score. Spearman test was used for correlation between birthweight z-score and UtA z-score. A multivariate linear regression analysis for birthweight prediction combining maternal characteristics, fetal biometry and UtA Doppler was determined.

Results

<table>
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<tr>
<th>PE w/UtA at diagnosis</th>
<th>N = 143</th>
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<td>e-PE (36.4%)</td>
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<td>I-PE (63.6%)</td>
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$R^2$ BW z-score & UtA z-score

- 0.21 ($p=0.04$)
- -0.50 ($p=0.0002$)

BW model

EFW z-score, previous PE, smoking ($r=0.87$; $p=0.0001$)

UtA z-score, fetal abdominal circumference ($r=0.80$; $p=0.0001$)

Conclusion
Uterine artery Doppler is a good predictor of birthweight in patients with pre-eclampsia, mainly in those that delivered after 34 weeks of gestation. These results bring new evidence on the role of placental dysfunction in l-PE.