



Longitudinal changes in cardiovascular and biochemical markers in women at high risk for preeclampsia

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Objective

To assess the longitudinal behaviour of laboratory and echocardiographic parameters in women with high-risk for preeclampsia (PE) compared to controls.

Methods

Longitudinal prospective study that included patients after 1st trimester (1T) screening for PE, classifying them as high- or low-risk. Participants attended two visits: one after 1T ultrasound and at 28-32weeks (3T). Blood samples were collected for hematological, biochemical, and cardiovascular analysis, and maternal echocardiography was performed. A mixed model for repeated measures analyzed variable evolution by PE risk and evaluation.

Results

258 women with high-risk for PE and 97 low-risk were included, with follow-up data available for 256 and 92 cases, respectively. Women at high-risk showed worse body mass index and blood pressure throughout gestation (systolic BP 118 ± 12 mmHg 1T vs 120 ± 13 mmHg 3T; $p < 0.001$ and diastolic BP 72 ± 8 mmHg 1T vs 74 ± 9 mmHg 3T; $p < 0.001$). Triglycerides (135 ± 54 mg/dl 1T vs 237 ± 85 mg/dl 3T; $p < 0.001$) and angiogenic factors' ratio (18 ± 17 1T vs 33 ± 68 3T; $p = 0.004$) increased significantly as pregnancy progressed in the high-risk group. Echocardiography also showed changes in cardiac morphology (LA volume 47 ± 13 mL 1T vs 49 ± 13 mL 3T; $p = 0.007$), with thicker ventricular walls (0.8 ± 0.1 cm 1T vs 0.9 ± 0.1 cm 3T; $p < 0.001$), and diastolic function (LV A wave 67.2 ± 15 cm/s 1T vs 66.2 ± 15 cm/s 3T; $p < 0.001$ and E/E' ratio 9.2 ± 2.5 1T vs 9.3 ± 2.1 3T; $p = 0.009$) indicating a trend toward subclinical dysfunction that was more pronounced over time in the high-risk group.

Conclusions

High-risk for PE women showed significant and more pronounced changes towards cardiovascular maladaptation during pregnancy, indicating an early insult that persists and progressively deteriorates throughout gestation.