Associations between blood pressure variability and perinatal outcomes

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Objective. This study aimed to investigate the impact of maternal haemodynamics in preeclampsia on nontraumatic perinatal central nervous system disorders.

Materials and Methods. A case-control study conducted between 2007 and 2014, involving 705 pregnant women, with 339 diagnosed with preeclampsia (baseline group) and 366 without (control group). Gestational age ranged between 28+0 weeks gestation (w.g.) and 41+6 w.g. Maternal haemodynamic changes were assessed, focusing on systolic blood pressure variability.

Results. Significant associations were observed between systolic blood pressure fluctuations and perinatal outcomes. In preeclamptic pregnancies, there was a higher prevalence of blood pressure parameter fluctuations, during the pre-delivery period. The presence of at least one systolic blood pressure spike greater than 30 mm Hg was detected in 54.3% of cases in the preeclamptic group compared to 30.0% in the control group. When comparing the presence of 2 or more cases of systolic blood pressure fluctuations ≥ 30 mmHg, significant differences were observed. In preeclamptic women with nontraumatic perinatal brain lesions, 14 cases were recorded (40.0%) 95%CI 23.8-56.2, while in preeclamptic women without nontraumatic perinatal brain lesions there were 8 cases (11.4%) 95%CI 4.0-18.8. The differences were confirmed by χ^2 11.5, GL 2, $p < 0.003$.

Conclusions. Fluctuations in blood pressure values during pregnancy, especially in preeclamptic cases, may exacerbate foetal hypoxia and increase the risk of perinatal central nervous system damage. The study underscores the importance of monitoring maternal haemodynamics in preeclampsia to mitigate adverse perinatal outcomes.