Arterial stiffness and endothelial function after preeclampsia: can they predict the outcome of the subsequent pregnancy?

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Objective. In this longitudinal prospective cohort study, we aim to investigate the association between vascular function after preeclampsia (PE) and recurrence of gestational hypertensive disorder (GHD). We hypothesise that women with more pronounced vascular dysfunction after PE, have a higher recurrence risk on GHD in the subsequent pregnancy.

Materials and Methods. Vascular function was measured in the postpartum period after a first event of PE. Arterial stiffness was assessed by carotid-femoral pulse wave velocity (cfPWV), augmentation index (Aix) and heart rate-corrected augmentation index (Aix75). Endothelial function was determined by flow-mediated dilatation (FMD), modified FMD (mFMD) and low-flow mediated constriction (L-FMC). Vascular function was compared between women with and without recurrent GHD (Mann-Withney U test).

Results. Forty-nine patients presented with PE. Average post-partum period for measurement of vascular function was 6.2 months (IQR 6.4). The average pregnancy interval was 31.1 months (12.2-68.5). Thirty-seven (75.5%) patients remained normotensive in their subsequent pregnancy, while 12 patients developed GHD (of which 7 PE).

In the GHD group, cfPWV, Aix and Aix75 was significantly higher compared to patients that remained normotensive (respectively 33.29 *vs* 22,31; p = 0.021 – 35.29 *vs* 20.90; p = 0.002 – 36.75 *vs* 20.42; p = 0.000). L-FMC was significantly lower in GHD compared to the normotensives (11.90 *vs* 23.37; p = 0.007). No significant differences could be found for FMD and mFMD.

Conclusions. In our study, vascular dysfunction after PE is associated with GHD in the following pregnancy. Measuring vascular function after PE might be helpful in evaluating the recurrence risk of GHD.