

## Evaluation of maternal skin microvascular reactivity by laser speckle contrast imaging in pregnancies complicated by preeclampsia and foetal growth restriction

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**Objective.** To study parameters of microvascular reactivity, assessed by laser speckle contrast imaging (LSCI) combined with post-occlusive reactive hyperaemia (PORH), in pregnancies complicated by preeclampsia and/or foetal growth restriction (FGR) and to compare them with uncomplicated pregnancies.

**Materials and Methods.** We enrolled 25 singleton pregnancies complicated by preeclampsia and/or FGR, and 25 women with uncomplicated pregnancies (controls) matched for gestational age. Skin blood flux at the dorsal hand was recorded using LSCI coupled with PORH before (baseline flux), during (occlusion flux) and after (peak flux) a 3-minutes occlusion obtained with an inflated pneumatic cuff. The percentage increase in flux from baseline to the maximal post-occlusive response (base-to-peak flux) was recorded.

**Results.** 12/25 cases had both FGR and preeclampsia, 12 had FGR alone, and one had preeclampsia alone. The base-to-peak flux was significantly lower in pregnancies complicated by placental dysfunction compared to the uncomplicated controls (mean and SD:  $215.5 \pm 61.2\%$  versus  $283.6 \pm 64.2\%$ ,  $p < 0.001$ ), which indicated impaired microvascular reactivity in the former group. Pregnancies complicated by preeclampsia also showed significantly decreased microvascular function compared to those with FGR without preeclampsia ( $190.5\%$  vs  $246.2\%$ ,  $p = 0.018$ ).

**Conclusions.** Pregnancies complicated by placental-related disorders, particularly preeclampsia, present impaired maternal microvascular function. The potential use of the LSCI technique as an adjunctive tool for predicting and diagnosing preeclampsia deserves further investigation.