138

MICROVASCULAR REMODELLING IN PREECLAMPSIA; QUANTIFYING CAPILLARY RAREFACTION ACCURATELY AND INDEPENDENTLY PREDICTS PREECLAMPSIA

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Background Preeclampsia is a major cause of maternal and neonatal mortality and morbidity. There is increasing evidence to suggest widespread microcirculatory abnormalities before the onset of pre-eclampsia. We have recently reported that women who later on in pregnancy developed preeclampsia had significant reduction in their skin capillary density (ie, rarefaction) before the onset of pre-eclampsia. We hypothesised that quantifying capillary rarefaction could be helpful in the clinical prediction of preeclampsia.

Methods We measured skin capillary density according to a well-validated protocol at 5 consecutive predetermined visits in 322 consecutive Caucasian women, of which 305 subjects completed the study.

Results We found that structural capillary rarefaction at 20–24 weeks gestation yielded a sensitivity of 0.87 with a specificity of 0.50 at the cut-off of 2 capillaries/mm^2 with the Area Under the Curve of the Receiver Operating Characteristic value of 0.70 whilst capillary rarefaction at 27–32 weeks gestation yielded a sensitivity of 0.75 and a higher specificity of 0.77 at the cut-off of 8 capillaries/mm^2 with ROC AUC value of 0.82. Combining capillary rarefaction with uterine artery Doppler pulsatility index increased the sensitivity and specificity of the prediction. Multivariate analysis shows that the odds of preeclampsia are increased in women with previous history of preeclampsia or chronic hypertension, in those with increased uterine artery Doppler pulsatility index, but the most powerful and independent predictor of preeclampsia was capillary rarefaction at 27–32 weeks.

Conclusions Quantifying structural rarefaction of skin capillaries in pregnancy is a potentially useful and accurate clinical marker for the prediction of preeclampsia.