**Long-Term Effects of Hypertensive Disorders of Pregnancy on Central Blood Pressure, Microcirculation and Cardiovascular Diseases: A Cross-Sectional Case Control Study**

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**Introduction:**

The risk of cardiovascular disease (CVD) increases in women with a history of hypertensive disorders of pregnancy (HDP). Although the mechanisms exploring this association are poorly understood, a reduction in skin capillary density or capillary rarefaction (CR), has been proposed in its pathogenesis. CR precedes the onset of pre-eclampsia (PE) and essential hypertension. Hence, this study aimed to investigate whether CR persists post HDP and therefore, acts as a significant risk factor for the consequent development of CVD.

**Methods:**

A total of86 non-pregnant women were studied (mean age 37±6 years). Of these, 44 had a previous history of PE (mean age 37±9 years), 29 had history of gestational hypertension (GH) (mean age 37±6 years) and 13 were healthy controls (mean age 35±5 years). We measured central systolic blood pressure (cSBP), aortic augmentation index (AIx), pulse pressure (PP) and capillary density on the dorsum of the middle finger using non-invasive intra-vital capillaroscopy.

**Results:**

GH group had higher cSBP (128.93±10.3mmHg vs 111.15±11.02mmHg, p<0.0001), SBP (124.66±8.7mmHg vs 109.81±11.1mmHg, p=0.001) DBP (76.33±9.0mmHg vs 67.8±8.4mmHg, p=0.025) and PP (48.3±8.6mmHg vs 41.9±4.5mmHg, p=0.031), compared to controls. GH also had a higher SBP (mean difference 7.5mmHg, 95%CI 0.84 to14.23mmHg, p=0.022) and PP (mean difference 6.26mmHg, 95%CI 2.01 to 10.51mmHg, p=0.002) compared to PE. Moreover, PE group had higher cSBP (mean difference 11.63mmHg, 95%CI 1.76 to 21.50mmHg, p=0.015) compared to controls. No significant differences were seen in AIx or capillary density between groups.

**Conclusions:**

Women with a history of GH are more likely to have systemic arterial stiffness, as a result of raised cSBP, PP and SBP, compared to women with history of PE and healthy controls. Further larger studies are needed to characterise the role of microcirculation in the causation of long-term increased risk of CVD in women with a history HDP.