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Alterations and association in Endocan-1 and placental growth factor in women with pre-eclampsia

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Context: Pre-eclampsia (PE) is one of the three major causes of maternal morbidity and mortality in the world, affecting 2% to 8% of all pregnancies. A specific predictive biomarker has not been found yet. Endocan-1 is a soluble proteoglycan specifically expressed in endothelial cells, a biomarker of vascular endothelial related pathologies, such as PE. Placental growth factor (PlGF) is an angiogenic factor and a placental dysfunction marker that is down regulated in women with PE. Objective: To analyse Endocan-1 and PlGF levels in maternal plasma in normotensive and PE women and test any associations between the findings, in the third trimester of pregnancy. Methods: A case-control study was conducted at São Lucas Hospital. Endocan-1 and PlGF levels were quantified in maternal plasma using MagPlexTH-C microspheres system and analysed by ANCOVA adjusted by BMI, gestational age and maternal age. To estimate the difference between groups, mean ratio (MR) and 95% confidence interval (CI) were calculated. Pearson correlation test was used to establish any association between Endocan-1 and PlGF levels. The null hypothesis was rejected when p <0.05. Patients: normotensive (n=67) and PE (n=50) women. Interventions: maternal blood was collected before delivery Main Outcome Measures: Alterations and association of PlGF and Endocan-1 in women with PE Results: Higher levels of Endocan-1 were found in maternal plasma in PE group (MR=1.56; 95% CI: 1.22 - 2,01, p=0.001), with a moderate effect size (Cohen's D= 0.93). Lower levels of PlGF were found in the PE group (MR= 0.38; 95% CI: 0.15–0.95; p= 0.041), (Cohen's D= 0.54). A negative correlation between Endocan-1 and PlGF was noted in the entire group (r= -0,605; p< 0.001); as well as in the PE group (r= -0,545; p< 0.001), Conclusions: Endocan-1 levels are increased in patients with PE and inversely correlated with PlGF levels. We suggest that it is important analyse angiogenic and pro-inflammatory molecules concomitantly in women with PE, to better understand the disease pathophysiology. In this case, both molecules are strong competitors as a PE biomarkers and future work will examine any mechanisms connecting these factors in PE.

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