Original Research Article

Expression of genes coding for proangiogenic factors and their receptors in human placenta complicated by preeclampsia and intrauterine growth restriction

Marian Semczuk, Aleksandra Borczyńska, Małgorzata Bialas, Natalia Rozwadowska, Anna Semczuk-Sikora, Agnieszka Malcher, Maciej Kurpisz

Summary

The aim of the study was to investigate the expression of genes coding for vascular endothelial growth factor (VEGF) and placenta growth factor (PlGF) as well as their receptors, fms-like tyrosine kinase receptor 1 (VEGFR-1/Flt-1) and VEGF receptor 2 (VEGFR-2/KDR) in the placentae of patients with pregnancies complicated by preeclampsia (PE) and intrauterine growth restriction (IUGR). Tissue samples were collected from placentae of women with PE (n = 31) and IUGR syndrome (n = 25) as well as of healthy control women (n = 31). Total RNA was extracted and purified, mRNA reversely transcribed, and amplified using real-time PCR. Expression of the examined genes was normalized to β-actin. Higher levels of PlGF (p < 0.001) and Flt-1 (p < 0.05) transcription were found in PE placentae compared to normal ones. A positive correlation between PlGF and Flt-1 expression was revealed in the PE patients. In conclusion, the presented data indicate the upregulation of both PlGF and Flt-1 in placentae of women with PE, which could be induced by a pathological process possibly due to endothelial dysfunction.

Keywords

Placenta; Angiogenesis; Angiogenic factors; Complicated pregnancies