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VEGFA and *TGFβ1* Expression in Chorionic Tissue and Decidua of Women with Pregnancy Loss at the First Trimester

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Background & Hypothesis:
Early stages of placenta development are dependent on vascular development. *VEGFA* and *TGFβ1* are essential for the development of maternal and placental vasculation in pregnancy. The aim of the study is to determine the expression level of the growth factors of genes in chorionic and decidual tissues during pregnancy.

Methods:
Samples of tissues were taken after the surgical termination of normally progressing pregnancies (abortion for social reasons) and spontaneous abortion in 5-9 week of gestation. Total RNA was isolated. *VEGFA* and *TGFβ1* expression levels were performed by the RT-qPCR method.

Results:
VEGFA expression in samples of both tissues in the control group is equal. Compared with chorionic tissue, the expression of *TGFβ1* increased in decidual tissue under the condition of normally progressing pregnancy ($P = 0.003$). The *VEGFA* expression level correlated with *TGFβ1* expression ($P = 0.038$). There was no difference in the *VEGFA* level of expression in decidua and chorionic tissue under the condition of normal pregnancy compared to spontaneous abortion. *TGFβ1* expression in samples of both tissues in spontaneous abortion is equal. The positive dependence was determined for the level of mRNA *VEGFA* and *TGFβ1* in normal pregnancy (r = 0.6, $P = 0.038$). The ratio of mRNA levels was changed in decidua (r = -0.76, $P = 0.028$) under the condition of pregnancy loss.

Discussion & Conclusion:
Our findings show that a change of ratio between the *VEGFA* and *TGFβ1* expression levels in decidua can be associated with spontaneous abortion in the first trimester of pregnancy. This study was carried on the equipment of Center for collective use "High Technology" and supported by the federal assignment №6.98.2014/К from Russian Ministry of Science and Education