

DIFFERENTIATED IMMUNOHISTOCHEMICAL EXPRESSION OF ANGIOGENIC FACTOR ANG2 IN THE GERMINAL STATUS OF UTERINE PREGNANCIES DISTURBED AT EARLY TERM

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Background. Angiopoietins contribute to vascular and angiogenic processes, playing a crucial role in establishing a functional placental vascular system that supports the intrauterine growth of the embryo and fetus. Changes in Ang2 expression disrupt the maturation and stabilization of the vascular network. **Aim of the study.** Assessment of the immunohistochemical expression pattern of Ang2 in the chorionic villi germinal status of patients experiencing early-term pregnancy complications.

Methods and materials. Tissue samples were collected via uterine aspiration from 67 patients with early-term pregnancy disruptions at the Perinatal Center of the Mother and Child Institute's, during 2020. Patients were categorized into three groups: early spontaneous abortion (ESA) – 11 cases; missed abortions (MA) – 43 cases; and 13 cases of pregnancies terminated for social or personal reasons (TS or TD). All groups were further divided based on gestational age into 3-5 weeks, 6-9 weeks, and 10-12 weeks. Study methods included hematoxylin-eosin (H&E) staining, immunohistochemistry evaluating anti-Tie1. Immunohistochemical expression was analyzed in cellular expression sites: cytotrophoblast, syncytiotrophoblast, endothelial cells, Hofbauer cells, and stroma. Immunohistochemical intensity was graded from 0 (absent) to +3 (pronounced). Statistical analysis involved assessing intensity, statistical correlations (Spearman r_s), and Mann-Whitney (U) test.

Results. Cytoplasmic immunohistochemical expression was predominantly negative in all studied sites of the control group except for syncytiotrophoblasts (+3). SS and ASP groups showed negative cytotrophoblast expression and variable expression in Hofbauer and stromal cells (70,4/63,6%, 86,3/90,9%), except for endothelial sites, which exhibited differentiated immunostaining: SS – 56,1% positive vs ASP – 36,4% negative. Syncytiotrophoblast expression was predominantly positive (+3) in SS and ASP: 90,6%/90,9%. Significant statistical differences were found intergroup for the endothelial site in SS 6-9 weeks vs Control 6-9 weeks $p=0,01$; SS 10-12 weeks vs Control 10-12 weeks $p=0,04$; Control total vs SS total $p=0,001$ and ASP total vs Control total $p=0,025$. Correlations were observed in the total SS group, namely: TS with Hofbauer cells and stromal cells ($r_s=0,54$, $p=0,002$ and $r_s=0,45$, $p=0,002$); age with vascular endothelium ($r_s=0,38$, $p=0,01$).

Conclusion. During early-term pregnancy disturbances, Ang2 angiogenic environment in placental development mostly displays negative conditions, except for vascular endothelium in the MA group with prevalent positive expression. Cellular expression varies with gestational term and patient age, especially in the SS group.

Keywords: Ang2, placental implantation, pregnancy, early miscarriage.