DISTICTIVE IMMUNOHISTOCHEMICAL EXPRESSION OF ANG1 IN THE GERMINAL STATUS OF UTERINE PREGNANCIES DISTURBED AT EARLY TERM

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Background. Angiopoietins are part of vasculo- and angiogenesis with an important role in the formation of a functional placental vascular network, capable of supporting the intrauterine development of the embryo and fetus. Disruption of Ang1 expression is associated with the dysregulation of vascular network maturation and stabilization.
Aim of the study. Evaluation of the immunohistochemical expression profile of Ang1 in the choriovillary germinal status of patients with early-term pregnancy disturbances.
Methods and materials. Tissue samples from 62 patients experiencing early-term pregnancy disturbances were obtained via uterine aspiration at the Mother and Child Institute's Perinatal Center in 2020. Patients were categorized into three groups: early spontaneous abortion (ESA) – 8 cases; missed abortions (MA) – 39 cases; and 15 cases of pregnancy termination for social reasons/desire (TS or TD). Each group was further stratified by gestational age (3-5 weeks, 6-9 weeks, and 10-12 weeks). Methods included hematoxylin-eosin staining, immunohistochemistry assessing anti-Tie1. Immunohistochemical expression was evaluated in cytotrophoblasts, syncytiotrophoblasts, endothelial cells, Hofbauer cells, and stroma, graded from 0 to +3. Statistical analysis involved intensity assessment, Spearman's correlations (rs), and Mann-Whitney (U test).
Results. Cytoplasmic immunohistochemical expression ranged from 0 to +2, predominantly negative in controls (68,9%) versus 80% positivity in syncytiotrophoblasts. In the MA group, anti-Ang1 expression rose slightly to +2 (71,7%), peaking at 94,8% in villous syncytiotrophoblasts. ESA group showed significant positivity only in syncytiotrophoblasts (75%), with the rest within 50% positive-negative limits. Statistically significant differences were observed between ESA and control groups in syncytiotrophoblasts (p=0,02) and within MA 10-12 weeks versus MA 3-5 weeks: cytotrophoblasts (p=0,004), vascular endothelium (p=0,02), and cellular stroma (p=0,05); MA 10-12 weeks versus MA 6-9 weeks (p=0,01, p=0,02, and p=0,03). Cytotrophoblasts and vascular endothelium expression negatively correlated with gestational age (GA) (r_s=-0,33/0,02 and -0,32/0,02) and age (r_s=-0,41/0,01 and -0,36/0,01) in the MA group. In ESA 6-9 weeks, there was a strong positive correlation between age and cytotrophoblasts (r_s=0,89; p=0,02), and in ESA total between GA and syncytiotrophoblasts (r_s=-0,62/0,05).
Conclusion. During placental development, Ang1's angiogenic environment differs in pregnancies disrupted early, leading to a relatively weak angiogenic milieu. Cellular expression varies with gestational term and patient age.
Keywords: Ang1, placental implantation, pregnancy, early miscarriage.