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TITLE

VERIFICATION OF KISSPEPTINS AND THEIR RECEPTORS IN FETAL HYPOTHALAMUS-PITUITARY-GONAD AXIS

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ABSTRACT

It is known that kisspeptins (KP) and their receptor (KISS1R) play a key role in many physiological processes, such as puberty, the functioning of the reproductive system, the secretion of insulin and vasoconstriction. The highest level of peptides is observed in the organs of reproductive system and in some structures of the brain (pituitary, hypothalamus). The aim of this study was to identify the expression of kisspeptins and their receptors in fetal organs of the reproductive system. The objects of the research were the samples of fetus organs (hypothalamus, pituitary, uterus, ovaries) at different stages of gestation from 9 fetus. Primary monoclonal antibodies to Kiss1 (1:150, Abcam) and monoclonal antibodies to Kiss1R (1:350, Abcam) were used for IHC reaction. Alexa Fluor 488 and Alexa Fluor 647 (1:1000, Abcam) were taken as secondary antibodies. Scanning of samples was performed on a microscope FluoView1000 (Olympus). The study revealed the presence of KISS1/KISS1R system in the material. In all samples, the intensity of KISS1R expression was higher, than of KP. The maximum level of kisspeptins expression is registered in the hypothalamic tissue at 28-32 week of fetal development, and the minimum - in the uterine tissues at all stages of gestation. The correlation between gestational age and relative area of immunopositive staining of KP is characteristic for ovarian tissue ($r=0,92$), uterus ($r=0,87$) and KISS1R - for pituitary tissue ($r=0,86$), ovarian ($r=0,99$) and uterus ($r=0,96$). This might be due to participation of kisspeptins in the regulation of the reproductive system and synchronization of neuroendocrine-reproductive axis. In conclusion the presence of kisspeptins and receptors of kisspeptins hypothalamus-pituitary-gonad axis during prenatal development was demonstrated for the first time. This work was supported by grant MD-6001.2016.7

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