

B-8 Possible Existence of Human GnRH-II Specific Receptor and its Expression in Human Endometrium During the Normal Menstrual Cycle and Early Pregnancy

천강우¹ · Parhar IS² · RP Millar³ · 강인수⁴

¹삼성제일병원 생식생물학 및 불임연구실, ²닛본의대 생리학과,

³University of Cape Medical School, Cpae Town, South Africa, ⁴삼성제일병원 산부인과

Objectives: GnRH-II ([His⁵, Trp⁷, Tyr⁸]-GnRH) is the second isoform of human GnRHs and its decapeptide is identical to that of chicken GnRH-II (cGnRH-II). We have reported that GnRH-II mRNA and peptide are expressed in human endometrium and placenta. Moreover, the cycle dependent change and placental expression suggest GnRH-II may be involved in implantation and maintenance of pregnancy. However, the physiological and biochemical function of GnRH-II has not been understood yet. In vertebrates, there are some evidences on the existence of GnRH receptor subtypes. The aim of this study is to examine the possible existence of GnRH-II receptor in human endometrium and assess the change of its protein expression during the normal menstrual cycle and early pregnancy.

Materials and Methods: We used polyclonal antibody generated against cGnRH-II specific receptor. For immunohistochemistry, twenty endometrial samples (proliferative: n=5, early secretory: n=5, mid-secretory: n=5 and late secretory: n=5) and decidual samples obtained during 5~10 wk of gestation (n=7) were examined. The immunoreactivity at each phase of the menstrual cycle was semi-quantitatively assessed by immunohistochemical score (HSCORE) and mean HSCORE was analyzed by ANOVA.

Results: During menstrual cycle, the immunoreactivity of GnRH-II receptor was exclusively localized in glandular epithelial cells. The mean HSCORE of early and mid-secretory phase (2.5 ± 0.4 and 2.7 ± 0.4 , respectively) were significantly higher ($p < 0.05$) than those of proliferative phase (1.1 ± 0.2). The HSCORE of late secretory phase was 1.8 ± 0.1 , which was lower than early and mid-secretory phase. This cycle dependent change of the receptor was similar with that of GnRH-II peptide, already reported by us (Mol Hum Reprod, 7: 447-452, 2001). This immunoreactivity was maintained in decidual gland of first trimester at a high level. Interestingly, there were very few immunoreactivity positive cells in stromal cell population during entire menstrual cycle. However, decidualized stromal cells showed strong immunostaining intensity in the first trimester.

Conclusions: Our results demonstrate for the first time that the receptor for the human GnRH-II may exist in human endometrium during normal menstrual cycle and first trimester. We also suggest that endometrial GnRH-II peptide and its possible receptor, noted during the early, mid-secretory phase and first trimester of pregnancy, may play a role in implantation and maintenance of early pregnancy.