REVIEW ARTICLE

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Molecular characterization of the endometrium as a fertility-determining factor

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Abstract

Background: Structural transformation of the endometrium during the menstrual cycle is a genetically determined process and is provided by complex molecular-biological interactions aimed at the onset and development of pregnancy. Sex steroid hormones play a key role in endometrial morphogenesis, which mediate or directly affect angiogenesis and immunogenesis.
Conclusions: The primary function of the endometrium is to provide an immuno-privileged site for embryo implantation and to provide a nurturing environment for the fetus during pregnancy. The cyclic differentiation of the endometrium depends on the actions of steroid hormones that act through specific down – stream mechanisms involving complex molecular signaling. The endometrium undergoes repetitive episodes of proliferation, secretion, and menstruation, up to 400 times during a woman's life, without apparent signs of aging. The human endometrium undergoes complex and dynamic changes during the menstrual cycle. Thus, the combination of molecular, endocrine, biochemical, immunological factors leads to a complete transformation of the endometrium during the menstrual cycle. Secretory transformation of the endometrium with an appropriate ratio and distribution of estrogen and progesterone receptor expression, complete angiogenesis and immunological balance determine implantation, placentation and pregnancy development.
Key words: menstrual cycle, endometrium, angiogenesis, immunogenesis.

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