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Abstract

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Luteinizing hormone affects uterine receptivity independently of ovarian function.

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Abstract

Previous studies have suggested that LH, in addition to its well-known effects on the ovary, may exert direct effects on the uterus. This study evaluated the effects of mid-cycle administration of human chorionic gonadotrophin (HCG), which signals through the LH receptor, on endometrial thickness and uterine receptivity in two groups of women lacking ovarian activity and receiving embryos from an oocyte donation programme. Patients in one group still had ovulatory cycles, but their ovarian function was suppressed by pituitary down-regulation with a gonadotrophin-releasing hormone (GnRH) agonist in the embryo transfer cycle, resulting in low endogenous LH concentrations. Patients in the other group were menopausal women whose pituitary function was not down-regulated in the embryo transfer cycle and whose endogenous LH concentrations were thus high. Patients in each of the two groups were randomized into two subgroups. Patients in one subgroup were given 5000 IU of HCG 2 days before oocyte recovery in the corresponding donor. Patients in the other subgroup received placebo at the same time. Oocytes from each donor were randomly distributed between one patient from the HCG subgroup and one patient from the placebo subgroup in each patient group. Endometrial growth and secretory transformation were stimulated by sequential treatment with oestradiol valerate and progesterone. In women with low endogenous LH receiving placebo, endometrial thickness stopped increasing at the beginning of secretory transformation. Mid-cycle HCG administration resulted in a continuous increase in endometrial thickness through this period, improved the implantation rate after embryo transfer in these women (30.6 versus 20.7%) and augmented the number of multiple pregnancies. No similar stagnation of endometrial thickness and no effects of mid-cycle HCG administration on endometrial thickness, the implantation rate and the number of multiple pregnancies were found in women with high endogenous LH. It is concluded that endometrial maturation is disturbed in women with low endogenous LH but can be rescued by mid-cycle stimulation of LH receptor with exogenous HCG in the absence of ovarian activity.

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