Assessment of changes in utero-ovarian arterial impedance during the peri-implantation period by Doppler sonography in women undergoing assisted reproduction

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摘要

Abstract

OBJECTIVE: To investigate changes in utero-ovarian blood flow during the peri-implantation period and their significance in successful embryo implantation. METHODS: A prospective longitudinal study was conducted in 317 women undergoing in-vitro fertilization-embryo transfer (IVF-ET) treatment. All of them had at least one good-quality embryo for transfer on the second or third day after oocyte retrieval. Measurement of endometrial thickness and color flow imaging with pulsed waveform analysis ofuterine and ovarian arteries were performed before ET and 5-6 days after ET. RESULTS: There were no significant differences in the age of patients, duration of infertility or number of embryos transferred between women who became pregnant (n = 91) and those who did not (n = 226). There was no difference in mean endometrial thickness between the two groups before ET, while a thicker endometrium was found in women who had conceived compared with those who had not 5-6 days after ET (P = 0.02). Mean uterine arterial resistance index (RI) and pulsatility index (PI) values were significantly lower in the pregnant than in the non-pregnant group before ET (P = 0.04 and P = 0.003, respectively), but no significant differences were found between thetwo groups 5-6 days after ET. In contrast, the mean ovarian arterial RI and PI values were similar between the two groups before ET, yet the pregnant group showed significantly lower RI and PI values compared with the non-pregnant group 5-6 days after ET (P = 0.002 and P = 0.01, respectively). A significantly higher peak systolic velocity (PSV) of intraovarian vessels was also noted in the pregnant group 5-6 days after ET. CONCLUSION:

Different utero-ovarian blood flow changes during the peri-implantation period occur in conception and non-conception cycles in women following IVF. Doppler assessment of uterine arterial resistance can help to determine a time interval within the menstrual cycle that is of optimal endometrial status for embryo implantation in assisted conception programs. Delay in achieving adequate uterine perfusion during the temporal window of embryo implantation may have an impact on endometrial receptivity.

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