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Role of vascular endothelial growth factor (VEGF) and doppler sub-endometrial parameters as predictors of successful implantation in intracytoplasmic sperm injection (ICSI) patients (Article) (Open Access)

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Abstract

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Objective: to investigate the expression of vascular endothelial growth factor (VEGF) in patients having infertility due to low endometrial acceptance, and to correlate it to non-invasive ultrasound variables, endometrial thickness,and sub-endometrial Doppler parameters (PI, RI, Vs/Vd).Methods: 80 women all under the age of 40 underwent ICSI-ET; all patients were exposed to ovarian stimulation protocols. The oocytes were retrieved using an ultrasound guide, and were fertilised via injection of sperm inside the follicle (ICSI). VEGF serum level was analysed at day of embryo transfer by ELIZAtest, and sub-endometrial evaluation was conducted via two-dimension power Doppler ultrasound (2D PD-US), by measuring resistance index (RI) and pulsatility index (PI) on the day of embryo transfer. Results: There was a significantly higherVEGF level and endometrial thickness in pregnant (433± 207 and 9.72± 1.35) women, compared to non-pregnant(276± 165 and8.95 ± 1.21) respectively as p-values were (0.001 and 0.01)). Additionally, there were significantly lower RI and PI in pregnant (0.584 ± 0.124 and 0.829 ± 0.301) women compared to non-pregnant (0.651±0.132 and 1.006±0.335) women, as p-values were (0.02 and 0.02, respectively). The level of E2 was on theday of embryo transfer and Vs/Vd in pregnant women (1402± 524 and 3.14 ± 3.75) and in the non-pregnant group (1296± 611 and 3.82 ± 3.07), as p-values were 0.41 and 0.38, respectively. Conclusion: The combined analysis of endometrial receptivity was completed, and the serum level of VEGF and sub-endometrial evaluation with 2D PD-USwas defined by measuring resistance index (RI) and pulsatility index (PI) on the day of embryo transfer. These can serveas useful prognostic methods for the detection of endometrial receptivity and pregnancy outcomes in infertile women undergoing ICSI protocols, and will be helpful for candidate counselling about postponing embryo transfer and cryopreservation, which may serve as a better option, to be recommended for the next cycle, when achieving better endometrial Doppler parameters . © 2020 Faculty of Medicine Siriraj Hospital, Mahidol University.

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