The role of endometrial thickness on intracytoplasmic sperm injection outcomes

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Abstract

Introduction: Transvaginal sonography is used to monitor the response to ovulation induction, to guide transvaginal collection of oocytes and subsequently guide transcervical transfer of embryos to the uterus. Three-dimensional sonography may be used in any of these areas but it has largely been applied as a tool for the evaluation of ovarian response to treatment and as a determinant of endometrial receptivity. Despite the widespread use of high-resolution ultrasonography, the clinical significance of differences in endometrial thickness and pattern has remained controversial and its predictive role in determining the outcomes of intracytoplasmic sperm injections (ICSI) has not been established yet. The aim of this study was to evaluate the role of endometrial thickness on ICSI success rates.

Materials & Methods: In this cross-sectional study we evaluated the predictive values of endometrial thickness in infertile couples who referred to Mehr Infertility Institute during 2005-2006 for ICSI. After preliminary studies, including hormonal tests, sonography, hysterosalpingography, etc, women with uterine disorders such as myomas, Asherman's syndrome, etc, were excluded but couples with tubal, ovulatory and male factor infertilities and also those with unexplained etiologies of infertility were included in the study. Endometrial thickness was measured from the echogenic interface of the endometrial-myometrium junction in transverse fundal sections by intravaginal sonography on the day of hCG injections. All patients were put on the long protocol for controlled ovarian hyperstimulation (COH) and those who had a triple-line pattern in endometrium and a thickness of ≥6 *mm* were included in the study. The following variables were evaluated as potential confounders: age of the cases, duration of infertility, causes of infertility, embryo quality and number of human menopausal gonadotropin (hMG) injections used for COH. In an effort to determine the factors affecting ICSI success rates, multivariate analysis was performed based on logistic regression. Receiver operating characteristic (ROC) curve analysis was used to determine the cut-off point. An alpha error of <0.05 was considered significant.

Results: During the study, 528 patients were evaluated. Clinical pregnancy was reported in 192/528 cycles (36.4%).The mean number of oocyte retrieval, injected oocytes (in metaphase II), fertilized, cleaved and transferred embryos had statistically significant effects on pregnancy rates ($p<0.05$). The mean age of those who responded to treatment was 29.9±5.5 years in the pregnant versus 32.2±6.3 years in the non pregnant cases ($p<0.05$). The mean duration of infertility did not influence pregnancy rates (7.6±5.5 years in the pregnant versus 7.6±5.4 years in the non-pregnant) ($p<0.05$). The relations between pregnancy rates and endometrial thickness classification were not statistically significant. Multiple logistic regressions showed no statistically significant effects by endometrial thickness, duration of infertility, causes of infertility and number of gonadotropin injections for ovarian stimulation on the outcome of IVF/ICSI, but there was a significant relation between female age and embryo quality for ICSI success rates. The ROC curve indicated no significant effects of endometrial thickness on the outcome of IVF/ICSI ($p>0.05$).

Conclusion: Endometrial thickness ≥6*mm* on the day of hCG administration does not have any value in predicting ICSI outcomes. Further studies are needed to provide an answer to this contradictory opinion about the role of endometrial thickness during ICSI-ET treatment cycles.

Key Words: Endometrial thickness, Sonography, Pregnancy rate, ICSI, Infertility, COH.

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