Impact of Estrogen Supplementation on Intrauterine Insemination Pregnancy Success Rates

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INTRODUCTION

As intrauterine insemination (IUI) gains popularity amongst individuals facing infertility, much research is being conducted to evaluate its success, specifically, in comparison to *in vitro* fertilization (IVF). Recent studies have listed IUI as more cost-effective, delivering similar success rates with lower complications compared to IVF.

The cost of IVF often steers patients seeking conception assistance towards IUI before attempting IVF. However, for patients under 35 years of age, IUI success rates are lower compared to IVF. This may, in part, be a result of too thin of an endometrium. It's known that a thin endometrium, defined as less than 7 mm measured on ultrasound, has less favorable outcomes in fertility treatments, especially with IVF. The effects of estrogen supplementation on pregnancy outcomes in relation to thin endometrial thickness have been less evaluated in IUI cycles. Furthermore, the common practice of rescuing the endometrium with exogenous estrogen has not been adequately studied.

OBJECTIVE

To compare the pregnancy success rate and endometrial thickness of patients undergoing intrauterine insemination with or without exogenous estrogen supplementation.

METHODS

This retrospective data analysis used data collected by an independent clinic. The dataset included patients who underwent IUI between January 2019 and September 2022. Cohorts were separated by use of Estrace (exogenous estrogen) prior to ovulation induction. Group A included individuals who received a 2mg dose vaginally or orally daily until a heartbeat was detected. Group B included the non-treatment controls. Patients that had a history of a thin endometrium were given Estrace. Those who smoked, were older than 40 years, had a BMI greater than 36, diminished ovarian reserve defined as an anti-Mullerian hormone (AMH) less than 1, or male factor defined as less than or equal to 5 million motile sperm, were excluded from the study. Endometrial thickness before and after Estrace supplementation as well as cycle outcomes were recorded. Pregnancy success rates were measured by a positive Beta-Human Chorionic Gonadotropin. Logistic regression analysis was utilized for statistical analysis.

RESULTS

A total of 157 patients were included in the analysis. 57 patients who underwent IUI with estrogen supplementation were compared against 100 controls.

RESULTS (CONT.)

There were 11 successful pregnancies in the estrogen supplementation group and 16 in the control groups. There was no statistical difference in pregnancy rates between groups ($P = 0.4$). There was also no difference in pregnancy rates with respect to age ($P = 0.8$) or endometrial thickness ($P = 0.4$). There was a higher AMH ($P = 0.04$) and number of motile sperm ($P = 0.03$) in the pregnancy groups.

CONCLUSION

There does not appear to be a significant difference between pregnancy success rates in patients receiving exogenous estrogen for thinned endometrium and those pursuing traditional IUI. Additionally, patients with a thinner endometrium continued to have similar success rates with ovulation induction and insemination.

IMPACT STATEMENT

This study may alter current practices regarding estrogen supplementation for ovulation induction and insemination. Endometrial thickness may not be an indicator of success with ovulation induction. However, further studies with additional participants should be performed.