

Morphometrical study of the effects of ovulation induction drugs in long protocol on ultrastructure of human endometrial epithelium during the implantation window

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Abstract

Introduction: The use of ovulation induction drugs such as: GnRHa, HMG and HCG to induce super ovulation and harvest more oocyte, known as long protocol, is now a commonplace in Assisted Reproductive Techniques (ART). Recent studies and experiences indicate that the rate of successful implantation in stimulatory cycles is less than natural cycles. In the present study we have investigated the possible effects of the above mentioned drugs on ultra structures of human endometrial tissues (luminal and glandular epithelium) on the 20th day of menstrual cycle (LH+6).

Materials and Methods: Biopsies were obtained from infertile women who were under super ovulation treatment and from fertile women (as control) who referred to infertility center of Tabriz University of Medical Sciences between 2001- 2003, on day LH+6. The control group (n=5) were normal fertile women who had not received ovulation induction medications and the study group (n=10) were under standard long protocol but the embryo had not been formed due to male factor problem. After preparation and taking light and electron micrographs photographs from samples, qualitative and quantitative evaluations (morphologic and morphometric) were accomplished and the data were compared using unpaired student t test.

Results: Qualitative results revealed the presence of nuclear channel system (NCS), vacuoles of glycogen & giant mitochondria in both groups. Quantitative analysis showed that volume fraction of organelles in glandular & luminal endometrial epithelium such as euchromatin to nucleus, RER to cell, mitochondria to cells in test group were significantly higher than those in the control group (P<0.05) which shows a higher state of activation than those in the controls.

Conclusion: These results suggest that ovulation drugs distort the normal development of endometrium in midluteal phase, coincident with implantation window, and consequently decrease the implantation success rate. Therefore, ART protocols without the use of ovulation induction drugs may improve the successful implantation rate.

Key Words: Infertility, Endometrium, Morphometry, Ovulation induction drugs, Implantation, long protocol, and Endometrial epithelium.

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