

## The relationship between estrogen receptor alpha gene polymorphism and ovarian response to ovulation induction in women under IVF treatment

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### Abstract

**Introduction:** Estrogen, as one of the most important female hormones, plays an essential role in fertility cycle and its receptors mediate estrogen actions in target tissues. Several polymorphisms of estrogen receptor (ER) alpha gene have been associated with different pathological conditions. In this study, the hypothesis that polymorphisms in ER alpha gene in women may be associated with their ovarian response to ovulation stimulation during in-vitro fertilization (IVF) was evaluated.

**Materials & Methods:** The prevalence of PvuII polymorphism of ER alpha gene in 102 infertile women undergoing IVF treatment was evaluated and its relationship to the mean number of follicles and oocytes, follicles to oocytes ratios, mean serum estrogen concentrations, the number of obtained embryos and pregnancy rates was determined. In each patient PP, Pp, or pp genotypes were identified by using PCR-RLFP technique. Statistical analysis was done through  $\chi^2$ , Kruskal Wallis and Mann-Whitney by using SPSS software, version 13. P-values smaller than 0.05 were considered significant.

**Results:** Based on the results of the study, 31.4% of the patients showed pp, 39.2% Pp and 29.4% PP genotypes. The percentages of male and female infertility etiologies, mean number of follicles, oocytes, and embryos in all three groups had no significant differences.

**Conclusion:** Investigating the role of different genes in response to different medications (Pharmacogenetics) is very important in choosing proper treatment methods. This study indicated the importance of one of the genes effective in ovarian response to ovulation induction in IVF treatments, but noticing the role of different endocrine and paracrine factors in ovulation induction and proper oocyte maturation, further studies are needed to find the importance of other effective genes in ovaries and to determine other ER mutations and prevalence of ER polymorphism in the fertile women's population.

**Key Words:** Estrogen receptor gene, Gene polymorphism, Infertility, IVF, Ovulation induction, Oocyte, Embryo, Embryo transfer.

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