Genetic Determinants of Ovarian Response to Gonadotropin Stimulation in Women Undergoing Assisted Reproductive Treatment

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Abstract : Gonadotropin stimulation is used in females undergoing assisted reproductive treatment for ovulation induction, but ovarian response is variable and unpredictable in these women. More effective protocols and individualization of treatment are needed to increase the success rate of IVF/ICSI cycles. We genotyped seven variants reported in previous studies to be associated with ovarian response (number of ova retrieved and total gonadotropin dose) in women undergoing IVF treatment including FSHR variants Asn 680 Ser (c.2039 A > G), Thr 307 Ala (c. 919 > A), -29 G > A, HRG c.610 C > T gene, BMP15 -9 C > G, AMH Ile 49 Ser (c.146 G > T), and AMHR -489A˒G in 118 Egyptian females attending Mansoura Integrated Fertility Center in Egypt, these females were undergoing their first cycle of controlled ovarian hyper stimulation for IVF/ICSI treatment. They were analyzed by TaqMan allelic discrimination assay in Manchester Center of Genomic Medicine. We found no evidence of any significant difference (p value < 0.05) in the number of eggs retrieved or the gonadotropin dose used between individuals in all genotypes except for HRG c.610 C > T gene polymorphism where regression analysis gives a p value of 0.04 with a fewer eggs number in TT genotyped females. These results indicate that these variants do not provide sufficient clinically relevant data to individualize the treatment protocols.

Keywords : controlled ovarian hyperstimulation, gene variants, ovarian response, assisted reproduction

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