Original Paper

AMH and *AMHR2* Polymorphisms and AMH Serum Level Can Predict Assisted Reproduction Outcomes: A Cross-Sectional Study

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Key Words

AMH gene • *AMHR2* gene • Ovarian reserve • Anti-Mullerian Hormone •Human Reproduction

Abstract

Background: In human assisted reproduction, the ovarian response to exogenous recombinant Follicle-stimulating Hormone (FSH) therapy is variable and difficult to predict. The standard protocol of ovarian hyperstimulation can result in satisfactory response; however, an unsatisfactory response necessitates FSH dose adjustment or results in ovarian hyperstimulation syndrome (OHSS). Polymorphisms in *AMH* and *AMHR2* genes appear to affect hormone biological activities, thus affecting follicle recruitment and development, leading to infertility. We aimed to evaluate *AMH* and *AMHR2* polymorphisms in infertile women, and correlate those findings with AMH, FSH and estradiol serum level response to controlled ovarian hyperstimulation (COH), as well as assisted reproduction outcomes. ***Methods:*** A cross-sectional study comprising 186 infertile women that underwent one cycle of high complexity assisted reproductive treatment. Blood samples were collected and a TaqMan assay was used for *AMH* G146T/rs10407022 and *AMHR2* A-482G/rs2002555, A10G/rs11170555, C1749G/rs2071558 and G4952A/rs3741664 genotyping, and FSH, estradiol and AMH levels were measured. The findings were correlated to human reproduction outcomes. ***Results:*** *AMH* rs10407022 and *AMHR2* rs2002555 polymorphisms were not associated with hormonal measurements, whereas *AMHR2* rs11170555 and rs3741664 were positively associated with AMH, estradiol and FSH levels. The genotype distribution of *AMH* and *AMHR2* genes according to Controlled Ovarian Hyperstimulation did not show a positive association. However, an association with AFC, degree of oocyte maturation (allele G of *AMHR2* rs2071558)

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