Genetic alterations of FSH receptor gene can cause Ovarian Hyperstimulation Syndrome

Shabnam Zari Moradi  Department of Genetics at reproductive biomedicine research center, Royan Institute for reproductive biomedicine, ACECR Tehran, Iran. 
Najmehsadat Masoudi Department of Genetics at reproductive biomedicine research center, Royan Institute for reproductive biomedicine, ACECR, Tehran, Iran.  
Anahita Mohseni Meybodi Department of Genetics at reproductive biomedicine research center, Royan Institute for reproductive biomedicine, ACECR Tehran, Iran.  
Zahra Mansouri Department of Genetics at reproductive biomedicine research center, Royan Institute for reproductive biomedicine, ACECR Tehran, Iran.  
Mehdi Totonchi Department of Genetics at reproductive biomedicine research center, Royan Institute for reproductive biomedicine, ACECR Tehran, Iran.  
Naeemehsadat Mirghavam-Aldin Department of Endocrinology and female infertility at reproductive biomedicine research center, Royan Institute for reproductive biomedicine, ACECR Tehran, Iran.  
Mahnaz Ashrafi Department of Endocrinology and female infertility at reproductive biomedicine research center, Royan Institute for reproductive biomedicine, ACECR Tehran, Iran.  
Hamid Gourabi Department of Genetics at reproductive biomedicine research center, Royan Institute for reproductive biomedicine, ACECR Tehran, Iran.  

Context: Ovarian Hyper Stimulation Syndrome (OHSS) is an infertility disorder in which women's ovaries don't have proper response to gonadotropins. Follicle stimulating hormone(FSH) has a critical role in the maturation of the ovarian follicles from the antral to the graffian stage. FSH will start a signaling cascade in the granulosa cells after sitting on its receptor(FSHR). Objective: Alteration of this receptor may change follicle maturation and therefore result in improper response to gonadotropins. We investigated the association of FSH receptor gene alteration in OHSS patients. Methods and Patients: The presence of P.Ala307Thr, P.Ser680Ala, P. Ala665Thr and Mut.Val341Ala were analyzed in a case control study. 68 Iranian OHSS patients were selected as the case group. 60 Iranian fertile women were enrolled as the control group. The patients DNA were extracted from their peripheral blood and amplified by relevant INSTITUTE.
primers. For determining allelic variant status all PCR products were analyzed by Sequencing. Results: The results were unexpected; the homozygous Ser680 and Ala307 variants seem to be significantly associated with OHSS. The FSHR P.Ala665Thr genotype frequency was similar in all patients and controls. The number of oocytes retrieved was comparable between patients with different FSHR genotype. Conclusion: Although data are accumulating with evidence suggesting that the ovarian response to gonadotropins is mediated by different genetic alterations, the optimal biomarkers and the efficacy of the tests still remain to be evaluated.