



Significant association of TNF- α and IL-6 gene with male infertility—An explorative study in Indian populations of Uttar Pradesh

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Abstract:

In this study we aimed to identify the association of SNPs candidate genes of TNF- α and IL-6 with hormones levels and sperm cells death in infertile subjects of Uttar Pradesh population in North India. The study population comprised, fertile donor (control group) and infertile group patients i.e. normozoospermic (idiopathic unexplained), oligozoospermic and asthenozoospermic groups, with 260 subjects in each group. Subjects were selected from the Departments of Urology, K.G.'s Medical University and Urology, SGPGIMS, Lucknow, India. The allele-specific polymerase chain reaction (PCR) and PCR-RFLP were used to investigate the substitution of the guanine (G)-to-adenosine (A) at position-308 and guanine (G)-to-cytosine (C) at position-174 in the promoter regions of the TNF- α and IL-6 genes, respectively. Further their relation to male fertility and sperm function were also investigated. It was found that the substitution levels from G to A and from G to C in the TNF- α and IL-6 genes, respectively, were significantly higher in the infertile subjects as compared to that of control group. The apoptosis and necrosis levels were also higher in oligozoospermic and asthenozoospermic infertile subjects. Further it was found to be associated with increased level of reactive oxygen species as observed in oligozoospermic and asthenozoospermic subjects. However, a significant decrease in testosterone and luteinizing hormone with increased prolactin and follicle stimulating hormones was observed in infertile subjects. The study populations indicating a strong association between TNF- α G-308A and IL-6 G-174C substitution within infertile men which is further supported by allele and genotype meta-analysis and thus established it as a risk factor.

Keywords:

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