

Testis Specific Gene 10 expression in the testes of patients with non-obstructive azoospermia

Arabi M. (M.D.)¹, Soltan Ghoraei H. (M.D.)^{1,2}, Amir Jannati N. (M.D.)^{1,2}, Ghaffari Novin M. (M.D., Ph.D.)^{1,2}, Sadeghi M.R. (Ph.D.)^{1,3}, Akhondi M.M. (Ph.D.)^{1,2}, Modarresi M.H. (M.D., Ph.D.)^{1,4,5}

1- Biotechnology Research Center, Avesina Research Institute, ACECR, Tehran, Iran.

2- Avesina Infertility Clinic, Avesina Research Institute, ACECR, Tehran, Iran.

3- Monoclonal Antibody Research Center, Avesina Research Institute, ACECR, Tehran, Iran.

4- Nanobiotechnology Research Center, Avesina Research Institute, ACECR, Tehran, Iran.

5- Department of Genetic, Faculty of Medicine, Tehran, University of Medical Sciences, Tehran, Iran.

Abstract

Introduction: Disorders in the expression of any gene effective in spermatogenic pathway is known as a probable cause of non-obstructive azoospermia and male infertility. The way responsible genes for sperm motility are expressed can considerably affect male fertility. Recent studies show that TSGA10 gene is effective in the natural process of spermatogenesis as protein produced by this gene in mouse results in the production of the main structure of sperm tail. Up to now, no comprehensive studies have been done on the way this gene is expressed in the infertile's testicular tissue.

Materials & Methods: In this study, TSGA10 mRNA expression in testicular samples of 84 patients with non-obstructive azoospermia was investigated by semi-quantitative nested RT-PCR in Avesina Infertility Clinic during 2005-6. Moreover, expression levels of TSGA10 during spermatogenesis were evaluated using Johnsen's method for histopathological scoring of the samples. For statistical analysis, SPSS software (Version 11.2) was used. The difference between gene expressions was done based on quantitative variables by the use of t-test and covariance analysis and $\alpha < 0.05$ was regarded as a statistically significant value.

Results: Testicular TSGA10 mRNA expression was observed in 31 patients, (36.9%), with non-obstructive azoospermia which it had a statistically significant correlation with spermatogenesis progress ($p < 0.000.0$). Histopathologically, the gene had been expressed in patients with higher Johnsen's score of spermatogenesis while a lack of expression was seen in all of those with Johnsen's score less than 4.5.

Conclusion: The findings indicate that TSGA10 is expressed in human testis and it is restricted to germ cells. It seems that lack of TSGA10 expression may have negative effects on spermatogenesis and on male fertility. On the other hand, determination of the timing of gene expression in a certain level of spermatogenesis may also be used to determine levels of spermatogenesis in azoospermic patients alongside histopathological findings.

Key Words: Male infertility, Spermatogenesis, Testis Specific Gene 10 (TSGA10), Testicular biopsy, Azoospermia.

Corresponding Author: Dr. Mohammad Hossein Modarresi, Avesina Research Institute, ACECR, Tehran, Iran.

E-mail: modaresi@sina.tums.ac.ir