

## Letter to the Editor

# Genomics revolution on andrology: genetic testing for male infertility

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Dear Editor,

We would like to write to you on the era of 'omics—genomics revolution on andrology, the way that has taken into a new dimension for tackling the emerging pressure on male infertility and for normal successful fertility outcome. In the Special Issue on Semen Analysis of Asian Journal of Andrology, Aitken [1] has extensively discussed the causes of male infertility, the past and the future developmental methods for its treatment and possible modes of prevention have been. The author stated that in the 21st century, molecular andrologists will have wide range of methods to examine the defective spermatozoa of infertile patients.

We would like to present the supporting data on sperm chromosomal abnormalities in infertile men and their implications on fertility. Abnormal semen parameters in chromosomally normal men are an indicator of an increased risk of sperm aneuploidy [2]. These authors found the meiotic segregation and an interchromosomal effect in carriers of (11;18) by multicolor fluorescence *in situ* hybridization (FISH). They concluded that FISH analysis provides useful information for genetic counseling and assisted reproduction. The risk of male's sperm aneuploidy used for intracytoplasmic sperm injection (ICSI) needs to be evaluated to prevent the further aneuploidy in the offspring of these men. Some studies [3, 4] revealed that the infertile men with normal karyotypes possessed higher frequency of sperm aneuploidy, specifically the sex chromosomes. Male carriers of Robertsonian

translocations are vulnerable for fertility problems as evident from 14 Robertsonian carriers [5]. We also observed the similar findings as evident from the above mentioned literature with respect to the chromosomal pattern, translocations and sperm chromosomal (Y chromosome) microdeletions in our tertiary referral hospital, All India Institute of Medical Sciences, New Delhi, India. Hence evaluation of spermatozoa with different techniques, such as single cell gel electrophoresis (COMET assay), terminal transferase dUTP Nick End Labeling (TUNEL), sperm chromatin structure assay (SCSA), *in situ* nick translation (ISNT), acridine orange test, germ cell chromosomal aneuploidies and microdeletions, will help detecting the defective spermatozoa in men opting for assisted reproduction [6–13]. Preimplantation genetic diagnosis is an added new promising approach at the molecular level with the application of polymerase chain reaction (PCR)-based protocols. These protocols are carried out for translocation analysis utilizing multiplexed short tandem repeat (STR) markers located on both segments of the translocated chromosomes [14].

When the need arises for *in vitro* fertilization (IVF)/ICSI for the treatment of male infertility, the use of the above mentioned cytomolecular diagnostic tests may be taken into consideration with proper consent of the subject. This molecular diagnostic approach will enable us to study the integrity of the sperm DNA because it is the essential and prerequisite criteria for the accurate transmission of genetic material from parents to offspring.

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