SPERM ANEUPLOIDY AND MALE FERTILITY

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Abstract:

Worldwide, infertility affects 20% of couples and male factor infertility is the primary problem in about half of these couples. Extensive studies have shown that infertile men have an increased frequency of aneuploid spermatozoa. Because aneuploidy is correlated with overall reproductive failure, the high frequency of cytogenetically abnormal sperm cells in male factor infertility raises concerns that there may be an increased incidence of abnormal babies, as well as a higher incidence of spontaneous abortions. Before a few decades, human-rodents egg (from mice and hamster) fusion techniques were used to study human sperm aneuploidy. While this method was effective to define chromosomes number and structure abnormality, it was very difficult to define the aneuploidy for specific chromosome; also it is time and effort consuming. An alternative technique for aneuploidy determination is fluorescence in situ hybridization (FISH) analysis with chromosome-specific DNA probe was developed in 1990s, which directly identifies both aneuploidy and polyploidy in spermatozoa. Using FISH protocol, it is become clear that some specific chromosomes show higher aneuploidy rate than other chromosomes. While the incidence of sperm aneuploidy was observed in men with normal and abnormal karyotype, its rate varies based on life style costume, age, diseases and other factors. However, the genetic factor remains the main controller in sperm aneuploidy. Many trials have been made in andrology laboratory to discriminate between sperm with normal or abnormal chromosome numbers, however none of them is reliable. Recent trends should be focused on the physiological differences between euploid and aneuploid spermatozoa