

Assessment of Sperm Aneuploidy Using Advanced Sperm Fish Technique in Infertile Patients

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Abstract : Background: There is evidence that male factors contribute to the infertility of up to 50% of couples, who are evaluated and treated for infertility using advanced assisted reproductive technologies. Genetic abnormalities, including sperm chromosome aneuploidy as well as structural aberrations, are one of the major causes of male infertility. Recent advances in technology expedite the evaluation of sperm aneuploidy. The purpose of the study was to determine the prevalence of sperm aneuploidy in infertile males and the degree of association between DNA fragmentation and sperm aneuploidy. Methods: In this study, 75 infertile men were included, and they were divided into four abnormal groups (Oligospermia, Terato-spermia, Asthenospermia and Oligoasthenoteratospermia (OAT)). Men with children who were normozoospermia served as the control group. The Fluorescence in situ hybridization (FISH) method was used to test for sperm aneuploidy, and the Sperm Chromatin Dispersion Assay (SCDA) was used to measure the fragmentation of sperm DNA. Spearman's correlation coefficient was used to evaluate the relationship between sperm aneuploidy and sperm DNA fragmentation along with age. $P < 0.05$ was regarded as significant. Results: 75 participants' ages varied from 28 to 48 years old (35.5 ± 5.1). The percentage of spermatozoa bearing X and Y was determined to be statistically significant (p -value < 0.05) and was found to be 48.92% and 51.18% of CEP X X 1 - nucish (CEP XX 1) [100] and CEP Y X 1 - nucish (CEP Y X 1) [100]. When compared to the rate of DNA fragmentation, it was discovered that infertile males had a greater frequency of sperm aneuploidy. Asthenospermia and OAT groups in sex chromosomal aneuploidy were significantly correlated ($p < 0.05$). Conclusion: Sperm FISH and SCDA assay results showed increased sperm aneuploidy frequency, and DNA fragmentation index in infertile men compared with fertile men. There is a significant relationship observed between sperm aneuploidy and DNA fragmentation in OAT patients. When evaluating male variables and idiopathic infertility, the sperm FISH screening method can be used as a valuable diagnostic tool.

Keywords : male infertility, dfa (dna fragmentation assay) (scd-sperm chromatin dispersion).art (artificial reproductive technology), trisomy, aneuploidy, fish (fluorescence in-situ hybridization), oat (oligoasthenoteratospermia)

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