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Poster Presentations

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Study of the relationship between sperm DNA fragmentation and classical parameters with consideration of various diseases

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Background: Sperm chromatin integrity has a major role in the normal embryo's development and pregnancy outcome. Nonetheless, lots of variable factors such as lifestyle, history of surgery and disease can destruction sperm DNA. Therefore evaluation of sperm DNA fragmentation (SDF) could be a good predictor of ART outcome and improvement of healthy pregnancy rate.

Objective: The present study was performed to evaluate the effect of various diseases (Diabetes Mellitus and Mumps) and varicocele and hernia surgery on SDF and sperm classic parameters in a big sample size of infertile couples who underwent ART treatment.

Materials and Methods: The demographic data of 1,191 records of men who were referred to Royan Institute, for SDF test from July 2018 to March 2020 were investigated. Following liquefaction, semen quality parameters including semen volume, sperm concentration, count, motility, morphology were tested according to guidelines of the WHO, 2010. The sperm concentration and total motility including progressive motility plus non-progressive motility were measured by CASA. The sperm morphology was studied by Papanicolaou staining. The sperm chromatin structure assay (SCSA) test was applied for measuring sperm DNA fragmentation. Data were analyzed using the two-tailed Student's *t* test for independent data.

Results: Within the studied group, 295 men (25%) had varicocele surgery. The results demonstrated this group had higher mean of total DFI (25.77 ± 14.38%) than non-varicocele surgical group (22.70 ± 13.75%) and there is a significant correlation between men who had varicocele surgery and total DFI (p = 0.002) and also all sperm classic parameters including (count, motility, progressive motility, morphology (p = 0.000). Patients who had mumps in childhood had higher total DFI (26.07 ± 1.25%) than patient who had not (23.47 ± 0.44) and the difference was significant (p = 0.042). Also mumps group had lower motility (49.46 ± 0.01%) and lower normal morphology (1.77 ± 0.09%) rather than non- mumps group (54.91 ± 0.78%; p = 0.010), (2.05 ± 0.04%; p = 0.012), respectively. Moreover, 36 men (3%) had hernia surgery and the result demonstrates no significant correlation between hernia surgery and total DFI and sperm classic parameters. Men were divided into two groups based on whether they had diabetes or not (regardless of type I or type II diabetes). Although the mean of SDF in diabetics men was numerically higher than non-diabetics, the difference wasn't significant (p = 0.454).

Conclusion: These results indicate differences in SDF and semen parameters between men who suffering from mumps compare to healthy subjects which warrants further studies. Furthermore, in men who had varicocele surgery SDF was elevated.

Key words: *Sperm DNA fragmentation, Mumps, Varicocele.*