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Poster Presentations

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Improvement of sperm parameters and chromatin quality in asthenospermic men by oral co-administration of pentoxifylline and anti-oxidants

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Background: Oxidative stress affects male fertility by defecting spermatozoa. Asthenozoospermia is referred to reduced or complete sperm motility. Reactive oxygen species is one of the major reasons of higher sperm DNA fragmentation. Sperms with high DNA fragmentation are higher in asthenozoospermia, teratozoospermia and oligozoospermia. Also, sperm DNA fragmentation level is higher in men with sperm motility defects. The imbalance between the production of Reactive oxygen species and physiological status leads to damage which is known as oxidative stress. So, antioxidants supplements and Pentoxifylline (PTX) probably improve sperm quality by reducing oxidative damage.

Objective: The present retrospective study aimed to investigate the possible effect of oral co-administration of PTX + folic acid (FA) + vitamin E (Vit E) on sperm parameters, apoptosis, and sperm chromatin in asthenospermic men.

Materials and Methods: Semen samples of 30 infertile asthenospermic men, who referred to Yazd Reproductive Sciences Institute ere collected. Sperm parameters (count, motility, morphology, and viability), apoptosis, and DNA and chromatin quality were evaluated before and three months after consumption of PTX + FA + Vit E. DNA integrity and chromatin quality were assessed by Aniline blue (AB), Toluidine blue (TB), and Chromomycin A3 (CMA3) staining. Also, apoptosis was assessed by Terminal deoxynucleotidyl transferase dUTP nick end labeling (TUNEL). Sperm morphology was assessed by Papanicolaou staining.

Results: Our results showed that after co-administration of PTX and antioxidants, sperm motility and morphology increased significantly ($p < 0.0001$). Semen volume and sperm count were also increased, but not significantly ($p < 0.05$). Following the intervention, AB, TB, and CMA3 staining showed that the number of sperms with good chromatin quality and DNA integrity was increased, although it was not significant ($p < 0.05$). The mean ± S.D. of chromatin condensation, which were measured by AB, TB, and CMA3 before taking the drugs were 37.48 ± 8.84, 47.10 ± 15.43. and 37.72 ± 9.52, respectively and after taking the drug were 34.51 ± 7.27, 44.51 ± 14.99, and 35.68 ± 9.37, respectively. Also, the mean ± S.D. of sperm apoptosis by TUNEL test before and after taking the drug was 14.89 ±3.49, and 14.06 ± 3.74, respectively.

Conclusion: Based on these data, the cocktail of PTX + FA + Vit. E significantly increased the normal motility and morphology of sperm in asthenospermic men. But still more studyies with larger sample size is needed.

Key words: *Pentoxifylline, Folic acid, Vitamin E, Sperm chromatin, Asthenospermia.*