A Treatment Of Asthenozoospermic Patients With Oral Administration Of Vitamin E And C Combination

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Abstract:
The present study was aimed to improve semen and sperm parameters in asthenozoospermic patients with oral administration of vitamin E and C combination. The research was included examination of 36 semen samples collected from asthenozoospermic patients who treated at a private infertility clinic in Al-Najaf province. The pre- and post-treated patients were examined. The results indicated that there was a significant increase (p<0.01) in sperm concentration, sperm motility percent, and normal sperm percentage in post-treatment examination in comparison to that of pre-treatment.

Introduction:
The influence of reactive oxygen species (ROS) on fertility has an increasing interest. In patients with asthenozoospermia, an elevated production of ROS in seminal cells has been detected but the origin of their effects are unknown.(1) It is undefined the point in which the peroxidative damage to spermatozoa occurs. Whether within the semen (during the time required for liquefaction), in the epididymis (where spermatozoa are stored before ejaculation) or in the testis. By altering membrane integrity, ROS may impair sperm motility as well as sperm viability.(2)

Ascorbic acid is a water-soluble ROS scavenger with high potency. In seminal plasma ascorbic acid concentration are 10-Fold higher than in serum.(5,6) Ascorbic acid concentration in seminal plasma are positively related to the percentage of morphologically normal spermatozoa, and it has been suggested that ascorbic acid is a protective vitamin in the epididymis.(7)

Alpha – tocopherol (Vitamin E) is lipid soluble and acts mainly within cell membranes.(14) The concentration of alpha –tocopherol in spermatozoa is not significantly related to the concentration, nor to the total amount of alpha-tocopherol in seminal plasma, though the percentage of motile spermatozoa is significantly related to sperm alpha- tocopherol content.(15)

By combining their hydrophilicity and lipophilicity, vitamin C and E act synergistically in vivo to reduce peroxidative attack on spermatozoa.(16) The present study was performed to clarify whether supplementation with vitamin C and E can protect human spermatozoa from possible damage by oxygen free radical species in the epididymis, and thus improve sperm parameters in asthenozoospermic patients.
Materials and Methods:

Semen Evaluation:
Semen samples were obtained by masturbation and their analysis were performed according to WHO guidelines.(17) Semen parameters were included (Semen volume, PH, Liquefaction time and leucocytes concentration), as well as spermatozoa concentration, sperm motility percent and morphologically normal sperm percent.

Design:
The present study included (18) asthenozoospermic patients (average age 30.5 years). The treatment with oral administration of vitamin E (400 IU twice daily) with vitamin C (250 mg/day) for 3 months was given to asthenozoospermic patients treated at an infertility clinic (Private clinic in Nejaf).

Semen sample were evaluated pre and post treatment with vitamins.

Statistical analysis:
The obtained values were expressed as mean + SE.
Analysis of variance was used for statistical analysis of variables and sample means. The least significant difference was used to determine the statistical significance.(18)

Results and discussion:
The result revealed significant increase (P<0.01) of sperm concentration, sperm motility percent and morphologically normal sperm percent after the treatment with vitamin E and C in comparison with before treatment, while the results were showed no significant difference (P<0.01) of semen volume, leucocytes count, seminal pH, and liquefaction time between pre- and post- treatment.

On the basis of the results of our study, combined moderate-antioxidative treatment with vitamin C and E for 3 months period was improved sperm parameters in patients with asthenozoospermia. These results were in a greement with those reported by other(11,8,10,9) but were in disagreement with those reported elsewhere in the literatures.(12,13)

After exposure to ROS, the sperm membranes becomes more fragile and the treatment with antioxidative agents may prevent lipoperoxidation of sperm membranes.(19) Despite intracellular and extracellular antioxidative defence mechanisms, ROS may cause DNA damage which then causes mutations. It is suspected that DNA damage may lead to an increasing risk of miscarriage and chromosomal abnormalities, and this should be further investigated.(20)

In some pervious studies, attempts have been made to improve semen parameters of infertile men using comparable doses of vitamin C (1 g/day)(5,21) or Vitamin E (600 mg/day)(22), Whereas other studies have used lower doses of vitamin E, such as 300 mg/day,(24,23) or 200 mg/day,(4)

In summary, all these results could provide us with a possible therapeutic approach to treat asthenozoospermic patients with vitamin E and C combination.
Figure (1): Sperm concentration in asthenozoospermic patients after the treatment with vitamin E with vitamin C combination for 3 months.
* (P<0.01) Significant difference in comparison with pre-treated group.

Figure (2): Sperm motility in asthenozoospermic patients after the treatment with vitamin E with vitamin C combination for 3 months.
* (P<0.01)(P<0.05) Significant difference in comparison with pre-treated group.

Figure (3): Normal Sperm percent in asthenozoospermic patients after the treatment with vitamin E with vitamin C combination for 3 months.
*(P<0.05) Significant difference in comparison with pre-treated group.

Figure (4): Semen volume in asthenozoospermic patients after the treatment with vitamin E with vitamin C combination for 3 months.
(P<0.05) No Significant difference in comparison with pre-treated group.

Figure (5): Leukocyte concentration in asthenozoospermic patients after the treatment with vitamin E with vitamin C combination for 3 months.
(P<0.05) No Significant difference in comparison with pre-treated group.
Figure (6): Liquefaction time in asthenozoospermic patients after the treatment with vitamin E with vitamin C combination for 3 months.

(P<0.05) No Significant difference in comparison with pre-treated group.

Figure (7): Seminal PH in asthenozoospermic patients after the treatment with vitamin E with vitamin C combination for 3 months.

(P<0.05) No Significant difference in comparison with pre-treated group.

References: