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DNA fragmentation index (DFI) and seminal carnitine, with moderate accuracy, impact progressive sperm motility in oligoasthenozoospermc men treated with metabolic and essential nutrients

S Micic (RS) [1], N Lalic (RS) [2], D Djordjevic (RS) [3], N Bojanic (RS) [4], G Busetto (IT) [5], A Virmani (NL) [6], A Agarwal (US) [7]

Objective

Sperm DNA damage has been associated with adverse reproductive outcomes . L-carnitine is essential for the normal mitochondrial oxidation of fatty acids, protects cell membrane and DNA.

Methods

Analysis of ejaculate was done according to WHO 5th guideline. Progressive sperm motility was done manually. DFI was evaluated by Halosperm kit (Halotech DNA, S.L,) and seminal carnitine by enzymatic UV test (Roche).

Patients

This was DBPC study and examined the effect of Proxeed Plus, containing L-C 2g and ALC 1g, as well as antioxidants, vitamins and minerals, in men with idiopathic oligo-asthenozoospermia (age group18-50 years). The protocol was 2 months wash-out and 6 months treatment (T-2, T0, T+3, T+6), with test formulation (125 patients) or placebo (50 patients).

Results

The progressive sperm motility in the treated group demonstrated statistically significant difference, p<0.001 by Friedman test, in 3 different time periods: T0=28.00%(12.00±38.00), T3=30.00%(12.00±39.00) and T6=31.00%(20.00±41.00). DFI (%): T0=38.50 (32.00-48.75), T3=35.50 (25.50-44.00) and T6=31.00 (25,00-41.00)(Friedman test, p<0.001) The seminal carnitine at T0 was 700.50 ?mol/L (625.50±800.00) and at T6=751.50 ?mol/L (671.10±896.80), and this difference was significant. It was showed that the increase of seminal L-C level influenced the progressive sperm motility (R=0.274; p=0.023) . The correlation of seminal L-C and progressive sperm motility showed that an increase of seminal L-C of 7,7%, after therapy, would impact progressive sperm motility >10% (AUC=0.713). If DFI drops by more than 3%, after 6 months of therapy, it can be expected that men would have sperm motility greater than 10% (AUC=0.793; p<0.001). DFI reduction (odds ratios=1.106 with 95% confidence intervals) independently of elevation of L-C, increases the likelihood that sperm motility is >10%. There was no significant difference in placebo group in sperm motility, seminal L-C and DFI between T0 and T6. Pregnancy was obtained, in treated group in 21 cases and in 3 cases in placebo group

Conclusions

The percentage of change in DFI can be used in detection of men with better sperm motility after therapy . An increase of seminal carnitine of 7.7% , after 6 months therapy, would impact progressive

sperm motility >10% . This means that treatment with Proxeed plus improves functional capacity of spermatozoa.

[1] Uromedica Polyclinic, Belgrade, [2] Uromedica Polyclinic, Belgrade, [3] Urologic Clinic, Clinical Center of Serbia, Belgrade, [4] Urologic Clinic, Clinical Center of Serbia, Belgrade, [5] Department Gunc-Obstetrics and Urology, La Sapienza University of Rome, [6] Sigma-tau Healthscince, Utrecht, [7] American center for Reproduction, Andrology Center, Cleveland