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TITLE

CORRELATION BETWEEN PROTAMINE DEFICIENCY (CMA3 (POSITIVE) AND DNA FRAGMENTATION (TUNEL) AND OTHER SPERM PARAMETERS

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ABSTRACT

Abnormalities in protamination make the DNA susceptible to DNA damage especially by oxidative stress. Both protamine deficiency and DNA fragmentation related to infertility. A correlation between protamine under expression, DNA damage and lack of viability was detected.

Objectives. To determine the relationship between protamine deficiency of spermatozoa and DNA fragmentation beside other sperm parameters, count, vitality, motility and membrane integrity.

Materials and Methods. 75 randomized sperm samples of patients undergoing IVF/ICSI therapy were included in this study. Protamine deficiency was assessed by Chromomycine (CMA3), Whereas, Vitality assessed by Eosin and Hypo osmotic swelling test (HOS). DNA fragmentation was evaluated using TUNEL test.

Results: The mean values of investigated sperm parameters were as follow: Count (54.92 ± 4.83 mill/ml), Motility ($34.60 \pm 2.95\%$), Vitality ($48.00 \pm 2.74\%$), Membrane integrity ($62.80 \pm 1.89\%$), CMA3 (positive) ($31.22 \pm 1.78\%$) and TUNEL (positive%) ($20.80 \pm 1.31\%$).

The CMA3 (positive %) showed significant negative correlations with sperm count ($r=-0.591$, $p=0.0001$), motility ($r=-0.399$, $p=0.004$), vitality ($r=-0.482$, $p=0.0004$), and membrane integrity ($r=-0.394$, $p=0.004$).

Besides, TUNEL (positive %) showed negative significant correlations with sperm count ($r=-0.56$, $p=0.0001$), motility ($r=-0.326$, $p=0.021$), vitality ($r=-0.432$, $p=0.001$), and membrane integrity ($r=-0.412$, $p=0.003$). Moreover, the DNA fragmentation showed significant positive correlation with protamine deficiency as assessed by Chromomycin CMA3 test ($r=0.859$, $p=0.0001$).

Conclusions: The present study demonstrates a relationship between protamine deficiency (CMA3 stain) and DNA fragmentation (TUNEL assay) of spermatozoa. Therefore, it is important to select spermatozoa with normal protamine levels for use in ART.

INSTITUTE

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