

Relationship between level of lipid peroxidation markers in seminal plasma and sperm motility

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Abstract

Introduction: Although all leading causes of impaired sperm motility are not completely understood, poor sperm forward motility (asthenozoospermia) is considered to contribute to the infertility of a significant number of males. One of the major factors that can potentially cause asthenozoospermia is oxidative stress induced by reactive oxygen species (ROS). The aim of this study was to investigate lipid peroxidation by measuring a novel marker of lipid peroxidation, $F_{2\alpha}$ -isoprostane, and malondialdehyde (MDA) in seminal plasma of normozoospermic vs. asthenozoospermic men, and their relationship with sperm motility.

Materials and Methods: We designed a case-control study with a total subject of 30 males. After semen analysis subjects were determined to be either normozoospermic, as the control group (n=15), or asthenozoospermic, as the case group (n=15). Seminal plasma level of $F_{2\alpha}$ -isoprostane was measured using a commercially available enzyme immunoassay (EIA) kit. The amount of MDA was determined by the thiobarbituric acid (TBA) assay. The Mann-Whitney test was used to compare results of the two groups. Coefficients of correlation between sperm quality parameters and the concentration of Isoprostan $F_{2\alpha}$ and MDA were calculated using Spearman's correlation analysis.

Results: The mean level of $F_{2\alpha}$ -isoprostane did not show a significant difference between the two groups ($p>0.05$). But, the difference of mean MDA between the two groups was statistically significant ($p<0.05$). Sperm motility was inversely correlated with both $F_{2\alpha}$ -isoprostane and MDA levels ($p<0.05$).

Conclusion: Our results suggest that sperm membrane lipid peroxidation might not have a significant role in asthenozoospermia etiology, but further investigations are needed for confirmation.

Key Words: Lipid peroxidation, Sperm motility, $F_{2\alpha}$ -Isoprostane, Malondialdehyde, Seminal plasma, Asthenospermia, and Normospermia.

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