Title: Relationship of enzymatic antioxidants in the follicular fluid and semen of infertile couples with assisted reproduction outcomes

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Objective: The controlled generation of ROS in spermatozoa is associated with normal physiological functions. The relationship between markers of oxidative stress in sperm and oocyte with fertilization and pregnancy is not well established. The goal of our study was to examine the correlation between the levels of superoxide dismutase (SOD), catalase in the seminal plasma as well as in serum and follicular fluid of women undergoing assisted reproduction techniques with fertilization and cleavage rates.

Design: Prospective study

Materials and Methods: Two hundred and eight infertile couples undergoing ICSI from January 2004 to December 2006 were enrolled in this study. Levels of SOD, catalase were measured in the seminal plasma and lipid peroxidation was measured in the sperm. All these were also measured in the serum and follicular fluid of female partners. SOD and catalase were measured using the assay kits and LPO was measured by the thiobarbituric acid method and measuring the malonaldehyde (MDA) concentration.

Results: After adjusting for age, a negative correlation was detected between the LPO levels in the blood serum ($r = -0.17; p = 0.01$) and follicular fluid ($r = -0.21; p = 0.01$) with the pregnancy rates. The correlations with various markers is shown in the table.

Conclusions: Superoxide dismutase and catalase levels in the follicular fluid show a good correlation with both fertilization and cleavage rates. Levels of LPO in the follicular fluid and in the serum may serve as an important marker of healthy metabolic activity within the follicle which is necessary for establishing a pregnancy.

Support: None