Objective: The generation of reactive oxygen species (ROS) in the male reproductive tract has become a real concern due to its potential toxic effects at high levels on sperm quality and function. Human spermatozoa are rich in polyunsaturated fatty acids and are therefore susceptible to ROS attack. Among the well known biological antioxidants, superoxide dismutase (SOD), catalase, and glutathione peroxidase/reductase system have a significant role in protecting the sperm against peroxidative damage. The objective of our study was to evaluate the seminal antioxidant enzymatic activity (SOD and catalase) and lipid peroxidation levels among fertile and infertile men. Design: Retrospective study at a tertiary care institution. Materials and Methods: The Institutional Review Board approved this study. Ten fertile donors and 112 infertile patients were included in the study. Semen analysis was performed according to the World Health Organization guidelines and sperm morphology according to Tygerberg strict criteria. Lipid peroxidation levels were estimated by thiobarbituric acid assay. Superoxide dismutase and catalase levels were determined with a spectrophotometer. Results: Significantly lower levels of SOD (14.67 ± 12.27 vs 38.03 ± 21.65) and catalase (14.87 ± 16.95 vs 34.03 ± 20.65) were seen in infertile patients compared to fertile donors (P < 0.0001). A significant correlation was seen between catalase and SOD levels (r = 0.461, P = 0.0001). Lipid peroxidation levels were inversely correlated with SOD (r = -0.267, P = 0.035). Superoxide dismutase was significantly correlated with sperm concentration (r = 0.204, P = 0.034) and negatively with leukocytospermia (r = -0.228, P = 0.021). Conclusion: Low antioxidant enzyme and high lipid peroxidation levels are associated with male infertility. Oxidative stress precipitates a range of pathologies that are thought to affect the male reproductive system. Determining the levels and the sources of excessive ROS production in human semen and precise evaluation of the scavenger system are useful tools in developing therapeutic strategies for male infertility. Support: None

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