Elevated seminal reactive oxygen species and depressed total antioxidant capacity in infertile men after vasectomy reversal.
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Objectives: Pregnancy rates after vasectomy reversal are 23 to 70% despite patency rates of 71 to 97%. Possible reasons for this disparity include antisperm antibodies, partial obstruction, epididymal dysfunction, and female infertility factor(s). Elevated levels of seminal reactive oxygen species (ROS) and depressed total antioxidant capacity (TAC) are known causes of male infertility, but their role in men after vasectomy reversal is not known. This study examined seminal ROS and TAC levels of men who remained infertile after vasectomy reversal.

Design: ROS, TAC, and semen quality were evaluated in men after vasectomy reversal and in normal donors recruited at a male infertility clinic of a tertiary care center.

Materials and Methods: After receiving institutional review board approval, we recruited patients who had undergone vasectomy reversal in 1995 and 1996 (n = 12) and normal donors (n = 19). Fertility was defined as the ability to establish a pregnancy at least 1 year after surgery. Azoospermic men, men with leukocytospermia, (>1 X 10^6 white blood cells/mL), and men not actively trying to establish a pregnancy were excluded from the study. Semen analyses were performed using a computer-assisted semen analyzer, and sperm counts were verified manually. ROS levels were measured in washed spermatozoa with a chemiluminescence assay. ROS results were calculated as log (ROS + 1) and expressed as 10^-1 counted photons/minute/20 X 10^6 sperm. TAC was measured with an enhanced chemiluminescence assay, and the results were expressed in trolox (a water-soluble vitamin E analogue) equivalents.

Results: Infertile men after vasectomy reversal (2.23; interquartile range 1.60, 3.39) had significantly higher ROS levels than normal donors (1.13; interquartile range: 0.94, 1.65) (P = 0.001). TAC was significantly lower in infertile men after vasectomy reversal (1682.3; interquartile range: 1311, 2129) than in normal donors (1061; interquartile range: 913, 1205) (P = 0.01). The percentage of normal sperm forms was significantly lower in the infertile men after vasectomy reversal compared to normal donors (P = 0.01).

Conclusions: Men who have undergone vasectomy reversal have elevated levels of seminal ROS and depressed TAC compared to normal donors. Our data demonstrates that vasectomy reversal is associated with seminal oxidative stress.

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