VASOVASOSTOMY IS ASSOCIATED WITH RETENTION OF SPERM CYTOPLASMIC DROPLETS AND OXIDATIVE STRESS

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Objective: There is a lack of clear relationship between patency following vasectomy reversal rates and pregnancy rates. It has been shown that spermatozoa with retained cytoplasmic droplets have defective sperm function and produce excessive levels of reactive oxygen species (ROS). We sought to determine whether bilateral vasovasostomy is associated with retention of sperm cytoplasmic droplets and increased ROS levels.

Design: Retrospective study at a tertiary care institution. University based center.

Materials and Methods: We retrospectively reviewed the results of 18 patients who underwent vasovasostomy. Semen samples were obtained from a consecutive group of men postoperatively and a cohort of 17 men considered as normal semen donors. Semen was obtained by masturbation after at least 48 hours of abstinence. Samples were collected into sterile containers and allowed to liquefy at 37°C for 30 minutes and analyzed for sperm concentration, percent motility, and morphology according to World Health Organization criteria. ROS levels were determined by measuring chemiluminescence with a luminometer in the integrated mode for 15 minutes, and results were expressed as $10^4$ counted photons per minute (cpm) per $20 \times 10^6$ sperm.

Results: Vasectomy reversal had lower sperm concentration ($41.6 \pm 9.8$ vs. $69.4 \pm 9.1$, $P = 0.001$) sperm motility ($31.5 \pm 4.4$ vs. $55.5 \pm 4.9$, $P = 0.002$), and morphology ($33.75 \pm 2.78$, $P = 0.04$) compared to donors. Log (ROS + 1) was higher in the vasectomy reversal patients ($21. \pm 0.24$) compared to donors ($1.30 \pm 0.14$, $P = 0.001$). Sperm concentration ($r = -0.07$, $P = 0.76$), motility ($r = -0.024$, $P = 0.922$), or normal sperm morphology ($r = -0.249$, $P = 0.07$) showed a lack of correlation with ROS levels in the vasectomy reversal group. A positive correlation was detected between the levels of ROS and cytoplasmic droplets ($r = 0.5616$, $P = 0.01$) in patients who underwent a vasovasostomy.

Conclusion: Seminal oxidative stress is related with vasectomy reversal. These data suggests that seminal oxidative stress may play a role in reduced fertility potential associated with the vasovasostomy.

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