ROS-TAC SCORES AND SEMEN QUALITY IN INFERTILE PATIENTS WITH VARICOCELE

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Introduction and Objectives:
Semen analysis typically produce a wide variety and number of semen characteristics that are correlated, indicating that underlying measures of semen quality can be used to reduce the number of variables evaluated. The purpose of our study was to compare the semen quality and the seminal oxidative stress (ROS-TAC score) in infertile men with varicocele with normal donors (controls) and to a known group of fertile and infertile men treated for their infertility.

Methods:
Principal component analysis was applied to 9 semen characteristics (concentration, motility, morphology, and sperm motion characteristics assessed by computer assisted semen analyzer) to provide a standardized score in 21 infertile men with varicocele and 17 controls attending our infertility clinic. Reactive oxygen species (ROS) production and total antioxidant capacity (TAC) was measured by chemiluminescence assays. ROS-TAC score was formulated using principal components to predict fertility potential in these men. A logistic regression analysis comparing the fertile (n = 13) and infertile (n = 39) men (treated male factor cases) was used to provide estimates of fertility based on the ROS-TAC score.

Results:
Compared to controls, infertile patients had significantly lower sperm concentration (37.0 ± 5.9 vs. 69.4 ± 9.1; P = 0.003), sperm motility (35.6 ± 3.5 vs. 55.5 ± 4.9; P = 0.002), and normal morphology according to the WHO criteria (30.6 ± 2.8 vs. 39.8 ± 2.5; P = 0.07). Patients with varicocele had lower semen quality scores (81.7 ± 10.5) than controls (98.9 ± 10.3); (P = 0.002). The ROS levels was higher in men with varicocele (2.1 ± 0.25) compared to controls (1.3 ± 0.3) (P = 0.02); whereas the TAC level was lower in men with idiopathic infertility (1,186.0 ± 96.9) compared to controls (1,443.0 ± 105.0) (P = 0.05). In addition, infertile varicocele patients had significantly lower ROS-TAC scores (41.7 ± 13.1) than controls (51.3 ± 9.9) (P = 0.03). An estimated 74% of men with idiopathic infertility were estimated to remain infertile within one year follow-up based on logistic regression analysis.

Conclusions:
Infertile patients with varicocele have lower scores of semen quality as well as markers of oxidative stress (ROS, TAC, and ROS-TAC score) compared to controls. Seventy-four percent of infertile men with varicocele tend to remain infertile within one year. Both semen and ROS-TAC scores provide important information about the semen quality and fertilizing potential; this information may be used in the medical management of infertile patients with idiopathic etiologies.

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