

## **ROLE OF SEMEN QUALITY SCORE AND REACTIVE OXYGEN SPECIES LEVELS IN DIAGNOSING MALE FACTOR INFERTILITY**

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Increased levels of reactive oxygen species (ROS) are associated with poor quality semen. Individual sperm parameters are poor predictors of semen quality. Our objective was to 1) characterize a novel semen quality (SQ) score and levels of ROS in male factor infertility (MFI) patients, and 2) examine the association of SQ score and ROS levels. MFI patients (n = 115) and healthy donors (n = 45) with normal semen parameters were evaluated. A principal component analysis model was used to construct an SQ score using 9 semen parameters. Levels of ROS were measured by chemiluminescence assay and results expressed as log (ROS + 1). Lower SQ score (mean  $\pm$  SD) was observed in MFI patients  $74.36 \pm 18.69$  and the various subgroups: oligozoospermic (OZ):  $60.20 \pm 14.21$ ; asthenozoospermic (AZ):  $70.32 \pm 18.29$ ; teratozoospermic (TZ):  $67.07 \pm 16.86$ ; and oligoasthenoteratozoospermic (OAT):  $55.80 \pm 12.94$  compared to donors ( $99.73 \pm 7.22$ )  $P < 0.0001$ . ROS levels were higher in MFI patients  $2.30 \pm 1.07$  and the subgroups: OZ:  $2.73 \pm 1.19$ , AZ:  $2.32 \pm 1.1$ , TZ:  $2.42 \pm 1.19$ , and OAT:  $2.87 \pm 1.19$  compared to donors ( $1.01 \pm 0.52$ )  $P < 0.0001$ . A negative correlation was observed between SQ score and levels of ROS in MFI ( $r = -0.36$ ,  $P < 0.0001$ ), AZ ( $r = -0.40$ ,  $P < 0.0001$ ), and TZ patients ( $r = -0.41$ ,  $P < 0.007$ ). In conclusion, evaluation of SQ score and measurement of ROS in semen should be included as part of patients infertility screening. The results of these tests may help the clinicians in better diagnosis of infertility compared to routine semen evaluations.