Acrosome status in fertile men: normal variability, assay reproducibility, effects of cryopreservation and correlation with sperm motion characteristics. 1,2SC Esteves, 2RK Sharma, 2AJ Thomas, Jr. and 2A Agarwal. 1Division of Urology, Campinas, São Paulo, Brazil and 2Andrology Research and Clinical Laboratories, Department of Urology, The Cleveland Clinic Foundation, Cleveland, OH

Objectives: The sperm count and motion characteristics can vary greatly in semen specimens collected from the same individual at different time intervals. However, it is unclear whether such variability is also present in sperm function characteristics such as the acrosome reaction. This study determined the variation in the acrosome reaction in two different spermatogonial cycles in fresh and cryopreserved sperm from fertile men; we also assessed the reproducibility of the assay and its correlation with sperm motility and motion characteristics.

Design: Prospective study in which semen specimens were evaluated at two different points in the spermatogonial cycle.

Materials and Methods: Semen specimens from 14 volunteers with proven fertility were obtained by masturbation after 48 hours of sexual abstinence at two different time intervals of the spermatogonial cycle (median interval = 5 months, range: 5 to 8 months). Specimens were analyzed for percentage motility and motion characteristics using a computer-assisted semen analyzer. Acrosome status was determined by FITC-PNA lectin analysis and sperm viability by Hoechst-33258 analysis before and after cryopreservation. Specimens were cryopreserved with TEST-yolk buffer freezing medium. The inter- and intra-observer variation for the acrosome assay was assessed. Differences were considered significant at P <0.05.

Results: The frequency of spermatozoa with an intact acrosome decreased after cryopreservation at both study intervals (P<0.001). The intraclass correlation coefficient analysis revealed that motion characteristics poorly correlated with the acrosome reaction results at both time intervals before and after cryopreservation. Percentage sperm motility and motion characteristics decreased significantly after cryopreservation at both time intervals (P<0.02). The inter- and intra-observer variation for the acrosome scores were 6.5% (r² = 0.81; 95% confidence interval [CI] = 0.62 to 0.91) and 1.6% (r² = 0.98%; 95% CI = 0.95 to 0.99), respectively.

Conclusions: A single semen analysis does not predict the results of a subsequent semen evaluation from different spermatogonial cycles. Trained observers can assess the acrosome status with high accuracy. Similarly, standard semen analysis in the same individual can give different results at different time intervals for the acrosome status.

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