Sperm function tests in the assessment of semen quality
R.S. Sidhu,* R.K. Sharma, Y. Wang, A.J. Thomas, Jr. and A. Agarwal. Andrology Research & Clinical Laboratories, Department of Urology, The Cleveland Clinic Foundation, Cleveland, OH 44195

Sperm concentration and motility are insufficient in the diagnosis of male infertility. Sperm characteristics that can predict the fertilizing capacity can provide useful information in the management of infertile men. The aim of the study was to evaluate if sperm motility, morphology, levels of lipid peroxidation (LPO) and creatine kinase (CK) correlate with the extent of mannose ligand receptor (MLR) binding and acrosome reaction (AR). Semen samples from 16 normal volunteers were analyzed by computer assisted semen analyzer. Seminal smears were assessed by Kruger's method. Thiobarbituric assay was used to determine LPO levels in the presence of a ferrous ascorbate primer system. Creatine kinase levels were measured using the CK-40 Sigma kit. Spermatozoa were capacitated for 6 h at 37°C in Ham's F-10 medium containing 3% human serum albumin (HSA), and the viability assessed using Hoechst-33258 (1 µg/mL) staining. MLR binding (pattern III) were detected by the binding of fluorescein isothiocyanate labeled (FITC) mannosylated bovine serum albumin and AR (pattern III) was simultaneously evaluated by rhodamine (RITC)-labeled pisum sativum lectin. Results were analyzed using the Pearson correlation test. A negative but non-significant correlation was seen between sperm morphology and the levels of LPO and CK. Significant correlation was seen between FITC-pattern III at 6 h and RITC-pattern III at 6 and 24 h (P < 0.0006). A negative although non-significant correlation was also seen between FITC-pattern III and CK. We conclude that 1) sperm morphology is a good predictor of semen quality, 2) biochemical parameters such as LPO and CK are inversely related to the sperm quality, and 3) MLR and AR can be used to assess the fertilizing potential of the spermatozoa. These tests when performed together may provide relevant information important in the treatment of infertile men.