Relationship Between Sperm Creatine Kinase Level and Clinical Diagnosis, R.S. Sidhu, J. Hallak, A.J. Thomas Jr., and A. Agarwal; Andrology Research & Clinical Laboratories, Dept of Urology, Cleveland Clinic Foundation, Cleveland, OH.

Objectives: Creatine kinase enzyme level indicates the degree of sperm maturity and correlate with their fertilizing potential. We determined whether sperm créatine kinase level in subfertile men is related to the clinical diagnosis.

Design: A prospective clinical study.

Materials and Methods: Semen samples from patients with varicocele (n = 19), cancer (n = 22), obstructive pathology (n = 7), unexplained infertility (n = 33), and healthy normal donors (n = 15) were obtained after 48 h to 72 h of sexual abstinence. Specimens were allowed to liquefy at 37°C, and sperm characteristics were assessed by a computer-assisted semen analyzer. Creatine kinase was measured after extraction with Triton-X using a CK test kit (Sigma Chemical Company, St. Louis, MO). The results were expressed as U/10⁸ sperm.

Results: The median and interquartile values of creatine kinase were: varicocele 0.34 (0.20 - 1.21), cancer 0.07 (0.05 - 0.17), obstructive pathology 0.59 (0.43 - 4.04), idiopathic infertility 0.12 (0.06 - 0.17), and normal donors 0.06 (0.06 - 0.08). Creatine kinase was significantly higher in varicocele patients compared to normal donors (P = 0.0002), cancer patients (P = 0.0004), and men with idiopathic infertility (P <0.002). Sperm concentration and creatine kinase level significantly correlated in patients (r = -0.7, P <0.001) but not in normal donors. Sperm concentration and creatine kinase levels were also negatively correlated in the patient groups.

Conclusions: Our results indicate that subfertile patients with varicocele and ductal obstruction may be examined for high levels of creatine kinase. These patients with high creatine kinase levels can be first treated surgically, and then if needed, referred for assisted reproductive procedures. That creatine kinase levels were similar in normal donors and cancer patients suggests that the final phase of spermatogenesis is not altered in cancer; thus, semen from cancer patients should be bankers to ensure future fertility.