Normal values of creatine kinase and its correlation with semen parameters and clinical varicocele in a fertile population

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Objective: Creatine kinase (CK) M isoform in human sperm is regulated and expressed during late spermiogenesis. Gametes expressing immaturity present higher levels of total CK and other cytoplasmic enzymes. The objective of this study was to determine the normal reference values for seminal CK in a population of fertile subjects and evaluate its correlation with clinical varicocele and seminal parameters.

Design: Prospective

Materials and Methods: One hundred and twenty-one fertile men requesting vasectomy and 30 infertile positive control patients were included. Physical examination, standard semen analysis, seminal leukocyte counts and total seminal CK levels were assessed in all samples. Fertile men with leukocytospermia were excluded.

Results: Statistically significant differences in CK levels were found between fertile men (median and interquartile values: 0.18 IU/10^8 sperm [0.1, 0.4]) and infertile patients (0.57 IU/10^8 sperm [0.3, 1.2]) (p<0.0001). A significant negative correlation between CK levels and sperm count, grade A motility, normal morphology by World Health Organization (WHO) as well as Kruger's strict criteria was observed. There was no significant correlation between seminal CK levels and clinical varicocele (Table 1). The cutoff value of normality for CK was 0.36 IU/10^8 sperm, 75.6% for area under curve (AUC), 65.9-85.2 (95% confidence interval).

Conclusions: We defined the cutoff values of CK in a fertile population. These values will allow the use of this important marker in the evaluation of patients with male infertility in an Andrology laboratory.

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