INTRODUCTION AND OBJECTIVES: Creatine kinase (CK) is a marker of sperm maturity that correlates with sperm fertilizing capacity. Elevated levels are associated with an increased rate of functional abnormalities and increased cytoplasmic retention. We evaluated CK levels in men with mild, moderate, or severe oligospermia to assess the degree of sperm maturity.

METHODS: We compared CK levels of 51 oligospermic men who could not initiate pregnancy naturally (27 had varicocele, 23 had unexplained infertility, and 9 had recently reversed vasectomies) with 25 healthy donors. All patients had a sperm count below \(20 \times 10^6\)/mL and a total sperm count (TSC) below \(40 \times 10^6\). Patients were categorized by the degree of oligospermia, as defined by TSC: severe (\(\leq 5 \times 10^6\); \(n = 10\)), moderate (5 to \(\leq 10 \times 10^6\); \(n = 11\)), mild (>10 to \(\leq 40 \times 10^6\); \(n = 30\)). Sperm characteristics were assessed by a computer-assisted semen analyzer. Creatine kinase levels were measured after extraction with Triton-X using a CK test kit (Sigma Diagnostics, St. Louis, MO).

RESULTS: Mean (SD) CK levels were \(8.8 \pm 6.5 \) U/\(10^8\) sperm in the severe group, \(0.50 \pm 0.19 \) U/\(10^8\) sperm in the moderate group, \(0.49 \pm 0.15 \) U/\(10^8\) sperm in the mild group, and \(0.06 \pm 0.01 \) U/\(10^8\) sperm in the healthy donor group and were significantly higher in all three infertile groups (\(P < 0.001\)). Mean CK level in the severe oligospermic group was seventeen times higher than that in the moderate (\(P = 0.03\)) and mild groups (\(P < 0.001\)).

CONCLUSIONS: Elevated CK levels are associated with severe oligospermia, irrespective of the clinical diagnosis. Creatine kinase may be a more sensitive indicator of sperm quality and maturity in the follow-up of patients treated for male factor infertility.