ELEVATED REACTIVE OXYGEN SPECIES AND DEPRESSED TOTAL ANTIOXIDANT LEVELS IN MEN WITH VARICOCELE. Peter N. Kolettis, Benjamin N. Hendin, Rakesh K. Sharma, Anthony J. Thomas, Jr., and Ashok Agarwal, Cleveland OH (Presented by Dr. Kolettis)

INTRODUCTION and OBJECTIVES: Elevated levels of reactive oxygen species (ROS) and depressed levels of antioxidants are associated with male subfertility. ROS induces lipid peroxidation, decreasing membrane fluidity and sperm fertilizing capability. The purpose of this study was to evaluate the role of seminal ROS in men with clinical varicocele and to examine the role of total antioxidant capacity (TAC) in the same population.

METHODS: Semen samples were obtained from infertile (unable to establish a pregnancy within 1 year) men with clinical varicocele (n = 23), men with incidental (fertile or attempting pregnancy less than 1 year) varicocele (n = 14), and normal donors (n = 13). Men with leukocytospermia (>1 X 10^6 white blood cells/mL) were excluded from study. ROS levels were measured from washed spermatozoa using a chemiluminescence assay. Results were expressed as 10^4 counted photons/minute/20 X 10^6 sperm. TAC was measured using an enhanced chemiluminescence assay and the results were expressed as trolox (a water-soluble vitamin E analogue) equivalents.

RESULTS: Patients with varicocele had significantly higher ROS levels than donors (P = 0.03). ROS levels did not differ between infertile and incidental varicocele patients (P = 0.80). However, ROS levels were significantly higher (P = 0.048) in infertile varicocele men compared with normal donors. TAC levels were significantly lower (P = 0.004) in all varicocele patients compared with normal donors and significantly lower (P = 0.002) in incidental varicocele patients compared with normal donors. There was no relationship between ROS and TAC levels in any group.

CONCLUSIONS: Our results suggest that elevated ROS and depressed TAC levels are associated with varicocele; these changes may be related to the sperm functional abnormalities and infertility commonly seen in this patient population. These findings suggest a possible rationale for antioxidant supplementation in men with varicocele.