

Journal of Andrology, Vol 15, Issue 2 145-150, Copyright © 1994 by The American Society of Andrology

JOURNAL ARTICLE

The detrimental effects of electric current on normal human sperm

S. C. Sikka, R. Wang, E. Kukuy, C. F. Walker and W. J. Hellstrom

Department of Urology, Tulane University, New Orleans, Louisiana.

This in vitro study was conducted to determine the direct effects of electric current and associated increase in temperature on human sperm. Washed sperm samples from normal volunteers were subjected to an electric current (0 to 100 mA) in a small, customized Plexiglas chamber for up to 10 minutes. Resistive heating was monitored by a miniature temperature probe. An aliquot (7 microliters) obtained from the exposed sample (at 0, 3, 7, and 10 minute intervals) was evaluated for sperm motion parameters, viability, gross morphology, and electron microscopic analyses. As the current increased, there was a time-dependent decrease in the percentages of motility, viability, and curvilinear velocity. Light and electron microscopic evaluations of the sperm showed no demonstrable damage to the head, mid piece, or tail regions on electric stimulation. A gradual time-dependent increase in the temperature of the medium was observed with electric current. Separate evaluations in the absence of an electric current showed a significant increase in percent motility and curvilinear velocity until 40 degrees C. These results suggest that an electric current, independent of temperature (up to 40 degrees C), is detrimental to sperm motion and viability. Further studies are indicated to evaluate whether electric current during electroejaculation may be in part responsible for poor sperm recovery in men with spinal cord injury.

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