

Ex vivo study of effect of wireless telephone radiation on human sperm

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Infertility is a major health problem in developed countries, with about 14% of couples in reproductive age facing a problem of childbearing. In 40% of these couples, infertility is attributable to the male companion, along with the absence of clinical etiology, enabling scientists to implicate modern lifestyle and to investigate various environmental risk factors, including radiation. The use of wireless technology at domestic and professional areas has been increased exponentially in the last decades and users are exposed regularly to a variety of wireless communication technology devices (cell phones, tablets, Wi-Fi routers, DECT) during communication. This study focused on the effect of non-ionizing radiation (NIR) emitted by a base of cordless DECT-type phone in human spermatozoa and in particular the plausible radiation-induced changes in quality parameters, which characterize the fertilizing ability. For this purpose, samples of fresh sperm were obtained from healthy donors, of reproductive age and divided into two aliquots. One aliquot was continuously exposed to non-ionizing radiation (1880-1890 MHz), for one hour (E field value of 2.7 V/m) and the other served as the control sample and treated under the same conditions without the presence of radiation. Motility of spermatozoa was decreased in the irradiated samples compared to the controls at a percentage of 8.6%. Reactive oxygen species

(ROS) were measured by fluorometry and found to be elevated in irradiated samples by 24%, while DNA fragmentation was observed through fluorescent microscopy and calculated to be higher in the exposed samples approximately by 28%. Sperm also showed to be affected morphologically in mid-piece region and microtubules of axoneme of mitochondria and membranes as revealed by transmission electron microscopy. This *ex vivo* study demonstrated that human spermatozoa are vulnerable to low energy, NIR, due to the redox-status perturbation observed, which might have resulted subsequently in the rest sperm-parameters impairment, possibly contributing to male infertility.

Speaker Biography

A A Argyriou has 31 years of professional and research experience in Biology of Reproduction and Andrology. He has a Bachelor's in Biology from the University of Athens, Greece, D E A in Endocrinology and Development from the University of Caen, France, Diploma in Andrology from the University Paris XI, France and has done his PhD in Physiology of Human Reproduction from the University of Paris VI, France. As a Senior Clinical Embryologist in IVF Laboratories, he has attended multiple seminars in advanced IVF laboratory methods, teaching both undergraduate and Post-graduate students and published scientific papers and articles. He delivered lectures to academic and scientific audiences as a Member of Greek and International Scientific Associations and a regular Member of the National Committee of Medically Assisted Reproduction in Greece

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