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Direct mobile phones radiation influence: Dial 1-800-EXTINCTION

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Electronic devices and the Internet have changed the way people interact with each other. Be it via laptop computers with Wireless LAN, mobile phones or smartphones, nowadays everybody seems to be electronically connected to everybody all the time. These changes have brought about an enormous increase in everyday exposure to radio waves. Concerns have been raised that radiofrequency energy might cause cancer, since it is absorbed by the tissues of the human body. However, to date there is no clear scientific evidence that this non-ionizing energy has the potential to alter DNA and cause cancer [1]. Apart from the question about cancer, fertility is another area of interest since many men keep mobile phones in their trouser pockets in the proximity of their testicles. Several reports on the decline of semen parameters have been published over the last decades and even before mobile phones were invented. Igor Gorpinchenko and co-workers [2] devised an in-vitro study to test the hypothesis that electromagnetic waves from mobile phones have a detrimental effect on sperm parameters. When placed 5 cm from a mobile phone, they observed a significant decrease in the number of spermatozoa with progressive movement and an increase in the number of spermatozoa with non-progressive movement. Additionally, a significant increase in DNA fragmentation was found during the 5 hours of electromagnetic exposure. The approach is not genuinely new and other research groups came to similar conclusions. How these findings translate into an in vivo setting remains unclear. If mobile phones had a detrimental effect in real life, additional questions will arise. In this case the use of laptop computers 'on the lap' would cause the same damage. And what about women trying to get pregnant? Spermatozoa have the ability to survive several days in the female reproductive tract. Would laptop computers and mobile phones produce the same damage to spermatozoa there?

ANDROLOGY

So what do we know about the decline of semen parameters? In 1992, Carlsen et al. published a paper about decreasing semen quality during the past 50 vears [3]. It gained a lot of publicity, not only in the scientific community, but also in the media. The media love such headlines and in the last twenty years it has become common knowledge to practically everybody on this planet that deteriorating sperm quality is a fact. Keeping in mind the retrospective nature of Carlsen's data, dating back as far as 1938, with lack of information on specimen collection and analysis, the message might not be so clear-cut after all. Moreover, it is known, that there exist large within-subject variations in semen parameters in healthy men, including sperm count and sperm motility [4]. Between 1996 and 2010 a large cross-sectional study of 4,867 Danish men (median age 19 years) was carried out to scrutinize whether a decline in sperm quality could be observed [5]. The authors concluded that this was not the case. However, only 23% of the participants had optimal sperm parameters. The Danish health authorities' comment on the outcome of the study was that no conclusions could be drawn from the afore-mentioned historic data, as there were too many uncertainties involved. However, they raised a cautious flag and advised that sperm quality should be monitored even in the future [6, 7].

Coming back to mobile phone users, which conclusions can be drawn from the study at hand? Unfortunately, there is no simple answer to this question, but to be on the safe side for men on the verge of infertility, "don't grill your testicles" seems to be reasonable advice. They might be better off with their phone kept in a higher position, farther away from the scrotum.

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