

EDITORIAL COMMENT

The authors have addressed an important issue in timely manner. The effect of cell phone radiation on human health is the matter of recent awareness and debate, as a result of the enormous increase in cell phone usage worldwide. Up to November 2011, there were about 6 billion subscriptions throughout the world.⁽¹⁾

Cell phones use electromagnetic radiation (EMR) in the microwave range. The WHO has classified cell phone radiation on the International Agency for Research on Cancer (IARC) scale into group 2B, may be carcinogenic. It means that there "could be some risk" of carcinogenicity; hence, further studies on the long-term, profound use of cell phones are warranted.⁽²⁾ Several national radiation advisory authorities have suggested measures to decrease exposure to their citizens as a precautionary measure.⁽³⁾

Many researchers have studied possible health effects of cell phone radiation. A recent evaluation was reported in 2007 by the European Commission Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR).⁽⁴⁾ It denotes that the three lines of evidence, viz. animal, in-vitro, and epidemiological research, demonstrate that "exposure to radio frequency fields is unlikely to result in an increase in cancer in humans".

Cell phones have also radiation absorption, thermal, non-thermal, cognitive, genotoxic, sleep and electroencephalography, behavioral, and blood-brain barrier effects, which have not been addressed in the present study. Part of the radio waves emitted by a cell phone handset is absorbed by the human head. The radio waves emitted by a Global System for Mobile Communications (GSM) handset preserve a peak power of 2 watts. One well-documented effect of microwave radiation is dielectric heating, in which any dielectric material, such as living tissue, is heated by rotations of polar molecules produced by the electromagnetic field.

The communications protocols used by cell phones often give rise to low-frequency pulsing of the carrier signal. Whether these modulations have biological significance has yet to be determined.^(5,6)

Most studies have addressed the effects of cell phone usages on the head cancer. To my knowledge, there is no study addressing the effects of cellular telephone use on the kidney cancer. Therefore, the present animal study is welcome as a pilot study.

In 2007, Hardell and colleagues, from Örebro University in Sweden, reviewed published epidemiological studies and concluded that:⁽⁷⁾

- Cell phone users have an increased risk of developing malignant gliomas.
- There is a link between cell phone use and a higher rate of acoustic neuromas.
- Tumors are more likely to occur on the side of the head that the cell handset is used.
- One hour of cell phone use per day significantly increases tumor risk after ten years or more.

A study entitled "Public health implications of wireless technologies" cites that Hardell and associates' reported age is a significant factor. The study replicated the finding that the use of cell phones before age 20 increased the risk of brain tumors by 5.2-fold, compared to 1.4-fold for all ages.⁽⁸⁾ A review article by Hardell and colleagues found that current cell phones are not safe for long-term exposure.⁽⁹⁾

Several national radiation advisory authorities, such as Austria,⁽³⁾ France,⁽¹⁰⁾ Germany,⁽¹¹⁾ and Sweden,⁽¹²⁾ have recommended measures to minimize exposure to their citizens, such as:

- Use hands-free to decrease the radiation to the head.
- Keep the mobile phone away from the body.

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- Do not use telephone in a car without an external antenna.

The effects of the non-ionizing radiation emitted by cell phones depend on a number of factors besides the duration of transmission, eg, the type of cell phone and the distance from the cell phone tower. The authors examined only the duration of use not specified to other variables. As the ear to the kidney distance differs significantly in humans, further controlled studies on human are needed to clarify whether the EMR from cell phones affects the kidney, and to determine the mode of action of such a possible damaging effect.

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There are many studies investigating the effect of EMR on human body.^(1,2) Many of these studies research about cancer. However, long-term outcomes of these studies are unclear. In our study, we could not come up with any conclusion about cancer due to the lack of follow-up. However, there are a lot of non-cancer effects of EMR,⁽³⁾ which we aimed to investigate in this study. The use of the mobile phone puts the head area at greater risk.^(2,4) This situation can also hide possible risks for other organs. In this study, we investigated the effects of EMR on the kidney tissue with fixed distance.

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