The use of cellular (mobile) phones is widespread all over the world nowadays. Brain is the organ with the highest near-field exposure to microwaves during the use of the mobile phones. I've searched in “Science” magazine about the “cell phones and brain tumor” topics a week ago and have found only one resource which was dated back to 2001 (Cell phone lawsuits face a scientific test. Parascandola M. Science 294:1440-2, 16 Nov 2001)(10). This single source was dealing with the claims of a neurologist who diagnosed a life-threatening brain tumor and he concluded that it was caused by the cellphone. Evidence that radiation from cell phones increases the risk of brain cancer has not fared well in the court of scientific opinion; is it acceptable in the court of law?

Several studies and especially recent neuroepidemiologic studies conducted in Sweden by Hardell L et al. have clearly indicated an increased risk for both malignant brain tumors and acoustic neuroma for long-term use of wireless phones\(^7\). The risk was most pronounced for ipsilateral tumors after a latency period of >10 years. These case-control studies have been already published\(^6,7,18\).

According to the studies done by Cardis et al., the average relative SAR* is the highest in the temporal lobe (6–15%, depending on frequency, of the spatial peak SAR in the most exposed region of the brain) and the cerebellum (2–10%) and decreases very rapidly with an increasing depth, particularly at higher frequencies. The SAR distribution appears to be fairly similar across phone models, between older and newer phones and between phones with different antenna types and positions\(^4\). Sorkun et al. found increased proliferative activity and protein synthesis in neuronal and glial cells of the brain tissue in response to exposure to magnetic field is demonstrated by AgNORs. They concluded that extended use of mobile phones, can increase the proliferation and protein synthesis of glial cell in the brain\(^16\).

**Israeli experience and incidence of meningioma in 2039**

Prior to introduction of griseofulvin in 1960, the world standard for treatment of tinea capitis was scalp low dose irradiation\(^17\). In 1974, Modan and colleagues at the Sheba Medical Center in Tel Aviv published a retrospective cohort study showing a significantly higher risk of malignant and especially benign head (meningiomas) and neck tumors among ~11,000 Israeli adults treated for tinea capitis as children\(^9\). The increased incidence of meningiomas among survivors of the 1945 atomic explosions in Japan was shown only in 1994, when Shibata et al demonstrated a higher incidence of meningiomas in survivors of the bombing in Nagasaki\(^13\). In 1997 Shintani et al published similar findings after studying data obtained in Hiroshima survivors\(^14\). Due to the relatively low-dose exposure to ionizing radiation among these survivors compared with those undergoing radiotherapy for tinea capitis, the average latency was greater in the
Japanese studies. The risk of meningioma induction was shown to increase with closer proximity to the bombs' epicenters and in those exposed during childhood.

The Israeli experience has shown that even low-dose radiation in children leads to a high and significant increase in the risk of developing meningioma\(^{(12)}\). This risk should be considered when decisions are made to use radiation in routine imaging examinations, such as CT scanning, or to administer higher doses of radiation for treatment of benign tumors during childhood, adolescence, and young adulthood\(^{(1,2,3,5,11,15)}\).

In a recent neuro-oncology congress held in Maastricht (EANO-2010) Siegal Sadetzki from Israel has addressed her expectation of a burst in world's meningioma incidence from their Israeli experience as in the year of 2039 when she consider the usage of public cell-phones as available world-wide in 1990's.

As a neurosurgeon I want to give a correct answer to my brain tumor patients and relatives and I wonder how and why the “science” is not capable of finding an accurate answer to this misclassified bias\(^{(11)}\)(**).

Sincerely yours
Prof. Nezih Oktar MD
Ege University, Medical Faculty, Dept. of Neurosurgery, Izmir, Turkey
E-mail: nezih.oktar@ege.edu.tr
& Editor-in-chief, Journal of Neurological Sciences Turkish
http://www.jns.dergisi.org

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REFERENCES

(*) SAR is the specific energy absorption rate i.e. energy absorption rate per unit mass (measured in W kg$^{-1}$).
(**) This editorial has submitted as letters to editor to “Science” twice as separate formats but has found worthless to publish or for an answer.