عنوان مقاله:

Exposure to Radiofrequency Radiation Emitted from Common Mobile Phone Jammers Alters the Pattern of Muscle Contractions: an Animal Model Study

محل انتشار:

مجله فیزیک و مهندسی پزشکی, دوره 5, شماره 3 (سال: 1394)

تعداد صفحات اصل مقاله: 10

نویسندگان:

A Rafati

S Rahimi

A Talebi

A Soleimani

M Haghani

S M J Mortazavi

خلاصه مقاله:

Introduction: The fast-growing telecommunication and wireless technologies has led to more dependence to these communication devices and higher levels of exposure to electromagnetic radiations propagated by cellular devices and their service towers. To disable signaling in places where silence is valued or where information quarantine measures are required, mobile phone jammers emit radiofrequency radiation in the same frequencies that mobile phones operate. On the other hand, the rapid growth of wireless communication technologies has caused public concerns regarding the biological effects of electromagnetic radiations on human health. Some early reports indicated a wide variety of non-thermal effects of electromagnetic radiation on amphibians such as the alterations of the pattern of muscle extractions. This study is aimed at investigating the effects of exposure to radiofrequency (RF) radiation emitted from mobile phone jammers on the pulse height of contractions, the time interval between two subsequent contractions and the latency period of frogâ€™s isolated gastrocnemius muscle after stimulation with single square pulses of ۱V (۱ Hz). Materials and Methods: Frogs were kept in plastic containers in a cool room. Animals in the jammer group were exposed to radiofrequency (RF) radiation emitted from a common Jammer at a distance of ۱m from the jammerâ€™s antenna for ۲ hours while the control frogs were only sham exposed. Then animals were sacrificed and isolated gastrocnemius muscles were exposed to on/off jammer radiation for ۳ subsequent ۱۰ minute intervals. Isolated gastrocnemius muscles were attached to the force transducer with a string. Using a PowerLab device (۲۶-T), the pattern of muscular contractions was monitored after applying single square pulses of ۱V (۱ Hz) as stimuli. Results: The findings of this study showed that the pulse height of muscle contractions could not be affected by the exposure to electromagnetic fields. However, the latency period was effectively altered in RF-exposed samples. However, none of the experiments could show an alteration in the time interval between two subsequent contractions after exposure to electromagnetic fields. Â Conclusion: These findings support early reports which indicated a wide variety of non-thermal effects of electromagnetic radiation on amphibians including the effects on the pattern of muscle extractions.

کلمات کلیدی:

Non-Ionizing Radiation, Radiofrequency (RF), Electromagnetic Fields, GSM mobile phone, Muscle Contractions, Frog