EVALUATION OF 900 MHz MOBILE PHONE EFFECTS ON PALATE AND TOOTH GERM DEVELOPMENT IN MOUSE EMBRYO

(HISTOLOGICAL AND IMMUNOHISTOCHEMICAL STUDY)

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Abstract

Background: Mobile telephones, sometimes called cellular phones (GSM, Global System for Mobile Communication) or handies, are now an integral part of modern telecommunications. In some parts of the world, they are the most reliable or only phones available. In others, mobile phones are very popular because they allow people to maintain continuous communication without hampering freedom of movement.

Widespread use of wireless communication made it necessary to investigate the effect of mobile phone, which is the most popular technological equipment in the earth. One of the important parts of body that absorbs radiation emitted from mobile phones is oral tissue. However, mobile phone users and also scientists usually do not pay attention on effect of mobile phone exposure on oral tissue.

There are a lot of studies investigated the effect of mobile phone on health, and some of them on head. But did not encounter any histological study focused on the effects on the tooth development.

Aim of the study:

To evaluate the effect of 900 MHz mobile phone on palate and tooth germ development. (histologically and immunohistochemically study)

Materials and methods: Thirty pregnant Bulb-c Albeno Swiss female mouse (2-3 months of age, 100-125 gm of weight), were used in the present work. Those mice were divided into three groups. The first group consisted of 6 pregnant mice were assigned as a control group. The second group consisted of 12 pregnant mice were exposed to mobile phone radiation for 60 minutes daily and the third group consisted of 12 pregnant mice were exposed to mobile phone radiation for 120 minutes daily starting from the zero day of gestation till the day of scarification. The embryos of mice; were obtained at different period of gestation (At 16^{th} day I.U.L., 18^{th} day I.U.L., and One day old postnatal period).

Histological examination and immunohistochemical evaluation for CD34 expression were done for all animals including control group.

***Results*:** Mobile phone (EMF radiation) with 900 MHz in short exposed period 60 minutes (one hour) can stimulate the development of tooth germ as it was shown histological and immunohistochemical,an early appearance of tooth germ in cap stage at 16^{th} day I.U.L and positive expression of CD34 marker on dental tissue. Immunohistochemical results using CD34, showed positive reaction to mesenchymal cell of dental sac, bone and cartilage.

Increment in time exposure to EMF radiation emitted from mobile phone showed retardation in teeth development that illustrated in experimental group exposed for120 minutes (two hours) daily. Clinically there is a reduction in the size of mice at 18^{th} day (I.U.L.) and one day old (postnatal period).

Conclusion: The study concludes that tooth development may be affected by radiation emanating from mobile phone depending on exposure time (duration).