



## Histopathological examination of glomerulus in the kidney of newborn rats following prenatal exposure to 900 MHz electromagnetic field

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### ABSTRACT

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Widespread use of mobile phones, which are a major source of electromagnetic fields (EMF), might affect living organisms. It has been known that exposure to EMF has side effects on animal tissue and their physiological activities. The use of mobile phones is currently one of the fastest growing technological developments. The close proximity of the antenna of such a device to the abdominal organs has raised concerns about the biological interactions between EMF and the kidney. The kidney is a major potential route for the absorption of hazardous materials encountered in the environment. The mobile telephone emitting 900 MHz radiations may be absorbed by kidney more than other internal organs because mobile phones are often carried in belts. Additionally; the direct biological effects of exposure to 900-MHz EMF have not been studied extensively. For that reasons, we aimed to study the effect of prenatal exposure to 900 MHz EMF on the glomeruli in the kidney of the 4-week male rats. Pregnant rats were randomly divided into two groups that are the control (Cont) and the electromagnetic fields exposure (EMF) groups (three pregnant rats each group). Pregnant rats in the Cont group were kept under the standard laboratory conditions and the pregnant rats of EMF group were exposed to an EMF of 900 MHz for 60 min/day from the first to the last day of the gestation period. The exposure period was from 12.00 p.m. to 13.00 p.m. each day. Fourteen pups were obtained from control pregnant rats (4, 5 and 5 pups from Cont 1, 2 and 3 pregnant rats, respectively) and the 15 pups were obtained EMF exposed pregnant rats (4, 5 and 6 pups from EMF 1, 2 and 3 pregnant rats, respectively) after spontaneous delivery. At the end of the 4<sup>th</sup> week, totally 11 pups were randomly selected for study without regarding their sexes. They were divided into the Cont group (n=5), obtained randomly from the pregnant rats of the control group, and the EMF group (n=6), obtained randomly from the pregnant rats of the EMF group. At the end of 4 weeks, offspring were anesthetized with urethane and removed kidneys were routinely processed and cut into serial sections at 10 $\mu$ m thickness, stereological and histopathological analyses were done. According to statistical analysis there were significant differences between the Cont and EMF groups in terms of numerical density of glomeruli. As a result of the study, we suggest that 900 MHz EMF may cause a decrease in the glomerular density in the rat kidney.