

Effect of the static magnetic field (SMF) generated by the power supply on some histological changes in the male reproductive system in mice

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ABSTRACT

This look up aimed to check out the effect of the static magnetic region (SMF) of 217 G on testis and epididymis duct in mice. Twenty mice have been choose two types, manipulate tests . The experimental crew was uncovered to SMF (217 G) for 1 hour a day for 30 days, whilst the manipulate crew did now now not expose. After the expiry of the publicity period, the mice had been weighed, sacrificed and dissected.

Keywords: SMF, Reproductive system, Mice, Epithelial cells, Histology.

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INTRODUCTION

"The regular applications of electromagnetic subject (EMF) in day by day life have generated many concerns related to its consequences on. There are many types of equipment; some should have a therapeutic utility that emits such radiation (1). EMF can have outcomes on cells by using extraordinary mechanisms. For example, electromagnetic radiation on the cytoplasmic membrane can purpose a exchange in purposeful plausible due to biochemical alternate observed by a exchange in the awareness of intracellular ions (2). Several research have proven that fairly low-intensity EMFs are capable of interacting with molecular, cellular and systemic strategies (3). Some studies have said that EMF can have destructive outcomes on copy and fertilizing workable of spermatozoa that are related with magnetic fields densities and the time of exposure (4). In addition, it would possibly enlarge the outcomes of cancer causing agents (5) and reproductive male qualities (6). Although it used to be found that publicity to extremely low-frequency magnetic area has no detrimental results on reproductive device of male rats (7) existence of positive frequency home windows for the resonance of the have an impact on of magnetic subject on human spermatozoa was mentioned (8) and the non-stop exposure to magnetic fields might also result in the duration- and dose-dependent apoptosis of testicular germ cells (9)." Use of cellphone phones through men or exposing it to the rat reduced the semen parameters by way of decreasing the sperm count, motility, viability, and everyday morphology (11). On the different hand, any other latest study (12) showed that exposure to ELF electromagnetic fields had adverse outcomes on copy in male mice, which include decreased testicular weights, decreased sperm counts and sperm motility. However (13) stated no alternate in sperm count. Exposure to EMF did not set off any destructive consequences on sperm quantity, quality, and morphology, but diminished testosterone stages in rats (14). Otherwise, radiofrequency EMF, 1 h/day for 2 weeks did not result in any destructive

outcomes on sperm first-rate (15). Therefore the aim of this find out about to look into the impact of the static magnetic area (SMF) of 217 G on testis and epididymis duct in mice

MATERIAL AND METHODS

This experimental learn about used to be carried out at the College of Science, University of Anbar, Iraq). Twenty BALB/ C mice weighting between (15-30) grams were purchased from the Ministry of Health / National Center for Drug Control and Research (NCDCR) (Baghdad).

Exposure system

SMF density and uniformity were measured in the complete ground vicinity of the cage (217 G) and examined via Tesla scale. The cage measurement is 14 cm, 35 cm, and 6 cm. SMF male rats had been uncovered for 1 hour a day. Control mice were positioned in the identical circumstance barring SMF publicity.

Tissue preparation

At the give up of the experiment, "animals had been sacrificed by means of cervical dislocation accompanied by means of removal of their weight from the left testes followed by a sampling of the epididymis on the left side.

RESULTS

The facts confirmed that the weight of testicles and epididymis in the SMF crew (217 G) used to be drastically reduced compared to that of the manage team (P<0.05). The suggest diameter of an epithelial mobile of seminiferous tubules and epididymis ducts and ducts Efferent in the experimental team was significantly lowered compared to that of the manipulate group (P<0.05), Table 1. The microscopic sections of seminiferous tubules, epididymis and ducts efferent are shown in (Fig. 1).

Table 1. Comparison the variables (Mean \pm SE) beneath find out about in one-of-a-kind companies

Treatment	Con.	217G
T. W(gm)	.0391 \pm 0.0029	.0372 \pm 0.0015
Epididymis Weight(gm)	0.0249 \pm 0.0015	0.0223 \pm 0.0012
Seminiferous tubules diameter	149.91 \pm 1.40	145.80 \pm 1.37
Ducts Epididymis diameter	114.93 \pm 1.45	107.23 \pm 1.13
Ducts Efferent diameter	80.01 \pm 1.09	71.40 \pm 2.44
Height of seminiferous epithelial cell	32.97 \pm 0.76	31.32 \pm 0.67
Height of Epididymis epithelial cell	27.06 \pm 0.56	25.95 \pm 0.50
Height of Efferent epithelial cell	20.98 \pm 0.72	18.60 \pm 0.40

Control

217G

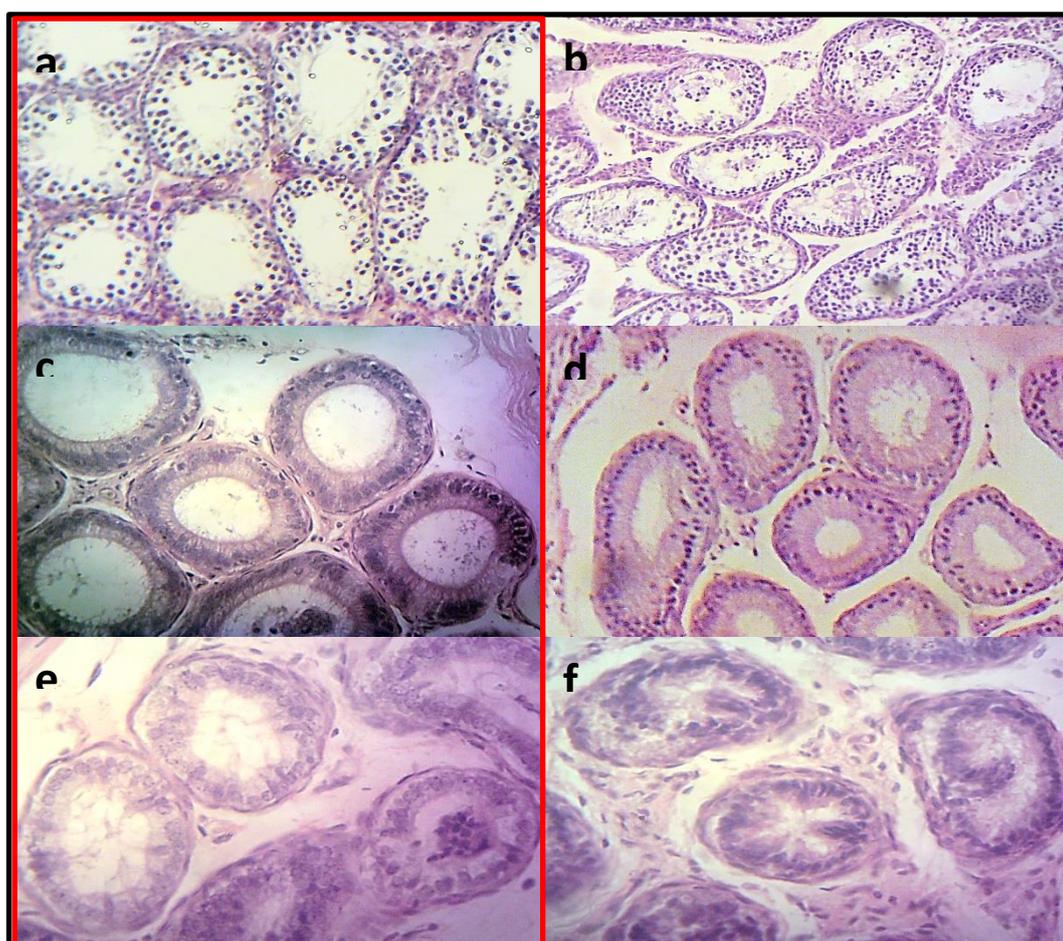


Figure 1. Effect of the static magnetic field in the male reproductive system in mice. (a and b) Microscopic section of seminiferous tubules showing the differences in diameter and height of epithelial cells. (c and d) Microscopic section of epididymis showing the differences in diameter and height of epithelial cells of the epididymis. (e and f) Microscopic section of Ducts Efferentes showing the differences in diameter and height of epithelial cells of the epididymis. (400X).

DISCUSSION

The predominant motive of this find out about used to be to appear at the impact of SMF on fertility parameters of Swiss white mice male. In a preceding comparable work (16), the have an impact on the magnetic place on the intercourse hormones and special fertility parameters of grownup male Sprague–Dawley rats used to be investigated. (17) showed that publicity to EMF (50 Hz, 0.1 T) ought to stop end result in a good buy of testes weight. A find out about by means of (18) is additionally validated the cut rate of testes weight following the publicity to EMF. It has been placed in this analyze about a discount in the testis and epididymis weight. This reduction of testis weight ought to be attributed to a accelerated Mobilephone loss of life following the publicity to electromagnetic radiation (19 ,20) validated the publicity to SMF leads to damaging outcomes on the male reproductive desktop in mice as viewed via a bargain in diameter of reproductive ducts at the top of epithelial cells. The reduce in Mobilephone peak and duct diameter in the current discover out about ought to be due to the synthesize ailment of proteins worried in cellular phone form (22). In addition, (21) investigated the affect of EMF (0.7 T) following a time length between 10-35 days. Later, the examination of sperms bought from mouse epididymis in the experimental crew showed that there was once as soon as a giant make greater in velocity and the range of feasible sperms in the epididymis duct in contrast to the administration group. Finally, it ought to be deduced that maybe the detrimental penalties of EMF radiation are associated with an extend in physique temperature (23) and free radicals formation (24)" every of which must be viewed as hazardous shops to physique tissues, on the whole, the reproductive system. Hence, to decrease the side-effects of these radiations on the reproductive system, protecting off the vain utility of such EMF-generating domestic gear is recommended. The end result of finding out about on seminiferous tubules and epididymis and ducts two efferent confirmed in experimental crew (217 G) have been considerably reduced in distinction to managing crew (P&t; 0.05) For occasion, the learn about by means of way of (25)that the publicity to(EMFs) leads to risky effects on male reproductive computing device in mice as seen by using a minimize in diameter of reproductive ducts, the pinnacle of epithelial cells and weight of testis, two studies through the usage of way of (1) additionally confirms the bargain of testis weight following the publicity to (EMFs). (4) decided that publicity to sinusoidal (25µT) decreases the testosterone stage in rats on the other hand prolonged the Luteinizing hormone (LH) concentration. (6) referred to a presumable direct effect of whole-body magnetic area publicity on the human chorionic gonadotropin-stimulated steroidogenic response of mouse Leydig cell.

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