Original Paper

Effects of low electromagnetic field on mice embryos development

Darabi MR (PhD)[1], Bayat PD (PhD)*[2]

[1]Assistant Professor, Department of Anatomy, Arak University of Medical Sciences, Arak, Iran.
[2]Associate Professor, Department of Anatomy, Arak University of Medical Sciences, Arak, Iran.

Abstract

Background and Objective: Electromagnetic waved generated by electronic industries and the increasing use of electrical appliances have led to higher rise in chronic exposure to extremely-low-frequency electromagnetic field (ELF-EMF). This study was done to investigate the effects of low electromagnetic field on mice embryos development.

Materials and Methods: In this experimental study, eighty female NMRI mice were super ovulated and coupled with male mated over the night. Next morning the female mice with a vaginal plug were identified as pregnant mice. Animals allocated into 2 groups; control group was not exposed to EMF and animals in case group exposed to 50 Hz and amp; 1.2 mT EMF the pregnant mice were scarified by cervical dislocation at 24, 72, 81, 96, 110 and 120 hours. Embryos were subsequently obtained from the mice by flashing the fallopian tubule and uterus horn. Data were analyzed using SPSS-13.5, ANOVA and student's t-tests.

Results: The number of 2, 3-4 cells and 5-8 of embryo cells and blastocyst decreased in case group compared to controls, but these reduction were not significant. The number of morula in cases significantly reduced in comparison with control group ($P<0.05$). The average number of fragmented blastocyst in experimental groups siginficantly increased compared to control group ($P<0.05$). The number of inner cell mass and trophoectoderm in experimental group significantly reduced in comparison with controls ($P<0.05$).

Conclusion: The exposure of extremely-low electromagnetic field in pregnancy reduces the number of morula, inner cell mass and trophoectoderm.

Keywords: Low electromagnetic field, Mice, Pregnancy, Embryo

*** Corresponding Author: Bayat PD (PhD), E-mail: bayatanat@yahoo.com.au**

Received 16 Jan 2011 **Revised** 17 Jan 2012 **Accepted** 11 Apr 2012

This paper should be cited as: Darabi MR, Bayat PD. [Effects of low electromagnetic field on mice embryos development]. J Gorgan Uni Med Sci. 2012; 14(3): 33-39. [Article in Persian]