The Effect of Methimazole-Induced Hypothyroidism on fertility in female Rats

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Abstract

Background & Aim: Thyroid hormones play critical roles in regulating body metabolism, reproduction, fertility, and the continuation of fertility and delivery. Therefore, this study was designed to investigate the effects of thyroid hormones on fertility rate, duration of pregnancy, childbirth success rate, number of neonates and weight of one-day old female mice.

Methods: 30 adult female mice were selected with the mean weight of 28 g and divided into three groups: Control group, pure water, low dose group, receiving 20 mg/100 ml, and high dose group receiving 100 mg/100 ml of Methimazole powder dissolved in water until the end of pregnancy. In each group, the duration of pregnancy, the number of successful delivery and the weight of newborns were evaluated on the first day of birth. Also, after the end of pregnancy, the mice were sacrificed, then blood samples were taken and the serum levels of thyroid hormones level were measured. In this study, SPSS software version 22 and one way ANOVA were used to analyze the data.

Results: The rate of successful delivery among different groups were as follows: 9/10 in control group, 8/10 in low dose group and 4/10 in high does group in which the reduction rate was statistically significant compared to the control group (P = 0.032) .The pregnancy period in both experimental groups did not show a significant increase compared to the control group, the number of newborns in each successful delivery showed a significant decrease compared to the control group in both experimental groups (low dose 0.039, high dose 0.042).

Conclusion: The study suggests that reducing thyroid hormone after insemination can also affect embryo-fetal development, reducing births and increasing abortions.

Keywords: Hypothyroidism, Methimazole, Fertility, Mature Mice