Effect of co-administration of restraint stress and morphine in prenatal period on offspring body weight in rat

Authors: *Elnaz Nakhjiri1, Ehsan Saboory2, Shiva Roshan-Milani3
Address: 1 Student of physiology (Master degree), Studental research committee, Urmia University of medical sciences, Urmia, Iran
2 Professor, Neurophysiology research center, Urmia University of medical sciences, Urmia, Iran
3 Associate professor, Department of physiology, Faculty of medicine, Urmia University of medical sciences, Urmia, Iran
elnaz.nakhjiri@yahoo.com

Introduction: Stressful events during gestation have important effects on the later physical health of the offspring. Prenatal exposure to opiates hascrucial effects on the development of human fetuses, and may induce long-term physical changes during postnatal maturation. The present study aimed to identify effects of co-administration of restraint stress and morphine in prenatal period on offspring body weight in rats.

Methods: Thirty pregnant rats divided into six groups (n=5, each), namely control, stress, saline, morphine, stress-saline and stress-morphine. In the stressed group, pregnant rats were under restraint stressand held immobile in the Plexiglas tubetwice per day two hour per session for three consecutive days started on day 15 of pregnancy. The rats in saline and morphine groups received saline and/or morphine (0.5 ml) at the same days. In the morphine/saline-stress groups, rats were exposed to stress and received morphine/saline simultaneously. The control rats were used intact. The pups (n=24, in each group) were weighed at days 1, 15 and 22 after birth (P1, P15, and P22, respectively).

Results: Body weight significantly decreased in stress, morphine and stress-morphine pups compared to the control group at P1, P15, and P22. Our data indicated that co-administration of stress and morphine in prenatal period led to low birth weight more severe than other groups ($p<0.001$).

Conclusions: These data emphasize the inhibitory impact of prenatal stress on fetal growth. Meanwhile, the effect of prenatal stress and morphine is age-specific.

Keywords: Restraint stress, Morphine, Body weight, Rat