The effect of uncontrolled stress and morphine consumption on spinal cord development in Wistar rats’ embryo

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Received: 23 May, 2011 Accepted: 29 November, 2011

Abstract

Background: Studies have indicated that morphine may induce its delay effect on embryos development by corticosterone release. In the present study the effect of simultaneous oral morphine consumption and stress on spinal cord development in Wistar rat embryos was investigated.

Methods: Wistar rats (250-300 g) were used in this study. After pregnancy, the animals were divided into control, morphine (0.05 mg in tap water), stress (electro foot shock), and experimental (morphine plus stress) groups. On 14th embryonic day, the rats were killed and their embryos were surgically removed, washed, weighted, and their crown-romp lengths were measured and were fixed in formalin 10%. Then tissue processing, cutting and Hematoxylin-Eosin (H&E) staining were performed. The samples were evaluated using light microscope and MOTIC software for changes in spinal cord area. Data were analyzed using SPSS software version 9.01.

Result: The weight of embryos was increased in the stress group and decreased in the stress plus morphine group. This was true for the length of the embryos as well. In addition, the area of the spinal cord in the stressed group was increased but in the experimental group decreased.

Conclusion: It seems that morphine and stress induced their influence on embryo development via different pathways and it is not true that morphine effect on embryos development is due to its ability for corticosterone release in the pregnant rats.

Keywords: stress, morphine, spinal cord, embryo, Wistar rat

Journal of Kermanshah University of Medical Sciences. 2012; 16(3): 236-245

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