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Reduction of cell size in amygdaloid complex of the Wistar rat embryos after oral morphine consumption

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Abstract

Introduction: In the present study, the effects of oral morphine consumption in pregnant female rats on the amygdaloid complex development in the embryos were investigated.

Methods: Female Wistar rats weighing 250-300 g (n=15) were divided into control (n = 8) and experimental groups (n = 7). The experimental group received morphine (0.05 mg/ml) in their tap water. On the 19th day of pregnancy, the animals were killed by chloroform overdose and their embryos were surgically taken out (57 control and 49 experimental embryos). Corticosterone concentration in plasma was determined by an ELISA method. The embryos were fixed in formalin 10% for 90 days, then their length and weight were determined and tissue processing, sectioning and Hematoxylin and Eosin (H&E) staining were preformed. The cases (200 each) were evaluated and analyzed by light microscope and MOTIC software.

Results: Our data showed that the length and weight of the embryos were not different among control and experimental groups. On the other hand, morphine consumption decreased the length and the area of the amygdaloid complex in the experimental group. In addition, the cell size was reduced in the experimental group, but the cell number was increased. Plasma corticosterone levels in control and experimental groups were not different.

Conclusion: It could be concluded that oral morphine consumption during pregnancy could lead to amygdaloid growth retardation in the embryos of the pregnant rats demonstrated by the reduction in the length and area of the amygdaloid complex and the decrease of the cell size in the experimental group.

Key words: Amygdaloid Complex, Morphine, Corticosterone, Embryo, Rat

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