عنوان مقاله:

Congenital abnormality effect of methamphetamine on histological, cellular and chromosomal defects in fetal mice

محل انتشار:

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خلاصه مقاله:

Background: Methamphetamine (MA) is a potent psychomotor stimulant with high abuse and addictive potential. MA is a neurotoxic drug which is widely abused by females of childbearing age, raising serious public health concerns in terms of exposure of the fetus to the drug. Neurotoxic effects of MA on adult are well known, such as dopaminergic nerve terminal degeneration and cell death in regions of brain in some doses. Objective: In the present study, we examined effect of prenatal MA exposure on mouse fetuses. Materials and Methods: In this study, forty 8-12 week-old NMRI female mice were used which were mated with male mice in serial days. When sperm plug was observed it was designated as gestational day (GD) 0. Pregnant mice were individually housed in plastic cages. Pregnant mice were divided into four groups: in first group 10 mg/kg /day MA, in second group 5 mg/kg /day MA and in third group saline were injected subcutaneously from GD 6 to GD 14, corresponding to organogenesis period, while fourth or control group were without injection. On GD 14 fetuses were removed and accomplished chromosome preparation from fetal liver. Then fetal were fixed in formalin for brain hematoxilin and eosine staining and TUNEL assay. Results: We observed morphological abnormality including exencephal fetus in 5mg/kg MA group and premature fetuses in 10 mg/kg MA group. Also brain histological study showed subarachnoid hemorrhage in fetal brain in both experimental groups. Fetal liver karyotyping analysis was normal in fetuses of all groups and TUNEL assay in fetal striatum did not show significant difference in number of apoptotic cells between groups. Conclusion: From our results, it could be concluded that chronic abuse of MA by pregnant females during organogenesis period can cause teratogenic effect .and brain hemorrage in fetus

کلمات کلیدی:

Methamphetamine, Apoptosis, Brain, Histology, Karyotype, Abnormality, Fetal