Effect of Mercuric Chloride Exposure during Pregnancy and Lactation on the Postnatal Development of the Liver in the Albino Rat

Mohamed El-Badry Mohamed, Manal M.S. El-Meligy, Reneah R. Bushra, Esraa K. Mohamed

Abstract:

Effect of Mercuric Chloride Exposure during Pregnancy and Lactation on the Postnatal Development of the Liver in the Albino Rat Mohamed El-Badry Mohamed, Manal M.S. El-Meligy, Reneah R. Bushra, Esraa K. Mohamed Human Anatomy and Embryology Department, Faculty of Medicine, Assiut University, Assiut, Egypt Abstract Background: Mercury (Hg) is a prominent environmental contaminant that causes detrimental effects to the human health. It is used in some thermometers, electrical switches, batteries, fluorescent lamps, paints, fungicides, insecticides and in mercuric vapours lamps. Mercury and its compounds have been also used in medicine as in topical antiseptics, stimulant laxatives, skin lightening products, diaper rash ointment, eye and nasal sprays. Elemental mercury is an ingredient in dental amalgams. Thiomersal (mercury-based preservative) is an organic compound that is used as a preservative in vaccines and in the manufacture of mascara. Aim of the Work: To detect the effects of mercuric chloride (HgCl2) exposure during pregnancy and lactation on the postnatal development of the liver in albino rat. Materials and Methods: A total number of sixteen pregnant albino rats were used in the study. They were equally divided into control and experimental groups. During the whole periods of gestation and lactation, the control females received an oral daily saline of 2 mg /kg body weight. The experimental females received an oral daily dose of 2 mg HgCl2 /kg body weight. After weaning, the offspring of the treated group was given HgCl2 of the same oral daily dose. The control and treated mothers' offspring was sacrificed at the following ages: 1 day (group I), 21 days (group II) and 2 months (group III). Each group consisted of 6 rats. At the time of scarification, the rats were weighed, anaesthetized and the livers were extracted and weighed. The specimens from the fixed livers were dissected and processed for the light and the electron microscopic examination. Morphometric studies were also done. Results: Light microscopic study of the treated groups revealed vacuolization, degeneration of the hepatocytes, inflammatory cell infiltration, dilated and congested hepatic sinusoids as well as portal venules. Weak PAS reaction was observed in the treated liver specimens of groups I and II and a strong PAS reaction in the treated group III when compared with the corresponding controls. The electron microscopic study showed degeneration of the mitochondria, vacuolization of the cytoplasm, congested sinusoids with perisinusoidal fibrosis. Morphometric studies revealed a significant increase in the liver weight inspite of the decrease in the body weight. Conclusion: Ingestion of HgCl2 during pregnancy and lactation produces hepatic affections of the offspring.

Keywords:

Liver, Mercuric chloride, Albino rat

Published In:

Egyptian Journal of Anatomy , 40(1) , 13