

Original Paper

Eye malformations induced by carbamazepine in Mice

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Abstract

Background & Objective: Neural tube defects, growth retardation and nail hypoplasia are most common features of teratogenic effects of carbamazepine. This study was done to determine the effects of carbamazepine on eye development in Mice fetuses.

Materials & Methods: In this experimental study 40 BALB/c pregnant Mice were divided into four groups. Experimental groups I and II received 15 mg/kg daily 6-15 GD (gestational days) and 30 mg/kg daily 6-15 GD intraperitoneal of carbamazepine, respectively. All drugs recolved in Tween20. Two control groups received normal saline or Tween 20. Dams were dissected on GD18 and embryos were collected. After observation of eye malformation in fetuses, we employed routine histological processes to stain the samples and also skeletal staining was performed.

Results: Calvaria deformations, finger anomalies, brachygnathia and short tail in experimental groups I and II were 7% and 10.8%, 13.3% and 16.6%, 7.8% and 11.7%, 10.2% and 9.2% respectively. Ten of fetuses (8.6%) in experimental group I and nine of fetuses (7.5%) in the experimental group II had eye malformations. Premature opening of one or both eyes with mild to severe exophthalmos occurred in both of the experimental groups. Also, histological examination showed deformed lens, retinal folds with undeveloped layers, corneal fold with absence of surface epithelium.

Conclusion: This study revealed that administration of carbamazepine during embryonic period can induce eye malformations in Mice fetuses.

Keywords: Carbamazepine, Eye malformations, Mice, Teratogen

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