

The teratogenic effects of Lamotrigine on mouse fetus

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Abstract

Introduction: One of the most important complications of antiepileptic drugs (AEDs) is increased congenital malformations. The risk of malformations in such fetuses is 7-10% compared to 2-4% in the general population. Lamotrigine is a recently introduced AED, with fewer teratogenic effects than that of the older ones and without reported teratogenic effects in most cases. Recently some malformations have been reported related to Lamotrigine use in human beings but the reports are scanty and contradictory and no particular patterns of malformations have been presented. This study has been done to detect the teratogenic effects of this drug in mouse fetus.

Materials & Methods: In this study, NRMI mice were divided into four groups: I) control group 1, II) control group 2, with intraperitoneal administration of ethanol solution, III) case group 1, with intraperitoneal administration of three 25 mg/kg doses of Lamotrigine and IV) case group 2, with intraperitoneal administration of three 75 mg/kg doses of Lamotrigine. Injections were made during the 9th to the 18th days of gestation. On the 18th day of gestation, the fetuses were harvested. The body weight and height were measured and malformations in vertebral column, limbs and cranium were looked for and recorded. Malformations were compared in the four groups by SPSS software.

Results: In the groups with 25 & 75 mg/kg Lamotrigine administrations, reduction of body weight and height and increased malformations of vertebral column and limbs were noticeable in a dose dependent fashion compared to the control groups number 1 & 2_ cranial malformations were insignificant.

Conclusion: Based on the results, Lamotrigine can be considered as a risk factor for the increase of malformations in the treated animals. As a number of researchers believe that decrease of serum folate and methionine are effective in the appearance of malformations and they may implicate the situation, further studies on the mechanisms of Lamotrigine from this point of view are recommended.

Key Words: Lamotrigine, Mouse, Fetus, Teratogenic, Epilepsy, Pregnancy, Antiepileptic Drugs, Folic Acid.

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