Original Paper

Effect of interaventricular injection of Vitamin C on the histological structural of dentate gyrus of hipocampus in epileptic rats

Golmohammadi R (Ph.D)*[1], Kmalimansh B (B.Sc)[2]

[1]Associate Professor, Department of Anatomy, Faculty of Medicine, Sabzevar University of Medical Sciences, Sabzvar, Iran. [2]Miswifer, Sabzevar University of Medical Sciences, Sabzvar, Iran.

Abstract

Background and Objective: Hippocampus is the main region in cortex of the brain that involved in epilepsy. This study was done to determine the effect of intraventricular injection of vitamin C on histological structure of dentate gyrus of hipocampus in adult male epileptic rats.

Methods: In this experimental study, 40 adult male rats were randomly allocated into 5 groups (n=8). Animals in three groups were received vitamin C at dose (12.5, 25 and 50 mg/kg/bw) during 28 days, intraventricularly after were kindled by (pentylentetrazol; 40 mg/kg). Animals in forth group were received normal saline after were kindled by (pentylentetrazol; 40 mg/kg). Animals in the fifth group were received normal saline. After 28 days, rats were anesthetized by ketamin, then structure of hypocamp dissected. Histological passage was done in samples and coronal section was carried out. The sections of samples were stained by Hematoxyline-eosin. Forty fields systematicly were counted the normal neurons in dentate gyrus. Morphological change was determined by immunohistochemical method.

Results: The mean number of normal neurons in dentate gyrus in epileptic rats which received 25 g/kg vitamin C was more than animals in groups which were received doses of 12.5, 25 and 50 mg/kg vitamin C ($P<0.05$). This mean number of normal neurons in dentate gyrus of hypocamp in epileptic rats which received normal saline was lower than control and other experimental groups ($P<0.05$). Extensive morphological change in neurons of dentate gyrus in epileptic rats which received normal saline were observed ($P<0.05$). The lowest morphological change were observed in neurons of dentate gyrus in epileptic rats which received at dose 25 mg/kg vitamin C in compared to the other groups ($P<0.05$).

Conclusion: Intraventricular injection of vitamin C in epileptic rat's dose dependly had neuroprotective effect on dentate gyrus neurons.

Keywords: Hypocampus, Dentate gyrus, Neuron, Epilepsy, Pentylentetrazol, Vitamin C, Rat

*** Corresponding Author: Golmohammadi R (Ph.D), E-mail: rahimgolmohammadi@yahoo.com**

Received 15 Mar 2015 **Revised** 29 Jun 2015 **Accepted** 26 Sep 2015

Cite this article as: Golmohammadi R, Kmalimansh B. [Effect of interaventricular injection of Vitamin C on the histological structural of dentate gyrus of hipocampus in epileptic rats]. J Gorgan Uni Med Sci. Autumn 2016; 18(3): 14-20. [Article in Persian]