

Effect of different times of ischemia/reperfusion on dentate gyrus cells of hippocampus in Wistar rat

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Abstract

Stroke is the most important result of cerebral ischemia and followed reperfusion produces free radicals and can lead to apoptosis. Granular cells of dentate gyrus are sensitive to ischemia. Whatever the time of ischemia gets longer and reperfusion starts with delay, cell protection from oxidative damage and apoptosis will be less efficient. Since the percentage of tissue damage plays an important role in the study of neuroprotective drugs, We decide to study the appropriate duration of ischemia in order to use different drugs in ischemic animal models. In this experimental study, 30 male Wistar rat were divided to 6 groups (5,10,15,20 and 30 minutes of ischemia). The ischemia was induced by ligation of bilateral common carotid arteries followed by reperfusion. After four days, brains were removed and prepared for hematoxylin-eosin method and nissl staining. Our data showed that The number of degenerative cells with pyknotic nucleuses were increased especially in the 30 minutes of ischemia and the number of the dentate gyrus granular cells were decreased significantly in 15,20,30 ischemic groups.. It seems that more than 10 minutes of ischemia is the appropriate time for studying the effects of drugs in ischemic model.

Keywords: dentate gyrus, hippocampus, ischemia/reperfusion, rat