Original Paper

Effect of Diazoxide on Ultra-structure morphology of Rat parietal cortex after ischemic - reperfusion

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Abstract

Background and Objective: Until now there is no drug formulated to prevent Neuronal Loss following Brain Stroke. In this study, we compared the effects of the mitoKATP opener, diazoxide, on ultra-structural morphology changes following in cortical neurons following in-vivo ischemic injury.

Materials and Methods: In this experimental study, Rats randomly allocated in eight experimental groups including sheme, positive control, 1, 5 and 25 mg/kg/body weight of Glybanclamid groups and 2, 6 and 18 mg/kg body weight of Diazoxide experimental groups, respectively. In animals in each experimental groups, only 2 hours following administration of Diazoxide or Glybanclamid ischemia was induced for 15 min by the 4-vessel occlusions surgery followed by 24 hours reperfusion. After tissue processing, ultra-structural changes in neuronal mitochondria and nuclei were studied by electromicroscope.

Results: Ultrastructural morphological changes including nuclear pyknosis, swollen mitochondria and cristae damage after ischemia were observed in control and sheme groups. These changes were severe in Glybanclamid experimental groups. Also this changes were depend on dosage of Glybanclamid. Ultrastructural changes were decreased in Diazoxide treatment group (18mg/kg body weight), but in 2 and 6mg/kg/body weight of Diazoxide groups these decreasing of Ultrastructural changes was not observed.

Conclusion: This study showed that Diazoxide with dosage of 18mg/kg/body weight has neuro-protective effects on diminishing ischemia-induced structural deterioration of neuronal mitochondria and morphological apoptotic changes in nucleus.

Keywords: Ischemia reperfusion, Ultra-structure, Mitochondri, Diazoxide, Glybanclamid, Brain cortex

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