Original Paper

Effect of transforming growth factor alpha of dentyte jyrus neurons and pyramidal cells of CA1 subfiled of hippocampus following ischemia-reperfusion in Rats

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Abstract

Background and Objective: Ischemia-reperfusion invoke cell death in hippocampus. This study was carried out to investigate the effect of transforming growth factor alpha (TGF-alpha) of dentyte jyrus neurons and pyramidal cells of CA1 subfiled of hippocampus following ischemia-reperfusion in rat models.

Materials and Methods: This experimental study was done on 40 male Wistar rats weighing 250-300gr. Animals were divided in four groups: control (n=7), sham (n=7), ischemia (n=14) and treatment (n=14). Sham group was just under surgical stress. In ischemia and treatment groups after induction of ischemia-reperfiusion by obstruction of carotid arteries blocked for 30 minutes, reperfusion PBS (phosphate buffer salin) and subsequently TGF-alpha (50 ng) were injected stereotaxicaly in lateral ventricle, respectively. In 12 and 72 days after treatment the brains were fixated by transcardial perfusion and stained by immunohistochemestry and nissle methods. Furthermore, morris water maze was used to evaluate the learning memory. Data were analyzed using SPSS-16 and ANOVA test.

Results: Injection of TGF-alpha increased the cell number in hippocampus of treatment group compared to ischemic group. TGF-alpha increased expression of neuron in dentyte jyrus of treatment group in comparison with ischemic group ($P<0.05$). Also spatial memory improved in treatment group in comparison with ischemia group.

Conclusion: TGF-alpha improves ischemia-induced neurodegenration and memory impairment.

Keywords: Ischemia-reperfusion, Spatial memory, Neurogeneis, Hippocampus, Transforming growth factor alpha

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