

论著

早期高压氧对脑缺血再灌注损伤大鼠神经细胞凋亡及学习记忆的影响

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摘要

目的: 探讨早期高压氧(脑缺血再灌注30 min后)对脑缺血再灌注神经细胞凋亡及学习与记忆的影响。方法: 将实验用大鼠随机分为假手术组、模型组及处理组。采用Zea Longa法制作脑缺血再灌注动物模型, 观察大鼠早期高压氧处理后神经功能缺损评分、海马区凋亡阳性细胞计数、caspase-3和Bcl-2蛋白表达的改变情况; 并采用Morris水迷宫检测大鼠的逃避潜伏期(EL)和穿过原平台次数的变化。结果: 第2 h, 1 d, 2 d, 3 d大鼠神经功能缺损评分模型组和处理组均较假手术组增加($P < 0.01$), 第2, 3 d大鼠神经功能缺损评分处理组较模型组明显降低($P < 0.05$); 模型组凋亡细胞计数和caspase-3蛋白表达量显著多于假手术组($P < 0.01$), 而处理组较模型组明显减少($P < 0.01$); 模型组Bcl-2蛋白量较假手术组明显增加($P < 0.01$), 处理组则高于模型组($P < 0.01$); 模型组EL时间比假手术组明显延长, 穿过原平台次数明显少于假手术组($P < 0.01$), 而处理组EL时间则较模型组明显缩短, 穿过原平台次数则明显多于模型组($P < 0.05$)。结论: 早期高压氧能抑制脑缺血再灌注损伤海马神经细胞的凋亡, 提高学习记忆功能。

关键词 [脑缺血再灌注](#); [高压氧](#); [细胞凋亡](#); [学习记忆](#)

分类号

Effect of early hyperbaric oxygen on neuronal apoptosis and learning and memory of cerebral ischemia-reperfusion injury in rats

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Abstract

Objective To explore the effect of early hyperbaric oxygen (HBO) on neuronal apoptosis and learning and memory in rats treated with cerebral ischemia-reperfusion injury in 30 min. Methods Experimental rats were randomly divided into 3 groups: a sham-operation group, a model group, and a treatment group. Cerebral ischemia-reperfusion injury model was induced by Zea Longa's method. Neurologic impairment score, apoptosis cell, and the expression of caspase-3 and Bcl-2 protein were observed. The amount across platform and the escape latency (EL) time were determined by Morris water maze. Results Neurologic impairment scores at 2 h, 1 d, 2 d, and 3 d of the model group and the treatment group were obviously higher than the sham-operation group ($P < 0.01$), and those at 2 d and 3 d of the treatment group were obviously lower than those of the model group ($P < 0.05$). The number of apoptosis cells and the expression of caspase-3 protein in the model group significantly increased compared with those in the sham-operation group ($P < 0.01$), while those in the treatment group was significantly lower than the model group ($P < 0.01$). Bcl-2 protein expression in the model group increased more obviously than that in the sham-operation group ($P < 0.01$), and that in the treatment group was much higher than the model group ($P < 0.01$). The EL time of the model group was much longer than that of the sham-operation group and the number across platform was obviously decreased compared with that of the sham-operation group ($P < 0.01$), while the EL time of the treatment group was much shorter than that of the model group and the number across platform was more than that of the model group ($P < 0.05$). Conclusion Early hyperbaric oxygen could inhibit nerve cell apoptosis suffered cerebral ischemia-reperfusion injury and improve the function of learning and memory.

Key words [cerebral ischemia-reperfusion](#) [hyperbaric oxygen](#) [apoptosis](#) [learning and memory](#)

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