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跑台训练对脑缺血大鼠脑组织超微结构及突触素表达的影响

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摘要：

目的：研究运动训练对局灶性脑缺血大鼠脑组织超微结构及突触素表达的影响。方法：选取健康雄性SD大鼠37只，随机分为假手术组、缺血对照组和缺血加跑台训练组。线栓法阻断动物大脑中动脉血流2h制备局灶性脑缺血模型。术后2周，采用Western blot测定脑组织中突触素的表达；术后4周，透射电镜观察各组实验动物脑组织超微结构改变情况。结果：①与假手术组相比，缺血组和缺血加跑台训练组大鼠脑额顶叶皮质半暗区突触素含量显著升高(P＜0.01)；其中跑台训练组升高明显，两组差异有显著性意义(P＜0.05)。②电镜观察显示缺血加跑台训练组大鼠脑组织超微结构损伤较轻，突触数目较多，突触形态基本正常。结论：运动训练可以减轻脑缺血性损伤程度，并可能通过增加脑组织突触素的表达，促进脑缺血性损伤后新生突触的形成。

关键词：跑台训练 超微结构 突触素 脑卒中

Influences of treadmill training on ultrastructure and synaptophysin expression in rats with focal cerebral ischemia

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Abstract:

Objective:To evaluate the influences of treadmill training on cerebral ultrastructure and expression of synaptophysin in rats with focal cerebral ischemia. Method: Thirty-seven healthy male Sprague-Dawley rats were randomly divided into 3 groups:sham operation group,ischemic control group and treadmill training group.Temporary focal cerebral ischemia model was established by 2 hours middle cerebral artery occlusion. Western blot technique was used 2 weeks after operation to detect the expression of synaptophysin protein and transmission electron microscope was used 4 weeks after operation to observe the changes of cellular ultrastructure in ischemic penumbra. Result: ①The expression of synaptophysin in ischemic penumbra of frontal-parietal lobe increased remarkably in both ischemic control group and treadmill training group compared with that in sham operation group(P＜0.01)and there was statistical difference(P＜0.05) between two groups.②The observation under electron microscope demonstrated that the severity of ischemic damage in treadmill training group was lighter than that in ischemic control group and there were more normal synapsis in treadmill training group. Conclusion: Treadmill training can alleviate the severity of cerebral ischemia and probably, promote the formation of new synapses after ischemia by increasing the expression of synaptophysin.

Keywords:treadmill training ultrastructure synaptophysin stroke

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