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运动训练对出血性脑损伤GAP-43基因及蛋白表达的影响 [点此下载全文](#)

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摘要:

目的: 观察运动训练对脑出血大鼠生长相关蛋白(GAP-43)基因及其蛋白表达的影响。方法: 实验动物用健康雄性SD大鼠160只。先将96只大鼠随机分为3组, 实验组(出血后运动, n=32)、对照组(出血后不运动, n=32)、假手术组(无出血不运动, n=32)。各组又分为术后第7天, 第14天, 第21天, 第28天共4个时相点, 每个时相点4只用于免疫组化检测, 4只用于RT-PCR检测。实验组大鼠于术后第72小时开始跑笼训练, 其余大鼠在标准笼内自由活动。再将另外64只随机分为脑出血后第6小时, 第12小时, 第24小时, 第48小时, 第72小时, 第7天, 假手术组和正常组, 每组4只分别用于免疫组化和RT-PCR检测。结果: ①免疫组化结果: GAP-43阳性细胞表达为细胞胞浆着棕黄色, 阳性细胞主要分布于血肿周围和大脑皮质的神经元, 实验组于脑出血后第12小时开始上调, 持续到第7天, 与正常组和假手术组相比差异有显著性(P<0.05)。实验组于运动后第14天出现上调, 第28天达高峰, 与对照组相比差异有显著性(P<0.05), 实验组和对照组与假手术组相比差异有显著性(P<0.01)。②RT-PCR结果: 脑出血后第12小时GAP-43 mRNA 表达一度升高, 与对照组比差异有显著性(P<0.05), 之后维持较高水平, 直到第14—28天。实验组表达于第14—28天与假手术组相比差异有显著性(P<0.05), 与对照组比(P>0.05)。结论: GAP-43参与了脑出血后神经可塑性的发生, 运动训练可促进GAP-43基因及蛋白表达, 从而改善神经功能。

关键词: [运动训练](#) [脑出血](#) [大鼠](#) [生长相关蛋白-43](#)

The effects of exercises on expression of GAP-43 and GAP-43mRNA after ICH in rats [Download Fulltext](#)

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Abstract:

Objective: To investigate the effects of exercises on expression of GAP-43(growth associated protein-43) and GAP-43mRNA of neuronal cells after intracerebral hemorrhage(ICH) in rats. Method: Ninety-six male SD rats(body weight, 270—300g) were divided into three groups, trial group(ICH and exercises group, n=32), control group(ICH group, n=32) and sham operated group(no ICH without exercises, n=32). The rats brains were removed at the 7th d, 14th d, 21st d, 28th d after operation. The other 64 rats were divided into 8 groups(the 6th h, 12th h, 24th h, 48th h, 72th h, 7th d after ICH, sham operated and normal). The activations of GAP-43 and GAP-43mRNA were measured by immunohistochemistry and RT-PCR. The rats in trial group began cage-running exercises at the 72nd h after operation. The others lived in standard cages. Result: ①The result of immunohistochemistry: GAP-43-positive cells distributed around the hematoma and neuron of cortex. The number of GAP-43 - positive cells was very little in sham-operation group. In trial group up-regulation of GAP-43 displayed at the 12th h after ICH, until the 7th d after ICH, and there was significant difference compared with sham operated group and normal group (P<0.05). There was up-regulation of expression of GAP-43 in trial group at the 14th d-28th d after operation, and there was significant difference in trial group and control group compared with sham operated group (P<0.01), but in trial group the expression of GAP-43 was on a higher level than that in control group (P<0.05). ②The result of RT-PCR: There was up-regulation of GAP-43mRNA at the 12th h after ICH in trial group, compared with control group(P<0.05). In trial group and control group there was higher expression at the 14th—28th d than that in sham-operated group(P<0.05), but in trial group there was no significant difference compared with control group (P>0.05). Conclusion: The results suggested that GAP-43 participated in neuronal plasticity after ICH, and exercises training could clearly up-regulate the expression of GAP-43 and GAP-43-mRNA and improve neurological function.

Keywords: [exercise](#) [intracerebral hemorrhage](#) [rats](#) [growth associated protein-43](#)

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