

补阳还五汤与六味地黄丸合方对脑缺血大鼠APP蛋白及突触重构的影响

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中文摘要:目的:探讨补阳还五汤、六味地黄丸及合方对脑缺血大鼠学习记忆及海马轴突淀粉样前体蛋白(APP)、生长相关蛋白(GAP-43)和突触素(SYP)表达的影响。方法:采用大脑中动脉永久性缺血模型,雄性SD大鼠随机分为正常对照组、模型组、补阳还五汤组、六味地黄丸组及合方组。造模后48 h开始灌胃给药,每天1次,补阳还五汤组每天灌胃 $13 \text{ g} \cdot \text{kg}^{-1}$,六味地黄丸组每天灌胃 $9.1 \text{ g} \cdot \text{kg}^{-1}$,合方组每天灌胃 $22.1 \text{ g} \cdot \text{kg}^{-1}$,模型组和假手术组每天灌胃等剂量的生理盐水。每组动物连续给药30 d后进行行为学检测。治疗30 d后,利用Morris水迷宫检测学习记忆功能;Western blot检测轴突淀粉样前体蛋白(APP)及突触分子标志SYN、GAP-43蛋白的表达。结果:脑中动脉永久性缺血30 d后,空间参考记忆明显受损;补阳还五汤、六味地黄丸及合方均能不同程度提高大鼠空间参考记忆,特别是合方组大鼠在定位航行实验第2天的逃避潜伏期较模型组明显减少($P<0.05$),补阳还五汤组和合方组大鼠穿环次数较模型组显著性增加($P<0.05$);合方组大鼠首次穿越原平台所在位置时间也较模型组明显缩短($P<0.01$)。脑缺血大鼠海马APP蛋白表达明显上调,GAP-43、SYN蛋白明显减少,与假手术组差异显著($P<0.01$ 或 $P<0.05$);合方及补阳还五汤治疗可明显下调海马APP蛋白表达,上调海马GAP-43、SYN蛋白,较模型组有统计学差异($P<0.05$);六味地黄丸组大鼠海马APP蛋白较模型组没有明显差异,海马GAP-43、SYN蛋白明显上调,差异显著($P<0.05$)。结论:补阳还五汤与六味地黄丸合方治疗在减轻缺血脑区轴索损害,降低海马APP蛋白异常积聚的同时,可诱导GAP-43、SYN的合成而促进神经元突起再生,促进学习记忆功能的康复。

中文关键词:[血管性痴呆](#) [补阳还五汤](#) [六味地黄丸](#)

Effects of Buyang Huanwu Decoction Combined with Liuwei Dihuang Wan on APP Expression and Reconstruction of Neuron Synapses in Permanent Cerebral Ischemia Model in Rats

Abstract: Objective: To investigate the effects of Buyang Huanwu decoction combined with Liuwei Dihuang Wan on learning memory, amyloid precursor protein (APP), growth associated protein 43 (GAP-43) and synaptophysin SYP expression in permanent cerebral ischemia model in rats. **Method:** To establish the permanent middle cerebral artery model in rats. Male SD rats were randomly divided into five groups: normal group, model group, Buyang Huanwu decoction group, Liuwei Dihuang Wan group and combination group. After treatment for 30 days, Morris water maze was used to measure the learning memory, and the technology of Western blot was adopted to examine the expression of APP, SYN, GAP-43. **Result:** After the ischemia model was established for 30 days, the spatial memory was damaged obviously in model group. Buyang Huanwu decoction and Liuwei Dihuang Wan as well as the combination therapy could improve the spatial memory ability in different degrees. The escape latencies of the combination decoction were decreased significantly compared to the model group ($P<0.05$) on the second day of position navigation test. On the fourth day of position navigation test, the escape latencies in Buyang Huanwu decoction group and the combination decoction group was decreased obviously ($P<0.05$). In the spatial probe testing, the piercing number in Buyang Huanwu decoction group and the combination decoction group were increased significantly compared to the model group, the first time through the original plat of the combination decoction group was shorted remarkably compared to the model group ($P<0.01$). Compared to sham group, the APP expression of the model group was increased significantly and the GAP-43 and SYN expression was descended obviously ($P<0.01$, $P<0.05$) while Buyang Huanwu decoction group and the combination decoction could decrease the APP expression and increase the GAP-43, SYN expression remarkably compared to the model group ($P<0.05$). There was no statistical significance in the APP expression between Liuwei Dihuang Wan group and model group. The GAP-43 and SYN expression was increased obviously ($P<0.05$). **Conclusion:** Buyang Huanwu decoction combined with Liuwei Dihuang Wan can alleviate the cerebral ischemia injury and reduce the abnormal APP accumulation. In addition, the combination decoction can reduce GAP-43 and SYN

synthesis and promote regeneration of neurite, and promote the recovery of learning memory.

keywords:[vascular dementia](#) [Buyang Huanwu decoction](#) [Liuwei Dihuang Wan](#)

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