

## 星蒺承气汤和补阳还五汤对脑缺血大鼠海马神经元损伤的影响

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**中文摘要:**目的:通过观察和比较星蒺承气汤和补阳还五汤对脑缺血大鼠海马神经元的保护作用,明确两方治疗脑缺血的时相性特点。方法:大鼠随机分为假手术组、模型组、尼莫地平组、星蒺承气汤和补阳还五汤组;线栓法制备大鼠大脑中动脉阻塞;大鼠给药剂量为尼莫地平 $10.8 \text{ mg} \cdot \text{kg}^{-1}$ 、星蒺承气汤 $5.0 \text{ g} \cdot \text{kg}^{-1}$ 、补阳还五汤 $13.0 \text{ g} \cdot \text{kg}^{-1}$ ,造模前4 d灌胃用药,脑缺血术后每天用药1次;大鼠分别于1,3,7 d进行神经功能评分后取脑,测定脑组织含水量和脑梗死面积,观察海马神经元密度和病理损伤。结果:模型组大鼠神经功能明显降低( $18.00 \pm 0.00$  vs  $7.43 \pm 1.27, 8.86 \pm 1.34, 10.25 \pm 1.03$ )、脑组织含水量增多( $71.00 \pm 1.33\%$  vs ( $79.85 \pm 1.73\%$ ), ( $80.84 \pm 0.98\%$ ), ( $82.86 \pm 1.15\%$ )、脑梗死面积增大( $0.00 \pm 0.00\%$  vs ( $16.73 \pm 1.13\%$ ), ( $17.89 \pm 1.54\%$ ), ( $19.32 \pm 1.21\%$ )、海马神经元密度减小( $153.57 \pm 15.62, 118.71 \pm 9.98, 79.38 \pm 6.02$ )、脑组织病理损伤加重;各药组的神经功能、脑含水量、神经元密度和脑组织病理损伤均较模型组改善,尼莫地平组3 d和7 d、各中药组的脑梗死面积较模型组减小;与尼莫地平组比较,补阳还五汤各组的神经评分增高,7 d的脑含水量减少、病理损伤减轻,两药组的海马神经元密度增大;补阳还五汤组7 d的神经功能( $13.29 \pm 1.11$ )、脑含水量( $77.94 \pm 2.00\%$ )、海马神经元密度( $124.29 \pm 11.64$ )、脑组织病理损伤均较星蒺承气汤改善明显。结论:星蒺承气汤和补阳还五汤对脑缺血海马神经元受损均具有保护作用,二者在缺血早期(1 d和3 d)的作用未见明显差异,但随着缺血时间的延长(7 d),补阳还五汤方显示出更为全面和显著的神经保护和功能修复作用。

**中文关键词:**[脑缺血](#) [补阳还五汤](#) [星蒺承气汤](#) [海马神经元](#)

## Effects of Xinglou Chengqi Decoction and Buyang Huanwu Decoction on the Injury of Hippocampal Neurons in Rats with Cerebral Ischemia

**Abstract:**Objective: To observe and compare the effects of Xinglou Chengqi decoction(XLCQD) and Buyang Huanwu decoction(BYHWD) on hippocampal neurons injured by cerebral ischemia, and then to clarify the characteristics of two recipes in phase of therapy. Method: Rats were divided randomly into sham, model, nimodipine, BYHWD and XLCQD groups. Rat focal cerebral ischemia model was established by middle cerebral artery occlusion(MCAO) with nylon thread. The dose of two recipes was  $10.8 \text{ mg} \cdot \text{kg}^{-1}$  for nimodipine,  $5.0 \text{ g} \cdot \text{kg}^{-1}$  for (XLCQD),  $13.0 \text{ g} \cdot \text{kg}^{-1}$  for BYHWD. Rats were administrated with corresponding drugs by gavage before establishing model. After operation of cerebral ischemia, rats were given the corresponding drugs once a day. Rat neurological score(NS) was evaluate and brain was taken out at 1, 3 and 7 d after operation, and then the brain tissue water ratio(BTWR), infarct area ratio(IAR), hippocampal neurons density (HND) and brain pathological damage (BPD) were observed and determined. Result: In each model group, rats NS( $18.00 \pm 0.00$  vs  $7.43 \pm 1.27, 8.86 \pm 1.34, 10.25 \pm 1.03$ ) and HND ( $215.00 \pm 7.78$  vs  $153.57 \pm 15.62, 118.71 \pm 9.98, 79.38 \pm 6.02$ ) decreased, BTWR( $71.00 \pm 1.33\%$  vs ( $79.85 \pm 1.73\%$ ), ( $80.84 \pm 0.98\%$ ), ( $82.86 \pm 1.15\%$ ) and IAR( $0.00 \pm 0.00\%$  vs ( $16.73 \pm 1.13\%$ ), ( $17.89 \pm 1.54\%$ ), ( $19.32 \pm 1.21\%$ ) increased, and the BPD was severed. In comparison with that of rats in each model group, NS, BTWR, HND and BPD of rats in each treatment group improved obviously, and rats' IAR reduced at 3 d and 7 d in nimodipine group and each chinese medicine group. In comparison with that in nimodipine group, the NS and HND increased in each BYHWD group, BTWR decreased and BPD weakened at 7 d group, and HND in each BYHWD and XLCQD group all increased. The improvement of NS( $13.29 \pm 1.11$ ), BTWR( $77.94 \pm 2.00\%$ ), HND( $124.29 \pm 11.64$ ) and BPD were more significant at 7 d in BYHWD group compared with that in XLCQD group. Conclusion: It is seemed that the treatment of XLCQD and BYHWD can perform the effects on hippocampal neurons injured by cerebral ischemia, and the roles of two kinds of recipes have no significant difference in early ischemia(1 and 3

d), but following the prolongation of cerebral ischemia(7 d), BYHWD has more appreciable and significant roles in neurons protection and functional recovery.

**keywords:**[cerebral ischemia](#) [Buyang Huanwu decoction](#) [Xinglou Chengqi decoction](#) [hippocampal neurons](#)

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