

论著

转肝细胞生长因子的脐带间质干细胞移植促进大鼠脑出血后髓鞘再生

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摘要 目的: 研究转人肝细胞生长因子(hHGF)人脐带间质干细胞(hUCMSCs)移植对脑出血后髓鞘再生和神经功能恢复的影响。方法: SD大鼠60只, 随机分为3组: 脑出血+hUCMSCs-HGF组、脑出血+hUCMSCs组和脑出血+PBS组, 每组20只。胶原酶诱导建立脑出血模型, 据不同组别于术后7 d 立体定向下进行侧脑室相应的移植。分别于移植前1 d 和移植后1、7、14、21、28、35 d 利用mNSS (modified neurological severity scores)评分检测大鼠神经功能情况, 应用劳克坚牢蓝检测脑损伤区的神经纤维恢复情况, 利用免疫组化和Western blotting检测髓鞘碱性蛋白(MBP)的表达变化。结果: 脑出血模型大鼠术后3周(即移植术后2周)mNSS评分检测的神经功能, hUCMSCs-HGF组和hUCMSCs组的神经功能改善较PBS组明显提高(P<0.05), 而且hUCMSCs-HGF组较hUCMSCs组神经改善更加显著(P<0.05)。hUCMSCs-HGF组的神经纤维修复较其它组明显改善, 髓鞘碱性蛋白的表达较其它组亦明显提高(P<0.01)。结论: 转hHGF人脐带间质干细胞移植较单纯细胞移植能明显提高神经纤维髓鞘再生能力, 促进脑出血后神经功能缺失的修复。

关键词 [间质干细胞](#); [肝细胞生长因子](#); [髓鞘再生](#); [脑出血](#); [大鼠](#)

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Hepatocyte growth factor modified human umbilical cord mesenchymal stem cell therapy promotes remyelination after intracerebral hemorrhage in rats

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Abstract

AIM: To study the effects of neurological improvement and remyelination after intracranial hemorrhage (ICH) in rats by a novel therapeutic strategy with hepatocyte growth factor (HGF) gene transfected human umbilical cord mesenchymal stem cells (hUCMSCs) by lentiviral vector. METHODS: ICH was induced in 60 adult male Sprague-Dawley rats by a stereotactically guided injection of bacterial type IV collagenase into the right internal capsule. Non-modified hUCMSCs, HGF-modified hUCMSCs with lentiviral vector or PBS were administered left intraventricularly 7 d after right internal capsule ICH. All rats underwent modified neurological severity scores for 35 d. Luxol fast blue staining, immunohistological staining and Western blotting assessments for myelin basic protein (MBP) were applied. RESULTS: The ICH rats receiving HGF-modified hUCMSCs demonstrated significant functional recovery, determined by modified neurological severity scores, compared to the other groups from 2 weeks after cell therapy. As indicated by Luxol fast blue staining, the percent area of demyelination was obviously reduced in the HGF-hUCMSC treatment group compared to the PBS control group and hUCMSC-only treatment group at 5 weeks after ICH. The expression of MBP detected by immunohistological staining and Western blotting was significantly higher in HGF-hUCMSCs treated brain than that in other groups (P<0.01). CONCLUSION: Our data suggest that the HGF gene-modified hUCMSCs contribute to the remarkable functional recovery after ICH compared to hUCMSCs transplantation alone. The treatment promotes nerve fiber remyelination by up-regulating the MBP after ICH in rats.

Key words [Mesenchymal stem cells](#) [Hepatocyte growth factor](#) [Remyelination](#) [Brain hemorrhage](#)

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