

论著

HGF对脑缺血/再灌注大鼠脑iNOS, NO及IL-1 β 的影响

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摘要:

目的: 探讨肝细胞生长因子(HGF)对脑缺血/再灌注(I/R)大鼠脑诱导型一氧化氮合酶(iNOS)、NO及白细胞介素-1 β (IL-1 β)的影响。方法: SD大鼠随机分为以下5组: 假手术组(Sham组); I/R组; HGF1, HGF2, HGF3组, 即I/R大鼠分别注射15, 30, 60 μ g/kg HGF。线栓法建立局灶性脑I/R模型, 脑缺血1.5 h再灌注24 h后, 测定缺血区脑组织iNOS活性及NO含量, 检测iNOS及IL-1 β mRNA水平的变化, 测定iNOS蛋白表达水平及IL-1 β 含量。另取体外培养的大鼠大脑皮层神经元行 I/R 处理, 检测iNOS和IL-1 β 蛋白表达水平及NO含量。结果: 大鼠缺血区脑组织iNOS活性升高、NO含量增加, iNOS和IL-1 β mRNA表达上调, iNOS 蛋白表达增多, IL-1 β 含量增加。注射不同剂量HGF均能降低缺血区脑组织iNOS活性及NO含量, 下调iNOS和IL-1 β mRNA的表达, 抑制iNOS蛋白的表达, 降低IL-1 β 含量。此外, HGF可明显下调体外 I/R 神经元IL-1 β 和iNOS蛋白的表达, 降低NO含量。结论: 抑制IL-1 β 的表达, 减少iNOS的表达, 降低NO含量可能是HGF减轻脑缺血损伤的机制之一。

关键词: 脑缺血 肝细胞生长因子 iNOS IL-1 β 大鼠

Influence of hepatocyte growth factor on iNOS, NO and IL-1 β in the cerebrum during cerebral ischemia/reperfusion in rats

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Abstract:

Objective: To explore the effect of hepatocyte growth factor (HGF) on inducible nitric oxide synthase (iNOS), NO and interleukin-1 β (IL-1 β) in the cerebrum of rats subjected to cerebral ischemia/reperfusion (I/R). Methods: Sprague-Dawley rats were randomly divided into 5 groups: a sham group, an I/R group, an HGF1 group, an HGF2 group, and an HGF3 group. The latter 3 groups were respectively injected 15, 30 and 60 μ g/kg HGF. The focal cerebral I/R model was established by sutureoccluded method. After 1.5 h ischemia followed by 24 h reperfusion, the iNOS activity and NO content in the ischemic cerebral tissue were assessed. The expression of iNOS mRNA and IL-1 β mRNA was detected. The level of iNOS protein and IL-1 β content were determined. In addition, cultured cerebral cortical neurons in vitro were exposed to I/R. Then the expression of iNOS and IL-1 β protein in the neurons was detected, and NO content was assessed. Results: The iNOS activity and NO content in the ischemic cerebral tissue were increased. The expression of iNOS mRNA and IL-1 β mRNA was upregulated. The level of iNOS protein and IL-1 β content were increased. Administration of HGF decreased the iNOS activity and NO content, and downregulated the expression of iNOS mRNA, IL-1 β mRNA, iNOS protein and IL-1 β content in the ischemic cerebral tissue. HGF decreased the expression of IL-1 β , iNOS protein and NO content in the cortical neurons exposed to I/R in vitro. Conclusion: HGF can inhibit the expression of IL-1 β and decrease the expression of iNOS and content of NO, which is probably one of the mechanisms mediating the protection of HGF against cerebral ischemia injury.

Keywords: cerebral ischemia hepatocyte growth factor iNOS IL-1 β rat

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