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论著

HGF对脑缺血/再灌注大鼠脑iNOS, NO及IL-1β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-1β(IL-1β)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 μg/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-1β mRNA水平的变化，测定iNOS蛋白表达水平及IL-1β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-1β 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-1β mRNA表达上调，iNOS 蛋白表达增多，IL-1β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-1β mRNA的表达，抑制iNOS蛋白的表达，降低IL-1β含量。此外，HGF可明显下调体外 I/R 神经元IL-1β和iNOS蛋白的表达，降低NO含量。结论：抑制IL-1β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-1β 大鼠

Influence of hepatocyte growth factor on iNOS, NO and IL-1β 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-1β (IL-1β) 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 μg/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-1β mRNA was detected. The level of iNOS protein and IL-1β content were determined. In addition, cultured cerebral cortical neurons in vitro were exposed to I/R. Then the expression of iNOS and IL-1β 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-1β mRNA was upregulated. The level of iNOS protein and IL- 1β content were increased. Administration of HGF decreased the iNOS activity and NO content, and downregulated the expression of iNOS mRNA, IL-1β mRNA, iNOS protein and IL-1β content in the ischemic cerebral tissue. HGF decreased the expression of IL-1β, iNOS protein and NO content in the cortical neurons exposed to I/R in vitro. Conclusion: HGF can inhibit the expression of IL-1β 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-1β rat

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