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论著

胰岛素样生长因子1对缺血缺氧神经元的保护及其与PI3K信号转导通路的关系

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摘要：

目的：观察胰岛素样生长因子 1(insulin like growth factor 1, IGF 1)对缺氧缺糖神经元的保护作用并探讨其可能的作用机制。方法：构建体外培养的神经元氧糖剥夺模型（oxygen and glucose deprivation, OGD），第7天将培养的神经元分为8组(4组暴露于氧糖剥夺，另4组非暴露)，分别施加纯化的IGF 1单体，并观察加入PI3K和MAPK信号通路的特异性阻断剂LY294002和PD98059的效应，利用MTT法分别观察各组神经元的细胞活性；Western印迹观测不同干预因素下Akt 和 p Akt蛋白的表达情况。结果：神经元正常组和缺血缺氧模型组，加入IGF 1后细胞增殖活性均显著升高 (P＜0.05)；而同时加入IGF 1和LY294002后，IGF 1促神经元活性的作用被明显抑制 (P＜0.05)，反之同时加入IGF 1与PD98059后，IGF 1发挥促神经元存活的作用未被明显阻滞 (P＞0.05)。Western印迹结果示IGF 1可显著上调p Akt的表达，这种上调作用可以被LY294002阻滞。结论：IGF 1有明确的神经保护作用，其可能是通过PI3K/Akt通路来发挥作用的。

关键词： 胰岛素样生长因子 1；神经元；信号通路；氧糖剥夺模型

Protective effects of IGF 1 on neurons under condition of hypoxia and the role of PI3K signal pathway

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Abstract:

ObjectiveTo investigate the protective effects of insulin like growth factor 1(IGF 1) on cortical neurons under condition of hypoxia and the possible mechanism. MethodsCerebral cortical neurons from newborn rats were cultured under the condition of oxygen and glucose deprivation (OGD) . On day 7, neurons were treated with IGF 1 or IGF 1 plus LY294002 or PD98059 under condition of OGD or normal condition. MTT assay was used to analyze the viability of neurons in each group. The expression of total Akt and p Akt were analyzed by Western blot. ResultsCompared with the control, the neuron viability was significantly higher in IGF 1 treated group under normal or OGD condition (P＜0.05). The protective effects of IGF 1 were attenuated in the presence of LY294002 but not PD98059. The result of Western blot showed IGF 1 upregulated the expression of p Akt, which was inhibited by LY294002. ConclusionPI3K pathway may play an important role in neuroprotection afforded by IGF 1.

Keywords: insulin like growth factor 1;neuron;signal pathway;oxygen and glucose deprivation model

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