

论文

不同年龄糖尿病大鼠脑组织LRP-1表达与Aβ1-40的相关性

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摘要:

目的 研究糖尿病大鼠脑组织中低密度脂蛋白受体相关蛋白1(Lrp-1)和β淀粉样蛋白(Aβ1-40)的含量,探讨二者的关系。方法 采用高脂高糖饮食加小剂量腹腔注射链脲佐菌素建立2型糖尿病大鼠模型。将Wistar大鼠随机分为3月龄正常对照组、6月龄正常对照组、3月龄糖尿病组(DM3组)、6月龄糖尿病组(DM6组)。应用免疫组化法测定Lrp-1、Aβ1-40的表达。酶联免疫吸附试验(Elisa)法测定Lrp-1、Aβ1-40在脑组织的表达量。结果 ①Aβ1-40表达于大鼠大脑皮质、海马等处的神经元、神经胶质细胞的胞浆、胞膜及软脑膜动脉和穿支动脉的外膜及平滑肌细胞处;在同月龄大鼠中,糖尿病组Aβ1-40在脑组织中表达均较正常大鼠组明显增多(P<0.05);两组大鼠随着月龄的增长Aβ1-40在脑组织中的表达逐渐增加(P<0.05);②Lrp-1表达于大脑皮质、海马等处的神经元细胞的胞浆、胞膜及软脑膜动脉和穿支动脉的内膜和毛细血管内皮细胞上;在同月龄大鼠中,糖尿病组较正常大鼠组Lrp-1的表达明显减少(P<0.05);两组大鼠随月龄增长Lrp-1表达逐渐减少(P<0.05);③Aβ1-40和Lrp-1呈负相关。结论 Aβ1-40沉积可能与Lrp-1的表达下调有关。

关键词: 糖尿病; 脑血管; 低密度脂蛋白受体相关蛋白1; β淀粉样蛋白; 大鼠, Wistar

Correlation between Lrp-1 and Aβ1-40 expressed in brain tissue of diabetic rats of different ages

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Abstract:

Objective To research low density lipoprotein receptor-related protein 1(Lrp-1) and Amyloid Beta 1-40(Aβ1-40) content in the brain tissue of rats with diabetic mellitus, as well as the relationship between them. Methods The type 2 diabetic rat model was induced by streptozotocin and high carbohydrate fat diet. All Wistar rats were randomly assigned into four groups: normal rats aged 3 months and 6 months, and diabetic rats aged 3 months(DM3) and 6 months(DM6). Then expressions of Lrp-1 and Aβ1-40 were detected by immunohistochemistry and enzyme-linked immunosorbent assays(Elisa) respectively. Results ①Aβ1-40 was detected in several parts of the brain tissue, such as the cytoplasm or cytomembrane of neurons or neuroglial cells of the cerebral cortex and hippocampus, and adventitia or smooth muscle cells of the pial artery or the perforating branch. More Aβ1-40 was detected in diabetic rats than in same age normal ones(P<0.05). Expression of Aβ1-40 increased with age in both groups(P<0.05);②Lrp-1 was also detected in several parts of the brain tissue, such as the cytoplasm or cytomembrane of neurons or neuroglial cells of cerebral cortex and hippocampus, intima of perforating arteries, and capillary endothelial cells. On the contrary, less Lrp-1 was detected in diabetic rats(P<0.05), and expression of Lrp-1 decreased with age(P<0.05);③Aβ1-40 had a typical negative linear correlation with Lrp-1. Conclusion Deposition of Aβ1-40 was related to down-regulation of Lrp-1.

Keywords: Diabetes mellitus; Cerebrovascular; Lipoprotein receptor-related protein 1; Amyloid Beta 1-40; Rats, wistar

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