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论著

大鼠海马HIF-1&agr;和EPO在衰老过程中的表达

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摘要

目的:探讨大鼠海马组织中低氧诱导因子-1&agr;（HIF-1&agr;)和促红细胞生长素（EPO)在衰老过程中的表达规律及二者在神经系统衰老过程中的作用。方法:应用尼氏染色和免疫组织化学技术观察不同月龄组（3,18,24,30月)大鼠海马CA1区神经细胞尼氏体及HIF-1&agr;和EPO的表达情况。结果:随大鼠月龄的增大,海马CA1区神经细胞体积变大,排列稀疏,胞浆内尼氏体减少。随月龄增加海马CA1区HIF-1&agr;阳性细胞数增加,差异有统计学意义（P<0.05)；大鼠海马CA1区EPO表达随月龄增加呈抛物线变化,由3月龄到18月龄,阳性细胞个数的增加有统计学意义（P<0.05),由18月龄到30月龄,阳性细胞个数减少有统计学意义（P<0.05)。结论: HIF-1&agr;与EPO在大鼠海马的表达在中年期之前,呈平行递增变化,在中年期之后,二者呈分离变化,提示HIF-1&agr;活性下降和蛋白质合成功能的减退是衰老过程中EPO表达减少的主要原因,通过加强内源性HIF-1&agr;的活性和补充外源性EPO有可能减缓神经系统的衰老。

关键词　衰老；低氧诱导因子-1&　agr　；促红细胞生成素；大鼠；海马

分类号

Expression of hypoxia inducible factor-1&agr; and erythropoietin in the hippocampus of aging rats

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Abstract

ObjectiveTo explore the expression of hypoxia inducible factor-1&agr; (HIF-1&agr;) and erythropoietin in the hippocampus of aging rats, and to investigate the role of HIF-1&agr; and erythropoietin in the aging of nervous system. MethodsThe expression of Nissl body, HIF-1&agr;, and erythropoietin in the CA1 region of the hippocampus in different months was observed by Nissl staining and immunohistochemical technique. ResultsNerve cells became bigger and appeared sparse, and the Nissl bodies decreased with age. HIF-1&agr; positive cells increased significantly with age in the CA1 region of the hippocampus (P<0.05). The expression of erythropoietin presented a parabola with aging in the CA1 region of the hippocampus. The increase from 3 to 18 months and the reduction from 18 to 30 months of erythropoietin positive cells had statistical significance (both P<0.05). ConclusionHIF-1&agr; and erythropoietin are parallelly incremental before middle age, and are separated after middle age, suggesting decreased activity of HIF-1&agr; and recession of protein synthesis function may be the main reasons for decreased expression of erythropoietin in the brain during aging. Strengthened endogenous HIF-1&agr; activity and supply of exogenous erythropoietin may delay the aging of the nervous system.

Key words　aging　hypoxia inducible factor-1&　agr　erythropoietin　rat　hippocampus

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