

[1]王洪凯,梅峰,刘志,等.不同年龄小鼠脱髓鞘动物模型中脑内星形胶质细胞激活情况的观察[J].第三军医大学学报,2012,34(08):696-700.

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不同年龄小鼠脱髓鞘动物模型中脑内星形胶质细胞激活情况的观察 (PDF)

《第三军医大学学报》 [ISSN:1000-5404/CN:51-1095/R] 卷: 34 期数: 2012年第08期 页码: 696-700 栏目: 论著 出版日期: 2012-04-30

Title: Activation of intracerebral astrocytes in a demyelination model of mice at different ages

作者: 王洪凯; 梅峰; 刘志; 韦美; 肖岚

第三军医大学基础医学部组织学与胚胎学教研室, 重庆市神经科学研究所

Author(s): Wang Hongkai; Mei Feng; Liu Zhi; Wei Mei; Xiao Lan

Department of Histology and Embryology, Chongqing Institute of Neurobiology, College of Basic Medical Sciences, Third Military Medical University, Chongqing, 400038, China

关键词: 星形胶质细胞激活; 脱髓鞘; 年龄; 小鼠

Keywords: activation of astrocyte; demyelination; age; mouse

分类号: R-332; R338; R363.27

DOI: -

文献标识码: A

摘要: 目的 观察星形胶质细胞在不同年龄(青壮年及中老年) cuprizone (CPZ) 脱髓鞘小鼠模型中的激活特点, 探讨星形胶质细胞激活与髓鞘脱失可能存在的内在联系。 方法 选取6周龄(青壮年)及9月龄(中老年) 雄性C57BL/6小鼠建立CPZ导致的急性脱髓鞘动物模型, 经0.2%CPZ处理6周后, 通过体质量测量及卢卡斯快蓝(luxol fast blue, LFB)染色观察模型建立是否成功, 利用免疫组织化学染色检测实验组(CPZ)和对照组(CTL)小鼠胼胝体(corpus callosum, CC)及皮层(cortex, CTX)区胶质纤维酸性蛋白(glial fibrillary acidic protein, GFAP)和髓鞘碱性蛋白(myelin basic protein, MBP)表达变化, 并通过Western blot方法进一步检测GFAP及MBP蛋白表达差异。 结果 0.2%CPZ处理6周后, 青壮年CPZ小鼠于胼胝体及皮层区GFAP阳性细胞数显著增多($P<0.01$), 同时伴有显著的MBP表达下降($P<0.01$); 中老年小鼠于胼胝体区GFAP阳性细胞数增多较明显($P<0.05$), 并伴有MBP表达明显下降($P<0.05$); GFAP阳性细胞数的增多和MBP表达下降均表现为青壮年组更加明显($P<0.01$)。 结论 星形胶质细胞的激活于青壮年小鼠更加明显, 并与髓鞘损伤呈现出一定的正相关性, 星形胶质细胞激活可能是参与髓鞘损伤的重要原因。

Abstract: Objective To observe the activating features of astrocytosis in a cuprizone (CPZ)-induced demyelination model of mice at different ages and their correlation with demyelination. Methods Six-week old and 9-month old male C57BL/6 mice were enrolled in this study and served as 6-week group and 9-month group, respectively. A mouse model of CPZ-induced acute demyelination was established. Six weeks after 0.2%CPZ treatment, whether the model was successfully established was observed by measuring the body weight and luxol fast blue (LFB) staining. Expression of glial fibrillary acidic protein (GFAP) and myelin basic protein (MBP) in corpus callosum and cortex from 6-week group and 9-month group was detected by

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immunohistochemistry and Western blotting, respectively. Results Six weeks after 0.2%CPZ treatment, the number of GFAP positive cells in corpus callosum and cortex from 6-week group was significantly increased ($P<0.01$), while the expression of MBP significantly decreased ($P<0.01$); the number of GFAP positive cells in corpus callosum from 9-month group was significantly increased ($P<0.05$), while the expression of MBP significantly decreased ($P<0.05$). The number of GFAP positive cells was significantly greater and the expression level of MBP was significantly lower in 6-week group than in 9-month group ($P<0.01$). Conclusion Activation of astrocytes is more significant in 6-week old mice and positively related with myelin sheath damage. It may be one of the important reasons for myelin sheath damage.

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王洪凯, 梅峰, 刘志, 等. 不同年龄小鼠脱髓鞘动物模型中脑内星形胶质细胞激活情况的观察[J]. 第三军医大学学报, 2012, 34(8): 696-700.

备注/Memo: -

更新日期/Last Update: 2012-04-16