[1]彭超,程国华,王芸,等.双环己酮草酰二腙诱导的精神分裂症样小鼠大脑皮质体积及有髓神经纤维的体视学观测[J].第三军医大学学报,2013,35(08):717-721.

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分享到:

《第三军医大学学报》[ISSN:1000-5404/CN:51-1095/R] 卷: 35 期数: 2013年第08期 页码: 717-721 栏目: 论著 出版日期: 2013-04-30

Title: Stereological observation of cerebral cortex volume and myelinated fibers in cerebral cortices of cuprizone-induced schizophrenia-like mice

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关键词: 双环己酮草酰二腙; 小鼠; 行为学; 大脑皮质; 有髓神经纤维; 体视学

Keywords: cuprizone; mouse; behavior; cerebral cortex; myelinated fibers; stereology

分类号: R-332; R322.85; R749.3

文献标志码: A

摘要: 目的 探讨双环己酮草酰二腙(cuprizone，CPZ)诱导的精神分裂症样小鼠大脑皮质体积及其内有髓神经纤维的改变。 方法 将6周龄的雄性C57BL/6小鼠分为CPZ组和对照组，CPZ组小鼠用含0.2% CPZ混合饲料饲育，对照组小鼠用标准的实验室饲料饲育。6周后进行行为学实验以证实精神分裂症样动物模型造模成功。然后运用透射电镜技术和体视学方法对小鼠大脑皮质体积和大脑皮质内有髓神经纤维进行定量研究。 结果 行为学实验中CPZ组小鼠出现精神分裂症样表现，体视学定量研究中CPZ组与对照组小鼠相比大脑皮质总体积没有显著性改变（$P>0.05$）。与对照组小鼠相比，CPZ组小鼠大脑皮质有髓神经纤维长度密度和总长度分别显著性降低了64.3%和68.9%

（*P*<0.01），有髓神经纤维平均直径显著性增加了17.8%（*P*<0.01）。直径为0.2～<0.4 μm、0.4～<0.6 μm和0.6～<0.8 μm的大脑皮质有髓神经纤维总长度与对照组小鼠相比分别显著性减少了4.317、3.313 km和0.940 km（*P*<0.01），CPZ组小鼠其他直径段大脑皮质有髓神经纤维总长度与对照组小鼠相比无显著性差异（*P*>0.05）。　　结论　CPZ组小鼠存在大脑皮质有髓神经纤维总长度的降低和平均直径的增加，有髓神经纤维总长度的降低主要是由小直径纤维丢失造成的。

Abstract: Objective To investigate the changes of cerebral cortex volume and myelinated fibers in the cerebral cortices of cuprizone(CPZ)-induced schizophrenia-like mice. Methods Six-week old male C57BL/6 mice were divided into a CPZ group and a control group. The mice in the CPZ group were fed with mixed standard rodent chow containing 0.2% CPZ, while those in the control group were fed with standard lab chow. After six weeks, behavioral tests were performed to confirm the success of schizophrenia-like animal model. Then the cerebral cortex volume and myelinated fibers in the cerebral cortices were determined with transmission electron microscopy and stereological methods. Results Mice in the CPZ group showed schizophrenia-like performance. Stereological results showed that there was no significant change in the volume of the cerebral cortex between CPZ group and control group (*P*>0.05). Compared with the control group, the length density and total length of myelinated fibers in the cerebral cortices of the CPZ group significantly decreased by 64.3% and 68.9%, respectively (*P*<0.01). Compared with the control group, the mean diameter of myelinated fibers in the CPZ group significantly increased by 17.8% (*P*<0.01), and the total length of the myelinated fibers with diameters of 0.2 to less than 0.4 μm, 0.4 to less than 0.6 μm and 0.6 to less than 0.8 μm significantly decreased by 4.317, 3.313 and 0.940 km, respectively (*P*<0.01). There was no significant difference in the total length of other myelinated fibers between the two groups. Conclusion In CPZ group, the total length of myelinated fibers in cerebral cortex decreases but the mean diameter of the myelinated fibers increases, which is due to the loss of small-diameter myelinated fibers.

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更新日期/Last Update: 2013-04-19