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论著

癫痫大鼠海马中表达生长抑素的中间神经元轴突出芽的研究

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摘要:

目的:探讨表达生长抑素(somatostatin,SS)的树突型中间神经元的轴突出芽。**方法**:6~8周龄健康雄性SD大鼠随机分为实验组(腹腔注射氯化锂+匹罗卡品)和对照组(腹腔注射氯化锂+生理盐水),注药后于1,7,15,30,60 d 5个时间点又随机分为5个亚组(A1~5亚组,B1~5亚组)。免疫组织化学方法检测各组海马不同区域不同时间点SS中间神经元的表达及其轴突出芽情况,结合神经元特异性核抗原(neuronal nuclei,NeuN)的免疫组织化学及其与SS的免疫荧光双标记,观察SS中间神经元的数目及其轴突出芽的动态变化。**结果**:癫痫持续状态(status epilepticus,SE)后60 d时CA1区SS神经元数目超过对照组(P<0.01),60 d时海马CA1区全层均可见大量增多的SS阳性纤维;SE后60 d CA1区的起始部位始层和辐状层NeuN阳性神经元数目超过正常;SE后15 d时与NeuN双标记的SS中间神经元在CA1区始层逐渐增多,60 d时CA1始层及辐状层可见增多的双标记SS中间神经元。**结论**:SE后60 d CA1区全层大量增多的SS阳性纤维来自于CA1区始层及辐状层增多的SS阳性中间神经元,这种病理性轴突出芽可能在颞叶癫痫的发生和慢性期自发发作中发挥重要作用。

关键词: 颞叶癫痫 生长抑素 中间神经元 轴突出芽 神经元特异性核抗原

Axonal sprouting of somatostatin positive interneurons in the hippocampus in epileptic rats

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Abstract:

Objective To investigate the axonal sprouting of somatostatin(SS) positive interneurons in temporal lobe epilepsy. Methods 6-8 week-old healthy male SD rats were divided randomly into an epileptic group (treated by lithium and pilocarpine intraperitoneal injection) and a control group (by lithium and normal sodium intraperitoneal injection). Each group was randomly divided into 5 subgroups at 1,7,15,30, amd 60 d after the injection. Immunohistochemistry method was used to detect the number changes of SS or neuronal nuclei (NeuN) positive neurons in different domains of the hippocampus at different time points in each group, and the coexpression of SS positive interneurons combined with NeuN was detected by double immunofluorescence to observe the dynamic changes and axonal sprouting of SS positive interneurons. Results The number of SS neurons in the experimental group exceeded that in the control group in the CA1 area at 60 d post-status epileptieus SE (P<0.01), and numerous SS positive fibers were seen throughout the layers of the CAl area at 60 d post-SE. NeuN positive neurons in the stratum oriens and stratum radiatum layers in the initiation site of the CA1 area were beyond normal at 60 d post-SE. The number of double labeled SS interneurons gradually rose at 15 d in stratum oriens of CA1, and even exceeded that of the controls in the stratum oriens and stratum radiatum layers of CA1 at 60 d. Conclusion The numerous SS positive fibers throughout the layers of the CAl area at 60 d post-SE come from the increased interneurons in the stratum oriens and stratum radiatum layers of CA1 area. The pathological axonal sprouting may play an important role in the generation and compensation of temporal lobe epilepsy.

Keywords: temporal lobe epilepsy somatostatin interneuron axonal sprouting neuronal nuclei

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