

钙调蛋白抑制剂三氟拉嗪对海马脑片缺氧损伤的保护作用

赵晖¹、李英奇²、张目¹、陈庆梅¹、张雷¹、郑筱祥¹

1 浙江大学生物医学工程及仪器科学学院

2 浙江大学医院

为了研究钙调蛋白抑制剂三氟拉嗪(trifluoperazine, TFP)抗缺氧脑损伤的作用,应用海马脑片胞外记录技术和高效液相检测技术,研究了TFP对缺氧时脑片群峰电位(population spikes, PS)以及脑片孵育液中氨基酸含量的影响。结果表明,50 $\mu\text{mol/L}$ TFP灌流的脑片,缺氧后PS的平均消失时间与缺氧组相比有显著差异($P<0.05$);复氧后脑片PS的平均恢复程度为 $52.8\pm 14.3\%$,与缺氧组 $20.5\pm 9.8\%$ 相比有非常显著差异($P<0.01$);同时,TFP也可显著地抑制缺氧所致脑片孵育液中兴奋性氨基酸含量的增加($P<0.05$)。由此可见,TFP对脑缺氧损伤有明显的保护作用,其作用机理可能与抑制海马组织兴奋性氨基酸的释放有关。

THE PROTECTIVE EFFECT OF TFP ON NEURONS OF RAT HIPPOCAMPUS IN HYPOXIA INJURY

In order to study the protective effects of trifluoperazine (TFP) against hypoxic brain injury, the effects of TFP on population spike (PS) of slices during hypoxia and the changes of content of amino acids in the culture medium of brain slices were studied by the extracellular recording technique in rat hippocampal slices and the HPLC fluorometric method. It was showed that in the hippocampal slices treated with TFP of 50 $\mu\text{mol/L}$, the mean disappearance time of PS after hypoxia was significantly higher than that of oxygen and glucose deprivation (OGD) group ($P<0.05$), and the mean recovery amplitude of PS after reoxygenation was $52.8\pm 14.3\%$, significantly higher than $20.5\pm 9.8\%$ of that of OGD group ($P<0.01$). TFP can also markedly inhibit the increase of the excitatory amino acid (EAAS) in the culture medium of brain slices during hypoxia ($P<0.05$). Therefore, TFP has a protective action against brain hypoxic injury. The mechanism may be that TFP can inhibit exciting amino acids (EAAS) release from hippocampal tissue.

关键词

脑片(Hippocampal slice); 三氟拉嗪(Trifluoperazine); 缺氧(Hypoxia); 氨基酸(Amino acid)