

白细胞介素-1 β 对实验性急性缺氧诱导的大鼠窦神经放电的影响

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最近的研究显示, 颈动脉体(carotid body, CB)除具有缺氧等化学感受功能外, 还对白细胞介素-1 β (IL-1 β)的刺激起反应。但是, IL-1 β 刺激对颈动脉体的缺氧感受功能有何影响还不清楚。本研究运用在体(in vivo)细胞外神经干电位记录的方法, 利用麻醉大鼠, 观察了CB局部给予IL-1 β 对实验性急性缺氧(experimental acute hypoxia, EAH)诱导的CB传入神经窦神经(carotid sinus nerve, CSN)放电频率的影响。结果发现, EAH可以诱导麻醉状态下大鼠的CSN放电频率增高; 颈动脉体局部给予ATP(0.1 mmol/L)和ACh(0.5 mmol/L)在一定程度上可模拟缺氧诱导的CSN放电; 局部给予IL-1 β (40 μ g/L)可诱导窦神经放电频率增加。但同时给予IL-1 β 和EAH, 所引起的放电频率增高效应与单独给予EAH或IL-1 β 所诱导的放电频率的增高效应间无显著性差别, 且IL-1 β 对ATP和ACh诱导的窦神经放电的增高效应也无显著影响。这些结果提示, IL-1 β 对EAH诱导的窦神经放电无调节作用。

The effect of IL-1 β on experimental acute hypoxia-induced firing of carotid sinus nerve

Recently, the studies showed that carotid body (CB), a traditional peripheral chemoreceptor, also played role of an immune-signal sensor in the body. However, it is not clear that whether peripheral proinflammatory cytokine, such as interleukin-1 β (IL-1 β), will influence the process of hypoxia sensing in CB. In order to understand the influence of IL-1 β on the chemoreceptive function of carotid body (CB), the effect of IL-1 β on the experimental acute hypoxia-induced firings in carotid sinus nerve (CSN), the nerve innervates CB, was studied in the anaesthetized rat by using extracellular recording method. The results showed that experimental acute hypoxia (EAH) induced an increase of CSN discharge rate. Topical application of ATP (0.1 mmol/L) and/or ACh (0.5 mmol/L) on CB induced a similar increase in CSN discharge rate as well. Furthermore, topical application of IL-1 β (40 μ g/L) under normoxia condition also increased the discharge rate of CSN, in consistent to our previous result. However, the increase of CSN discharge rate induced by hypoxia or ATP/ACh administration was not affected if IL-1 β was given in advance. These results indicate IL-1 β does not have a modulatory action on the EAH-induced firings in CSN, at least in the anaesthetized rat.

关键词

白细胞介素-1 β (IL-1 β); 三磷酸腺苷(ATP); 乙酰胆碱(ACh); 窦神经(carotid sinus nerve); 颈动脉体(carotid body); 细胞外记录(extracellular recording)