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论著

异氟醚延迟预处理对兔心肌缺血再灌注时Bcl-2和caspase-3蛋白表达的影响

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摘要：

目的：观察异氟醚延迟预处理对兔心肌缺血再灌注时Bcl-2和caspase-3蛋白表达的影响，并探讨其心肌延迟保护效应的机制。 方法：40只成年雄性新西兰大白兔随机分成4组:假手术组(C组)、缺血再灌注组(I/R组)、异氟醚预处理组(S组)、异氟醚预处理+阿片类受体阻断剂组(N组)。除C组外，各组均接受左冠状动脉前降支阻断40 min,再灌注120 min。S组在缺血前24 h时吸入2.0%异氟醚2 h，N组在吸入2.0%异氟醚前10 min，静脉注入阿片类受体阻断剂纳络酮6 mg/kg。再灌注结束后，测心肌梗死面积，免疫印迹法测Bcl-2和caspase-3蛋白的表达，透视电镜下观察心肌超微结构变化。 结果：与I/R组比，S组心梗面积(19.7%±2.8% vs 37.8%±1.7%)显著降低(P＜0.05)，Bcl-2蛋白表达增高，caspase-3蛋白活性降低(P＜0.05)，心肌病理损伤减轻。结论：异氟醚预处理对心肌延迟保护效应可能与其上调Bcl-2蛋白表达和下调caspase-3蛋白活性，抑制心肌细胞凋亡有关。

关键词： 异氟醚 延迟预处理 心肌再灌注损伤 阿片类受体 Bcl-2 caspase-3

Effect of isoflurane delayed preconditioning on the expression of Bcl-2 and caspase-3 in myocardium during ischemia reperfusion in rabbits

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Abstract:

ObjectiveTo investigate the effect of isoflurane delayed preconditioning on the activation of caspase-3 and the expression of Bcl-2 in rabbit myocardium during ischemia reperfusion and the possible mechanism.MethodsForty New Zealand male white rabbits were randomly divided into 4 groups： a sham group (Group C), an I/R group, an isoflurane group (Group S), and an isoflurane + opioid recepters inhibitor group (Group N). Group S was exposed to 2.0% isoflurane for 2 h. Group N was given naloxone (6.0 mg/kg) before exposing to 2.0% isoflurane. Group C and Group I/R were exposed for 2 h to 100% oxygen, serving as untreated controls. Twenty-four hours later, Group S and Group N underwent 40 min of coronary occlusion followed by 2 h of reperfusion. At the end of the reperfusion, infarct size(IS) and area at risk(AAR) were defined by Evans and TTC staining. The myocardial ultrastructure was observed by electron microscopy. The levels of the myocardial Bcl-2 and caspase-3 expression were determined by Western blot.ResultsThe caspase-3 activity of Group S was significantly lower than that of Group I/R(P＜0.05). The IS was significantly reduced in Group S(19.7%±2.8%) as compared with Group I/R(37.8%±1.7%) (P＜0.05). Microscopic examination showed less myocardial damage in Group S than in Group I/R. ConclusionIsoflurane delayed preconditioning can inhibit the apoptosis of myocardium by up-regulating the expression of Bcl-2 and down-regulating the activation of caspase-3, which may be part of the molecular mechanism of isoflurane delayed preconditioning on myocardial preservation.

Keywords: isoflurane;delayed preconditioning;myocardial reperfusion injury;opioid receptors;Bcl-2;caspase-3

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