

论著

咪达普利对扩张型心肌病钙电流的跨室壁不均一性的影响

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收稿日期 2003-7-21 修回日期 网络版发布日期 2008-9-9 接受日期 2004-1-8

摘要 目的 揭示咪达普利(imidapril)抑制扩张型心肌病(DCM)患者发生室性心律失常的机制。方法 用多柔比星制备家兔DCM模型, 咪达普利1.25 mg·kg⁻¹·d⁻¹ po, 连续8周进行干预。取心脏分离左室游离壁三层心肌细胞, 全细胞膜片钳技术记录L-型钙电流(I_{Ca-L})。结果 由于DCM模型心肌细胞的膜电容增加, 所以I_{Ca-L}密度明显减少, 心外膜下心肌、中层心肌和心内膜下心肌分别为(6.7±1.0), (10.6±0.5)和(7.4±0.7) pA·pF⁻¹, 各层细胞间电流密度差异加大。咪达普利处理后可逆转心肌的病变, I_{Ca-L}的密度明显高于DCM组(P<0.05), 心外膜下心肌、中层心肌和心内膜下心肌分别为(10.3±1.0), (12.7±0.6)和(11.1±1.6) pA·pF⁻¹, 使三层细胞间电流密度差异减小。结论 咪达普利可逆转DCM后心肌细胞I_{Ca-L}的改变, 减少跨室壁差异。提示可能是其减少DCM后发生快速心律失常的机制之一。

关键词 咪达普利 心肌病, 充血性 心肌

分类号 R972

Effect of imidapril on transmural variations of calcium current of ventricular myocytes in rabbits with dilated cardiomyopathy

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Abstract

AIM To explore the mechanism of imidapril inhibition on ventricular arrhythmia in patients with dilated cardiomyopathy (DCM). **METHODS** DCM model in rabbits was induced with doxorubicin, and imidapril 1.25 mg·kg⁻¹·d⁻¹ was orally administered for 8 weeks. Subendocardium(Endo), midmyocardium(M) and subepicardium(Epi) were isolated from the left ventricular free wall in rabbits. I_{Ca-L} was recorded with whole-cell patch clamp technique. **RESULTS** With the increment of cellular membrane capacitance in DCM cells, I_{Ca-L} densities decreased markedly. The average I_{Ca-L} densities of Epi, M and Endo in DCM cells were (6.7±1.0), (10.6±0.5) and (7.4±0.7) pA·pF⁻¹. The difference of I_{Ca-L} densities from three layer cells was obviously increased. After treatment with imidapril, the I_{Ca-L} densities of Epi, M and Endo increased to (10.3±1.0), (12.7±0.6) and (11.1±1.6)pA·pF⁻¹. Furthermore, the diversity of I_{Ca-L} densities of Epi, M and Endo was reduced. **CONCLUSION** Imidapril can decrease transmural variations of calcium current of ventricular in rabbits of DCM, which may be one of the mechanisms of antiarrhythmias.

Key words imidapril cardiomyopathy congestive myocardium calcium channels patch clamp technique whole-cell

DOI:

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