

论著

Apelin对异丙基肾上腺素诱导的大鼠心肌缺血性损伤的影响

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摘要 目的: 探讨心血管活性肽apelin及其受体APJ在异丙基肾上腺素诱导的大鼠心肌缺血损伤中的变化及意义。方法: 皮下注射异丙基肾上腺素(ISO)复制大鼠心肌缺血损伤模型, 放射免疫分析法检测血浆和心肌apelin的含量, 半定量RT-PCR方法检测心肌apelin和APJ mRNA水平; 股静脉注射10 nmol/kg apelin观察其对大鼠心脏功能的影响。结果: ISO处理组大鼠广泛心内膜下心肌缺血损伤、心功能抑制, 血浆、心房和心室肌apelin水平较对照动物明显降低, 心室肌apelin和APJ基因表达下调(均P<0.01); ISO+apelin处理组大鼠较单纯ISO组心内膜下心肌缺血损伤减轻, 心功能明显增强。股静脉单次注射apelin(10 nmol/kg)后, 正常大鼠平均血压较给药前下降15%(P<0.05), ISO组大鼠平均血压较给药前高27%(P<0.05), LV±dp/dtmax分别较给药前增高51%和53%(均P<0.01), LVEF升高23%, LVEDP降低27%(均P<0.05)。结论: 外源性apelin可明显减轻ISO诱导的大鼠心肌缺血损伤, 改善心力衰竭, apelin/APJ系统有可能是心肌缺血和心衰防治的新靶点。

关键词 [Apelin](#); [异丙肾上腺素](#); [RNA,信使](#); [心肌缺血](#)

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Effect of apelin on isoproterenol-induced myocardium injury in rats

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Abstract

AIM: To explore the change and significance of vasoactive peptide apelin and its receptor APJ during myocardial ischemia, and the therapeutic effects of apelin on myocardial ischemia injury. METHODS: The myocardial ischemia injury was induced by subcutaneous injection of high dose isoproterenol (ISO). Radioimmunoassay was used to measure the apelin contents. Semi-Quantitative RT-PCR was used to measure the mRNA levels of apelin and APJ in myocardium. Apelin (10 nmol/kg) was administered through femoral vein to observe the effect of apelin on ischemic heart induced by ISO. The hemodynamic parameters were recorded by Powerlab. RESULTS: In ISO-treated rat, histological sections showed severe myocardial ischemic injury. The apelin contents in plasma, atrial and ventricular myocardium were markedly decreased (all P<0.01), respectively. The mRNA levels of apelin and APJ in myocardium were also markedly reduced. However, therapy with apelin significantly ameliorated myocardial injury and heart failure induced by ISO. Compared with ISO alone, in the low dose apelin (200 ng·kg⁻¹·d⁻¹) group, the LV±dp/dtmax values were 39% and 66% higher, and the LVEDP was 29% lower (P<0.01). In the high dose (apelin 10 nmol/kg) group these parameters were superior to low dose group. Interestingly, it was found that when bolus injection of apelin (10 nmol/kg), its inotropic effect was more potent in ISO-treated rat than that in control. CONCLUSION: The data show that the myocardial injury induced by ISO leads to a hypoexpression of apelin and of its receptor APJ. Administration of exogenous apelin ameliorates heart failure and myocardial ischemia injury induced by ISO. These results suggest that apelin has a cardioprotective effect and apelin/APJ system may be a new therapeutic target for myocardial ischemia and heart failure.

Key words [Apelin](#) [Isoproterenol](#) [RNA messenger](#) [Myocardial ischemia](#)

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