中国医学科学院学报
ACTA ACADEMIAE MEDICINAE SINICAE
Medline收录 核心期刊
ISSN 1000-503X CN 11-2237/R



中国医学科学院学报 » 2010, Vol. 29 » Issue (5) :526-532 DOI: 10.3881/j.issn.1000-503X.2010.05.012



# 大鼠心肌缺血后适应对p38丝裂原活化蛋白激酶及细胞凋亡的影响

张国明[1,2],苏绍萍[3],王 禹[4],李天德[1],李晓燕[2],张国明[1,2],苏绍萍[3],王 禹[4],李天德[1],李晓燕[2],*

[1]中国人民解放军总医院心内科，北京 100853 [2]中国人民解放军济南军区总医院心内科，济南 250031 [3]中国人民解放军总医院门诊部干部诊疗科，北京 100853
[4]中国人民解放军总医院老年心血管病研究所，北京 100853

# Effect of Ischemic Postconditioning on Activation of p38 Mitogen Activated Protein Kinase and Cardiocyte Apoptosis in Rats

ZHANG Guo-ming, SU Shao-ping[3], WANG Yu[4], LI Tian-de[1], LI Xiao-yan[2], Tan Hong[2], ZHANG Da-wei[1], ZHANG Hui[1], LIU Li-feng[1]*

[1]Department of Cardiology, Chinese PLA General Hospital, Beijing 100853, China [2]Department of Cardiology, the General Hospital of Jinan Military Region, Jinan 250031, China [3]Department of Outpatient, Chinese PLA General

摘要 参考文献 相关文章

Download:PDF (850KB) HTML 1KB Export: BibTeX or EndNote (RIS) Supporting Info

摘要 目的研究大鼠缺血后适应对p38丝裂原活化蛋白激酶(MAPK)及细胞凋亡的影响。方法将60只大鼠随机分为假手术组(Sham组)、缺血再灌注组(R/I组)、后适应组(Post组)、SB203580组(I_p38组)、anisomycin+后适应组(Ani+post组)和anisomycin组(Ani组)6组，每组10只。建立急性心肌梗死再灌注模型，抑制剂(SB203580，1mg/kg)和激动剂(anisomycin，2mg/kg)在再灌注开始前5 min经颈静脉注射。再灌注6h后，每组处死3只大鼠，取心肌组织测定磷酸化p38(P-p38)、肿瘤坏死因子α(TNF-α)、Caspase-8、Bcl-2和Bax，并提取胞浆测定细胞色素C(Cyt-c)。再灌注24h后，各组剩余大鼠测定血流动力学，并抽血测定心肌酶，取心脏进行TUNEL凋亡检测或采用伊文氏蓝-三苯基氯化四氮唑法检测心肌梗死面积。结果再灌注6h后，Post组和I_p38组的P-p38 MAPK IOD值明显低于R/I组(P均<0.05)，Ani+post组和Ani组明显高于Post组(P均<0.05)，Ani+post组明显低于R/I组(P<0.05)；Post组和I_p38组的TNF-α和Caspase-8 IOD值均明显低于R/I组(P均<0.05)，Ani+post组和Ani组均明显高于Post组(P均<0.05)，Ani+post组的TNF-α IOD值明显低于R/I组(P<0.05)；Post组和I_p38组的Bcl-2 IOD值明显高于R/I组(P均<0.05)，Ani+post组和Ani组明显低于Post组(P均<0.05)；Post组和I_p38组的Bax IOD值明显低于R/I组(P均<0.05)，Ani+post组和Ani组明显高于Post组(P均<0.05)；去除线粒体后胞浆中Cyt-c的表达， Post组和I_p38组明显低于R/I组(P均<0.05)，Ani+post组和Ani组明显高于Post组(P均<0.05)。再灌注24h后，R/I组的心率血压乘积(RPP)和左心室压力最大上升/下降速度(±dp/dt max)均明显低于Post组和I_p38组(P均＜0.05)，Post组明显高于Ani+post组和Ani组 (P均＜0.05)；Post组和I_p38组的AI明显低于R/I组(P均<0.05)，Ani+post组和Ani组明显高于Post组(P均<0.05)；Post组、I_p38组和Ani+post组的CK和CK-MB值均明显低于R/I组(P均<0.05)，Ani+post组和Ani组均明显高于Post组(P均<0.05)；Post组和I_p38组的梗死心肌面积和缺血心肌面积比值(AN/AAR)明显低于R/I组(P均<0.05)，Ani+post组和Ani组明显高于Post组(P均<0.05)。结论后适应可抑制p38 MAPK在再灌注损伤中的磷酸化，其可能是通过减少P-p38来抑制TNF-α细胞受体途径和Bcl-2/Bax线粒体途径凋亡的发生。

关键词： 缺血后适应 急性心肌梗死 再灌注损伤 p38丝裂原活化蛋白激酶

Abstract: ObjectiveTo explore the change of phospho-p38(P-p38) mitogen activated protein kinase(MAPK) and its influence on myocardial apoptosis in reperfusion injury in postconditioning. MethodsTotally 60 rats were equally and randomly divided into six groups: Sham group, reperfusion injury (R/I) group, postconditioning (Post) group, SB203580 (I_p38) group, anisomycin plus postconditioning (Ani+post) group, and anisomycin (Ani) group. After the model of acute myocardial infarction was established, placebo solution (DMSO), SB203580 (1mg/kg), or anisomycin (2mg/kg) was injected through jugular vein 5 minutes before reperfusion. Six hours later, 3 rats in each group were executed and the hearts were separated to measure the signaling molecules including phospho-p38, tumor necrosis factor-alpha(TNF-α), Caspase-8, Bcl-2/Bax, and cytochrome-c(Cyt-c). Twenty-four hours later, the hemodynamic data were measured in the remaining rats, and then blood was collected to determine the serum markers of cardiac damage. After that, hearts were separated to measure the infarction area and apoptosis. ResultsSix hours after reperfusion, the expressions of P-p38 in Post and I_p38 group were significantly lower than those in R/I group(P<0.05), significantly higher in Ani+post and Ani group than in Post group (P<0.05), and significantly lower in Ani+post group than in R/I group(P<0.05). The expressions of TNF-α and Caspase-8 were significantly lower in Post and I_p38 group than in R/I group(P<<.05) and significantly higher in Ani+post and Ani group than in Post group(P<0.05). The expression of TNF-α was significantly lower in Ani+post group than in R/I group(P<0.05). The expression of Bcl-2 was significantly higher in Post and I_p38 groups than in R/I group (P<0.05) and significantly lower in Ani+post and Ani groups than in Post group(P<0.05). The expression of Bax was significantly lower in Post and I_p38 groups than in R/I group (P<0.05) and were significantly higher in Ani+post and Ani group than in Post group (P<0.05). The expression of Cyt-c after the removal of the cytoplasm mitochondria was significantly lower in Post and I_p38 group than in R/I group

Service
把本文推荐给朋友
加入我的书架
加入引用管理器
Email Alert
RSS
作者相关文章

(P<0.05) and was significantly higher in Ani+post and Ani group than in Post group(P<0.05). Twenty-four hours after reperfusion, the values of rate-pressure product and ±delta pressure/delta time max were significantly lower in R/I group than in Post and I_p38 groups (P<0.05) and was significantly higher in Post group than in Ani+post and Ani group(P<0.05). The apoptotic index(AI) was significantly lower in Post and I_p38 groups than in R/I group(P<0.05) and was significantly higher in Ani+post and Ani groups than in Post group(P<0.05). The values of creatine kinase and creatine kinase-MB were significantly lower in Post, Ani+post, and I_p38 groups than in R/I group (P<0.05) and were significantly higher in Ani+post and Ani group than in Post group (P<0.05).The area of necrosis/area at risk ratio was significantly lower in Post and I_p38 groups than in R/I group(P<0.05) and was significantly higher in Ani+post and Ani groups than in Post group(P<0.05). ConclusionPostconditioning can inhibit the phosphorylation of p38 MAPK, through which it can attenuate cardiocyte apoptosis by both extrinsic and mitochondria pathways.

Keywords: postconditioning acute myocardial infarction reperfusion injury p38 mitogen activated protein kinase

Received 2009-11-20; published 2010-11-04

Fund:

国家自然科学基金(30740080)

Corresponding Authors: 王禹 Email: wangyuheart@yahoo.com.cn

About author: 传真:010-66936776

引用本文:

张国明,苏绍萍,王 禹,李天德,李晓燕,张国明,苏绍萍,王 禹,李天德,李晓燕,.大鼠心肌缺血后适应对p38丝裂原活化蛋白激酶及细胞凋亡的影响[J] 中国医学科学院学报, 2010,V29(5): 526-532

ZHANG Guo-ming, SU Shao-ping, WANG Yu, LI Tian-de, LI Xiao-yan, Tan Hong, ZHANG Da-wei, ZHANG Hui, LIU Li-feng.Effect of Ischemic Postconditioning on Activation of p38 Mitogen Activated Protein Kinase and Cardiocyte Apoptosis in Rats[J] CAMS, 2010,V29(5): 526-532

链接本文:

http://www.actacams.com/Jwk_yxkxy/CN/10.3881/j.issn.1000-503X.2010.05.012 或 http://www.actacams.com/Jwk_yxkxy/CN/Y2010/V29/I5/526