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论文

Smad信号通路及CTGF在依那普利抑制高肺血流性肺动脉高压形成中的作用机制

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摘要：

目的 观察依那普利对大鼠高肺血流性肺动脉高压形成的抑制作用，并探讨Smad信号通路及结缔组织生长因子(CTGF)在依那普利抑制肺动脉高压形成中的作用机制。方法 45只Wistar大鼠随机分为对照组、分流组和依那普利干预组，每组15只。各组于第8周测量右心室平均收缩压(RVSP)、右心肥厚指数(RVHI)，HE染色观察肺动脉形态学改变，计算WT%及WA%。分别采用免疫组化法、Western blot及RT PCR法测量各组大鼠肺动脉平滑肌中Smad7、CTGF蛋白的表达及Smad7 、CTGFmRNA的表达情况。结果 与对照组相比，分流组大鼠肺动脉管壁明显增厚、狭窄，RVSP、RVHI及WT%、WA%增高(P均＜0.01)，Smad7表达减弱(P＜0.01)，Smad7mRNA表达减低(P＜0.01)；CTGF表达增强(P＜0.01)，且CTGFmRNA表达也相应增加(P＜0.01)。与分流组相比，应用依那普利干预后8周大鼠肺动脉管壁增厚、狭窄程度显著减轻，RVSP、RVHI及WT%、WA%明显降低(P＜0.01)，Smad7(P＜0.05)及Smad7mRNA(P＜0.01)表达增高；CTGF(P＜0.05)及CTGFmRNA(P＜0.01)表达降低。结论 依那普利可以通过影响大鼠肺动脉平滑肌中Smad7、CTGF表达而起到抑制高肺血流性肺动脉高压形成的作用。

关键词： 肺动脉高压； 结缔组织生长因子；Smad7；依那普利；大鼠，Wistar

Mechanism of the Smad signaling pathway and connective tissue growth factor in the inhibition of pulmonary hypertension in rats by enalapril

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Abstract:

objective To observe the inhibitive effect of enalapril on high-flow pulmonary hypertension in rats and to explore the mechanism of the Smad signaling pathway and connective tissue growth factor (CTGF) in pulmonary hypertension. Methods Forty-five female Wistar rats were randomly divided into the sham operated group, the high-flow pulmonary hypertension group, and the enalapril group(each n=15).The rat model of pulmonary hypertension was established by shunt operation between the abdominal aorta and inferior vena cava . The RVSP and RVHI were measured and WT% and WA% were calculated after HE staining of the left lung. Morphological changes of small pulmonary arteries were studied by microscopy. Expression of Smad7 and CTGF in the pulmonary arteries were determined by immunohistochemistry and Western blot, while expressions of CTGF and Smad7 mRNA were measured by reversetranscription polyme rase chain reaction(RT-PCR). Results Compared with the sham-operated group, WT%、 WA%, RVSP, and RVHI, together with expressions of CTGF and CTGFmRNA, significantly increased in the high-flow pulmonary hypertension group. However, all these parameters significantly deceased in the enalapril group when compared with the high-flow pulmonary hypertension group. Expressions of Smad7 and Smad7 mRNA in the high-flow pulmonary hypertension group were higher than those of the sham-operated group. Compared with the high-flow pulmonary hypertension group, expressions of Smad7 and Smad7 mRNA in the enalapril group were increased. Conclusion Enalpril may partly prevent the development of pulmonary hypertension by affecting CTGF and Smad7 in pulmonary hypertension rats.

Keywords: Pulmonary hypertension； Connective tissue growth factor; Smad; Enalapril; Rat, Wistar

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