中国病理生理杂志 2009 25 (11): 2131-2135 ISSN: 1000-4718 CN: 44-1187/R

论著

血管紧张素Ⅱ刺激高草酸尿症大鼠肾脏NADPH氧化酶的表达

邓耀良,黎承杨,孙丙华

广西医科大学第一附属医院泌尿外科，广西 南宁 530021

收稿日期 2008-12-2 修回日期 2009-3-27 网络版发布日期 2010-3-6 接受日期 2009-3-27

摘要 目的： 观察肾素-血管紧张素系统（RAS）和NADPH氧化酶在高草酸尿症大鼠肾脏氧化应激（OS）形成中的相互作用。方法: 采用0.8%乙二醇饮水法诱导建立高草酸尿症大鼠模型。动物分6个组（n=8）,A组:空白组；B组：高草酸尿症组；C组：高草酸尿症+apocynin治疗组；D组：单纯apocynin治疗组；E组：高草酸尿症+losartan治疗组；F组：单纯losartan治疗组。后4组分别灌胃给予apocynin（0.2 g·kg-1·d-1）或losartan（30 mg·kg-1·d-1）。4周后检测大鼠尿液、肾组织中的OS指标（尿8-IP和肾组织SOD活性），放免法检测肾组织血管紧张素Ⅱ（AngⅡ）的含量，免疫组化法观察NADPH氧化酶亚单位P47phox蛋白在肾脏中的表达位置，RT-PCR法检测肾组织p47phox mRNA的表达水平。结果: p47phox在各组大鼠肾脏中都有广泛表达，表达部位包括肾皮质、内髓、外髓。与A组比较，B组尿液8-IP明显增多，肾组织SOD活性降低，肾组织AngⅡ含量增多，p47phox mRNA在肾组织中的表达水平也明显增多。使用apocynin（C组）和losartan（E组）均可抑制肾组织p47phox mRNA的表达，同时肾脏的OS程度减轻。结论: 在高草酸尿症大鼠模型中，肾脏p47phox mRNA表达增多，导致肾脏OS；同时肾脏RAS也被激活，后者可通过刺激p47phox mRNA的表达而促进肾脏OS程度增加。

关键词 高草酸尿症； 氧化性应激； NADP氧化酶； Apocynin； 洛沙坦； 肾

分类号 R691.4

Angiotensin Ⅱ stimulates the expression of NADPH oxidase subunit p47phox mRNA in kidney in a rat model of hyperoxaluria

DENG Yao-liang,LI Cheng-yang,SUN Bing-hua

Department of Urology, The First Affiliated Hospital of Guangxi Medical University, Nanning 530021, China. E-mail: dylkf317@163.com

Abstract

<FONT face=Verdana>AIM: To investigate the roles of angiotensin Ⅱ and NADPH oxidase in the development of renal oxidative stress (OS) in a rat model of hyperoxaluria. METHODS: Animal model of hyperoxaluria was established in adult male Sprague-Dawley rats by administration of 0.8% ethylene glycol (EG) in drinking water for 4 weeks. Simultaneous treatment with apocynin (0.2 g·kg-1·d-1) or losartan (30 mg·kg-1·d-1) by intragastric administration were performed in rats, respectively. At the end of the study, markers for the state of oxidative stress (OS), urinary 8-IP and the enzymatic activity of superoxide dismutase (SOD) in kidney homogenates were assessed. The concentration of angiotensin Ⅱ in kidney homogenates was determined using radioimmunoassay method. Expression of NADPH oxidase subunit p47phox in kidney was localized and evaluated by immunohistochemistry and real time-PCR, respectively.RESULTS: p47phox expressed widely in the kidneys of this rat model, including renal cortex, inner medulla and outer medulla. Compared with the control, OS developed significantly in rats received EG, with increased expression of p47phox mRNA in kidneys. Renal angiotensin II also increased significantly. Treatment with apocynin or losartan significantly reduced the excretion of urinary 8-IP, restored the SOD activity, with decrease in the expression of p47phox mRNA in kidney, but the levels of those OS markers in apocynin or losartan treated rats were still higher than those in normal controls. CONCLUSION: Results suggest that renal Ang II and its stimulation of NADPH oxidase may partially account for the development of OS in kidney in this rat model of hyperoxaluria.</FONT>

Key words Hyperoxaluria Oxidative stress NADPH oxidase Apocynin Losartan Kidey

DOI: 1000-4718

通讯作者