일측요관폐쇄 백서모델에서 aliskiren의 신보호 효과

충남대학교 의과대학 내과학교실[1], 연세대학교 강남세브란스병원 병리학교실[2]

정사라[1] · 정진영[1] · 임범진[2] · 최대은[1] · 나기량[1] · 신영태[1] · 이강욱[1]

Renoprotective Effects of Aliskiren in Renal Injury Induced by Experimental Unilateral Ureteral Obstruction

Sarah Chung[1], Jin Young Jeong[1], Bum Jin Lim[2], Dae Eun Choi[1]
Ki Ryang Na[1], Young Tai Shin[1], Kang Wook Lee[1]

Department of Internal Medicine[1], Chung Nam National University College of Medicine
Department of Pathology[2], Yonsei University Gang Nam Severance Hospital College of Medicine

Introduction : Angiotensin II mediates the upregulation of fibrogenic factors such as transforming growth factor-b1 (TGF-β1) in experimental unilateral ureteral obstruction (UUO). And inhibition of renin angiotensin system by angiotensin-converting enzyme inhibitors, angiotensin II AT1 receptor blockers or angiotensinogen knockout has revealed a renoprotective effect in UUO model. Aliskiren is a first commercially available direct renin inhibitor which decreases the angiogensin I generation from angiotensinogen. The aim of this study is to evaluate the renoprotective effect of aliskiren against experimental UUO model in mice.

Methods : Male C57BL/6 mice (10 weeks old, 30-33 g) were divided into 4 groups; sham operated group (n=7), aliskiren treated sham group (n=7, 30 mg/kg, intraperitoneal injection for 7 successive days), untreated UUO group (n=10), and aliskiren-treated UUO group (n=10) aliskiren treatment was started 1 day prior to operation. Renal gene expression levels of TGF-β and MCP-1 were measured by real-time RT-PCR seven days after UUO. Light microscopic examination of kidneys in each group was also performed seven days after UUO. TGF-β and ED-1 protein expressions of kidneys were measured by immunohistochemistry. Plasma renin activity were measured by radioimmunoassay seven days after UUO.

Results : Plasma renin activity in aliskiren treated UUO group was significantly lower than that of untreated UUO group ($p<0.01$). Renal gene expression levels of TGF-β and MCP-1 in UUO group were significantly higher than those of sham operated group ($p<0.01$). The levels of TGF-β and MCP-1 mRNA expression of kidneys in aliskiren treated UUO group were significantly lower than those of untreated UUO group ($p<0.05$, $p<0.05$, respectively). The magnitude of TGF-β protein expression and CD68 positive cells in the kidneys of aliskiren treated UUO group were significantly less than those of untreated UUO control group ($p<0.05$, $p<0.05$, respectively).

Conclusion : In conclusion, the results of present study suggest that aliskiren-a direct rennin inhibitor has renoprotective effect on experimental UUO model in mice.

Key Words : 일측폐쇄요관, Aliskiren, Inflammation
Unilateral ureteral obstruction, Aliskiren, Inflammation