F-D9

신절제 모델에서 신장 pendrin 발현의 변화

충북대학교 의과대학 내과학교실[1], 이화여자대학교 의과대학 해부학교실[2]
Renal Division University of Florida College of Medicine[3]

김혜영[1] · 권순길[1] · 한기환[2] · I. David Weiner[3]

Effect of Reduced Renal Mass on Renal Pendrin Expression

ye-Young Kim[1], Soon Kil Kwon[1], Ki-Hwan Han[2], I. David Weiner[3]

Department of Internal Medicine[1], Chungbuk National University College of Medicine
Department of Anatory[2], Ewha Womans University School of Medicine
Renal Division University of Florida College of Medicine[3]

Pendrin is an apical Cl-/HCO3- exchanger present in B-type intercalated cells(ICs) and non-A, non-B cells. It is important in Cl- reabsorption and in bicarbonate secretion, and thus has roles in both blood pressure and acid-base homeostasis. Reduced renal mass(RRM) causes both hypertension and increased single nephron net acid excretion, and thus might be associated with either increased or decreased pendrin expression. In the current study we determine RRM' s effect on renal pendrin expression. We used a 5/6 ablation infarction model of RRM in SD rats with sham-operated rats as controls(C), and studied animals one week later.
RRM reduced creatinine clearance significantly, increased BP (RRM,144±32/91±13 mmHg; C,109±6/68±5; $p<0.05$), plasma HCO_3 (RRM, 25.7±2.8 mmol/L; C, 23.0±2.1 mmol/L), and fractional excretion of Na+, K+ and Cl- significantly, although plasma Na+ and K+ were unchanged. To assess pendrin's response to RRM we quantified cell height and single cell pendrin expression in ICs in the connecting segment(CNT), in which pendrin-positive ICs and predominantly non-A, non-B cells, and in the CCD, in which they are predominantly B-type ICs, using quantitative immunohistochemistry. RRM was associated with increased cell hight pendrin-positive ICs in both CNT (RRM-200% of C, $p<0.001$) and CCD(RRM, -155% of C, $p<0.005$). Although total cellular pendrin did not change, RRM increased the proportion of total cellular pendrin in the apical 25% of the cell in both CNT (RRM, 48.7±2.2%; C, 31.3±1.2%; $p<0.001$) and CCD (RRM, 37.3±4.2%; C, 23.7±1.3 %, $p<0.025$). We conclude that increased apical pendrin expression in both CNT and CCD in RRM contributes to Cl- retention and hypertension, and is counter-productive for acid-base homeostasis.

Key Words : 신절제, pendrin
Pendrin, Reduced renal mass