18) Urinary Beta-N Acetylglucosaminidase Activity in Female Spontaneously Hypertensive Rats. Noboru Saito. Department of Geriatrics, Kochi Medical School, Kochi 781-51

The activity of urinary beta-N acetylglucosaminidase (NAG) was investigated using spontaneously hypertensive rats (SHR) to estimate the states of renal tissue lesions in hypertension. The influence of NaCl on urinary NAG activity was also investigated.

Seven female stroke-prone SHR (SHRSP) aged 64 ± 0.5 (M $\pm$ SD) weeks, 7 stroke-resistant SHR (SHRSR) aged 68.7 ± 3.9 weeks and 6 Wistar Kyoto rats (WKY) aged 62.2 ± 0.4 weeks were used in the group of NaCl loading, which was high salt chow containing 8% NaCl plus physiological saline (0.9% NaCl) as drink. In the control group without NaCl loading, which was ordinary chow plus tap water, 5 female SHRSP aged 66 ± 0 weeks, 5 SHRSR aged 74 ± 0 weeks and 5 WKY aged 71.2 ± 1.1 weeks were used. In NaCl loading the rats were fed on high salt chow plus physiological saline for two days and then put into the metabolic cage only with physiological saline for one day to collect 24 hour urine. In the control the rats were put into the metabolic cage only with tap water for one day. These rats were killed by decapitation after the metabolic cage to make renal tissue specimens with HE staining. Urinary NAG activity was assayed by MCP-NAG method. Urinary sodium was measured using flame photometer 205 (Hitachi).

Urinary NAG activities were significantly higher in SHRSP than in SHRSR or WKY (Table). Urinary NAG/Cr ratios were highest in SHRSP, and lowest in WKY. Urinary sodium excretions under NaCl loading were 6.5 times in SHRSP, 7.1 times in SHRSR and 21.8 times in WKY as compared to those in the control. The same tendency was also observed in urinary Na/Cr ratios. Microscopic findings of renal tissue specimens showed the severest lesions in SHRSP and the least lesions in WKY (Table). Sodium concentrations did not influence on NAG activities. When renal tissue lesions were severer, urinary NAG activities tended to increase in this investigation. Higher urinary NAG activity may indicate the presence of renal tissue lesions, especially of renal tubular damages.

	SHRSP (a)	SHRSR (b)	WKY (c)	
Urinary NAG (U/day)				
NaCl loading (+)	0.207 ± 0.048	0.127 ± 0.03	0.166 ± 0.03	a:b**
NaCl loading (-)	0.181 ± 0.02	0.159 ± 0.02	0.146 ± 0.03	a:b***, a:c**
Urinary NAG/Cr				
NaCl loading (+)	0.41 ± 0.08	0.237 ± 0.07	0.253 ± 0.02	a:b***
NaCl loading (-)	0.365 ± 0.05	0.317 ± 0.04	0.239 ± 0.02	a:c***, b:c**
Urinary Na (mg/day)				
NaCl loading (+)	86.5 ± 18.2	106.7 ± 51.3	236.9 ± 91.3	a:c***, b:c*
NaCl loading (-)	13.3 ± 3.5	13.3 ± 4.5	10.8 ± 3.0	
Renal tissue				
Vascular wall thickening (%)	91.7	84.6	8.3	
Tubular colloidlike (%)	66.7	30.7	16.6	

M $\pm$ SD, *P<0.05, **P<0.01, ***P<0.005