29) Effects of Salt and Beta-Blocker (Nipradilol and Propranolol) on Blood Pressure and Renal Histology of SHR (SHRSR, SHRSP and SHRHP).

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I. Effects of salt loading on blood pressure of SHR and renal function of several strains of SHR. Purpose: The change of blood pressure of SHRHP as well as of SHRSP will be clarified. Method: 1% salt water was given to 11 SHRHP, 12 SHRSP, 12 SHRSR and 6 WKY for 3 weeks in the age of 16-19 weeks. All rats were fed in a specific pathogen free system with barrier environment. Blood pressure has been measured each week from the tail of the rats by electric manometer. Results. The blood pressure of the three groups increased by salt loading. However, the rate of the increase of blood pressure of SHRHP was largest and the peak of blood pressure was similar to SHRSP. The starting level of blood pressure in SHRSP was higher than SHRHP and SHRSR. The BUN increased more markedly in SHRHP and SHRSP than BUN in SHRSR and WKY.

Summary. The blood pressure of SHRHP and SHRSP has been increased markedly by salt loading. The BUN enhanced more clearly in SHRSP and SHRHP than in SHRSR and WKY by 1% salt water drinking.

II. The effects of beta-blocker on the renal histology of salt-loaded SHRSP.

Purpose of this study is to examine the effects of beta-blocker on the histological findings of kidney in salt loaded SHRSP.

Method. The male SHRSP of six weeks age have been given 1% salt water for 15 weeks. About sixty SHRSP were divided in four groups, each group contained 13-18 rats. A-group was given tap water, B-group was given 1% NaCl water, C-group was given 1% NaCl water and 10 mg/Kg Nipradilol (K351) and D-group was given 1% salt water and 10 mg/Kg Propranolol. The kidney of SHRSP has been examined by light microscope with H-E and Azan stains after 14 weeks of salt loading.

Result. (1) The level of blood pressure showed the following order: B-group) A-group) D-group) C-group.

(2) Histological change of kidney.

A-group. The thickening of interlobular artery is mild, thickening and sclerosis of arteriol is moderate, sclerosis and fibrosis of glomerulus is not visible, cellular infiltration in interstitium is moderate. B-group. Thickening of interlobular artery is mild, thickening and sclerosis with hyalinoid degeneration of arteriol is marked, sclerosis and fibrosis of glomerulus is moderate and the cellular infiltration in interstitium is moderate. C-group (K351). The thickening of interlobular artery is not visible, thickening and sclerosis of arteriol is very slight, sclerosis and fibrosis of glomerulus is slight, cellular infiltration of interstitium is slight. D-group. Thickening of interlobular artery is mild, thickening and sclerosis of arteriol is marked, sclerosis and fibrosis of glomerulus is slight and cellular infiltration of interstitium is moderate.

Summary. The salt loading on SHRSP aggravates the change of the arteriol and glomerulus in the kidney and enhances the blood pressure level. However, Beta-blocker (Nipradilol and Propranolol) alleviates the change of arteriol and glomerulus of kidney and the elevation of blood pressure in salt loaded SHRSP.