43) Plasma Catecholamine of Spontaneously Hypertensive Rats. Chun Ho Pak, Masato Matsunaga, Kenichi Morimoto, Akira Hara and Chuichi Kawai. Third Division, Department of Internal Medicine, Kyoto University, Kyoto 606.

In order to investigate the role of the sympathetic nervous system in the mechanism of blood pressure rise in the spontaneously hypertensive rats (SHR), plasma catecholamine was measured in young SHR.

Blood for determination of plasma adrenaline and noradrenaline was collected in 5-week-old SHR (7 female and 7 male rats) and 7-week-old SHR (6 female and 5 male rats). Normotensive rats of wister Kyoto (WK) strain (7 female and 7 male 5-week-old rats, 4 female and 5 male 7-week-old rats) were used as controls. Animals were catheterized in the abdominal aorta through the femoral artery. A few days after the catheterization, a small amount (within 0.5ml) of blood was collected via the indwelling aortic catheter. The same catheter was connected to a transducer to record the mean arterial pressure. Plasma catecholamine was measured by the radioenzymatic assay method of Prada et al. A 0.1ml sample of plasma was incubated in the presence of catechol-O-methyltransferase and s-adenosyl-methionine-³H. The adrenaline and noradrenaline derivatives were converted to vanilline and the radioactivity was counted in a liquid scintillation counter.

In 5-week-old female SHR the plasma adrenaline was not significantly different from that of the WK rats, but the plasma noradrenaline was significantly increased. In 5-week-old male SHR and 7-week-old female SHR both the plasma adrenaline and noradrenaline were increased over those of control rats. In 7-week-old male SHR no significant change was found in the plasma adrenaline, but plasma noradrenaline was significantly increased over the WK rats.

The present results are consistent with the view by some other investigators that sympathetic neuronal activity in young SHR is increased.

Our data indicated more definite difference in the plasma noradrenaline between young SHR and WK rats than in the plasma adrenaline. If plasma levels of noradrenaline largely reflect peripheral sympathetic activity, our data also suggest that peripheral sympathetic activity is exaggerated in young SHR.

We measured plasma catecholamine at Radioisotope Research Center, Kyoto University.

Plasma catecholamine of 5-week-old and 7-week-old SHR and normal rats

		Female		Male	
		WK	SHR	WK	SHR
Adrenaline	5W	268 ± 63	356 ± 66	149 ± 20	446 ± 89*
	7W	214 ± 48	502 ± 48**	266 ± 107	544 ± 97
Noradrenaline	5W	168 ± 22	272 ± 39*	81 ± 15	317 ± 29**
	7W	140 ± 30	314 ± 40*	150 ± 55	422 ± 47**

Results expressed as pg per ml of plasma and are the means(+ s.e.m).

* p<0.05 compared with control animals.

** p<0.01 compared with control animals.