56) Responses of isolated renal arteries in SHRSP to vasodilators and transmural electrical stimulation. Noriyoshi Kajimoto and Aritomo Suzuki, Department of Pharmacology, Kinki University School of Medicine, Osaka-fu, 589.

Our previous results on vascular reactivities to vasoactive agents in various isolated arteries from SHRSP and WKY at age of 10 - 12 months were summarized as follows: relaxation response produced by isoproterenol (ISO) and adenosine was markedly increased in renal arteries from SHRSP than in that of WKY; as the response induced by ISO was inhibited by propranolol and metoprolol, potentiation of sensitivity in beta adrenergic receptor in renal arteries of SHRSP was speculated; the contractile response induced by transmural electrical stimulation in renal arteries of SHRSP was significantly smaller than that of WKY; these specific findings observed in renal arteries from SHRSP were not obtained from mesenteric, superior mesenteric and femoral arteries. Thus, in the present study the reactivities to dopamine, adenosine and transmural electrical stimulation on renal arteries in SHRSP and WKY were further investigated.

Materials and Methods

Isolated interlobular renal arteries from SHRSP and WKY at age of 10 - 12 months were used. Helically cut strips were prepared and suspended in the magnus chamber containing Krebs-Ringer medium. The arterial contractions and relaxations were recorded isometrically. The arterial strips were transmurally stimulated by a train of 0.3 ms square pulses of supramaximal intensity at frequencies of 20 Hz for 10 sec. The preparations were sustained by slight tonus elicited by prostaglandin F2a(10^-7 - 3x10^-6 M) before dopamine and adenosine were added. Relaxation to dopamine was evoked after preincubation with 10^-5 M phenoxybenzamine.

Results and Discussions

1. Effect of dopamine: In renal arteries from SHRSP, dopamine produced the relaxation in a dose-dependent manner. The addition of 10^-6 M dopamine, which cause a maximal relaxation, relaxed about 40%. On the other hand, the relaxation response in WKY to 10^-6 M dopamine was significantly smaller than that of SHRSP and the degree of the relaxation was only about 7%. The dopamine-induced relaxation was blocked by pretreatment with 10^-6 M propranolol, but was not affected by 10^-5 M haloperidol. This evidence suggests that the relaxation of the SHRSP renal arteries to dopamine may be influenced by some part to beta receptor. It is required further study to prove some functions in association with dopaminergic receptor.

2. Effect of adenosine: The adenosine-induced relaxation of the SHRSP renal arteries was a dose-dependent manner. The dose-response curve was shifted to the left by 10^-6 M dipyridamol and was moved to right direction by 3x10^-4 M amonophylline. This indicates that the relaxation is clearly induced by adenosine receptor and the sensitivity in the receptor may be potentiated.

3. Effect of transmural stimulation: The transient contraction caused by transmural electrical stimulation was unaffected by 10^-6 M propranolol in both SHRSP and WKY. It is supposed that the attenuated contraction induced by transmural electrical stimulation in renal arteries of SHRSP is not influenced by the action of beta adrenergic receptor.