17) The Influence of Renal Denervation on the Action of Atrial Natriuretic Peptide. Masayori Ozaki, Masami Niwa, Shinji Uchida, Tetsu Maeda and Meiko Fujimoto. Second Department of Pharmacology, Nagasaki University School of Medicine, Nagasaki 852, Japan

Atrial natriuretic peptide (ANP), which is competitive with angiotensin II (Ang II) and yet also influential upon the secretion of antidiuretic hormone (ADH) of the hypophysis is involved in the homeostasis of systemic blood pressure and body fluid volume.

In the present experiment, the influence of renal denervation on the action of ANP was examined with respect to peripheral nervous regulation by the action of ANP.

[Methods]

Spontaneously hypertensive rats (SHR) and 18-20 weeks age Kyoto Wistar rats (WKY) were used for the experiment.

After the pre-adaptation by restriction in the Ballman-cage (removal of stress) for one week, 10% phenol, ethanol solution was applied on bilateral renal nerves. Ten days later, a cannula was inserted in the femoral vein (for intravenous injection) and the bladder (for collection of urine), respectively under light anesthesia with ether and 2 hours later, when conscious ANP (5 μ g/kg) was injected (I.V) then a small quantity of isotonic glucose solution was continuously infused while urine volume and Na concentration in the urine were measured every 10 minutes by weight and by flame spectrophotometer, respectively.

Blood pressure measured by tail-cuff method and norepinephrine (NE) content in the kidney were determined by HPLC-ECD method, respectively.

[Results]

The phenol application of renal nerves resulted in falls of blood pressure (averaging 42 and 50 mmHg for WKY and SHR, respectively) compared with preoperative values.

NE content in the renal tissue showed remarkable diminution for both WKY and SHR in the phenol-treated group compared with control group, confirming the influence of renal denervation.

Ten minutes after the injection of ANP, renal denervation led to obvious increases in urine volume and Na excretion in both groups. From 30 to 50 minutes thereafter, SHR showed a persistent increase in urine volume without natriuresis for SHR compared with WKY.

[Conclusion]

Sympathetic nerves are considered to inhibit the action of renal diuresis.

For SHR, the increase in urine volume observed 30-50 minutes during infusion of glucose was possibly ascribable to its dysfunction of the kidney.