responses of forearm vascular resistance(FVR) and plasma norepinephrine(PNE) to unloading of cardio-pulmonary and arterial baroreceptors with use of lower body negative pressure(LBNP) at -15 and -60 mmHg. At LBNP -15mmHg, normals developed vasoconstriction(Δ FVR=6.6U, $P<0.05$) but AF failed to increase FVR. The increase in FVR at cold pressor test was not different between the two groups. Responses to LBNP in AF was normalized after administration of G-Strophanthin(0.075mg i.v.). Resting PNE was higher in AF than in normals(284 vs 172pg/ml, $P<0.01$). Whereas, the increase in PNE at LBNP -60mmHg was significantly less in AF than in controls. These results suggest that the augmented resting sympathetic activity in AF could result from baroreflex dysfunction characterized by the impairment of vasoconstrictor and PNE responses to LBNP and that this could be normalized by digitalis.

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AUGMENTATION OF DIGITALIS ON BEZOLD-JARISCH REFLEX

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This study was undertaken to examine the possible facilitation of the Bezold-Jarisch reflex following intravenous ouabain in the cats. Fourteen cats anesthetized with pentobarbital were used. Veratrine (3, 5, 10 μ g/kg) produced dose-dependent decreases in arterial blood pressure (ABP), heart rate (HR) and efferent renal nerve activity (RNA). Ten μ g/kg of veratrine reduced ABP (26.3 ± 8.9 mmHg, mean $\pm$ SE, $P<0.01$), HR (19.8 ± 6.7 beats/min, $P<0.05$) and RNA (41.9 ± 12.0 %, $P<0.01$). Intravenous ouabain (30 μ g/kg) modified only slightly ABP from 124.3 ± 6.7 to 126.8 ± 6.3 mmHg and HR (from 190 ± 17.3 to 185 ± 16.1 beats/min), but reduced RNA (from 58.6 ± 9.2 to 39.1 ± 8.9 Hz, $P<0.01$). With cardiopulmonary and arterial baroreflexes intact, ouabain potentiated the Bezold-Jarisch reflex influences on ABP, HR and RNA. In the presence of ouabain, 10 μ g/kg of veratrine produced greater decreases in ABP (48.5 ± 10.3 mmHg, $P<0.01$), HR (42.7 ± 19.5 beats/min, $P<0.01$) and RNA (76.5 ± 11.3 %, $P<0.01$). After sinoaortic denervation and vagotomy, these reflexes were blunted. These results suggest that potentiation of the Bezold-Jarisch reflex induced by ouabain might be due to an action at afferent sides.

Chairman

- 104-108 T. Sawayama, *Kurashiki*
- 109-113 K. Taniguchi, *Tokyo*
- 114-118 K. Ogawa, *Nagoya*
- 119-124 K. Tamura, *Yamanashi*
- 125-130 R. Kusukawa, *Ube*

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PULSE WAVE VELOCITY ON AORTA BEFORE AND AFTER THE ADMINISTRATION OF NITROGLYCERIN

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We determined the pulse wave velocity on aorta (PWV) before and after the administration of nitroglycerin(NG), and studied whether the functional factors influence PWV.

We calculated PWV by Yoshimura's method and took BP before the administration of NG(Y) and at three minutes after the administration of NG(X) to 133 patients (male; 82 cases, av. 56.7 yrs., female; 51 cases, av. 56.5 yrs., from 19 yrs. to 84 yrs). We arrived at the reciprocal relationship of $Y=0.76X+2$ ($r=0.770$), and PWV changed within 1 m/sec more than 80 % in all cases.

PWV was not influenced when SBP decreased within 10 mmHg and HR increased then. But PWV decreased when SBP decreased above 10 mmHg, and increased with the increment of HR then. PWV decreased on the increment above 6 mmHg in DBP and above 2 mmHg in mean BP. PWV decreased with the increment of ET·HR, and increased with the decrement of it. Our result supports the view that the functional factors have only small influences on PWV, but we suppose that it would be possible to get a more accurate PWV by the use of vasodilator drugs and by the adjusting for the difference in HR and CO.

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A STUDY ON RELATIONSHIP BETWEEN PULSE WAVE VELOCITY AND COMPLIANCE OF THE AORTA

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Purpose: We devised a method by which it was relatively easy to measure ΔR , that is, changes in diameter of the aorta, related to the pulsations of it by using an electrostatic capacity displacement meter. A relationship between the pulse wave velocity and compliance of the aorta calculated from ΔR was discussed in this report. **Method:** Eleven dogs were anesthetized with sodium pentobarbital. The aortic pressure was measured by the mirror tip catheter. The pulse wave velocity was determined by dividing the length of the aorta by the time lag between R wave of ECG and the pulse wave recorded at the right femoral artery by the pick-up of the elastometer. ΔR was determined by recording changes in capacity between the electrode and the aortic walls after positioning the electrostatic capacity displacement meter directly under the divergence of the left subclavian artery. The diameter R of the aorta was measured directly by the calipers after the experiment had ceased. The increased volume of the aorta ΔV due to pulsation was calculated. Compliance was determined by dividing ΔV by pulse pressure. When noradrenaline(NA) and isoproterenol(IP) were infused under the condition of a constant heart rate with the atrial pacing, the results were; 1) Pulse wave velocity was significantly increased ($p<0.01$) in all cases; 2) Pulse pressure was also significantly increased in all cases; 3) ΔR was significantly increased after NA dosing, but there were no changes before and after IP dosing; 4) Compliance was significantly decreased for both NA and IP; 5) There was a negative correlation($r=-.76$) between the pulse wave velocity and compliance after NA and IP dosing.

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THE INFLUENCE OF LEFT VENTRICULAR RELAXATION IN DETERMINATION OF THE INTENSITY OF THE AORTIC COMPONENT OF THE SECOND HEART SOUND

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