COMPARATIVE EFFECTS OF BRADYKININ, KALLIDIN AND NITROGLYCERIN ON THE PERIPHERAL VASCULAR SYSTEM IN DOGS

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We reported on the effects of some vasoactive amines on the peripheral circulation of rabbits under the controlled cardiac output (1). In the present experiment, utilizing the same technique,

Fig. 1. (A) & (C) Dog 6.4 kg and (B) Dog 6.8 kg.
The effects of intra-aortically injected (A) bradykinin (0.5 μg/kg), (B) kallidin (0.2 μg/kg) and (C) nitroglycerin (5.0 μg/kg) on arterial pressure (AP), venous pressure (VP) and left auricular outflow (LAO) under the controlled cardiac output (PO).

* Bradykinin and kallidin were kindly supplied by Dr. E.D. Nicolaides, Parke, Davis & Co. Reserrch Laboratories, Ann Arbor, Michigan, U.S.A.
the effects of bradykinin and kallidin on the vascular system were compared with that of nitroglycerin in dogs.

The animals (5.6–8.3 kg) were anesthetized with 25 mg/kg of sodium pentobarbital injected intravenously. The chest was kept open under artificial respiration during the experiment. The left ventricle was replaced by a Sigmamotor pump (Model TM-5), which maintained the output constant. Systemic arterial pressure (AP), femoral venous pressure (VP) and left auricular cutflow (LAO) were recorded by an ink-writing oscillograph. Other procedures were described previously (1).

A result of an intra-aortic injection of bradykinin is illustrated in Fig. 1-A. Bradykinin* (0.1–0.5 μg/kg) lowered AP, decreased at first and then increased VP above the initial level, and increased LAO significantly indicating an increase in systemic venous return as discussed in the previous report (1). The effect of bradykinin to increase systemic venous return has recently been confirmed in dogs by Nakano (2) under the constant cardiac input (3).

Kallidin* (0.1–0.5 μg/kg) caused almost the same pattern of changes in AP, VP and LAO as those caused by bradykinin (Fig. 1-B).

A result of an intra-aortic injection of nitroglycerin is shown in Fig. 1-C. Nitroglycerin (2.5–5.0 μg/kg) decreased AP, VP and also LAO indicating a decrease in systemic venous return. Ablad and Mellander (4) showed that sodium nitrite has more pronounced dilator effect on the capacitance vessels than on the resistance vessels.

Thus above three drugs all decreased AP or total peripheral resistance, but their effects on LAO indicating venous return were different, the two peptides increasing LAO and nitroglycerin decreasing it. The effects of these drugs on the capacitance vessels seem to warrant further analysis.

REFERENCES

SEX DIFFERENCE IN THE ACTIVITIES OF MICROSOMAL DRUG-METABOLIZING ENZYME SYSTEMS IN RELATION TO DIETARY PROTEIN

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Kato et al. (1-3) and Booth and Gillette (4) demonstrated that the sex difference in the activities of drug-metabolizing enzyme systems of rat liver microsomes is related to the anabolic action of male sex hormone. In fact, they demonstrated increases in the activities of drug-metabolizing enzymes of liver microsomes of castrated female rats by the treatment with synthetic hormones, such as 4-chlorotestosterone and 19-nortestosterone.