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Blood Pressure and Hematology in Dogs Injected with Ant. Pituitary Extract.

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It has been observed that hypertension and polycythemia are frequently associated with pituitary basophilism. The effects of experimental hypophysectomy also suggest that the anterior pituitary may regulate blood pressure[1] and the number of erythrocytes.[2]

Because of these considerations a study was made of the effect of an extract of bovine anterior pituitary in 4 dogs. Dog No. 4 was

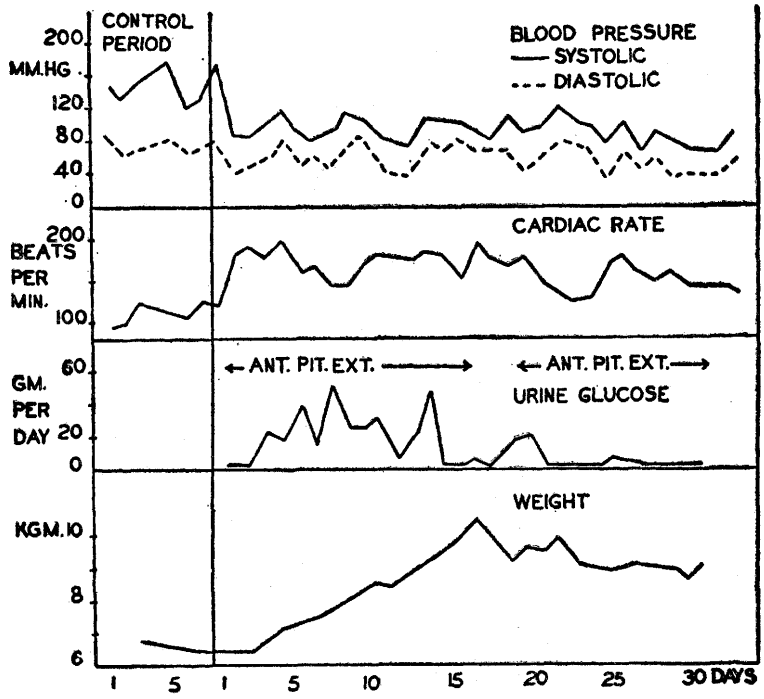

FIG. 1.

Dog 1. Illustrates the effect of increasing doses of anterior pituitary extract.

1 Houssay, B. A., *N. Eng. J. Med.*, 1936, **214**, 1086.

2 Stewart, G. E., Greep, R. O., and Meyer, O. O., PROC. SOC. EXP. BIOL. AND MED., 1935, **33**, 112.

TABLE I.
Erythrocyte and Platelet Data

	Dog No. 1			Dog No. 2			Dog No. 3			Dog No. 4	
Day of injection	0	8	18	0	7	*	0	10	18	0	6
RBC (millions)	7.4	6.0	4.4	6.5	6.1	5.0	8.1	6.7	6.7	5.8	5.0
Hgb† (%)	105	94	73	93	97	88	111	102	104	72	69
H'crit‡	54	45	33	47	46	36	56	44	45	35	30
Retics. (%)	0.1	0.3	0.7	0.2	0.1	0.4	0.1	0.1	0.1	0.2	2.0
Plate. (thousands)	280	360	260	270	340	310	300	240	290	290	210

*4th day after stopping injections.
†Sahli; 100% = 15.6 g/100 cc.
‡Van Allen Tube.

a male; the others were females. In general, the methods and technic of Young[3] were employed. With a few exceptions the injections were made daily into the peritoneal cavity. In general the dose was gradually increased from an amount of extract representing 10 g to an amount representing 30 g of gland. Dogs Nos. 1-4 were injected over periods of 31, 14, 26, and 8 days respectively.

The diet consisted of weighed portions of trimmed beef heart or a stock mixture of ground meat, cracker meal, chopped cabbage, cod liver oil and iodized salt. The blood pressure was determined daily in dogs No. 1 and 2 by the Collins method,[4] the animals having been trained to lie quietly. Hematological estimations were performed in duplicate on all 4 dogs.

The potency of the extract was illustrated by the marked glycosuria and weight gain (Fig. 1). These animals also developed polydipsia, insulin resistance, and diabetic glucose tolerance, lactation, and evidence of estrus, as well as retention of nitrogen such as is associated with the growth effect of anterior pituitary.[5]

In marked contrast to these metabolic effects were the slight changes in the blood pressure and blood picture. Both dog No. 1 and No. 2 showed an increase in heart rate (presumably a thyrotropic effect) which was accompanied by a slight fall in blood pressure (Fig. 1). The hematological findings were contrary to suggestions in the literature that an excess of anterior pituitary hormone may induce polycythemia. All 4 dogs showed reduced erythrocyte, hemoglobin and hematocrit values, while the number and immaturity of the leucocytes increased, reticulocyte and platelet numbers were not significantly altered (Table I).

The effect upon the blood pressure and blood picture in our animals treated with whole anteror pituitary extract is similar to that described by Thompson and Cushing[6] in a dog injected for 90 days with a gonadotropic fraction from sheep pituitaries.

Summary. No increase in blood pressure or in erythrocytes, reticulocytes, or hemoglobin was produced by repeated injections of an active crude saline extract of anterior pituitary.

3 Young, F. G., *Biochem. J.*, 1938, **32**, 513.

4 Collins, D. A., *Am. J. Physiol.*, 1936, **116**, 616.

5 Gaebler, O. H., and Price, W. H., *J. Biol. Chem.*, 1937, **121**, 497.

6 Thompson, K. W., and Cushing, H., *Proc. Roy. Soc. (B)*, 1934, **115**, 88.