

Effect of Activity, Rest, and Natural Sleep upon Blood Pressure of Renal Hypertensive Dogs.

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An experimental technic for measuring mean systolic blood pressure and pulse rate of dogs during activity, rest, and natural sleep has been described.¹ This technic has been applied to normal dogs and to dogs with neurogenic hypertension produced by excision of the 2 carotid sinuses, section of one vagus sympathetic depressor nerve trunk, and division of the remaining depressor

nerve.² Variations of blood pressure were noted in both the control and the neurogenic hypertensive dogs. Blood pressures were highest during activity and standing or feeding and lowest during rest and natural sleep. The reduction of pressure of animals with neurogenic hypertension during rest or natural sleep did not reach levels comparable with those reached by normal dogs.

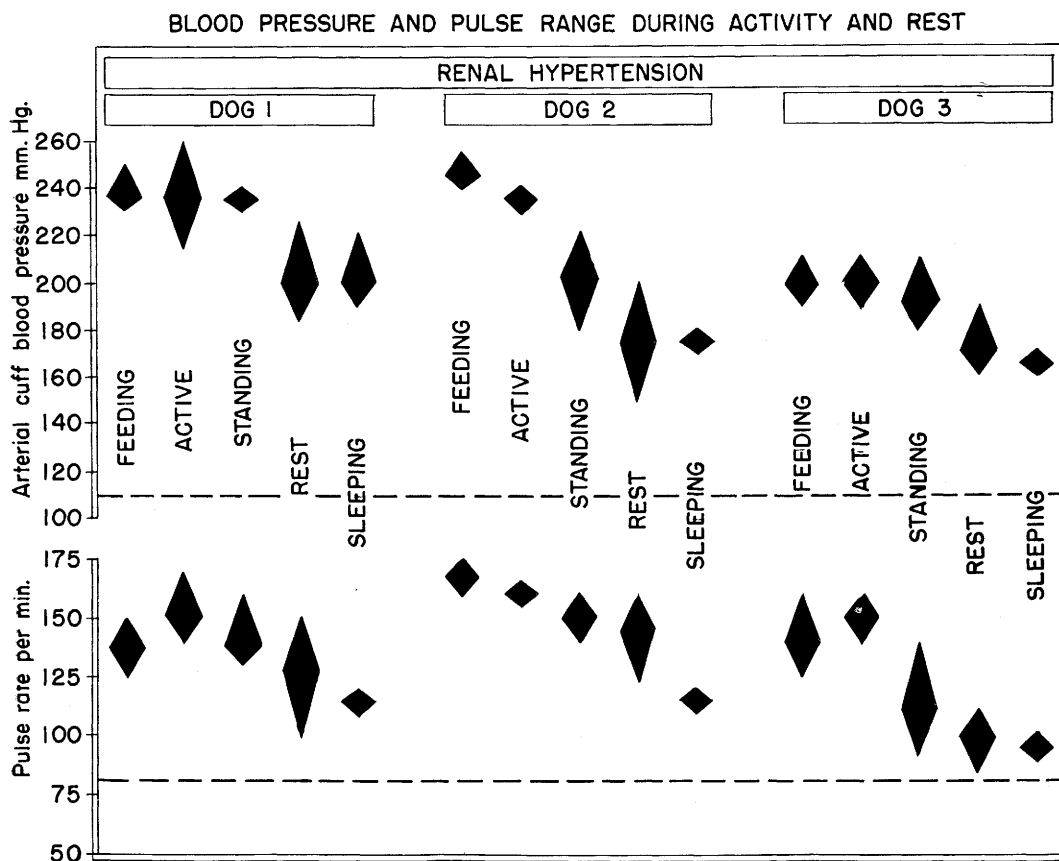


FIG. 1.

Blood pressure and pulse range of 3 renal hypertension dogs. A variable degree of reduction of blood pressure and pulse rate was observed during rest and natural sleep.

¹ Kernodle, C. E., Jr., Hill, H. C., and Grimson, K. S., *PROC. SOC. EXP. BIOL. AND MED.*, 1944, **55**, 64.

² Grimson, K. S., Kernodle, C. E., Jr., and Hill, H. C., *J. A. M. A.*, 1944, **126**, 218.

The present experiment was undertaken to determine the effect of activity and rest upon dogs with renal hypertension produced by placing capsules about the kidney, Page.³ Hypertension was produced in 3 dogs with normal blood pressure by placing silk capsules about both kidneys in 2 (dogs 1 and 2, Fig. 1) and plastic capsules in one (dog 3, Fig. 1). It was produced in a 4th dog by placing a silk capsule about one kidney and removing the other. Blood pressures as determined by direct arterial puncture rose to levels between 190 and 206 mm Hg during the 25 to 36 days that elapsed before the final experiment. Cuffs were then placed about the right iliac and femoral arteries and the animals were prepared for blood pressure determination according to the technique previously described.¹

After complete recovery from anesthesia blood pressures and pulse rates were recorded at frequent intervals for periods from 49 to 76 hours. The variation and the mean of readings of 3 dogs taken when they were feeding, moving about the cage, standing

quietly, lying and resting, or sleeping are illustrated in Fig. 1. The 4th dog with one kidney removed and a silk capsule about the other exhibited unusually high pressures throughout the experiment. Base lines and cuffs were carefully checked without determining a cause. The pressure by direct arterial puncture was 200 mm Hg 9 days earlier. This animal had pressures during the experiment ranging from 275 to 305 while feeding, 265 to 315 while active, 250 to 315 while standing, 270 to 295 while resting, and from 240 to 285 while sleeping. The variations of pulse rate of all 4 dogs during activity and rest roughly paralleled the changes of blood pressure.

Under the conditions of this experiment changes of blood pressure and pulse rate in dogs with renal hypertension are quite similar to those previously reported for dogs with neurogenic hypertension.² The reduction of blood pressure and pulse rate that occurs in both types of hypertension does not approach the reduction of levels that occurs in normal dogs.²

³ Page, I. H., *Science*, 1939, **89**, 273.

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Creatine Concentration and Weight Loss in Denervated Skeletal Muscle.

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Denervated skeletal muscle undergoes a number of degenerative changes of which atrophy is of especial interest. Hines, Thomson and Lazere¹ have pointed out that muscle strength, weight and creatine content decrease following denervation, subsequently increasing with regeneration of the nerve fibers. Since creatine, in the form of phosphocreatine, plays a vital role in muscular contraction, the present work was undertaken to

compare creatine loss and weight loss in denervated skeletal muscle.

Methods. Albino rats were used. The gastrocnemius muscle of one leg of each rat was denervated by removing a section of the sciatic nerve. The opposite leg was left intact and served as a control. Two animals were sacrificed at 2-day intervals after denervation. The intact and denervated muscles were carefully removed, placed directly into tared airtight flasks, weighed and analyzed for creatine.

Of the several methods for determining creatine concentration which have been re-

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¹ Hines, H. M., Thomson, J. D., and Lazere, B., *Am. J. Physiol.*, 1942, **137**, 527.