

Renal Oxygen Utilization of Dogs with Experimental Hypertension.*

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It has been shown by Harrison, Blalock and Mason¹⁻² and by Friedman and Prinzmetal³ that a dog kidney rendered ischemic by partial constriction of the renal artery according to the technique of Goldblatt *et al.*⁴ contains a greater amount of pressor substance than a normal kidney of either the same or a different dog. Although there is no evidence that this pressor substance (or substances) is responsible for the development of the hypertension exhibited by such dogs, it has been suggested that it is elaborated as a result of some process dependent on ischemia, possibly under conditions of low oxygen tension.

A low tension of oxygen in the renal parenchyma should be reflected in a greater degree of unsaturation of renal venous blood, *i. e.*, by an increase in the renal arterio-venous oxygen difference. In order to see if this were the case, a large number of determinations of this difference was made on normal dogs with a kidney explanted by the method of Rhoads,⁵ and similar dogs in which hypertension had been produced by partial constriction of the renal artery. The diet of these dogs consisted of a maintenance allowance of Wayne's dog chow supplemented by meat twice each week. Blood samples were drawn (fasting) by nearly simultaneous puncture of the femoral artery and renal vein without anesthesia.

In Table I the results of 70 observations on 16 normal dogs and 64 similar observations in 4 dogs with partial constriction of the

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¹ Harrison, T. R., Blalock, A., and Mason, M. F., *PROC. SOC. EXP. BIOL. AND MED.*, 1936, **35**, 38.

² Harrison, T. R., Blalock, A., Mason, M. F., and Williams, J. W., Jr., *Arch. Int. Med.*, in press.

³ Prinzmetal, M., and Friedman, B., *PROC. SOC. EXP. BIOL. AND MED.*, 1936, **35**, 122.

⁴ Goldblatt, H., Lynch, J., Hanzal, R. F., and Summerville, W. W., *J. Exp. Med.*, 1934, **59**, 347.

⁵ Rhoads, C. P., *Am. J. Physiol.*, 1934, **109**, 324.

TABLE I.
Renal Arterio-venous Oxygen Differences of Normal Dogs and Dogs with Partial Constriction of Renal Artery with and without Hypertension.

	Renal Arterio-venous Oxygen Difference (vol. %)			
	1-2	2-3	3-4	4-5
Normal dogs (70 observations)	12	32	23	3
Dogs with partial constriction of renal artery				
1. Without hypertension (33 observations)	7	15	4	7
2. With hypertension (31 observations)	7	15	5	4
Total	14	30	9	11

renal artery are shown. Thirty-one observations of the latter group were made when the dogs exhibited hypertension, and 33 were made when hypertension was absent in spite of renal artery constriction. It is seen that although a few more rather large arterio-renal venous oxygen differences were encountered in the group with renal artery constriction, the variability in oxygen utilization in this group, with or without attendant hypertension, is not markedly different from that of normal dogs. In both groups the renal A-V(O₂) most frequently encountered was between 2.5 and 3.0 volumes percent.

These results lend no support to the concept that partial constriction of the renal artery is attended by lowered oxygen tension in the kidney, under the conditions specified. Similar observations in circumstances in which the renal excretory work is increased, *e. g.*, a high protein diet, have not as yet been made.

Summary. The variability of renal arterio-venous oxygen difference in fasting dogs with partial constriction of the renal artery with and without hypertension is similar to that of normal dogs.

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The Active Fraction of Rous Chicken Sarcoma.

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Recent attempts to isolate the active agent of the Rous chicken sarcoma have resulted in conflicting views as to the nature of the causative agent. Jobling and Sproul¹⁻² have reported that repeated injections of a lipid fraction obtained from fresh or dried tumor

¹ Jobling, J. W., and Sproul, E. E., *Science*, 1936, **84**, 229.

² Jobling, J. W., and Sproul, E. E., *Science*, 1937, **85**, 270.