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Effect of Total Sympathectomy on Experimental Renal
Hypertension in Dogs.*

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Excision of the splanchnic nerves and the lower 4 dorsal sympathetic ganglia has been shown by Goldblatt, Gross and Hanzal¹ to have no effect on experimental renal hypertension. Grimson² has found that in normal dogs total sympathectomy produces a temporary fall in blood pressure.

The effect of total sympathectomy on experimental renal hyper-

* This work was aided by a grant from the Douglas Smith Foundation. Reference was made to this work in a report presented by D. Phemister and K. Grimson at the meeting of the American Surgical Association in New York City, June 3, 1937 (*Surgery*, 1937, **2**, 472).

¹ Goldblatt, H., Gross, J., and Hanzal, R. F., *J. Exp. Med.*, 1937, **65**, 233.

² Grimson, K. S., *PROC. SOC. EXP. BIOL. AND MED.*, 1936, **34**, 235.

2 TOTAL SYMPATHECTOMY AND EXPERIMENTAL HYPERTENSION

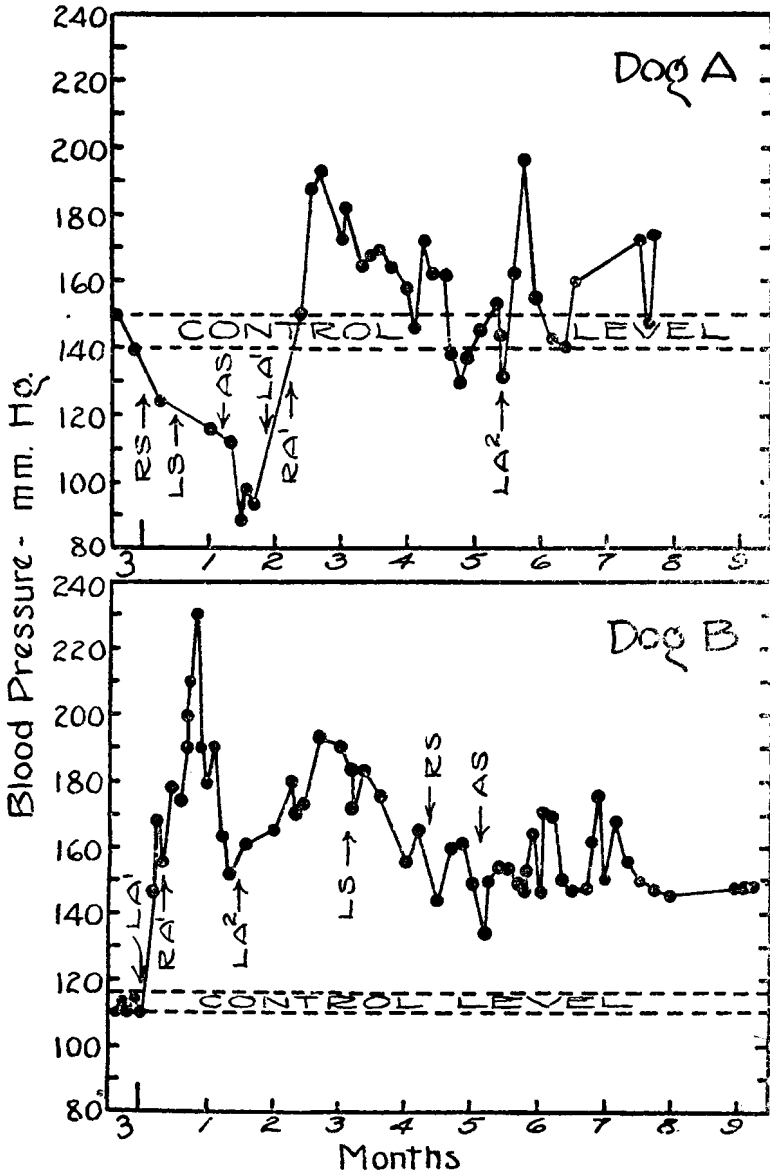


FIG. 1.

Effect of total sympathectomy on experimental renal hypertension. RS indicates right thoracic sympathectomy; LS, left thoracic sympathectomy; AS, abdominal sympathectomy; LA, clamp applied to left renal artery; RA, clamp applied to right renal artery.

tension as produced by Goldblatt, *et al.*,³ has been studied in 2 dogs. Blood pressures throughout the study were obtained by direct arterial puncture, the lowest sustained readings during a 10-minute period being charted (Fig. 1). In each dog control pressures were followed for 3 months before any operative procedure was performed. In Dog A the control readings ranged from 140 to 150 mm. Hg., and dropped to 88 mm. following total sympathectomy. After application of Goldblatt clamps to both renal arteries the blood pressure rose to 193 mm. After a gradual return of the blood pressure to the control level, the left clamp was further tightened, and the pressure again rose to 198 mm. A subsequent return to near the control level again occurred. Freeman and Page⁴ have also shown that total sympathectomy does not interfere with the development of hypertension due to bilateral renal ischemia.

In Dog B, whose control blood pressure was 110 to 116 mm., a rise to 230 mm. occurred following bilateral application of clamps to the renal arteries. When a tendency toward a lower level appeared, the left clamp was tightened, with a return of the blood pressure to 190 mm. Following total sympathectomy the blood pressure dropped to a lower level but after 4 months was still maintained at 30 mm. above the control level. Observations have not been continued for a sufficient length of time to determine whether the drop in blood pressure after sympathectomy is transient, as is the case in non-hypertensive dogs.²

Summary. In one dog with sustained hypertension established by application of Goldblatt clamps to both renal arteries, total sympathectomy produced a moderate drop in the blood pressure, which, however, has remained well above the control level. In another dog, previously sympathectomized, hypertension could be produced by bilateral application of Goldblatt clamps.

³ Goldblatt, H., Lynch, J., Hanzal, R. F., and Summerville, W. W., *J. Exp. Med.*, 1934, **59**, 347.

⁴ Freeman, N. E., and Page, I. H., Report of Meetings of American Heart Association, Atlantic City, June 7 and 8, 1937. *Surgery*, 1937, **2**, 487.