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Effect of Bilateral Splanchnicectomy upon Renal Blood Flow in Hypertension.

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It has been suggested by Peet, Woods and Braden¹ that the frequently successful results observed by them in hypertensive patients following splanchnicectomy might have been caused by a decrease in the tonus of the renal arterioles, thus permitting a better renal blood flow. In this communication we are reporting the renal blood flow and glomerular filtration rate as measured by the diodrast and inulin clearances, respectively, in two hypertensive patients before and after splanchnicectomy.

Description of Cases. Case No. I. L. G., male, age 32. History of severe headaches and difficulty in vision of 6 months' duration. On physical examination, the patient was found to have a blood pressure of 220/135 mm Hg, and severe retinal changes consisting of marked tortuosity and beading of the smaller arteries, many areas of exudate and hemorrhage with marked arterio-venous impression. The urine examination revealed occasional hyaline casts and erythrocytes. The specific gravity of a concentrated urine specimen (12 hours) was 1.020. Intravenous pyelography revealed no abnormalities. The diodrast clearance and inulin clearance were performed on July 26, 1940. On October 6, 1940, the patient was operated upon by Dr. Howard Naffziger at the University of California Hospital. At that time, a bilateral resection of the greater splanchnic and lesser splanchnic nerves together with the lower part of the sympathetic chain was performed. The patient withstood the procedure well despite an immediate and severe drop in blood pressure to a shock level immediately following the operation. After several days, the blood pressure again began to rise and on October 16th, the day on which the diodrast and inulin clearances were again performed, the blood pressure was 250/150 mm Hg.

Case No. II. F. P., male, age 52. History of severe headaches and marked impairment of vision of several months' duration. On physical examination, the patient was found to have a blood pressure of 230/140 mm Hg. The retinal changes were severe, consisting of extensive deposition of exudate and hemorrhages in the macular

¹ Peet, M. M., Woods, W. W., and Braden, S., *J. A. M. A.*, 1940, **115**, 1875.

area of each fundus, together with tortuosity and beading of the arteries. The urine examination revealed a trace of albumin, occasional erythrocytes and casts. The specific gravity of a concentrated urine specimen (12 hours) was 1.022. Intravenous pyelography revealed no abnormalities. The diodrast and inulin clearances were performed on October 25, 1940. On October 28, the patient was operated upon by Drs. Emile Holman and Frederick Reichert at the Stanford University Hospital. A bilateral resection of the greater splanchnic nerve for approximately 10 cm of its extent with a resection of the 10th to 12th sympathetic ganglia was performed. The recovery was uneventful. The blood pressure remained low for about one week and then rose again to its previous high level. On November 22, 1940, the diodrast and inulin clearances were repeated. At this time the blood pressure was 225/150 mm Hg.

Description of Methods. The diodrast and inulin clearances were performed simultaneously exactly as described in a previous report.² The blood pressure determination was made at the beginning, middle and end of each clearance test. The filtration fraction was computed as the $\frac{\text{inulin clearance in cc per minute}}{\text{diodrast clearance in cc per minute}}$. The whole blood flow through the kidney was obtained by the division of the diodrast clearance by the hematocrit determined plasma volume percentage. All determinations were corrected to 1.73 square meters of surface area. In Table I, the average renal clearance (inulin and diodrast) values found in 6 normal men are given.

Results. In the patient, L. G., the renal blood flow was 367 cc per minute before the operation and 420 cc per minute 10 days following the operation. When compared to the average normal renal

TABLE I.
Renal Clearance Determinations in Malignant Hypertension Before and After Splanchnicectomy.

Case No.		Plasma clearance (diodrast) (cc/min.)	Renal blood flow (cc/min.)	Inulin clearance (cc/min.)	Filtration fraction %
	Normal values (avg)*	761	1288	124	17.8
I	Before splanchnicectomy	283	367	108.5	44.5
	After "	252	420	89.5	35.7
II	Before "	287	386	88.2	33.9
	After "	210	304	92.5	44.0

*These figures represent the average clearance values of 6 normal men.

² Friedman, M., Selzer, A., and Rosenblum, H., *J. Clin. Invest.*, 1941, **20**, 2.

blood flow (Table I), it can be seen that there was a great reduction in the blood flowing through the kidneys of this patient both before and after splanchnicectomy. The inulin clearance decreased considerably from 108.5 before to 89.5 cc per minute after operation. It is unknown whether this was due to the splanchnicectomy or to the possible progressive glomerular damage that might have occurred in the 3 months which elapsed between the 2 clearance determinations. The filtration fraction also fell, presumably because of the fall in the inulin clearance, but it will be observed that it was still about twice the normal value.

In the patient, F. P., there was no significant change in the renal blood flow, for it was 386 cc per minute before splanchnicectomy and 304 cc per minute 27 days after the operation. The inulin clearance remained about the same. The filtration fraction rose from 33.9% to 44.0%.

Summary. The renal blood flow (diodrast) and the glomerular filtration rate (inulin) were measured in 2 patients with hypertension before and after bilateral splanchnicectomy. There was no significant change in the renal blood flow in either case. The glomerular filtration rate decreased in one patient and remained the same in the other.

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Effect of Oral Administration of Iodoacetic Acid on Cystine Content of Rats.*

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Growth studies in rats have demonstrated¹ that orally administered iodoacetic acid exerts a marked influence on sulfur metabolism, probably by imposing on the organism an increased demand for the sulfur-containing amino acids, cystine and methionine, or

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¹ Stevenson, E. S., and White, A., *J. Biol. Chem.*, 1940, **134**, 709.