

Denervation of Carotid Sinuses and Section of Depressor Nerves to Produce Chronic Arterial Hypertension.

A. DE GROAT, H. H. DAVIS AND C. H. MCDONALD. (Introduced by B. Sure.)

From the Departments of Physiology and Pathology, University of Arkansas School of Medicine.

From the investigations of Hering, Heymans¹ and their collaborators² on the reflexes originating in the carotid sinuses came a method that promised to make possible the study of the pathological changes which may result from chronic, arterial hypertension, uncomplicated by the action of infectious or toxic agents. By denervating the carotid sinuses and sectioning the depressor nerves (rabbit) or the vagi (dog) these authors obtained the equivalent of a permanently low intracarotid pressure, namely, permanent arterial hypertension, hyperpnea, and hyperepinephrinemia. The hypertension was apparently demonstrated to be the direct result of the increased secretion of epinephrine. Unless the denervation was performed in stages, the animal was said to succumb to acute cardiac dilatation. The respiratory effects of the denervation consisted of rapid, labored breathing with lowering of the alveolar CO₂.

The method was applied to the investigation of essential hypertension and arteriosclerosis with interesting and apparently positive results.

Experiments were planned to determine precisely the course of the blood pressure after denervation of the carotid sinuses and section of the depressor nerves, and to explore the possibilities in the operation for the production of lesions in the rabbit. Fourteen rabbits were successfully denervated either on one or both sides. Ten animals were operated upon in 2 stages, the second following the first by an interval of 5 to 10 days. Four animals were denervated in one stage. Blood pressure determinations by the McGregor³ method were made repeatedly before and after the operations. After bilateral denervation in 9 rabbits, slight elevations of pressure were observed in 5. The degrees of elevation of the pressure and the time required for the pressure to return to normal were as follows:

¹ Heymans, C., *Compt. rend. Soc. de biol.*, 1931, **107**, 1293.

² Goormaghtigh, N., *Ann. d'anat. path.*, 1931, **8**, 585.

³ McGregor, L., *Arch. Path.*, 1928, **5**, 630.

36 mm., 6 days; 30 mm., 90 days; 12 mm., 28 days; 10 mm., 22 days; 14 mm., 3 days. Precautions were taken to avoid the errors of observation into which the McGregor method may easily lead when moderate changes in blood pressure are involved. Bilateral denervation, performed in one stage, was quite as well tolerated as unilateral denervation. No changes in the respiratory rates were observed after the rabbits had recovered from the immediate effects of the operation.

To detect any modification in the secretion of epinephrine, the splenic volume, as revealed by the erythrocyte count of the peripheral blood, was utilized. The blood was drawn approximately 15 minutes after completion of the denervation. After unilateral denervation, no changes were observed in the erythrocyte counts. Bilateral denervation in 9 animals was followed by a polycythemia in 5. The maximum increase in the erythrocytes was 1,180,000, the minimum, 420,000. Blood sugar determinations, made after complete recovery of the animals from the operation, were always normal (80 to 105.6).

6902

Effect of Vitamin Deficiency on Gastric Secretion.

D. R. WEBSTER AND J. C. ARMOUR. (Introduced by B. P. Babkin.)

From the Department of Physiology, McGill University, Montreal.

Voegtlin and Myers¹ suggested the identity of vitamin B and secretin, but this could not be confirmed by Anrep and Drummond,² Downs and Eddy³ nor Cowgill and Mendel,⁴ who reported that this vitamin exhibits no effect on the liver, salivary or pancreatic secretions. Cowgill, Deuel and Smith⁵ state that the restorative action of vitamin B on the appetite is not due to stimulation of gastric secretion, but they made no investigation of the stomach secretions. Miyadere⁶ found a great diminution of the secretion from the Pavlov pouch on a vitamin-free diet, yet 100 cc. of 5% alcohol intro-

¹ Voegtlin, C., and Myers, C. N., *J. Pharmacol.*, 1919, **13**, 301.

² Anrep, G. V., and Drummond, J. C., *J. Physiol.*, 1921, **54**, 349.

³ Downs, A. W., and Eddy, N. B., *Am. J. Physiol.*, 1921, **58**, 296.

⁴ Cowgill, G. R., and Mendel, L. B., *Am. J. Physiol.*, 1921, **58**, 131.

⁵ Cowgill, G. R., Deuel, H. J., and Smith, A. H., *Am. J. Physiol.*, 1925, **73**, 106.

⁶ Miyadere, K., *Biochem. Z.*, 1921, **124**, 244.