

# DEMONSTRATION OF A CHEMODECTOMA BY PERFUSION SCANNING: CASE REPORT

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***A carotid body chemodectoma was demonstrated by perfusion scanning.***

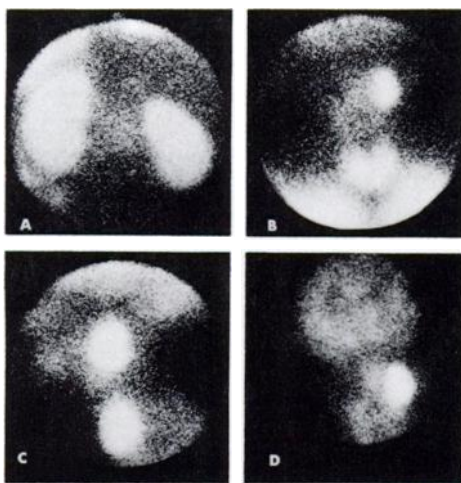
There have been scattered reports of tumor imaging by means of arterial perfusion scanning (1-7). We report here a case of carotid body chemodectoma that represents perhaps the most striking example to date of a tumor imaged by this technique. A renal cell carcinoma which was also clearly imaged by this method, though less vividly, is shown.

## CASE REPORTS

**Case 1.** A 32-year-old housewife was admitted for diplopia of sudden onset. She had had episodic generalized throbbing headaches for several years with premonitory bright or flashing spots in her right vis-

ual field and with an associated slight epistaxis about half the time. Exertional dyspnea had been present for 8 years. Physical examination revealed a well-nourished woman in no acute distress with right external strabismus. Three days later, the right eye was found to have recovered a full range of motion but the left pupil was dilated and hyporeactive to light and vision was impaired in the left eye. The neurologic examination was otherwise normal. No masses or bruits were found in the neck. There was digital clubbing and a Grade I/VI systolic ejection murmur was present at the left sternal border. A chest film showed structures resembling pulmonary arteriovenous malformations. The hematocrit was 63%.

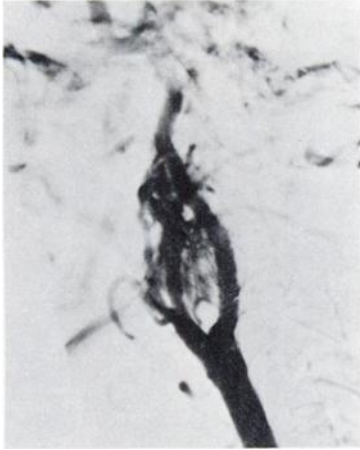
A pulmonary perfusion scan was performed with intravenous  $^{99m}\text{Tc}$ -macroaggregated albumin. Marked kidney activity was seen (Fig. 1), consistent with a substantial right-to-left shunt. Thyroid activity was noted on the lung images and so a view of the head was obtained to determine the amount of free pertechnetate in the sagittal sinus. Little sinus activity was seen but a conspicuous hypervascular lesion was revealed in the region of the left carotid bifurcation (Fig. 1). Angiography confirmed the presence of a hypervascular lesion that was interpreted as a carotid body chemodectoma by angiographic criteria (Fig. 2). The presence of multiple, inoperable, pulmonary arteriovenous malformations was also confirmed by angiography. Permission for pertechnetate flow and static studies was sought without success. The patient was discharged on a regimen of periodic phlebotomy to manage the secondary erythrocythemia. No biopsy



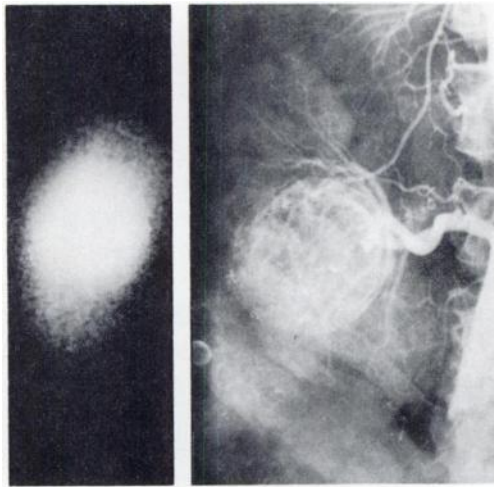
**FIG. 1.** Perfusion scans following intravenous  $^{99m}\text{Tc}$ -MAA administration. (A) Posterior scan of kidneys. (B) Anterior neck scan showing left carotid body chemodectoma, thyroid gland, and pulmonary apices. (C) Left lateral neck scan showing carotid body chemodectoma and thyroid gland. (D) Anterior head scan showing left carotid chemodectoma and little free pertechnetate in sagittal sinus.

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**FIG. 2.** Hypervascular tumor in left carotid bifurcation, thought to be carotid body chemodectoma. Subtraction angiogram.



**FIG. 3.** Perfusion scan and angiogram of renal cell carcinoma.

of the neck tumor was obtained but the angiographic findings were considered diagnostic.

**Case 2.** A 62-year-old woman was referred for renal angiography because an excretory urogram (performed because of recurrent urinary tract infections) had revealed a mass lesion in the left kidney. Following angiography, which showed a hypervascular tumor in the midportion of the kidney (Fig. 3), 200  $\mu$ Ci of  $^{99m}\text{Tc}$ -MAA were injected into the

left renal artery. The tumor was clearly delineated on a subsequent scan (Fig. 3). At nephrectomy, a renal cell carcinoma was found. There was no histologic evidence of renal injury from the macroaggregated albumin.

#### DISCUSSION

Tumors of brain, maxillary sinus, lung, liver, pancreas, stomach, bowel, kidney, uterus, and lymph nodes have been imaged by perfusion scanning (1-7). Although initial reports were promising, there has been little clinical use of this method. Delayed scans several days after injection of  $^{131}\text{I}$ -MAA were found more helpful than immediate scans in one series (3). Presumably this reflects decreased phagocytic activity in tumor tissue but clearance rates for albumin macroaggregates or albumin microspheres in tumor tissues have not been reported. Recent workers have used  $^{99m}\text{Tc}$ -labeled materials so that delayed scans were not possible. After fortuitously obtaining a vivid image of a carotid body chemodectoma in the course of a lung scan and subsequent review of the literature, we feel this procedure merits further attention.

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