Medical Memoranda

Hypertension Due to Hypernephroma

British Medical Journal, 1969, 4, 87-88

Hypernephromas may present in many different ways, though haematuria is the commonest symptom. Hypertension as a presenting feature is very rare. It is even less common for the blood pressure to return to normal levels immediately after removal of the tumour and to remain normal for two years.

We report a case in which hypertension was the only presenting feature of a hypernephroma and nephrectomy resulted in return to normal blood pressure.

CASE REPORT

The patient, a housewife born in 1943, was first found to be hypertensive at a routine antenatal examination in 1960. The pregnancy ended in an abortion and the hypertension was not followed up. In 1964 she was found to have a mobile lump in the right hypochondrium which was thought to be a mobile right kidney. She was first referred to the urological unit at Hammarsmith Hospital in March 1967 for investigation of a renal cause of her hypertension. Since 1960 she had had seven unsuccessful pregnancies and her blood pressure had been raised during each of these and also between pregnancies for the last two years. She could feel the lump in the right hypochondrium and it had not increased in size. She had not had haematuria or any other urinary symptoms. Her general health had been satisfactory, but for some shortness of breath on running, for six months previous to admission.

Physical examination showed a healthy woman with no clinical evidence of congestive heart failure and no anaemia. The blood pressure was 220/130 mm. Hg and a smooth mass about 6 in. (15 cm.) in diameter was found in the right hypochondrium. The mass was not pulsatile, nor was there a bruit, and it appeared to be arising from the right kidney. Examination of the fundus disclosed a macular star and a few haemorrhages and exudates on both sides. Clinically it appeared to be a hypernephroma of the right kidney.

Investigations showed normal blood urea, sodium, potassium, and calcium levels; haemoglobin 13.0 g./100 ml., with a P.C.V. of 35% ; and E.S.R. 40 mm. in the first hour. The urine showed no protein or red cells, and culture was sterile. Twenty-four-hour urinary excretion of sodium and potassium was within the normal range and excretion of 4-hydroxy-3-methoxy mandelic acid was also normal (4 mg.). Chest radiographs showed mild left ventricular hypertrophy. On intravenous pyelography a large space-occupying lesion (Fig. 1) was seen in the lower pole of the right kidney compressing the renal pelvis and calices on the same side. The left kidney and the bladder were normal. Renal angiography showed a large vascular tumour (Fig. 2) in the right kidney. There was no stenosis of the renal artery or its main divisions (Fig. 3).

At operation a tumour about 7 in. (18 cm.) in diameter was found replacing the lower pole of the right kidney. The tumour had a well-defined capsule and there were large veins coursing over its surface. The renal vein was not invaded and there were no involved lymph nodes. Nephrectomy was carried out and the post-operative course was uneventful. Twenty-four hours later the blood pressure fell to 120/80 mm. Hg and has remained at that level to date.
The tumour mass had a raised brown lobular surface with depressed reddish brown streaks. The kidney and pelvis were compressed into a relatively small mass. Histologically (Fig. 4) the tumour was an adenocarcinoma of the kidney, composed mainly of granular cells and a few clear cells arranged in sheets and trabeculae. There was no infiltration of the renal pelvis or of the renal vessels at the hilum by the tumour tissue. Away from the tumour the vessels showed intimal thickening and duplication of the internal elastic lamina (Fig. 5).

In the present case hypertension was the first sign and the tumour was not palpable until nearly four years later. It is interesting to note that it was a further three years before the tumour was recognized and removed, with subsequent return of blood pressure to normal levels. Five other cases of hypertension associated with hypernephroma in which the blood pressure returned to normal after nephrectomy have been reported (Lampe and Crovatto, 1965). In one of these the cause was an intrarenal arteriovenous fistula (Nicoioff, 1964).

The mechanism of hypertension due to hypernephroma could be either (a) renal artery stenosis or (b) a tumour secreting a pressor substance (renin). Two other factors may contribute to hypertension in these patients, (c) polycythaemia and (d) arteriovenous fistula, but they could be easily excluded in this case on the basis of the investigations. A renal angiogram excluded stenosis of the main renal artery (Fig. 3). The vessels in the compressed kidney tissue (Fig. 5) showed intimal hyperplasia and it could be argued that if there was any arterial stenosis the vessels on the same side would be protected from hypertensive changes. There must, however, be some degree of ischaemia in the compressed kidney tissue. Tumour extracts were not assayed for renin activity, but high renin activity in a tumour does not necessarily mean that the renin is reaching the circulation. Renin levels in blood alone would not help distinguish the cause, since they could be raised even in renal artery stenosis. Probably a combination of factors were responsible for hypertension in the present case and nephrectomy appears to have removed them. It would be interesting to watch for hypertension if she develops a recurrence of the tumour locally or at distant sites.

The effect of nephrectomy in this patient is of interest. The blood pressure has remained normal for two years. Braasch et al. (1940) reported the cases of 21 patients with hypertension and hypernephroma in whom after nephrectomy the blood pressure remained normal in nine, temporarily became normal in three, and was unaffected in nine. Griffiths and Thackray (1949) noted that their seven patients did not survive long enough after nephrectomy to determine the effect of removal of the tumour and concluded that hypertension is indicative of poor prognosis. Though it is difficult to prognosticate the outcome in the present case, the result at two years has been encouraging. Hypernephroma should be considered as one of the causes of renal hypertension and the prognosis is not always bad.

We wish to thank Dr. J. Lister and Mr. E. J. Williams, of Wexham Park Hospital, Slough, for referring the patient, and Dr. J. R. Storer, of Didcot, for help with the follow-up. The department of medical illustration deserves our thanks for the photographs.

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**REFERENCES**


