Diagnostic Images

Renal cell carcinoma

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Case 1

A male aged 70 years, complained of infertility and impotence for 1 year and increasing girth for 6 months. On examination he was thought to have ascites but aspiration proved a 'dry tap'.

Figure 1 Case 1. Nephrotomogram, i.e. tomograph taken in the 'blush' phase of the intravenous urogram (IVU) when the renal parenchyma takes up contrast medium. The mass on the lateral aspect of the right kidney (arrows) also takes up contrast medium unlike a simple cyst.

Figure 2 Case 1. In the pyelographic phase the 'blush' from the tumour has faded much more markedly than from the renal parenchyma. No distortion, displacement or destruction of calyces is present as the tumour is on the margin of the kidney.

Figure 3 Case 1. Unenhanced scan showing a mass on the lateral aspect of the kidney with attenuation somewhat less than the kidney itself. No evidence of ascites but marked mesenteric and omental adiposity. (L = liver; S = spleen; A = aorta; K = kidney; I = inferior vena cava; T = tumour.)

Figure 4 Case 1. Following intravenous contrast medium the tumour is irregularly enhanced, and to a considerably lesser degree than normal parenchyma with the intervening margin irregular and slightly blurred. The right renal vein (arrow) and inferior vena cava have homogeneous increased density with no evidence of tumour infiltration.

Case 2

A male aged 63 years complained of burning and frequency of micturition. He was found to have diabetes mellitus. IVU and ultrasound showed a mass in the right kidney of mixed echogenicity.

Figure 5 Case 2. (a and b) Large mass at the upper pole of the right kidney with mixed attenuation. As the mass abuts on the liver no clear line of separation is visible although there was no adjacent hepatic infiltration. More caudally a clear line of separation becomes visible. (L = liver; S = spleen; A = aorta; K = kidney; I = inferior vena cava; T = tumour.)

Figure 6 Case 2. (a and b) Following contrast enhancement the varying attenuation of the tumour is demonstrated and its irregular margin with normal renal parenchyma.

Comment

The classic presentation of renal cell carcinoma (hypernephroma) with pain in the renal angle, a palpable mass and haematuria occurs in only about 10% of cases. As the haematuria is microscopic and frequently also intermittent these tumours are often large at presentation. There are areas of necrosis, haemorrhage and ischaemia usually confined within the renal capsule. As it expands it displaces, distorts and finally causes destruction of calyces.

Sonography and computed tomography appearances reflect these pathological changes. The mass is of mixed echogenicity and attenuation merging with normal renal substance and showing some contrast enhancement with urographic medium given intravenously. Similar appearances may be seen on intravenous urography but are seldom as definitive. Confirmation by arteriography is now very uncommonly required.

Clinically these tumours may present as erythraemia (5%), hypercalcaemia, hypertension, Cushing's syndrome or with feminization or masculinization features, all varying manifestations of ectopic hormonal secretion. Eosinophilia and leukaemoid reactions also occur. However renal carcinoma can also present with anorexia, malaise, loss of weight and almost 50% have intermittent pyrexia. These features usually disappear following successful removal of the tumour.

Reference

EVANS, D.B. (1983). In *Oxford Textbook of Medicine*. Weatherall, D.J., Ledington, J.G.G. and Warrell, D.A. (eds). pp. 18–146. Oxford University Press: Oxford, New York etc.