Renal cell carcinoma presenting with cardiac failure

M Piggott, D Farrugia, U Otite, RTD Oliver, T Crake

CASE REPORT

A 62-year-old woman presented to her GP in February 1997 with a 4-month history of exertional dyspnoea and ankle oedema. She was referred to a cardiologist for further investigation. She had no other symptoms of note, was a lifelong non-smoker and had no significant family history. Examination revealed mild ankle oedema only. An electrocardiogram at rest showed left bundle–branch block and on exercise testing she developed dyspnoea at an early stage. Coronary angiography revealed minor irregularities in the left coronary artery, while the right was reported as normal and dominant. The left ventricle was dilated with impaired wall movement but no valvular abnormalities.

Over the next few months her symptoms failed to improve despite diuretic therapy. She was reviewed by her GP in June 1997, at which time abdominal examination revealed a large right-sided mass. Computed tomography showed a large renal tumour replacing most of the right kidney, while magnetic resonance imaging demonstrated a large enhancing mass, with no involvement of lymph nodes or extrarenal veins, and no metastases (*Figures 1* and *2*). At preoperative assessment the patient had sinus tachycardia (140 beats per minute) with a blood pressure of 130/85 mmHg. Her jugular venous pressure was elevated 3 cm and a systolic flow murmur with basal pulmonary crepitations were noted. No bruit was audible over the large abdominal mass. Cardiomegaly was present on chest radiograph.

She proceeded to a right radical nephrectomy and her postoperative course was uneventful. The patient was last reviewed 18 months after her operation. She was well with almost complete resolution of her symptoms and signs, including a decrease in cardiac size on chest radiography. She was no longer requiring diuretics, and was free of tumour recurrence. An echocardiogram showed residual left ventricular dilatation and an ejection fraction of 22%.

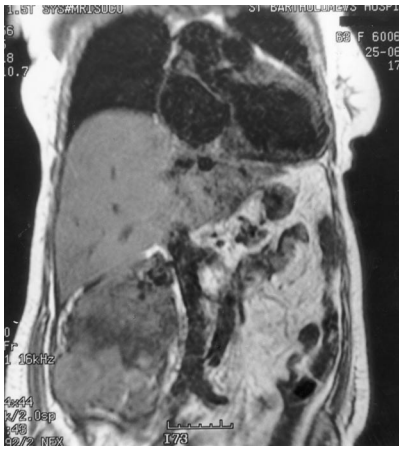

Figure 1. T1-weighted magnetic resonance image of a coronal section through the abdomen showing a large tumour in the right kidney.

INTRODUCTION

This article describes an unusual mode of presentation of a large renal primary tumour with cardiac failure, and briefly reviews the literature on this potential diagnostic pitfall. Surgical removal of the tumour resulted in resolution of symptoms and signs.

DISCUSSION

This patient showed evidence of cardiac failure without significant coronary artery or valvular disease and with normal blood pressure. The presence of left bundle–branch block on the electrocardiogram suggests subclinical cardiac ischaemia, supported by the minor abnormalities in the left coronary artery on arteriography, and the residual abnormalities on the postoperative echocardiogram. The presentation with overt heart failure at the time of diagnosis of her tumour and the resolution of this postoperatively suggests that this was precipitated by her malignancy.

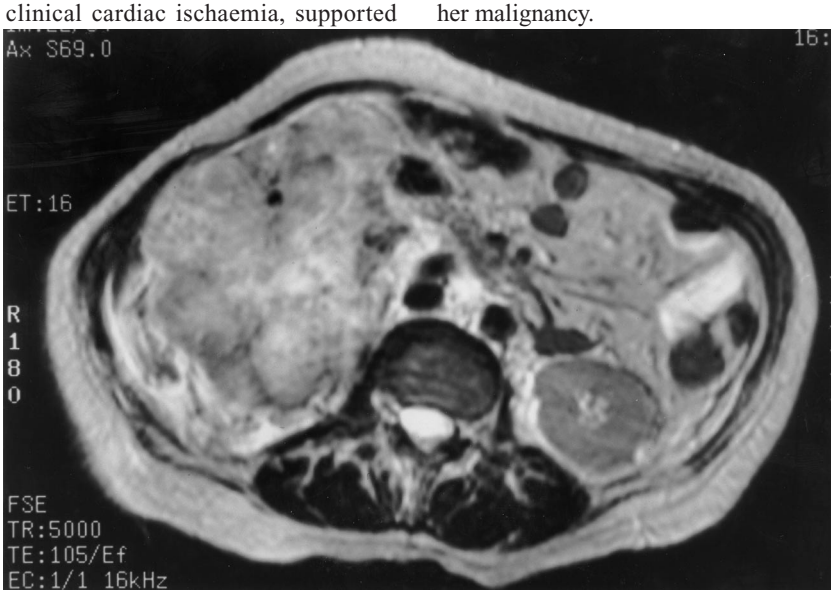

Figure 2. T2-weighted magnetic resonance image of a transverse section through the abdomen at the level of the highly vascular right renal mass.

Dr M Piggott is Senior House Officer, **Dr D Farrugia** is Specialist Registrar in Medical Oncology and **Professor RTD Oliver** is Sir Maxwell Joseph Professor of Medical Oncology in the Department of Medical Oncology, and **Dr U Otite** is Research Fellow in Urology in the Department of Urology, St Bartholomew's Hospital, London, and **Dr T Crake** is Consultant Radiologist, North Middlesex Hospital, London

Correspondence to: Professor RTD Oliver

Although renal angiography was not performed in this case, the most likely cause of her cardiac failure was arteriovenous shunting within the tumour. This resulted in a hyperdynamic circulation which exceeded the compensatory abilities of a mildly ischaemic myocardium, producing overt cardiac failure. Arteriovenous fistulae as a cause of high output cardiac failure are well recognized.

The commonest cause of renal spontaneous arteriovenous fistulae are primary neoplasms (Morin et al, 1986). Renal cell carcinomas are characteristically highly vascular and have a natural tendency to invade blood vessels (Cronin et al, 1976). A tumour bruit may be present in up to 70% of cases (Crawford et al, 1979). However, shunting is rarely of sufficient magnitude to cause cardiac decompensation, which is partly the reason why so few cases have been reported in the literature. Rodgers et al (1975) reviewed 22 cases of renal cell carcinomas complicated by fistulae and found that 60% had cardiac signs of varying severity. Patients typically improve soon after nephrectomy, often with complete resolution of signs of cardiac decompensation (Rodgers et al, 1975; Cronin et al, 1976; Crawford et al, 1979; Morin et al, 1986).

Together with the case reported here, these illustrate the importance of full examination and investigation in order to avoid diagnostic delay and proceed to potentially curative surgery. They also illustrate that renal cell carcinoma can manifest in many ways. The classical presentation of loin pain, mass and haematuria only occurs in 10–15% of cases (Cronin et al, 1976). Such tumours can be slow growing, and by the time of diagnosis, may be of considerable size and have often metastasized. Only by early recognition of atypical presenting features, followed by immediate surgery, can the chances of cure be maximized. HM

Crawford ED, Skinner DG, Mallamo JT (1979) Renal arteriovenous fistulas secondary to bilateral renal cell carcinoma. *Urology* **XIII(5)**: 525–8

Cronin RE, Kaehny WD, Miller PD et al (1976) Renal cell carcinoma: unusual manifestations. *Medicine* **55(4):** 291–311

Morin RP, Dunn EJ, Wright CB (1986) Renal arteriovenous fistulas: a review of etiology, diagnosis and management. *Surgery* **99(1)**: 114–8

Rodgers MV, Moss AJ, Hoffman M, Lipchik EO (1975) Arteriovenous fistulae secondary to renal cell carcinoma. Clinical and cardiovascular manifestations: report of a case. *Circulation* **52(2)**: 345–50

In the Public's View...

Trial by television?

Some of Channel 4's programmes in their series 'Why doctors make mistakes' were quite good. Anyone staying the course could not fail to conclude that, whatever regulation is thrown up by all this navel gazing, doctors are only human and mistakes are inevitable. The same channel's debate 'Doctors on trial' (October 15) was a different matter. Using a format that merged a court of law with *Mastermind,* shorn of the comfort of its black padded chair, the programme had 'witnesses' called to answer questions mostly on the lines of 'Have you stopped beating your wife yet?' The case for the prosecution was that doctors were more interested in protecting themselves than their patients. All around, there was the sound of axes being ground.

OK, I admit it: I didn't watch the whole programme; I couldn't bear it. Every time I switched on, yet another witness used the loaded question as a trigger for the politicians' trick of spilling out a carefully prepared predetermined message: soundbite fought soundbite in a clash of the emotional and the rational. In *Mastermind*, the answers are mostly single word. In court, witnesses stray from the point at their peril. Here, all sorts of ex-cathedra and beside-the-point statements were thrown in.

Dr Phil Hammond can probably take some credit for helping bring the problems at Bristol to light, but what is the basis for his statement that 'undergraduate and postgraduate education has been so awful', and what bearing does that have on doctors' reluctance in the past (please note: in the past) to admit mistakes? When counsel for the defence questioned him, he continually interrupted in a way that would have had him guilty of contempt of court.

Occasionally, independent of the counsels and their witnesses, the chair, Jon Snow, asked for statements from the audience. Shortly after Gerry Malone, a Minister of Health in the last Tory government, had given evidence, Snow asked a member of a Community Health Council: 'Is the current attacking of doctors by Channel 4 and the media justified?'

'No,' said the CHC member, 'it was the competitive tendering introduced by Mr Malone's government that caused a lot of the problems.' There was much applause. Under this government's National Plan for the NHS, the CHCs are being disbanded: can't have that amount of independent thinking causing trouble on the streets.

The axes ground and the soundbites bitten, the audience — referred to as the jury, and containing people so partial to one side or the other that they would have been rejected by any proper court of law — voted by electronic push button. The bars showing guilty and innocent crept across a large video screen: were they registering the votes as they were being made? Or, votes registered, was the bars' slow progress a way of injecting some semblance of suspense into the whole ghastly charade? For what it's worth, which is precisely nothing, 56% thought doctors innocent of the charge. And I don't suppose a single mind was changed. HM

Dr Neville W Goodman is Consultant Anaesthetist at Southmead Hospital, Bristol