Metastatic renal carcinoma: a question of management

Introduction

Renal cell carcinoma is a relatively unusual tumour where extensive contiguous extension of the tumour can still be treated with radical curative surgical therapy. Patients in whom there is contiguous extension of the tumour and metastatic disease require very different management. Such patients should be offered palliative systemic therapy or supportive care, with little evidence that surgery improves outcome. Management decisions are often complex as illustrated by this case.

Discussion

Renal cell carcinoma comprises 3% of all adult malignancies, of which tumour thrombus extension into the inferior vena cava or the renal vein occurs in up to 10% of patients, and involvement of the right atrium in 1% (Ayati et al, 2006). Patients with metastatic disease and those over 70 years of age have a poor prognosis (Rajendra et al, 2010).

The absence of metastases in some patients with vena caval extension is an intriguing aspect of this cancer's behaviour. Patients with non-metastatic renal cancer and inferior vena cava thrombus extending into the right atrium can undergo radical nephrectomy with caval thrombectomy using cardiopulmonary bypass and hypothermic circulatory arrest. In such cases, the 5-year survival rate is reported as between 18 and 68% with a perioperative mortality of 2.7–13% after complete surgical resection (Novick et al, 1990; Blute et al, 2004).

In the presence of metastases, surgery should only be considered in highly selected patients. Some authors reporting grave survival rates, while others have advocated surgery with satisfactory results (Glazer and Novick, 1996; Ayati et al, 2006).

Cyto-reductive nephrectomy is surgery in the case of a renal tumour that has spread beyond the kidney and surrounding tissues, with two historical trials supporting

Figure 1. Subcostal echocardiographic view of the inferior vena cava (IVC) and right atrium (RA). An 8 cm tumour (T) (open white arrow) is seen extending within the IVC into the RA.

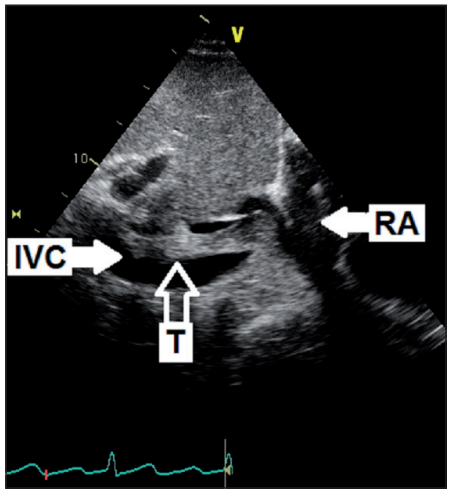
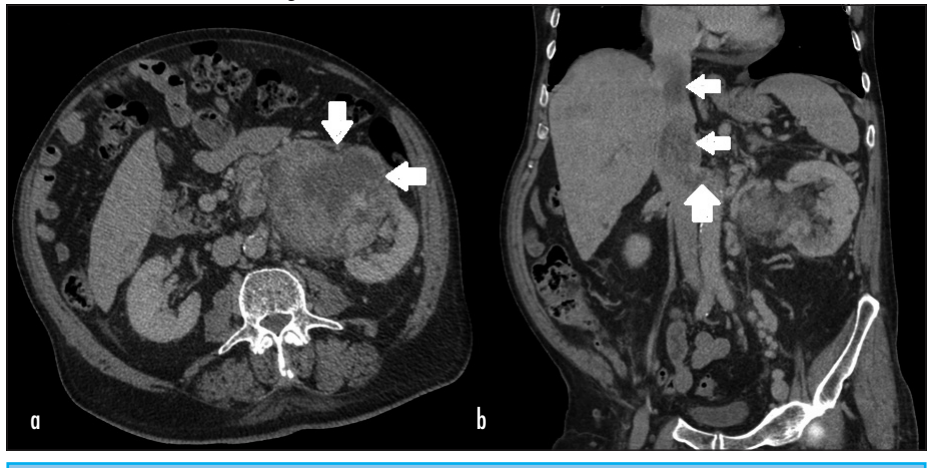


Figure 2. a. Axial computed tomography scan of the abdomen in portovenous phase shows a large 12 cm diameter tumour (white arrows) arising from the left kidney. b. Coronal computed tomography scan of the abdomen in portovenous phase shows proximal extension of tumour thrombus (white arrows) into the inferior vena cava and the right atrium.



Case Report

An 80-year-old Caucasian man presented with shortness of breath and leg swelling. Echocardiography revealed elevated pulmonary artery pressure (50 mmHg) and an abnormal structure within the inferior vena cava (*Figure 1*). Computed tomography showed a large mass arising from the left kidney (*Figure 2a*), extending along the left renal vein and inferior vena cava (*Figure 2b*) to reach the right atrium. Multiple low attenuation lesions were noted within the liver and nodules in both lungs – consistent with metastases. There were also enlarged pre-carinal and paratracheal lymph nodes.

The patient was deemed unsuitable for surgical intervention and an oncology opinion concurred that there were no curative options. The patient elected to start palliative treatment with pazopanib 400 mg daily (a tyrosine kinase inhibitor licensed for first-line treatment of advanced renal cancer). Dexamethasone was prescribed in an attempt to improve overall wellbeing and treatment dose heparin was given to reduce the risk of emboli originating from the thrombus. The patient was referred to the community palliative care team but died 9 weeks after the date of diagnosis.

Dr Hejrae El-Habti *is Core Trainee in Medicine in the Department of Medicine,* **Dr Sarah Ghonim** *is Specialist Registrar in the Department of Cardiology,* **Dr Allan Andi** *is Consultant Radiologist in the Department of Radiology and* **Dr Simon Dubrey** *is Consultant Cardiologist in the Department of Cardiology, Hillingdon Hospital, Uxbridge, Middlesex UB8 3NN*

Correspondence to: Dr S Dubrey (simon.dubrey@thh.nhs.uk)

its use (Mikisch_et al, 2001; Flanigan et al, 2004). More specific to this case, the effects of neoadjuvant therapy with tyrosine kinase inhibitors in patients undergoing inferior cava thrombectomy (before nephrectomy) show some benefit to the primary tumour, but limited effects on the tumour thrombus itself (Bigot et al, 2014). A further unusual feature of renal cell carcinoma is the potential for regression of metastases (pulmonary, brain, skeletal and lymphoid) following nephrectomy, radiation or embolization of the primary tumour (Lokich, 1997).

Renal cell carcinoma is a somewhat unusual cancer in its often incidental discovery, behaviour both in terms of 'dissemination' beyond the primary, treatment options and responses. The disseminated metastases in this patient prevented a surgical option that might have been considered with contiguous tumour extension alone. **BJHM**

Ayati M, Nikfallah A, Jabalameli P, Najjaran Tousi V, Noroozi M, Jamshidian H (2006) Extensive surgical management for renal tumors with inferior vena cava thrombus. *Urol J* **3**(4): 212–15

Bigot P, Fardoun T, Bernhard JC et al (2014) Neoadjuvant targeted molecular therapies in patients undergoing nephrectomy and inferior vena cava thrombectomy: is it helpful. *World J Urol* **32**(1): 109–14 (doi: 10.1016/j.clgc.2013.09.004)

Blute ML, Leibovich BC, Lohse CM et al (2004) The Mayo Clinic experience with surgical management, complications and outcome for patients with renal cell carcinoma and venous tumour thrombus. *BJU Int* **94**: 33–41 (doi: 10.1111/j.1464-410X.2004.04897.x)

Flanigan RC, Mickisch G, Sylvester R et al (2004) Cytoreductive nephrectomy in patients with metastatic renal cancer: a combined analysis. *J Urol* **171**(3): 1071–6 (doi: org/10.1097/01.ju.0000110610.61545.ae)

Glazer AA, Novick AC (1996) Long-term follow up after surgical treatment for renal cell carcinoma extending into the right atrium. *J Urol* **155**: 448–50 (doi: org/10.1016/S0022-5347(01)66415-2)

Lokich J (1997) Spontaneous regression of metastatic renal cancer. Case report and literature review. *Am J Clin Oncol* **20**(4): 416–18 (doi: 10.1097/00000421-199708000-00020)

Mikisch GH, Garin A, van Poppel H, de Prijck L, Sylvester R, European Organisation for Research and Treatment of Cancer (EORTC) genitourinary group (2001) Radical nephrectomy plus interferon-alpha-based immunotherapy compared with interferon alpha alone in metastatic renal-cell carcinoma: a randomised trial. *Lancet* **358**(9286): 966–70 (doi: 10.1016/S0140-6736(01)06103-7)

Novick C, Kaye C, Cosgrove M et al (1990) Experience with cardiopulmonary bypass and deep hypothermic circulatory arrest in the management of retroperitoneal tumors with large vena caval thrombi. *Ann Surg* **212**: 472–6

Rajendra N, Mahadev D, Gan M et al (2010) Renal cell carcinoma with vena caval thrombus extending into the right atrium. *Int J Nephrol Urol* **2**(4): 497–503

LEARNING POINTS

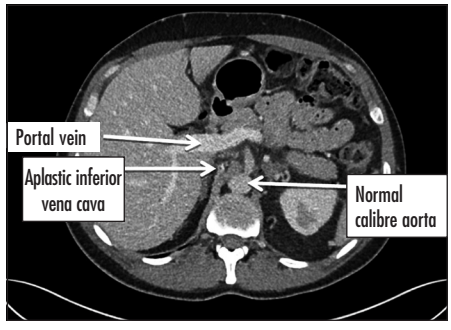
- Up to 70% of all renal cancers are incidental findings on imaging performed for unrelated reasons.
- The classical teaching that renal cell carcinoma presents with haematuria, pain or a palpable mass is more the exception than the rule.
- Renal cell carcinoma can be asymptomatic for many years.
- Non-metastatic renal cell carcinoma with inferior vena cava and right atrial invasion can be surgically treated with good prognosis.
- Metastatic renal cell carcinoma and age >70 years is associated with a poor outcome.

Absent inferior vena cava: an unusual cause of recurrent deep vein thrombosis

A 42-year-old Caucasian man with a history of right leg deep vein thrombosis a year earlier, presented with a painful, swollen left leg. There were no obvious risk factors. Doppler confirmed extensive left femoral vein deep vein thrombosis. Abdominopelvic ultrasound showed no abnormalities. Protein C, protein S, antithrombin 3, factor V Leiden and JAK-2 mutation were normal.

Computed tomography of the thorax, abdomen and pelvis showed the deep vein thrombosis extending into the left iliac veins. The scan also showed complete absence of the inferior vena cava (*Figure 1*), and extensive collaterals. The liver, heart, spleen, pancreas and kidneys were unremarkable. The patient was started on lifelong warfarin.

Figure 1. Computed tomography showing aplasia of the inferior vena cava.



Absent inferior vena cava is an uncommon cause of deep vein thrombosis (Gayer et al, 2003). Complete or partial absence and bilateral inferior vena cava are recognized. The pathogenesis is unclear (Iqbal and Nagaraj, 2008). Chronic venous leg changes, ulcerations, varicose veins and collateral veins in the lower trunk or abdomen point to the diagnosis. Contrast computed tomography or magnetic resonance imaging is essential for diagnosis. The management is long-term anticoagulation in most cases. Surgery is rarely indicated. **BJHM**

Dr Chrysiis Martinou *is Senior House Officer,* **Dr Senthil Krishnasamy** *is Specialist Registrar,* **Dr Laks Varadhan** *is Consultant Physician and* **Dr Biju Jose** *is Consultant Physician in the Department of Endocrinology and Diabetes, University Hospitals of North Midlands NHS Trust, Stoke-on-Trent ST4 6QG*

Correspondence to: Dr B Jose (biju.jose@doctors.org.uk)

Gayer G, Luboshitz J, Hertz M et al (2003) Congenital anomalies of the inferior vena cava revealed on CT in patients with deep vein thrombosis. *Am J Roentgenol* **180**(3): 729–32

Iqbal J, Nagaraj E (2008) Congenital absence of inferior vena cava and thrombosis: a case report. *J Med Case Rep* **2**: 46 (doi: 10.1186/1752-1947-2-46)