

# Rare synchronous metastases of renal cell carcinoma

Nieroshan Rajarubendra, David Pook<sup>1</sup>, Mark Frydenberg, Sree Appu

Departments of Surgery, and <sup>1</sup>Medicine, Southern Health, Melbourne, Australia

**Abstract** Renal cell carcinoma can metastasize to any region of the body. We review a patient who presents fourteen years after initial resection of the primary tumor with distant metastatic disease. This included spread to the bladder and penis that manifested as frank haematuria and malignant priapism respectively. We discuss the mechanism of spread and the management options available.

**Key Words:** Malignant priapism, metastatic renal cell carcinoma, synchronous tumors

**Address for correspondence:**

Dr. Nieroshan Rajarubendra, Department of MMC Moorabbin, PO Box 72, East Bentleigh Vic 3165, Australia. E-mail: nieror@hotmail.com

Received: 09.09.2012, Accepted: 04.11.2012

## INTRODUCTION

The diagnosis of renal cell carcinoma (RCC) is usually incidental during radiological investigations. In the past, at time of diagnosis, 25-30% of patients had metastasis predominantly in the lung, bone, liver, adrenal and brain.<sup>[1-3]</sup> However, as there is increased use of imaging modalities, incidental detection of renal masses at early stages is common. There have only been a few documented cases of isolated metastasis to bladder or penis. We present the first case of delayed synchronous metastatic spread of RCC to the skull, bladder, adrenal, lung and penis that manifested as malignant priapism.

## CASE REPORT

A 55-year-old male underwent an open left radical nephrectomy for RCC 14 years prior to his current presentation. The tumor was a 3.7 cm clear cell carcinoma Fuhrman Grade 3. At the time there was no evidence of metastatic disease and he was classified as having T1a disease. He was discharged from surveillance after 10 years in keeping with standard protocol.

He presented to emergency with right flank pain and macroscopic hematuria. On imaging a large adrenal mass on the right, multiple pulmonary nodules and sclerotic skull lesions were evident consistent with metastatic disease. The adrenal mass was biopsied and confirmed metastatic RCC.

The patient also complained of severe penile pain and persistent erection. Computer tomography (CT) imaging showed tumor infiltration in the corpora consistent with malignant priapism [Figure 1].

Investigation for the haematuria using CT revealed the presence of posterolateral bladder wall thickening consistent with tumor infiltration [Figure 2].

Rigid cystoscopy revealed the presence of a solid tumor with papillary areas occupying the right trigone, right bladder neck and right lateral bladder wall. This area of tumor was resected and the pathology confirmed metastatic RCC [Figure 3].

Despite all efforts the patient suffered acute renal failure and after discussions with the family, treatment was withdrawn and palliative measures implemented.

## DISCUSSION

Metastatic manifestation of RCC in the majority of cases is asymptomatic, however the effects can be debilitating and ultimately lead to the demise of the patient. The overall 5-year survival of metastatic RCC is 10% and it is less than 5% for a

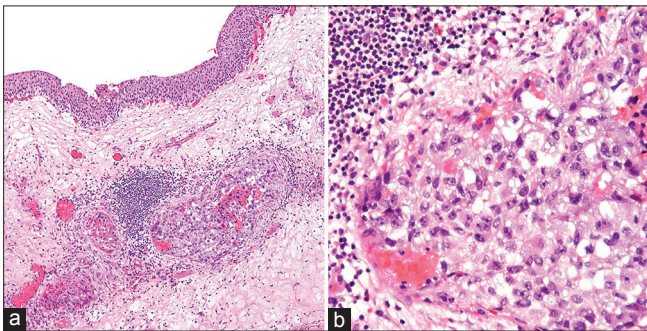
| Access this article online  |                                   |
|---|-----------------------------------|
| Quick Response Code:  | Website:<br>www.urologyannals.com |
|  | DOI:<br>10.4103/0974-7796.130652  |



**Figure 1:** Axial computer tomography image of the pelvis shows the presence of tumor infiltration of the corpora (white arrow)



**Figure 2:** Coronal computer tomography image depicts the presence of a large right adrenal metastasis (white arrow). The bladder metastasis is seen as the bladder wall thickening on the right side (red arrow)



**Figure 3:** H and E, staining of bladder resection show the presence of high grade renal cell carcinoma (black arrow) in urothelial tissue. (a) ×100 magnification, (b) ×400 magnification taken from box in image

10-year period.<sup>[4,5]</sup> Delayed synchronous metastases at the 14-year mark are rare and little has been reported in the literature.

The mechanism of spread of RCC to the penis is controversial, as multiple routes have been described. These include retrograde venous or lymphatic extension, arterial embolization, implantation and instrumental spread.<sup>[6,7]</sup> Of these possible methods of spread, dissemination via the retrograde venous

extension or via Batson plexus is the most plausible. With the considerable venous communication between the pelvic, lumbar, penile, spermatic and left renal vein the extension of cancerous cells in a retrograde fashion to the penis could have resulted.

The mechanism by which malignant priapism occurs is by the invasion of the cavernous sinuses and draining veins. The arterial supply is not affected. Overtime the venous drainage becomes completely occluded by the infiltrating cells. The cavernous sinus becomes distended resulting in a painful erection.

The size, location and growth rate of the lesion determine the management of metastatic spread to the corpora cavernosa. This includes conservative symptomatic management, local excision, partial or total penectomy and radiation therapy.

Metastatic spread to the bladder could be due to haematogenous spread via the general circulation or retrograde fashion, lymphatic spread and finally via direct intraluminal transit and seeding in the distal urothelium known as the, “drop method.”<sup>[8-10]</sup> The management of these metastases include transurethral resection, partial or radical cystectomy and radiotherapy.

Clinicians need to be aware of delayed metastatic spread of RCC to atypical sites. Early intervention is essential to reducing morbidity and mortality. The overall prognosis is poor with multisystem spread even in the era of tyrosine kinase inhibitors.

## REFERENCES

- Gupta K, Miller JD, Li JZ, Russell MW, Charbonneau C. Epidemiologic and socioeconomic burden of metastatic renal cell carcinoma (mRCC): A literature review. *Cancer Treat Rev* 2008;34:193-205.
- Motzer RJ, Bander NH, Nanus DM. Renal-cell carcinoma. *N Engl J Med* 1996;335:865-75.
- Saitoh H. Distant metastasis of renal adenocarcinoma. *Cancer* 1981;48:1487-91.
- Ng CS, Wood CG, Silverman PM, Tannir NM, Tamboli P, Sandler CM. Renal cell carcinoma: Diagnosis, staging, and surveillance. *AJR Am J Roentgenol* 2008;191:1220-32.
- Linehan WM, Zbar B. Focus on kidney cancer. *Cancer Cell* 2004;6:223-8.
- Abeshouse BS, Abeshouse GA. Metastatic tumors of the penis: A review of the literature and a report of two cases. *J Urol* 1961;86:99-112.
- Dubocq FM, Tefilli MV, Grignon DJ, Pontes JE, Dhabuwala CB. High flow malignant priapism with isolated metastasis to the corpora cavernosa. *Urology* 1998;51:324-6.
- McAhran SE, Williams DH, MacLennan GT. Renal cell carcinoma metastasis to the bladder. *J Urol* 2010;184:726-7.
- Raviv S, Eggner SE, Williams DH, Garnett JE, Pins MR, Smith ND. Long-term survival after “drop metastases” of renal cell carcinoma to the bladder. *Urology* 2002;60:697.
- Kava BR, Eldefrawy A, Ayyathurai R, Thompson SM, Ciancio G, Manoharan M. Renal cell carcinoma with solitary metastasis to the bladder: Mode of spread and prognosis. *Can J Urol* 2012;19:6121-3.

**How to cite this article:** Rajarubendra N, Pook D, Frydenberg M, Appu S. Rare synchronous metastases of renal cell carcinoma. *Urol Ann* 2014;6:157-8.  
**Source of Support:** Nil, **Conflict of Interest:** None.