Renal squamous cell carcinoma of a native kidney after renal transplant

Jakes, A.; Jani, P.; Menon, M.; Adams, K.; Edey, M.; Fleming, S.; Bhandari, S.

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Case Report: Renal Squamous Cell Carcinoma of a Native Kidney After Renal Transplant

Adam Jakes[1], Poonam Jani[2], Mini Menon[3], Kate Adams[4], Mathew Edey[5], Stewart Fleming[6*], Sunil Bhandari[5*]

[1]Renal Unit, Hammersmith Hospital, Imperial College NHS Trust, London, UK.
[2]Hull-York Medical School, University of Hull, Hull, UK.
[3]St. James's University Hospital, Leeds Teaching Hospitals NHS Trust, UK.
[4]Department of Infection & Tropical Medicine, Castle Hill Hospital, Hull and East Yorkshire Hospitals NHS Trust, Cottingham, East Yorkshire, UK
[5]Renal Unit; Hull Royal Infirmary, Hull and East Yorkshire Hospitals NHS Trust, Anlaby Road, Kingston upon Hull, UK.
[6*]University of Dundee

Corresponding Author
*Prof Sunil Bhandari
Consultant Nephrologist/Honorary Clinical Professor
Department of Renal Medicine;
Hull and East Yorkshire Hospital NHS Trust,
Anlaby Road, Kingston upon Hull,
HU3 2JZ, UK.
Email: Sunil.bhandari@hey.nhs.uk
Tel: 01482674566
Fax: 01482674998

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Renal squamous cell carcinoma is a rare primary tumour of the kidney, which rapidly invades local structures and has a poor prognosis. Presentation is usually non-specific and is associated with renal stone disease, chronic infection and excessive analgesia use.

A 46-year-old white male with renal stone disease and recurrent urinary infections underwent a right nephrectomy and subsequent renal transplantation due to failure of the remaining left kidney. Five years post-transplant, an abdominal ultrasound scan was performed due to recurrent urinary infections and ongoing pyuria. This was reported as normal, but he later developed a discharging sinus in his left flank. A CT scan of his abdomen revealed a tracking peri-nephric abscess with an associated cystic lesion of the left kidney. A left nephrectomy was performed and histological examination suggested an invasive squamous cell carcinoma of the renal pelvis. The patient later developed chronic infection at the left nephrectomy site requiring major surgery and further imaging revealed metastatic disease. The decision was made to manage palliatively, as he was too unwell to receive chemotherapy.

Renal transplant recipients are three-four times more likely to develop a malignancy than the general population. Given the patient also had renal stone disease and recurrent urinary infections, he was at a greater risk of developing this condition. Unfortunately the abdominal ultrasound was unhelpful and only a later CT scan revealed the underlying malignancy. Given the non-specific nature of the symptoms and the poor prognosis, healthcare professionals should have a lower threshold for diagnostic imaging in these patients. In addition, this should be expedited if there is a persistent abnormality on urinalysis.

Renal Squamous Cell Carcinoma of Native Kidney After Renal Transplant

Introduction

Primary tumours of the kidney are relatively rare accounting for only 3% of all malignancies[1]. Renal cell carcinoma is by far the most common type, followed by transitional cell carcinoma, which together represent over 90% of primary kidney tumours. Squamous cell carcinoma of the kidney is a much rarer condition, accounting for around 8% of primary kidney tumours[2]. There is an equal sex distribution and it most commonly affects those between 50-70 years old[2]. It is usually advanced at diagnosis and carries a poor prognosis. It is associated with long standing renal stone disease (particularly staghorn calculi[3]), chronic kidney infection[4], hydronephrosis and analgesic abuse[5]. The physical examination is usually unremarkable and presenting features are non-specific but may include abdominal pain or fullness and haematuria. Similar to squamous carcinoma of the lung, these tumours can be associated with paraneoplastic syndromes such as hypercalcaemia and Cushing's syndrome.

Renal transplant recipients are three-four times more likely to develop a malignancy, notably skin (particularly squamous cell carcinoma) and lymphoproliferative disorders[6]. Squamous cell carcinoma of the kidney in the context of a renal transplant and long-term immunosuppression has not previously been described in the literature.

We describe a case of squamous cell carcinoma of a native kidney in a renal transplant recipient.

Case Study

A 46-year-old white, British gentleman suffering from bilateral renal stone disease and recurrent urinary infections underwent a right nephrectomy. Due to failure of the remaining left kidney, he required haemodialysis thrice-weekly via a left radiocephalic arteriovenous fistula for 18 months before receiving a deceased-donor renal transplant. His past medical history included calcium pyrophosphate renal stone disease, secondary hyperparathyroidism and hypertension. His regular medications were: Tacrolimus 2mg twice a day, prednisolone 5mg once a day, ferrous sulphate 200mg three times a day, paracetamol 1g four times a day and lansoprazole 30mg once a day. The patient was a manual worker at a caravan site. He was a non-smoker, occasional alcohol drinker of 8 units per week and there was no renal disease in the family.

Five years post-transplant, an abdominal ultrasound scan was performed due to recurrent urinary infections and ongoing pyuria. This was reported as normal, but he later developed a discharging sinus in his left flank, which warranted a CT scan of his abdomen and pelvis. This revealed a tracking peri-nephric abscess with an associated cystic lesion (13.0cm x 8.5cm x 9.5cm) of the left kidney. A left nephrectomy was performed with histological examination demonstrating a cyst lined by stratified squamous epithelium, containing keratin within the lumen. Focal

invasion of the underlying lamina propria was present. There were areas of chronic inflammation associated with foreign body giant cell reaction, consistent with those of an epidermoid cyst. Further analysis revealed koilocytosis and coarse kertoyaline granules which were in keeping with a well differentiated but invasive squamous cell carcinoma arising from the collecting system of the left native kidney [FIGURE 1]. P16 tumour suppressor protein staining was negative. Unfortunately the patient continued to suffer from left renal bed infections and further sinus formation, later requiring exploratory laparotomy, which revealed a chronic colonic perforation, and resulted in a left hemi-colectomy, splenectomy, and distal pancreatectomy. Imaging of the patient's lungs and spine revealed evidence of metastatic disease and a decision to manage palliatively was made, as he was too unwell to receive chemotherapy. Palliative radiotherapy was required for bony metastases, which were causing spinal cord compression.

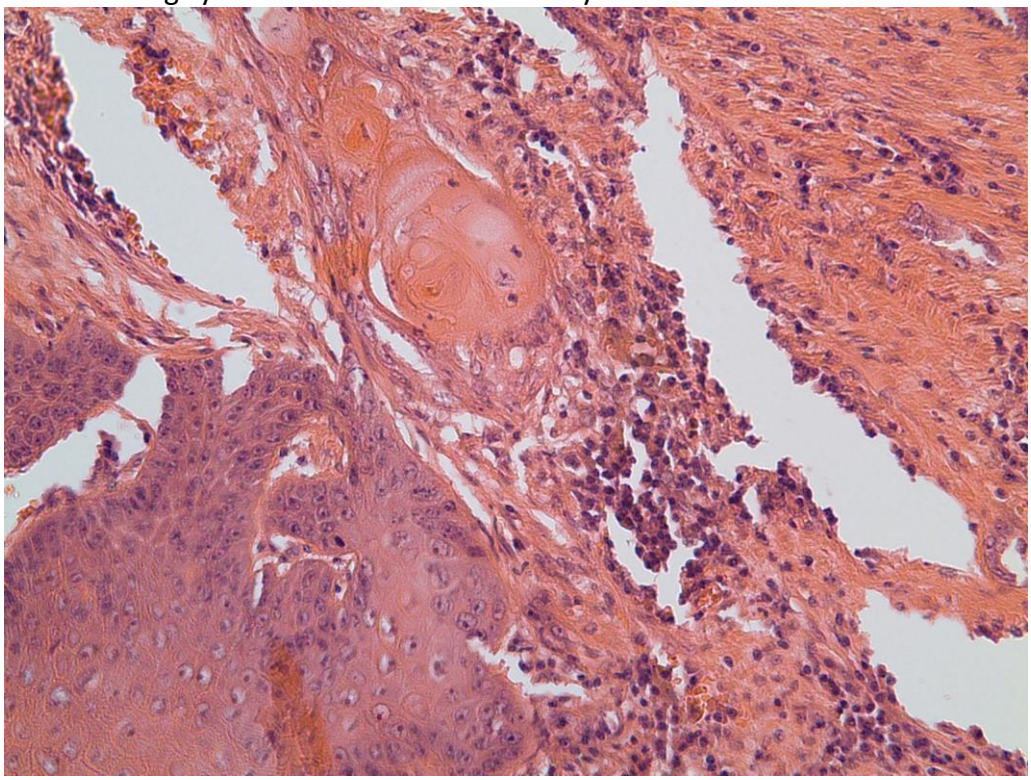
Discussion

Squamous cell carcinoma of the kidney is a rare condition. It is associated with chronic irritation caused by renal stone disease and (chronic) infection, leading to squamous metaplasia. Symptoms are non-specific, and diagnosis is often made late in the disease course resulting in a poor prognosis given the invasive nature of the condition.

Renal transplant recipients are three-four times more likely to develop a malignancy [6]. It is thought the dose and duration of immunosuppression is a key-contributing factor to the increased risk of malignancy in these patients. This is most likely due to impaired identification of tumour cells, direct oncogenic effects and diminished anti-viral defense[7-8]. For example, calcineurin inhibitors such as tacrolimus have been demonstrated to stimulate transforming growth factor-β, interleukin-6 and vascular endothelial growth factor to promote tumour growth in animal models[9]. Given that this patient also had renal stone disease and recurrent urinary infection, he was at a greater risk of developing this condition. Unfortunately, both these conditions can mimic the non-specific symptoms of a squamous cell carcinoma of the kidney. In the above case, the abdominal ultrasound was unhelpful and only a later CT scan of the abdomen revealed the underlying malignancy. The UK Renal Association currently does not recommend annual ultrasound screening for evidence of native kidney malignancies (Evidence Level - 2C) [10]. They do recommend however, smoking cessation and immunosuppression minimisation.

In patients with a renal transplant with renal stone disease or recurrent infections, the increased risk of squamous cell carcinoma should be considered. Given the non-specific nature of the symptoms and the poor prognosis, healthcare professionals should have a lower threshold for diagnostic imaging. This should be expedited if there is a persistent abnormality on urinalysis.

FIGURE 1: A well differentiated but invasive squamous cell carcinoma arising from the collecting system of the left native kidney.



Consent

Written informed consent was obtained from the patient described.

Disclosure statement

The authors declare no competing interests, support or funding.

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