CASE REPORT

Renal actinomycosis

Parimal Agrawal, Kim Vaiphei

Department of Histopathology,
PGIMER, Chandigarh, India

Correspondence to
Professor Kim Vaiphei,
kvaiphei2009@gmail.com

Accepted 21 October 2014

SUMMARY

Actinomycosis of the kidney is rare and less than 50 cases have been reported in the English literature. Reported presentations are pyelonephritis, renal abscesses or pyonephrosis. To date, one case of actinomycosis associated necrotising papillitis has been reported. We describe the second case of such a rare association of actinomycosis with papillary necrosis.

BACKGROUND

Actinomyces are Gram-positive anaerobic filamentous bacteria that are commensals in the oral cavity and gastrointestinal tract.¹ Actinomycosis develops under certain predisposing conditions; common forms are cervicofacial, thoracic and abdominal infections. Renal actinomycosis can have varied manifestations with papillary necrosis being the rarest form. The inflammation in renal actinomycosis spreads to involve the surrounding soft tissue forming a sclerotic mass lesion, which may mimic malignancy.²

CASE PRESENTATION

A 52-year-old man, with diabetes and hypertension, not compliant with medication for 2 years, presented with facial puffiness and bilateral pitting pedal oedema of 1-year duration. The patient also had gradually progressive dyspnoea associated with dry cough for 6 months and intermittent high-grade fever for 2 days. He gave a history of alcohol consumption and tobacco use for 20 years. On examination, he was found to have pallor, tachycardia, hypotension and tachypnoea. With the bilateral pitting pedal oedema he also had subconjunctival haemorrhages, gum bleed and ecchymoses over the trunk, abdomen and both limbs. Respiratory system revealed bilateral wheezes, per abdomen showed palpable liver, 5 cm below right costal margin, however, no splenomegaly or free fluid were observed. Cardiovascular and central nervous systems were within normal limits.

INVESTIGATIONS

Haemoglobin was 5.2 g/dL, platelet count $5 \times 10^9/\mu\text{L}$, serum creatinine was 6.4 mg/dL, urea 219 mg/dL, potassium 6.8 mEq/dL, calcium 6.84 mEq/dL, phosphate 7.6 mEq/dL, total serum protein 4.0 g/dL, albumin 1.8 g/dL, aspartate transaminase 428 IU/L, alanine transaminase 161 IU/L, prothrombin time 25 s, PTI 52%, international normalized ratio 1.86 and activated partial thromboplastin time 31 s. D-dimer was negative. Ultrasonography of the abdomen showed loss of corticomedullary distinction and raised echogenicity. Contrast-enhanced CT (CECT) of the

abdomen revealed enlarged kidneys with reduced nephrogenic density and a compact pelvicalyceal system. CECT of the chest revealed irregular nodules, bilateral upper lobes and right middle lobe, minimal bilateral pleural effusion and collapsed left lower lobe.

DIFFERENTIAL DIAGNOSIS

Clinical possibilities considered were disseminated tuberculosis or malignancy and pulmonary sarcoidosis with superadded bacterial infection.

TREATMENT

Anti-hyperkalaemic measures were initiated. The patient was subjected to haemodialysis. Packed red cells and platelet rich plasma were transfused for severe anaemia and thrombocytopenia, respectively. Injections of cefotaxime (1 g, 12 hourly) and azithromycin (0.5 g, 24 hourly) were given. The patient developed hypotension and was put on ionotrope support, but suffered a cardiac arrest from which he could not be revived.

AUTOPSY FEATURES

At autopsy, the kidneys were enlarged and swollen, together weighing 400 g and the cortex was blotchy with pinpoint haemorrhages. Cut section showed loss of corticomedullary distinction with multiple foci of pale infarcts involving the medulla and papillae. There was increased intrapelvic fat and the fat plane was merged imperceptibly with affected renal parenchyma (figure 1). The pelvicalyceal system was haemorrhagic. Microscopy: medullary and papillary necrotic foci showed haemorrhagic necrosis bordered by neutrophils extending into intrapelvic fat. Clusters of Gram-positive filamentous actinomyces were seen within the necrotic area involving tubules and vessels (figure 2A, B). Nodular lung lesions

Figure 1 Cut section of the kidney showing multiple foci of papillary necrosis (black arrows) and increased intrapelvic fat, which was also involved by the process.

CrossMark

To cite: Agrawal P, Vaiphei K. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2014-205892

Figure 2 (A) High power photomicrograph showing tissue necrosis and presence of a cluster of fine filaments within a necrotic blood vessel (H&E, ×500). (B) High power photomicrograph in Ziehl-Neelsen (ZN) stain section showing the negatively stained filamentous structures (ZN stain, ×500).

showed angioinvasive and bronchocentric mucormycosis with breaking down abscesses. There was evidence of disseminated intravascular coagulation in the form of fibrin thrombi within the renal glomerular capillaries.

DISCUSSION

Actinomycosis is usually seen with certain predisposing conditions,² but the index patient did not have the usual known

predisposing conditions. Our patient had uncontrolled diabetes mellitus. The kidneys can be involved as a result of contiguous spread within the abdomen or rarely due to haematogenous dissemination.³ Renal actinomycosis has a characteristic tissue reaction in which the inflammatory response spreads to involve adjacent soft tissue and form a sclerotic infiltrative mass. The resulting mass is invariably mistaken for neoplasia resulting in nephrectomy in the majority of cases.² Our patient had extensive medullary and renal papillary necrosis. The inflammation had spread to involve the intrapelvic fat, which was imperceptibly merging with the renal parenchyma, giving rise to an early mass lesion. To date, there is only one documented case of renal actinomycosis associated with bilateral necrotising papillitis.⁴

Learning points

- ▶ Renal actinomycosis, though uncommon, must be considered in the differential diagnosis of renal masses and renal papillary necrosis.
- ▶ A high index of suspicion may help in prompt diagnosis and management, thereby preventing nephrectomy.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

- 1 Khafagy R, Jundi O, Rogawski K, *et al*. Persistent ureteric dilatation due to pelvic actinomycosis presenting as pelvic inflammatory disease. *Case Rep Nephrol* 2011;2011:186708.
- 2 Efthimiou I, Mamoulakis C, Petraki K, *et al*. Renal actinomycosis presenting as a suppurated solitary cyst. *Indian J Urol* 2008;24:416–18.
- 3 Gidwani AL, Connolly D, Khan A, *et al*. Renal, colonic and retroperitoneal actinomycosis—a case report. *West Afr J Med* 2005;24:343–5.
- 4 Juhasz J, Galambos J, Surjan L Jr. Renal actinomycosis associated with bilateral necrotising renal papillitis. *Int Urol Nephrol* 1980;12:199–203.

Copyright 2014 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit

<http://group.bmj.com/group/rights-licensing/permissions>.

BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Become a Fellow of BMJ Case Reports today and you can:

- ▶ Submit as many cases as you like
- ▶ Enjoy fast sympathetic peer review and rapid publication of accepted articles
- ▶ Access all the published articles
- ▶ Re-use any of the published material for personal use and teaching without further permission

For information on Institutional Fellowships contact consortiasales@bmjgroup.com

Visit casereports.bmj.com for more articles like this and to become a Fellow