CASE REPORT

Candida dubliniensis encrustation of an obstructing upper renal tract calculusDermot O'Kane,¹ Anthony Kiosoglous,¹ Kay Jones²

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SUMMARY

We present the case of a 53-year-old man, with a history of alcohol abuse, requiring intensive care unit admission, with an obstructing right upper renal calculus and *Klebsiella pneumoniae* urosepsis. Ureteroscopic treatment of this obstruction displayed a small calculus within the renal pelvis completely encapsulated within a fungal bezoar. Laboratory analysis of the fungal mass found it to be *Candida dubliniensis*.

BACKGROUND

This case demonstrates a very unusual endoscopic finding, and a very uncommon cause of renal tract obstruction.

CASE PRESENTATION

This man presented to the emergency department at a tertiary referral hospital in Queensland, Australia, with a short history of right flank pain, diarrhoea, vomiting, fever and malaise. He had a history of known hypoplastic left kidney, previous alcohol abuse, with alcoholic liver disease and gout.

This patient required intensive care unit admission with urosepsis. He was found to be in acute renal failure with hyperkalaemia and metabolic acidosis.

INVESTIGATIONS

Non-contrast CT abdomen showed an enlarged right kidney with moderate dilation of the pelvicalyceal system. There was a 1.6 cm calculus in the right renal pelvis with moderate dilation of the proximal third of right ureter.

DIFFERENTIAL DIAGNOSIS

Upper renal tract calculus.

TREATMENT

The patient was taken to the operating theatre for emergency insertion of a right ureteric stent. The patient required prolonged invasive ventilation and tracheostomy postoperatively. The blood and urine cultures confirmed *Klebsiella pneumoniae* infection. He was treated with intravenous ceftriaxone and gentamicin in the intensive care unit. Gentamicin was ceased after 4 days. Ceftriaxone was continued for a total of 14 days. On day 11 the patient had positive *Candida albicans* growth from a catheter urine sample. Fluconazole treatment was started, and discontinued after 3 days. An indwelling

urethral catheter was removed on day 12 when the patient developed a malodorous urethral discharge. Urethral swabs grew *C. albicans* and mixed skin flora. *C. albicans* was identified on both occasions with a positive germ tube. The patient's clinical status improved and he returned to the renal ward. The patient required regular haemodialysis for 3 weeks. His renal function improved and he was discharged on day 34. The offending renal calculus was radiolucent on X-ray KUB (kidneys, ureters and bladder) and therefore theoretically amenable to dissolution therapy with sodium bicarbonate, which was initiated on discharge.

The patient was followed up at the urology outpatient clinic. Progress imaging (CT KUB) showed failure of dissolution therapy. Definitive surgical treatment was delayed due to patient comorbidities, namely; alcoholic liver disease, failure to abstain from alcohol and laryngeal stenosis following tracheostomy, perturbing general anaesthesia with endotracheal intubation. Following a review by the Ear Nose and Throat specialists, rigid cystoscopy, ureteroscopy and laser lithotripsy of the renal stone were performed under general anaesthetic 12 months following the patient's discharge. A retrograde pyelogram showed a filling defect in the renal pelvis measuring approximately 3 cm in diameter (figure 1). This was unexpected based on CT KUB measurements of the calculus 2 weeks prior as 12×8×16 mm (figure 2). Rigid ureteroscopy demonstrated a brown/green amorphous mass within the renal pelvis, which was clot-like in texture. Ureteroscopic debridement of this material displayed the underlying renal calculus. This calculus was fragmented using laser lithotripsy and retrieved. Samples of the amorphous debris surrounding the calculus were sent for microbiology (figure 3). Fungal growth with *Candida dubliniensis* was confirmed.

OUTCOME AND FOLLOW-UP

This patient had a good recovery following his endoscopic procedure. Repeat urine microscopy did not show any bacteriuria or funguria.

DISCUSSION

Fungal bezoars are concretions of fungal material within the renal tract, and have been reported in patients with florid fungal pyelonephritis as well as asymptomatic funguria. Fungal bezoars are usually seen in the immunocompromised patient or in the patient with diabetes or a chronic alcoholic,

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Figure 1 Retrograde pyelogram displaying a large (30 mm) filling defect within the right renal pelvis.

particularly with prolonged urethral catheterisation and prolonged courses of antibiotics.¹ There are some reports of *Candida* bezoars in patients without immunocompromising conditions.² Fungal bezoars are rarely encountered in clinical practice. Schonebeck and Ansehn (1972) noted only 29 cases in the literature of upper renal tract fungal bezoars, and approximately 50 cases have been reported since then.³ *Candida* species are the most common offending fungi involved, but there have been reports of *Aspergillus* species in the literature.⁴

C dubliniensis is a relatively recently discovered *Candida* species, first described by Sullivan *et al* in 1995. It was first isolated from the oral cavities of HIV-infected patients. It has since also been isolated from sputum samples, faeces samples, vaginal and penile swabs, as well as from urine samples, from HIV-infected and non-HIV-infected patients.⁵ *C dubliniensis* isolation from urine is relatively uncommon; indeed, only a

Figure 2 Non-contrast CT abdomen displaying the offending right renal calculus (12×8×16 mm).

Figure 3 Wet preparation of hyphal mass (magnification ×400).

small number of cases have been reported in the literature.⁶ Between the multiple centres that comprise Queensland Health, Australia, with a patient population of about 4.5 million people, there have only been 98 isolates of *C dubliniensis* from 63 different patients, since 2000. There have only been three isolates from urine samples, all of which have been from non-HIV infected individuals. This number is likely an underestimation of the prevalence of *C dubliniensis* isolates from urine as *Candida* species are rarely fully speciated when isolated from urine, and identification as *C albicans* or non-*albicans* is decided by germ tube alone. Full identification and susceptibility testing, as in this case, is only carried out for invasive or serious infection or isolation from sterile sites to ensure susceptibility to the chosen antifungal.

C dubliniensis can easily be confused with *C albicans* as both can produce hyphae and are therefore germ tube positive; however, most isolates of *C dubliniensis* do not form germ tubes in a commercial synthetic germination medium and remain mostly germ tube negative in the laboratory.⁷ Differentiation between *C albicans* and *C dubliniensis* may require testing for growth at 45°C; however, results are not definitive. Chromogenic *Candida* agar is not routinely used in all centres due to high cost. Differentiation between the two yeasts should only be carried out for invasive or serious infections or in case of concern about resistance.

Initial reports at the time of the discovery of *C dubliniensis* during the HIV and fluconazole prophylaxis era revealed many isolates with elevated minimum inhibitory concentrations to fluconazole under antifungal selection pressure.⁸ Subsequent reports by the same authors showed that *C dubliniensis* has remained fairly susceptible to fluconazole.⁹ Further work by Lockhart¹⁰ has revealed resistance of *C dubliniensis* to fluconazole in only 2/42 isolates. Other recent studies show rates of resistance ranging from 3.1% to 3.9% in 65 and 310 isolates, respectively.^{11 12} It was important to identify the susceptibility of this isolate in this case to ensure susceptibility to therapy.

We have failed to find any cases in the literature to date of *C dubliniensis* fungal bezoars of the renal tract.

Learning points

- ▶ Fungal bezoars of the renal tract are uncommon, but can occur in certain patients under certain conditions—immunocompromised, intensive care unit, prolonged renal tract foreign body (stent, etc).
- ▶ Fungal bezoar of the renal tract is an uncommon cause for failure of dissolution therapy of what might be assumed to be a uric-acid calculus based on imaging (radiolucent on plain X-ray).
- ▶ In the advent of increasing numbers of drug-resistant bacterial and fungal pathogens, uncommon presentations of fungal pathogens within the renal tract may become more common.

Contributors DOK is the main author, responsible for data collection and literature review, design and preparation of the final draft. AK is the supervisor and was involved in revision of final draft, data collection. KJ is responsible for data collection, drafting portions of the case, microbiology advice and revision of final draft.

Competing interests None.

Patient consent Obtained.

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