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Successful Treatment of a Renal Abscess Caused by *Mycobacterium chelonae*: A Case Report

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CASE

A 46-year-old woman presented to the emergency department with 2 weeks of nausea, vomiting, and abdominal pain. She denied fever, chills, or urinary symptoms, although her urine was darker than usual. Physical examination showed normal vital signs and tenderness over her right flank. Laboratory analysis revealed a leukocytosis (normal range) of 16.8 (3.98–10.04) thou/cmm with a segmented neutrophil percentage of 13.20 (1.56–6.13) thou/cmm and a creatinine of 0.48 (0.51–0.95) mg/dL. A computerized tomography (CT) scan of the abdomen and pelvis with intravenous contrast showed a 3.7 cm × 4.1 cm × 3.9 cm fluid collection suspicious for an abscess (Figure 1). The initial urinalysis with microscopy was unremarkable, and the urine culture was negative.

The patient was admitted to the hospital, and a CT-guided aspiration of the right renal mass was performed. The pathology was negative for malignancy, and aerobic and anaerobic cultures were negative. She was discharged home on oral ciprofloxacin. She was readmitted for recurrent abdominal pain 5 days later. An infectious disease consultant ordered a urine acid-fast bacillus (AFB) smear and culture. The AFB smear was positive, and *Mycobacterium chelonae* grew in the AFB culture 5 days later. The antimicrobial sensitivities of the *M. chelonae* are reported in Table 1.

The patient was started on parenteral tobramycin 5 mg/kg daily and oral doxycycline 100 mg twice daily. A baseline audiology test showed normal hearing. After 18 days, the tobramycin was discontinued due to tinnitus and acute kidney injury (creatinine 2.8 mg/dL). A repeat CT scan of the abdomen and pelvis done after 3 months of therapy demonstrated a complete resolution of the renal abscess (Figure 2). Her tinnitus and acute kidney injury resolved after discontinuation of the tobramycin, and she completed a 4-month course of doxycycline alone. A lung biopsy revealed adenocarcinoma of the left lung. An AFB smear and culture, along with routine bacterial cultures from the biopsy, were negative.

The patient was seen in the office 2 months after completing the doxycycline, and repeat laboratory testing and audiology testing were normal (creatinine 0.9 mg/dL). She underwent chemotherapy for the adenocarcinoma and is currently in remission, with no signs of recurrent *M. chelonae* infection.

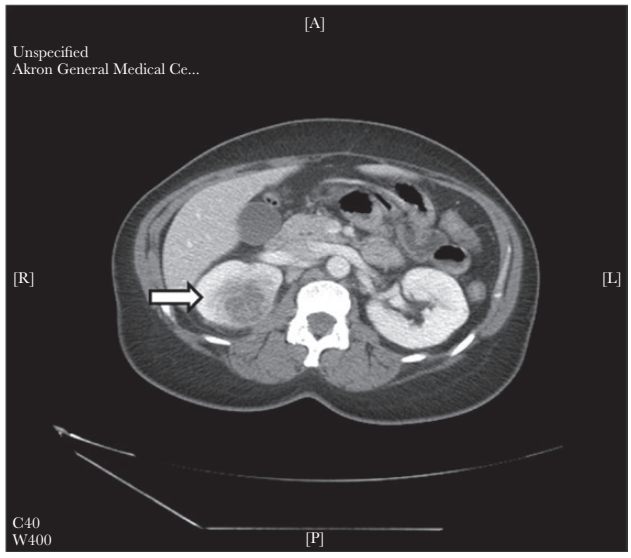

Figure 1. Initial computed tomography scan showing right renal abscess.

Table 1. Antibiotic Sensitivities for *Mycobacterium chelonae* From Acid-Fast Bacillus Urine Culture[a]

Antibiotic	Minimum Inhibitory Concentration, mg/L
Clarithromycin	<2 sensitive
Amikacin	8 sensitive
Cefoxitin	>128 resistant
Doxycycline	<0.12 sensitive
Imipenem	32 resistant
Tobramycin	<1 sensitive

[a]Antimicrobial susceptibility of the clinical isolates was determined using the disc dilution method, and the results were interpreted according to the breakpoints recommended by the Clinical and Laboratory Standards Institute.

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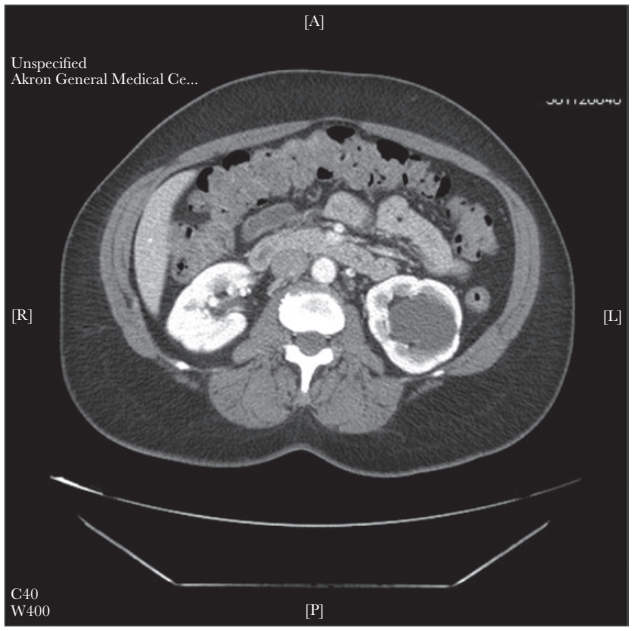

Figure 2. Follow-up computed tomography image showing resolution of the *Mycobacterium chelonae* right renal abscess.

DISCUSSION

Nontuberculosis mycobacteria are rare causes of urinary infections [1, 2]. *M. chelonae* usually causes infections in immunocompromised patients, including those with malignancy and organ transplants [3–6]. Thus, our patient's malignancy, which was undiagnosed at her initial presentation, may have predisposed her to develop the renal abscess from *M. chelonae*. Antibiotics with activity against *M. chelonae* include tobramycin, clarithromycin, linezolid, imipenem, amikacin, clofazimine, doxycycline, tigecycline, and ciprofloxacin. Tobramycin is more active in vitro than amikacin, has been shown to reach therapeutic concentrations in the kidney [7], and can be used to treat pyelonephritis [8]. The treatment guidelines for *M. chelonae* recommend a minimum of 4 months of combination therapy to achieve a high likelihood of cure [9]. Macrolides (eg, clarithromycin or azithromycin) are the drugs of choice for disseminated *M. chelonae* infection and are widely used in combination regimens [10].

The choice to use tobramycin and doxycycline was based on several factors. The patient claimed that azithromycin previously caused severe nausea. Antinausea medication was offered, but she still declined and also refused clarithromycin. Therefore, it was decided to prescribe parenteral tobramycin to achieve high drug levels in the kidney, along with doxycycline. After the tobramycin was discontinued, options for another antibiotic were limited. The patient wanted to avoid any additional risk of toxicities and preferred to continue just the doxycycline. Surgery is generally indicated in cases of abscess formation or when antibiotic therapy is difficult [9]. Obtaining a urological opinion for possible surgical excision of the abscess was offered, but she declined this as well.

As only approximately 20% of strains of *M. chelonae* are susceptible to doxycycline [11], the fact that our patient had a favorable outcome with doxycycline for most of her clinical course seems noteworthy. Indeed, there is no compelling rationale or evidence that doxycycline has any special properties that would make it especially effective in our case.

This is the first reported case of a renal abscess due to *M. chelonae*. Usually *M. chelonae* is treated with combination antibiotic therapy, including a macrolide. Our patient completed slightly more than 2 weeks of doxycycline and tobramycin dual therapy, followed by nearly 4 months of doxycycline monotherapy, achieving a clinical cure of the renal abscess based on symptom resolution and follow-up radiological imaging.

Acknowledgments

Potential conflicts of interest. All authors have submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest. Conflicts that the editors consider relevant to the content of the manuscript have been disclosed.

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