

Case Report: Urinary Mycobacterium Gordoniae

T Alhamad, K Chung, A Meza, A Elsayed, W Radwan

Citation

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Abstract

Mycobacterium gordonae, a non-tuberculous mycobacterium (NTM), is the third most commonly isolated acid-fast bacilli, comprising 14.6% of all isolates¹³. It rarely causes disease, as most of the isolates are commensals³, it is the few patients in whom disease occurs that prohibit one from always attributing isolates to contamination or colonization². We describe a case of a 40-year old HIV-negative man who presented with hematuria, dysuria, and right lower quadrant pain with a history of ureteral stenosis and hydronephrosis. *M. gordonae* was isolated from the urine, and the patient was started on antituberculosis medications. This case highlights the difficulty in diagnosing NTM and the obstacles in treating NTM in a patient with borderline cognitive function.

CASE REPORT

A 40-year old Latin American male with a history of toluene inhalation for over fifteen years with subsequent borderline cognitive function, renal tubular acidosis type one secondary to toxic insult from toluene inhalation, recurrent urinary tract infections, and multiple contractures throughout his lower extremities began frequenting the emergency department in 2008 with complaints of altered mental status secondary to toluene inhalation, epigastric pain secondary to gastritis, and hematuria of unknown origin. The patient was unemployed and frequently institutionalized at the local detention center. He smoked cigarettes occasionally, but denied drinking alcohol or using any other illicit drugs aside from toluene inhalation.

In November 2008 he presented to the emergency room with altered mental status and hypothermia. Upon resolution of the altered mental status, the patient complained of urinary retention. A renal ultrasound showed a stone in the right proximal ureter with minimal right hydronephrosis and worsening left hydronephrosis when compared to an ultrasound from the previous month. CT of the abdomen showed minimal fullness of the renal pelvis, worse on the left side, and a thickened bladder wall. To relieve urinary retention, urologists recommended intermittent catheterizations and tamsulosin for the patient with endoscopic and urodynamic studies to determine the origin of the urinary retention and hydronephrosis.

The patient returned to the emergency room in February of 2009 with altered mental status complaining of stranguria, hematuria, and urinary retention. CT of abdomen revealed left hydronephrosis secondary to a ureteral stricture (see figure 1) and a left sided ureteral stent was placed. Cystoscopy revealed inflammatory erosive cystitis and cobblestone appearance of the bladder. Retrograde pyelogram revealed left distal ureteral obstruction without presence of a stone and left hydroureteronephrosis. Bladder biopsy showed non-specific histological changes consistent with an inflammatory or infiltrative process. Urine cytology and acid-fast bacilli (AFB) cultures were ordered at that time as the diagnosis of renal tuberculosis was aroused. The patient was discharged after left ureteral stent was placed with recommendations to continue intermittent catheterizations and tamsulosin for urinary retention with nitrofurantoin for infection.

In March of 2009, the patient again visited the emergency department complaining of left lower quadrant pain that was sharp, constant, and without radiation for the last few months. Five days prior he noted intermittent gross hematuria, dysuria, and stanguria with progressive urinary retention, for which a urinary catheter was placed by a nurse at his detention center. The patient denied recent weight loss, cough, or hemoptysis, but did report intermittent fevers and night sweats.

Physical exam was remarkable for left-sided costovertebral angle tenderness, mild lower abdominal tenderness with

palpable bladder, but no hepatosplenomegaly or masses were detected. Rectal exam revealed guaiac-negative stool with no prostate hypertrophy. There was no blood at the urethral meatus.

Mild normocytic anemia with hemoglobin of 10.3 g/dl was detected. White blood cell count was 12,700 with predominantly neutrophils present. Potassium was 2.6 mol/ml, chloride was 116 mol/ml, and bicarbonate was 14 mol/ml. Urea was 22 mg/dl and creatinine was 1.2 mg/dl. The urine was red and hazy and with ketonuria, mild nitrites, moderate leukocyte esterase, bacteria (++); urine microscopy revealed 10-15 WBC/HPF and red blood cells that were too numerous to count. There was no growth on routine culture. In reviewing the patient's records, we found that the urine AFB culture ordered at the patient's last admission showed AFB isolated on liquid (disco bottle) and plated media (7H11 agar). There was no history for previous treatment of tuberculosis, chest radiograph was normal, and sputum was negative on smear and culture for mycobacteria. The presentation of persistent dysuria with urinary retention, intermittent fevers and night sweats with sterile pyuria, and mycobacteria in the urine was consistent with renal tuberculosis and infectious disease was consulted. The patient was started on rifampin 600 mg daily, isoniazid 300 mg daily, ethambutol 25 mg/kg/day, pyrazinamide 25 mg/kg/day, and pyridoxine 50 mg daily. ELISA for HIV infection was negative. Right ureteral stent was placed for the new right hydronephrosis and hydroureter (see figure 2), and cystoscopy and retrograde pyelogram were consistent with previous results. The patient was discharged to the detention center with a one week supply of medications and follow up appointments with the department of health. The mycobacteria isolates were later identified as *Mycobacterium gordonae* (El Paso City Country Health District Lab, El Paso, Texas).

The patient was difficult and non-compliant with antituberculosis medications, and was subsequently lost to follow up. He returned to the emergency department in April and again in June for altered mental status due to continued use of toluene. It was unknown during those admissions whether patient had been taking antituberculosis medications; however, two subsequent smears and cultures were negative for mycobacteria, and he remained asymptomatic without urinary complaints.

Figure 1

Figure 1. CT Abdomen from February 2009 shows right hydronephrosis



Figure 2

Figure 2 CT Abdomen from March 2009 shows new right hydronephrosis and a stent in the left ureter



DISCUSSION

In a patient with gross hematuria, the first task is to determine the origin of the bleeding. The presence of dysuria hints at a source in the lower urinary tract. Bleeding from the upper urinary tract, in contrast, may be associated with flank pain. Because of its non-specific presentation, the diagnosis of genitourinary mycobacterium infection is often missed or diagnosed until after destruction of renal tissue has ensued late in the disease course².

Mycobacterium gordonae is frequently referred to as "tap water bacilli" as it is found in water, soil, whirlpools, and even mucous membranes, urine, and gastric fluid of healthy individuals¹¹. There have been reports of nosocomial infections contracted from contaminated fluids in the hospital². It is not uncommon to see infection after instrumentation, trauma, or surgery on the genitourinary

tract².

M. gordonae occasionally does cause disease such as in the case of a 40 year old HIV negative woman reported in 1992². It is the few patients in whom disease occurs that prohibit one from always attributing isolates to contamination or colonization². Our patient's case truly emphasizes the importance of considering the diagnosis of *Mycobacterium gordonae* in a patient with hematuria, stranguria, recurrent urinary tract infections, ureteral strictures, and hydronephrosis, as he went undiagnosed for many years.

NTM can be found in skin, soft tissue, ocular, and pulmonary disease; prosthetic valve and shunt infections; meningitis; hepatic and peritoneal infections; and bone, joint, and disseminated disease. Genitourinary infection of *M. gordonae* is usually found to be part of the disseminated form of the disease and isolated cases are rare². Early in the disease course, the patient may be asymptomatic with only an abnormal urinalysis; however, advanced disease can include renal papillary and parenchymal damage with cavitation leading to fibrosis, scarring, and calcification on healing². Ureteral stenosis with hydronephrosis was reported in a case of *M. gordonae* in a renal transplant patient¹¹.

Follow up is required for the patient as keratinizing squamous metaplasia may develop as a late complication of chronic inflammation and infection of the renal pelvis³.

Genitourinary mycobacterium infections of the urinary tract are easily overlooked because of the non-specific presentation. Flank pain and other non-specific urinary complaints are the major symptoms³. Usually, a suspicion of infection is aroused only when there is no response to broad spectrum antibiotics or when urine examination reveals sterile pyuria². *M. gordonae* genitourinary disease diagnosis is made by isolation of the causative organism from urine on acid-fast bacilli (AFB) culture².

Treatment is generally complex because infections are sporadic and there is no standard of treatment established. Clarithromycin has been shown to be effective against *M. gordonae* in in vitro studies. Other possibilities for treatment include azithromycin, quinolones, ethambutol, and rifabutin¹¹. Resistance against isoniazid has been established². Treatment course may last anywhere between six months to two years, with favorable response and long-term prognosis expected¹¹.

References

Author Information

Tarek Alhamad, M.D

Department of Internal Medicine, Paul Foster School of Medicine, Texas Tech University HSC at El Paso

Kathleen Chung, M.D

Department of Internal Medicine, Paul Foster School of Medicine, Texas Tech University HSC at El Paso

Armando Meza, M.D

Associate Professor, Department of Internal Medicine, Paul Foster School of Medicine, Texas Tech University HSC at El Paso

Ahmed Elsayed, M.D

Department of Internal Medicine, Paul Foster School of Medicine, Texas Tech University HSC at El Paso

Wassim Radwan, M.D

Department of Internal Medicine, Paul Foster School of Medicine, Texas Tech University HSC at El Paso