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TB or Not TB? A Questionable Case of Septic Arthritis

Xiaoming Jia*, Niraj Mehta

Department of Internal Medicine, Baylor College of Medicine, Houston, USA
*Corresponding author: xiaoming.jia@bcm.edu

Abstract Tuberculosis (TB) is best known as a pulmonary disease but can infect any organ system. Presentation of extrapulmonary TB is often non-specific and slow in onset, though morbidity is often significant. We report a case of osteoarticular and genitourinary tuberculosis in a patient who travelled from an endemic region.

Keywords: *extrapulmonary tuberculosis, osteoarticular, genitourinary, cold abscess*

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1. Introduction

Since 1992, the overall number of tuberculosis cases has steadily decreased in the United States. However, TB remains a major health concern in many parts of the world, with an estimated one third of the global population now infected. With the increasing ease of global travel, foreign-born patients comprise the majority of TB cases in the United States - 66.2% in 2015 [1]. Tuberculosis is best known as a pulmonary disease but can infect any organ system. Presentation of extrapulmonary TB is often non-specific and slow in onset, though morbidity is often significant. Therefore, a high degree of suspicion coupled with consideration of the epidemiological context is necessitated for expedient diagnosis and treatment.

2. Case

The patient is a 51-year-old Chinese man who presented with progressively worsening atraumatic pain of his right hip and purulent drainage from a right thigh wound.

He emigrated from China at the age of 47 and had been in good health until one year prior to presentation. At that time, the patient began to develop pain at his right hip that progressively worsened until he could no longer bear weight on that extremity. In the last month prior to presentation, he also noted an induration at the right anterior thigh that drained pus. The patient reported high-risk sexual behavior but denied any sick contacts, recent travel, known HIV infection. He was asked multiple times about possible exposure to tuberculosis in the recent or distant past but continued to maintain that no such exposures had occurred.

Upon presentation, the patient met criteria for sepsis. Although hemodynamically stable, he was noted to have a temperature of 38.7C, heart rate of 107 beats per minutes, leukocytosis of 12.9 thousand per microliter. Examination of the affected leg revealed a two by two centimeter area of induration with copious purulent drainage and significant unilateral inguinal lymphadenopathy but minimal surrounding erythema, warmth or tenderness. Significantly decreased mobility of the hip joint was noted with active motion. X-ray of the right hip was suggestive of septic arthritis (Figure 1) and subsequent computer tomography of the pelvis demonstrated severe destruction of the right acetabulum, femoral head and neck as well as an eleven-centimeter right hip abscess with sinus tracking and surrounding myositis (Figure 2). The CT also revealed evidence of chronic cystitis and right-sided pyelonephritis that were initially thought to be the source of his septic joint (Figure 2). The patient was taken for drainage and debridement by orthopedic surgery. Routine blood, urine and wound cultures were all negative. However, aspirate taken during the surgery stained positive for acid-fast bacilli (AFB).

Figure 1. Xray of the pelvis showing septic arthritis with significant bone destruction at the right hip

It was at this time that we were contacted by the local health department regarding the patient's TB status. Per their records, the patient was worked up for intermittent dysuria and hematuria two years prior to presentation, with urine cultures growing out isoniazid-resistant tuberculosis (INHr-TB). Thereafter, sputum cultures were collected and also grew out INHr-TB. Therapy was initiated but due to poor understanding of his disease and with the resolution of his symptoms, the patient moved to another city for work without completing his therapy and was subsequently lost to follow-up.

After learning about his incomplete therapy, concerns arose for development of multi-drug resistance tuberculosis. Samples from the patient's wound aspirate were taken and sent for rapid molecular testing, which confirmed resistance to INH but susceptibility to rifampin. He was initiated on rifampin, ethambutol, pyrazinamide and levofloxacin for a planned course of twelve months. After several weeks, both wound and urine cultures grew *Mycobacterium tuberculosis* confirming the diagnosis of disseminated INHr-TB with skeletal and urinary tract involvement.

Figure 2. CT of the pelvis demonstrating obliteration of the femoral head and acetabulum as well as thickening of the bladder wall

2.1. Discussion

Though overall cases have steadily declined in the United States during the last two decades, tuberculosis should not be mistaken for a waning disease. Indeed, TB remains a worldwide epidemic and the ease of global travel ensures that it is a health concern even in the most medically advanced societies. The demographics of both pulmonary and extrapulmonary tuberculosis cases in the US have shifted away from predominately domestic patients with HIV to foreign-born individuals emigrating from endemic regions [1]. Extrapulmonary tuberculosis often presents with nonspecific symptoms and can be easily missed by those who are unsuspecting. Therefore, the prudent clinician must exercise a high degree of suspicion coupled with an appreciation for epidemiology in order to make an expedient diagnosis.

Osteoarticular and genitourinary tuberculosis trails only lymph node involvement as the most common sites of extrapulmonary TB infection. The spine (Pott's disease) is the most common site of bone involvement with hip arthritis and osteomyelitis constituting approximately 15% of all osteoarticular cases [2]. The development of TB at the hip joint is often insidious and slowly progressing. A majority of individuals complain of vague pain symptoms as seen in our patient. If treated with antituberculous medications at an early stage, approximately 90-95% of patients return to near normal function. However, because arthritis and osteomyelitis from TB mimic other disease processes, diagnosis and treatment are often delayed [3]. Late stages of infection result in significant osseous destruction of the affected joint space and bone. Periarticular abscesses can also develop though with limited inflammatory changes and thus little erythema, swelling and pain, which are often associated with classic septic joints. Thus, TB osteoarticular disease should be high on the differential in a presentation of "cold" septic joints and abscesses, especially if sinus tracking to the skin is present [4]. Diagnosis can be confirmed with culture or PCR and treatment consists of standard antituberculous therapy with similar duration compared to pulmonary TB. In patients with significant bone destruction, joint replacement surgery is often needed to restore functionality.

Similar to osteoarticular TB, urogenital disease is often initially asymptomatic and slowly progressive. Tuberculosis of the bladder is almost always caused by distal extension from kidney infection. TB cystitis begins with acute inflammation with ulcerations and tubercle formation followed by fibrosis of bladder wall and commonly bladder thickening [2,5]. Mycobacterium infection should be suspected in the setting of cystitis with repeat sterile pyuria.

Imaging is important in the diagnosis. In the acute phase, CT and ultrasound may reveal mucosal masses from tubercle formation, ulcerations, trabeculations or diffuse wall thickening. In chronic disease, imaging often shows a thick-walled contracted bladder from fibrosis[6]. Urine culture or cytology can be used to confirm diagnosis though MTB PCR is been found to be more sensitive. TB of the bladder is usually managed conservatively with standard antituberculosis regimens and rarely requires any surgical intervention

2.1.1. Conclusion

Tuberculosis is one of the great imitators among infectious diseases. Diagnosis can be elusive due to its oft-vague symptoms and its ability to affect any organ system. Osteoarticular and urogenital systems are two of the most common sites for extrapulmonary TB infections. Tuberculosis should be on the differential when evaluating patients with symptoms at these sites, especially individuals from endemic areas. Early detection and treatment is essential as progression of infection carries a heavy burden of morbidity and mortality.

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