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ID TEACHING CASES

A Case Report of Melioidotic Prostatic Abscess in a Traveler

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A 48-year-old man who had returned from Panama 5 weeks prior presented with fever, dysuria, hematuria, flank pain, and suprapubic pain and was found to have a prostatic abscess. Abscess fluid obtained during transurethral drainage grew *Burkholderia pseudomallei*. Blood cultures remained negative, and imaging did not show any other visceral abscess. This presentation of primary prostatic melioidosis is extremely rare in this region.

Keywords. *Burkholderia pseudomallei*; melioidosis; meropenem; prostatic abscess; traveler-related disease; trimethoprim-sulfamethoxazole.

Burkholderia pseudomallei is a soil and water bacterium that causes a potentially life-threatening disease called melioidosis in humans [1–3]. It is highly endemic to Southeast Asia (Thailand, Singapore, and Malaysia) and northern Australia [1–3]. This bacterium is renowned for its diverse clinical manifestations, multidrug resistance, high disease mortality, and recurrence if appropriate therapy is not given [1, 3]. Melioidosis frequently presents as a bloodstream infection with or without septic shock, pneumonia, or internal organ abscesses, particularly in the spleen, liver, kidney, prostate, or parotid [3]. Primary prostatic melioidosis has been mostly described in northern Australia and less frequently in Southeast Asia [1]. Nevertheless, primary prostatic melioidosis cases have been rarely reported among tourists returning from endemic areas in Southeast Asia [4, 5]. However, no prior cases of primary prostatic melioidosis have been reported from Panama [6]. We present a case of primary prostatic abscess due to *B pseudomallei* in a traveler returning from Panama.

CASE REPORT

A 48-year-old man with a past medical history of well-controlled diabetes mellitus presented with fever for 1 week and dysuria with hematuria for 2 days. He also complained of suprapubic and perineal pain, with moderate to severe aching left flank pain, nausea and vomiting, and 6 episodes of loose, watery bowel movements. He denied penile discharge and reported a monogamous relationship with his wife for >20 years.

He was febrile to 38°C (100.4°F) in the emergency room and tachycardic to 160 beats per minute. The lung and cutaneous examinations were unremarkable. Urology attempted to perform a prostate examination, but the patient could not tolerate it due to pain. Initial laboratory tests showed leukocytosis to 25 000 cells/μL and Prostate-Specific Antigen (PSA) of 67 ng/mL. His urinalysis showed 30 white blood cells per high-power field (HPF) and 3 red blood cells per HPF. A chest radiograph (CXR) did not show evidence of acute cardiopulmonary disease. A computed tomography (CT) scan of the abdomen and pelvis with intravenous (IV) contrast showed prostatomegaly with

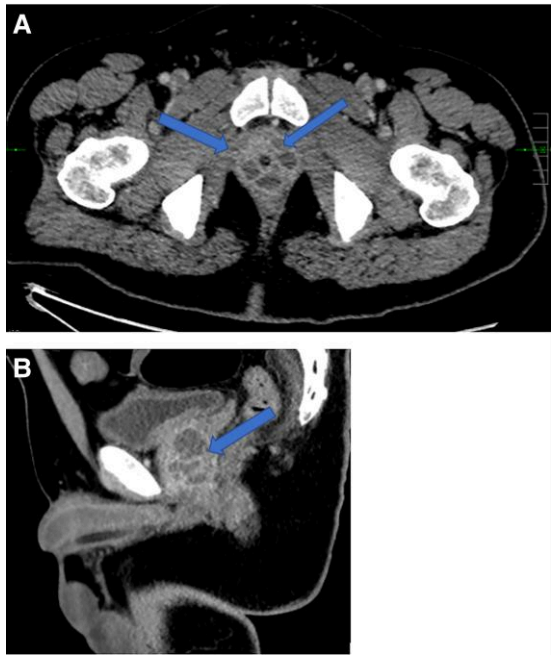

Figure 1. Computed tomography of the pelvis with intravenous contrast with axial (*A*) and sagittal (*B*) views. Arrows indicate multiloculated prostatic abscess.

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1.5-cm collection in the mid-prostate and mild nonspecific infiltration of the intrapelvic fat (Figure 1). Given the abnormality's location on imaging, fever, dysuria, and perineal pain, a bacterial prostatic abscess was high on the differential. Organisms considered were gram-negative bacteria (eg, *Escherichia coli* and *Klebsiella pneumoniae*) and gram-positive microorganisms (eg, *Staphylococcus* and *Enterococcus* species). He was started on empiric vancomycin and piperacillin-tazobactam. Urine cultures grew mixed flora.

Leukocytosis improved to 12 900 cells/μL by day 3. However, he continued to be tachycardic and febrile. Therefore, CT of the abdomen and pelvis with contrast was repeated on day 4, which showed an interval increase in the left prostatic abscess with new fluid and fat stranding in the presacral region. Urology then performed transurethral drainage of the prostate abscess on day 5. Multiple small cavities were noted throughout the prostate in the operating room. Abscess fluid grew a nonhemolytic, gram-negative bacillus after 48 hours of incubation that was oxidase-positive, indole-negative, and colistin-resistant. Per laboratory protocol, it was forwarded to the Florida Department of Health's Bureau of Public Health Laboratories and subsequently identified as *B pseudomallei* by polymerase chain reaction. The isolate was sent to the Centers for Disease Control and Prevention for confirmation and susceptibility testing (Table 1). Blood cultures obtained prior to initiation of antibiotics remained negative after 5 days of incubation.

After the availability of culture results, further history was obtained. The patient migrated to the United States from Panama 22 years prior and has visited frequently. The most recent trip was 5 weeks prior to the hospital admission. During that visit, he participated in building a new beach home in Coronado, Panama.

Over a 4-day period after the procedure, his leukocytosis increased to 20 500 cells/μL with improvement in fever episodes and tachycardia. Further evaluation with CT of the abdomen and pelvis showed multiple loculated abscesses throughout the prostate gland, the largest one in the transitional zone (2.1 × 1.5 × 2.3 cm). Urology was reconsulted, and they recommended continuing medical management due to defervescence and improvement of tachycardia after the procedure. Piperacillin-tazobactam was switched to meropenem and trimethoprim-sulfamethoxazole (TMP-SMX) while the susceptibilities were pending. Leukocytosis and pain improved by day 8 after the drainage. The infectious disease team recommended continuing IV meropenem 2 g every 8 hours and TMP-SMX 2 double-strength tablets twice a day for 6 weeks.

Follow-up imaging with magnetic resonance imaging of the pelvis with contrast at the completion of therapy showed resolution of abscesses. The patient completed oral maintenance therapy with TMP-SMX for 3 months and fully recovered.

Table 1. Antimicrobial Susceptibility Testing via Broth Microdilution for *Burkholderia pseudomallei* Isolate From the Prostate Abscess

Antibiotic	MIC, μg/mL	Interpretation
Amoxicillin-clavulanate	4/2	Susceptible
Ceftazidime	2	Susceptible
Doxycycline	1	Susceptible
Imipenem	0.25	Susceptible
Meropenem	1	No CLSI-approved breakpoints
Tetracycline	4	Susceptible
Trimethoprim-sulfamethoxazole	≤0.5/9.5	Susceptible

Abbreviations: CLSI, Clinical and Laboratory Standards Institute; MIC, minimum inhibitory concentration.

DISCUSSION

Burkholderia pseudomallei is a facultative intracellular gram-negative saprophytic bacillus. The worldwide incidence of melioidosis is unclear likely due to underrecognition and the lack of diagnostic resources in rural areas where the disease is prevalent [2]. Sporadic cases have been reported all over the globe, and <100 acquired cases were reported in the Americas from 1947 to 2015 [6]. Twelve melioidosis cases were identified in Panama between 2007 and 2017, but no prostate involvement was described [6].

Infection occurs through inoculation of the skin, inhalation, or ingestion [2, 3]. The clinical spectrum includes subclinical infection, localized, or disseminated disease [2]. Certain risk factors increase the risk of developing invasive disease, especially diabetes mellitus. About 20% of the cases do not have identifiable risk factors [3, 7].

The incubation period is generally 1–21 days, and can present as an acute (85%), chronic, or latent disease [2, 3]. Clinically, pneumonia is the most common clinical manifestation followed by genitourinary infection [8]. Prostatic abscess was identified in 21% of the episodes in northern Australia, whereas only 2.5% of prostatic involvement was seen in Thailand, even though Thailand has a greater population and a large number of cases reported [1]. In a Taiwanese series, urogenital involvement was described in 13% of cases, but prostate involvement was not specified [9]. Case reports of prostatic abscess and pyelonephritis have been reported from India [10].

In Australia, the policy of routinely screening by CT for occult abdominal and pelvic abscesses in all cases of melioidosis may partly explain the higher incidence. In contrast, patients in Thailand were examined with transrectal ultrasonography [1]. In this report from Australia, it was described that many of the patients who presented with primary prostatic disease had clinical or laboratory evidence of urinary tract pathology before going through any imaging of the prostate [1].

Positive blood culture or culture of prostatic abscess fluid is the confirmatory test [2, 3]. Due to the fact that *B pseudomallei* is a tier 1 select agent, clinical laboratories perform minimal

testing on potential isolates and refer suspicious isolates to a reference laboratory for confirmatory testing. Selective media are needed as *B pseudomallei* grows slowly and can be easily overgrown by other bacteria if the sample is from a nonsterile site [3].

Management involves abscess drainage, especially if the size of the abscess is >1 cm [1]. Antibiotic therapy involves an initial intensive phase with IV medications such as ceftazidime, meropenem, or imipenem for 2 weeks followed by an oral eradication phase for about 12 weeks, usually with TMP-SMX [2, 3, 7]. Although primary resistance to meropenem is rare, initial dual therapy with meropenem and TMP-SMX was chosen in this case due to a sizeable residual abscess of >1 cm despite drainage and the concern for persistence of the organism in the abscess, which can lead to relapse [1, 3, 7]. A longer intensive phase of 6 weeks was chosen for the same reason. Susceptibility testing was not available for 21 days. By then, the patient was already discharged home on IV meropenem, and a decision was made to continue the same medication for the rest of the duration.

This case emphasizes the fact that in addition to looking for common underlying risk factors, epidemiologic history of travel should also be considered while evaluating a case of prostate abscess in nonendemic areas for *B pseudomallei*. If *B pseudomallei* is considered in the differential diagnosis, the microbiology laboratory personnel should be alerted for safe handling and identification to avoid the risk of exposure to aerosols as it is classified as a hazard group 3 pathogen and tier 1 select agent [3].

This case is distinctive because it is from an unusual geographic region, and prostatic melioidosis is uncommon in Panama based on the reviewed literature. Other than well-controlled diabetes mellitus, this patient did not have risk factors for *B pseudomallei*. Even though the imaging showed worsening findings after the procedure, he improved with antibiotics without additional source control measures, although a prolonged intensive phase and dual therapy were instituted.

This case report is not without its limitations, as the portal of entry of the bacteria is unclear. However, percutaneous exposure to wet soil in Coronado's beach home construction area was considered the likely route that led to transient bacteremia and seeding of the prostate. At the initial presentation, he was on room air, and his CXR was clear, making pneumonia unlikely. Also, the incubation period appears slightly longer for an acute infection, allowing for the possibility of chronic or subacute disease from prior exposure.

CONCLUSIONS

Burkholderia pseudomallei prostatic abscess occurs from bacterial dissemination to distant sites or as a primary infection. The incidence of prostatic involvement is different in distinct geographical regions, potentially due to testing modality and resources. For large abscesses, drainage seems to be necessary as an adjunct to prolonged antibiotic therapy. An isolated symptomatic primary prostatic abscess is a rare but recognized manifestation of melioidosis. *Burkholderia pseudomallei* should be considered in the traveler to endemic areas with a primary prostatic abscess.

Notes

Author contributions. All authors made substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data; took part in drafting the article or revising it critically for important intellectual content; agreed to submit to the current journal; gave final approval of the version to be published; and agree to be accountable for all aspects of the work.

Patient consent. An ethical committee approval was not applicable for this article type. Written consent for publication was obtained from the patient.

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References

1. Morse LP, Moller CC, Harvey E, et al. Prostatic abscess due to *Burkholderia pseudomallei*: 81 cases from a 19-year prospective melioidosis study. J Urol **2009**; 182: 542–7.
2. Blaney DD, Gee JE. Chapter 4: travel-related infectious diseases, melioidosis. 2019 June. https://wwwnc.cdc.gov/travel/yellowbook/2020/travel-related-infectious-diseases/melioidosis. Accessed 23 March 2022.
3. Wiersinga WJ, Virk HS, Torres AG, et al. Melioidosis. Nat Rev Dis Primers **2018**; 4:17107.
4. Heyse AM, Dierick J, Vanhouteghem H, et al. A case of imported melioidosis presenting as prostatitis. Infection **2003**; 31:60–2.
5. Chong Vh VH, Sharif F, Bickle I. Urogenital melioidosis: a review of clinical presentations, characteristics and outcomes. Med J Malaysia **2014**; 69: 257–60.
6. Araúz AB, Castillo K, Santiago E, et al. Geographic distribution and incidence of melioidosis, Panama. Emerg Infect Dis **2020**; 26:118–21.
7. Sullivan RP, Marshall CS, Anstey NM, et al. 2020 review and revision of the 2015 Darwin melioidosis treatment guideline; paradigm drift not shift. PLoS Negl Trop Dis **2020**; 14:e0008659.
8. Currie BJ, Ward L, Cheng AC. The epidemiology and clinical spectrum of melioidosis: 540 cases from the 20-year Darwin prospective study. PLoS Negl Trop Dis **2010**; 4:e900.
9. Kozlowska J, Smith S, Roberts J, et al. Prostatic abscess due to *Burkholderia pseudomallei*: facilitating diagnosis to optimize management. Am J Trop Med Hyg **2018**; 98:227–30.
10. Naganathan K, Pillai SB, Kumar P, Hegde P. Whitmore's disease: an uncommon urological presentation. BMJ Case Rep **2014**; 2014:bcr2013201978.