**Case Report**

*Burkholderia* Aortic Aneurysm: A Case Report and Review of the Literature

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Melioidosis is a frequently fatal infection caused by the Gram-negative bacillus *Burkholderia pseudomallei* endemic to Southeast Asia and Northern Australia. It is a rare imported pathogen in the United States and is a potential bioterror agent. We report the case of an 82-year-old previously healthy man who presented with 2 weeks of fever and epigastric pain after he returned from the Philippines. A diagnosis of nondissecting mycotic aneurysm in the descending thoracic aorta was made with the help of CT angiogram and positive blood cultures. The patient completely recovered with a 6-month antibiotic therapy followed by surgical repair of the aneurysm. Given the slight increase in the number of melioidosis cases reported by CDC since 2008, melioidosis might be considered an emerging infectious disease in the United States. The purpose of this report is to raise awareness of the disease among clinicians as well as travelers.

1. Introduction

*Burkholderia pseudomallei* is a widely distributed environmental saprophyte causing serious infections in endemic regions of Southeast Asia and Northern Australia but is rarely reported in the United States [1]. They are predominantly transmitted through direct contact with an environmental source (wet soil or contaminated water) by ingestion, percutaneous inoculation, or inhalation of the bacterium. Common manifestations of melioidosis include pneumonia, skin abscesses, ulcers, osteomyelitis, and septic arthritis. However, mycotic aneurysm is a rare presentation found only in 1%–2% of cases and is related to high rates of morbidity, mortality, and relapse [2]. Due to its severe impact on human health and potential to transmit through inhalation, *B. pseudomallei* is considered a biological threat as well as a potential bioterror agent. We herein report a case of *Burkholderia*-associated thoracic aortic aneurysm from a community hospital in the United States.

2. Case Report

An 82-year-old man presented to our hospital with 2 weeks of fever, anorexia, drenching sweats, and epigastric pain radiating to the back. He denied any nausea, vomiting, or change in bowel habits. He visited the Philippines 4 months prior to presentation and did not have any sick contacts. Medical history was relevant for hypertension, hyperlipidemia, and osteoarthritis. He is a nonsmoker, nonalcoholic, and did not have similar episodes in the past.

On admission, he was febrile to 101°F with a normal blood pressure (154/76 mm Hg), heart rate (86 bpm), respiratory rate (16 breaths per minute), and oxygen saturation (>95% on room air). There were no peripheral stigmata of infective endocarditis. Abdomen examination was significant for epigastric tenderness with no palpable mass or pulsations and normal bowel sounds. Examination of other systems were unremarkable. Routine labs showed a hemoglobin level of 14.6 gm/dl, white blood cell (WBC) count of $5.2 \times 10^3$ per mm cube, normal liver enzymes (ALT 44 IU/L
and AST 34 IU/L), and normal renal function (creatinine level 0.82 mg/dL). The lipid profile included a low-density lipoprotein cholesterol level of 121 mg/dl, triglyceride level of 112 mg/dl, and high-density lipoprotein cholesterol level of 48 mg/dl. Urinalysis was normal. C-reactive protein level was elevated (44 mg/L). Quantiferon gold, HIV, and hepatitis tests were negative. Autoimmune panel was also negative. Chest radiography showed tortuous aorta with multiple aortic calcifications. CT abdomen showed saccular outpouchings from the descending thoracic aorta just above the diaphragm concerning for penetrating atherosclerotic ulcers with periaortitis (Figure 1). In order to further differentiate the esophagus from aneurysm, he underwent a CT angiogram of the chest with a small amount of oral contrast which demonstrated distal thoracic aorta aneurysm with no evidence of leak or hematoma. In the absence of a clear etiology for fever, he was started on vancomycin and ceftriaxone. On day 3, blood cultures drawn on the day of admission prior to antimicrobial therapy grew *Burkholderia pseudomallei*. An extensive septic screen, including urine culture, sputum culture, and transthoracic and transesophageal echocardiograms revealed no abnormalities.

The patient refused surgical management initially and was started on intravenous ceftazidime based on sensitivity results (Table 1). His fevers remitted, multiple repeat blood cultures remained sterile, and CRP returned to normal within 1 week. He was discharged on an additional 6-week course of ceftazidime 2 g BID through peripherally inserted central catheter followed by 3 months of oral Bactrim.

Surveillance CT angiogram at 5 months redemonstrated mycotic aneurysm of the distal descending thoracic aorta with decrease in mural thickening of the sac and improved inflammation of the adjacent posterior mediastinal fat (Figure 2). CT-PET after completion of antibiotics showed minimal signal in the aneurysm, consistent with microbiological suppression. Even though the bacteremia cleared, the aneurysm persisted, and hence, surgery was offered again as the only curative option. The patient agreed, and elective endovascular repair of aortic aneurysm was subsequently conducted without any complications.

### 3. Discussion

Melioidosis is a severe infectious disease caused by *Burkholderia pseudomallei* and was first described in Burma by Captain Alfred Whitmore. Since then, it has been known as a causative agent of community-acquired bacteremia in endemic countries such as Taiwan, Singapore, and Malaysia [1]. Mycotic aneurysm, a localized and irreversible dilatation of an artery caused by infection, is a rare presentation of melioidosis. The first description of mycotic aneurysm caused by *B. pseudomallei* was reported in 1998 in a 70-year-old man with hypertension [3]. Regional conditions and endemic diseases determine the etiology of mycotic aneurysms. In temperate areas, the *Burkholderia* infection is extremely rare and is almost always imported by travelers or immigrants. It has a potential latency of infection and may

| Antimicrobial                  | MIC     | Interpretation |
|--------------------------------|---------|----------------|
| Piperacillin + tazobactam      | ≤16     | Resistant      |
| Gentamicin                     | >8      | Resistant      |
| Amikacin                       | >32     | Resistant      |
| Tobramycin                     | >8      | Resistant      |
| Aztreonam                      | >16     | Resistant      |
| Ciprofloxacin                  | 2       | Intermediate   |
| Ceftazidime                    | 4       | Sensitive      |
| Imipenem/cilastatin            | ≤4      | Sensitive      |
| Meropenem                      | ≤4      | Sensitive      |
| Cefepime                       | >16     | Resistant      |
| Trimeth-sulfa                  | ≤2/38   | Sensitive      |
The authors declare that they have no conflicts of interest.

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