

# A Man with Melioidosis Mimicking Tuberculosis

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## ABSTRACT

The authors present a case of melioidosis with spondylitis and multiple internal organ abscesses including prostatic and psoas abscesses that mimic tuberculosis. The patient was a 61-year-old man who had pulmonary tuberculosis successfully treated 8 months ago. He developed subacute fever and progressive low back pain. The magnetic resonance imaging (MRI) showed spondylitis of sacrum and a large left psoas abscess. A transrectal ultrasonography of the prostate revealed a prostatic abscess. Both urine and drained pus from psoas abscess grew *Burkholderia pseudomallei*. After treatment, the patient showed a significant clinical improvement. (*J Infect Dis Antimicrob Agents* 2011;28:191-96.)

**Note:** This case had been presented and discussed in the Interhospital Case Conference on Infectious Disease (ICCID), 19 May 2011, Bangkok, Thailand.

## INTRODUCTION

Melioidosis is an infectious disease caused by *Burkholderia pseudomallei*, a soil bacterium endemic to many areas in Thailand, especially in the Northeast.<sup>1-4</sup> Melioidosis can present in a variety of clinical manifestations, but it tends to form abscesses.<sup>5-6</sup> Clinical course may be acute, subacute or chronic. In the subacute and chronic setting can cause musculoskeletal and urogenital diseases that mimic other infectious diseases, including tuberculosis. It has been referred to as the “great imitator” by various authors.<sup>7-9</sup> The musculoskeletal involvement includes septic arthritis, osteomyelitis, and pyomyositis.<sup>10</sup> A

urogenital melioidosis usually presents as a prostatic abscess.<sup>5,11</sup> Both conditions can cause psoas abscess, which may sometimes need to be surgically drained.<sup>10</sup> However, antibiotics are the mainstay of treatment for melioidosis.<sup>5,10</sup>

We report a case of melioidosis presenting with spondylitis and psoas abscess mimicking tuberculosis.

## CASE REPORT

A 61-year-old Thai male presented with subacute fever and progressive low back pain which was not relieved by analgesic for 3 weeks. He denied weakness or numbness of his legs. Two days prior to this admission, he developed severe lumbar pain, which

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referred to his left thigh. He denied any history of back injury.

His past medical history was unremarkable except he was diagnosed with smear negative pulmonary tuberculosis 14 months ago and he completed negative sputum smears at 6-month course of anti-tuberculosis agents. He had smoked a half to one pack of cigarettes per day for 8 years.

On admission at Srinagarind Hospital, the patient was a man of his age with full consciousness and looked sick. His vital signs were as follows: body temperature 36.6°C, blood pressure 116/65 mmHg, pulse rate 96/minute, and respiratory rate 20/minute. On examination his liver edge was just palpable and non-tender. His lumbosacral region was tender with positive left psoas sign. On rectal examination, the prostate gland was enlarged and tender to touch. The neurological examinations were intact. The others were unremarkable.

The initial hemoglobin concentration was 12.0 g/dL, and the white blood cell count was  $33 \times 10^5/L$  comprising of 5% band neutrophils, 88% neutrophils, 5% lymphocytes, 1% monocytes, and 1% eosinophils. The platelet count was 464,000 cells/mm<sup>3</sup>. Urine microscopic examination showed hematuria (RBC 20-30/HPF) and pyuria (WBC 50-100/HPF). The renal function revealed mild azotemia (blood urea nitrogen 24.9 mg/dL and creatinine 1.5 mg/dL) and electrolytes were normal. The liver function test revealed elevation of alkaline phosphatase (417 U/L) and serum C-reactive protein (CRP) level greater than 160 mg/L. The erythrocyte sedimentation rate (ESR) was 72 mm/hr and HIV antibody test was negative. Hemoculture and urine culture were done. A chest radiograph showed old fibrotic changes at right upper lung field (Figure 1). A lumbosacral spine radiograph revealed osteophyte formation of lumbar spines and normal psoas shadows (Figure 2). A

transrectal ultrasonography of the prostate revealed a 1 cm ill-defined round-shaped hypoechoic lesion at left side of prostate gland, measuring about 1.0 cm in diameter (Figure 3). The ultrasonography of abdomen only showed parenchymatous change of a right kidney. The magnetic resonance imaging (MRI) showed spondylitis of sacrum (S1-S3 levels) and a large left psoas abscess (Figure 4-6).

Open drainage was done and the intra-operative finding demonstrated a left psoas abscess, containing 100 ml of pus. Gram staining of the drained pus revealed white blood cells and bipolar-staining gram-negative bacilli (Figure 7), while acid-fast stain was negative. The cultures of both urine and pus grew *B. pseudomallei* which was susceptible to ceftazidime, cotrimoxazole and doxycycline, while the single bottle of hemoculture grew coagulase-negative Staphylococci which was considered as contaminant.

The patient had received intravenous ceftazidime 6 g per day for 14 days and reoperation for debridement. After treatment, the patient showed a significant clinical improvement and he was discharged from the hospital with oral cotrimoxazole (trimethoprim 640 mg per day) and oral doxycycline 200 mg per day as maintenance therapy.

## DISCUSSION

In this report, we demonstrate a case of melioidosis mimicking spinal tuberculosis. The patient presented with subacute fever with progressive low back pain and had point of tenderness at the lumbosacral region. The spinal infection or spondylitis/spondylodiscitis should be considered. In this case, the MRI of vertebral spine revealed spondylitis at sacral region with left psoas abscess.

Infectious spondylodiscitis is an infection of the vertebral body as well as the disc. Because, in adults the vessels enter only as far as the annulus fibrosus not



Figure 1. Chest radiograph.

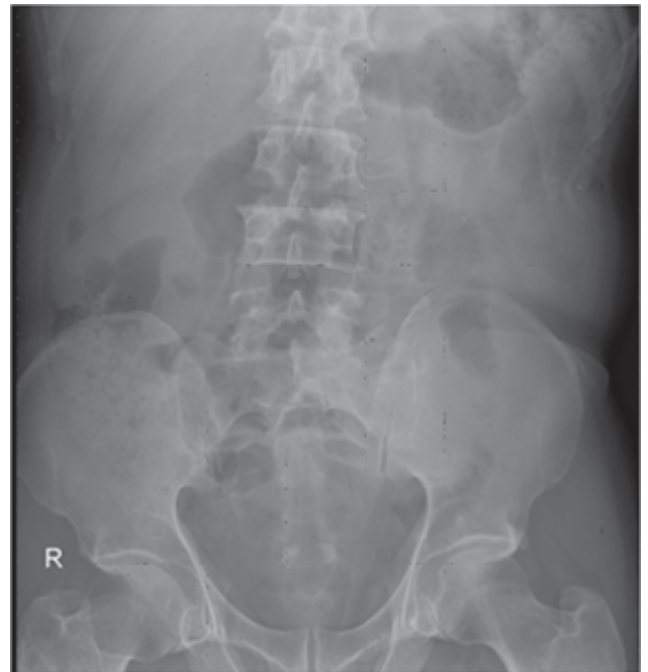


Figure 2. Lumbosacral radiography.



Figure 3. Transrectal ultrasonography of the prostate.



Figure 4. Lumbosacral spine MRI (proton density-weighted image).

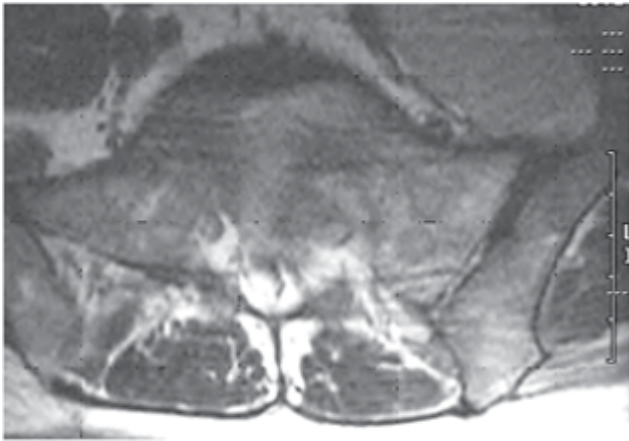


Figure 5. Lumbosacral spine MRI (T2-weighted image).

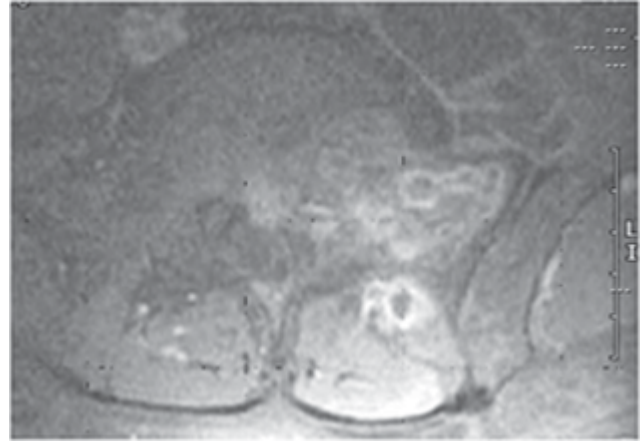


Figure 6. Lumbosacral spine MRI (T1-weighted image).

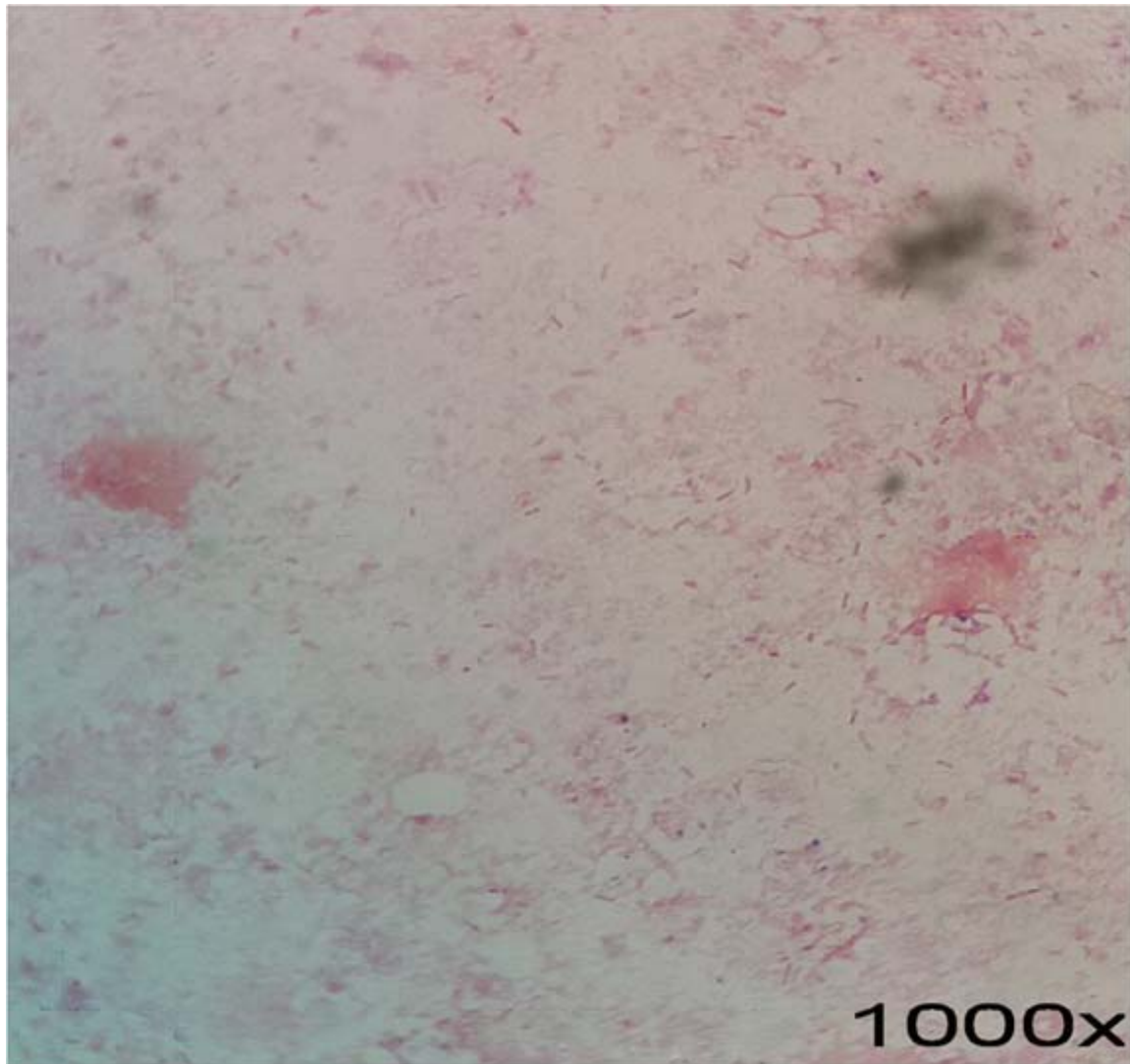


Figure 7. Gram staining of the drained pus.

in the disc space as in children, therefore it is postulated that the pathogens are deposited in the end-arterial arcades within the vertebral body metaphysis, and cause bony ischaemia and infarction. Further destruction of the vertebral body and endplate results in spreading into the contiguous disc space and paravertebral region. Most of the cases occur after hematogenous seeding of organisms from elsewhere, often from genitourinary tract, gastrointestinal tract and skin. Pre-existing diseases or conditions are often found such as diabetes, alcoholism, intravenous user, etc.<sup>12</sup> In this case, he had no significant underlying diseases.

The most common cause of spondylitis in the literature was bacteria and the majority of cases were monomicrobial. The most common pathogen identified was methicillin-sensitive *Staphylococcus aureus*, accounting for 15-84% of non-tuberculous cases, followed by gram-negative bacilli. However, the etiologic pathogens and their frequencies may vary from region to region. In Asia, certain endemic organisms should be considered such as *Brucella* spp., *Mycobacterium tuberculosis* and *B. pseudomallei*.<sup>12</sup>

Tuberculous spondylitis was initially considered in this case because he had history of pulmonary tuberculosis before. About 33-52% of tuberculous spondylitis has active or history of extra spinal tuberculosis. Paravertebral abscess or psoas abscess were also commonly found in tuberculous spondylitis as well as lumbar and lumbosacral involvement.<sup>13</sup>

However, melioidosis, infection caused by *B. pseudomallei* should be in differential diagnosis in this case. Melioidosis is more prevalent in the Northeast of Thailand than the other regions because it is a common endemic infection in Asian countries. Its manifestation is difficult to differentiate from tuberculosis, especially pneumonia, pericarditis and

chronic arthritis. Diabetes which is the most common risk factor of melioidosis is also the risk factor of tuberculosis. However, the musculoskeletal manifestation of melioidosis is less commonly found about 10-30% of the reported cases.<sup>14</sup> Therefore, in this case tuberculosis was more likely a causative pathogen initially.

Eventually, sacral spondylitis from melioidosis was diagnosed and confirmed by pus culture drained from the vertebral lesion as well as from urine culture. Melioidosis can cause various internal organ abscesses especially in liver, spleen and prostate. Prostatic abscess was also found in this case which should be looked up for because he had pyuria. Prostatic abscess is much more common in melioidosis than tuberculosis and was reported about 10-30% of cases.<sup>15</sup> In contrast psoas abscess is more common in tuberculosis than in melioidosis.<sup>14</sup> The melioidosis can cause primary and secondary psoas abscesses but a most common form of melioidotic psoas abscess is secondary psoas abscess due to spondylitis.<sup>14</sup>

In addition, Vidyalakshmi et al showed the parameters associated to melioidosis more frequent than tuberculosis, including total leucocyte count more than 11,000/mm<sup>3</sup>, neutrophil count more than 75%, ESR more than 70 mm/h and diabetes mellitus.<sup>16</sup> These findings were found in this case, except diabetes mellitus. The establishment of a definitive diagnosis requires cultivation of the organisms from the clinical specimens, so the patient had undergone open drainage then the final diagnosis was made based on microbiological results.

The critical point in this case is how to make an accurate diagnosis and give early treatment because the treatments for these two infections are radically different and delayed treatment can significantly increase morbidity and mortality.

In summary, we report an unusual case of melioidosis with spondylitis and psoas abscesses that mimic tuberculosis in the endemic area of both infections. A definitive diagnosis was made based on the results of the culture of clinical specimens. Therefore, the clinicians should be aware of this presentation of melioidosis.

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