

CASE REPORTS

Cutaneous Melioidosis in a Man Who Was Taken as a Prisoner of War by the Japanese during World War II

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Melioidosis, an infection caused by the gram-negative bacillus *Burkholderia pseudomallei*, is endemic to Southeast Asia and Northern Australia. Human infection is acquired through contact with contaminated water via percutaneous inoculation. Clinical manifestations range from skin and soft tissue infection to pneumonia with sepsis. We report a case of a man who was taken as a prisoner of war by the Japanese during World War II who presented with a nonhealing ulcer on his right hand 62 years after the initial exposure.

CASE REPORT

An 82-year-old man with a history of diabetes, hypertension, and chronic renal insufficiency who was taken as a prisoner of war by the Japanese during World War II was seen at the Audie L. Murphy Veterans Hospital on 14 February 2004 for a nonhealing ulcer overlying the metacarpophalangeal joint of his right thumb after a dog bite on 6 December 2003. He stated that the lesion initially started as a small scratch and began to enlarge and ulcerate, with intermittent purulent discharge, over a period of 3 months. There was minimal pain or restricted range of motion to the thumb. He denied fevers, chills, malaise, abdominal pain, or shortness of breath but did admit to 40 lb of weight loss over the past 2 years despite increased food intake. He had previously been seen at the VA urgent care clinic for the ulcer and was given short courses of cephalexin (Keflex) and augmentin treatment in December and January, respectively, without improvement. A wound culture done on 23 January 2004 grew a gram-negative bipolar rod sensitive to levofloxacin, piperacillin-tazobactam, cefepime, ceftoxime, and imipenem but resistant to aminoglycosides. He was started on levofloxacin treatment with marked improvement in the size of the ulcer after 2 days. After completion of the 7-day course of antibiotic, he returned to the clinic for a refill on 12 February 2004 because his ulcer worsened. He denied use of poultice treatment on the ulcer.

Upon further questioning regarding his past, he stated that he was captured on 8 March 1942 by the Japanese after his ship was bombed off the coast of the Philippines. He worked as a prisoner of war building railroads from Java through Singapore, Malaysia, Burma, and, finally, Thailand. He spent almost 2 years in Thailand in an internment camp doing manual labor. His present medical problems include diabetes, hypertension,

osteoarthritis, chronic renal insufficiency, benign prostatic hypertrophy treated with transurethral resection of the prostate, and coronary artery disease. Age-appropriate cancer screening was up to date. He had not traveled overseas since returning from the war and is retired and living on a farm in Pleasanton, Texas, with his wife.

On examination, he appeared well but was thin, with obvious signs of recent weight loss. An erythematous, ulcerated nodule overlying the metacarpophalangeal joint of the right thumb that was freely mobile over the bone was noted (Fig. 1A).

There was no tenderness, fluctuance, or discharge from the wound. There was no lymphadenopathy, hepatosplenomegaly, or cardiac or pulmonary abnormalities. Prostate examination revealed a small soft prostate that was not tender and did not have masses. Blood cell count, erythrocyte sedimentation rate, C-reactive protein, and liver function tests were normal. The creatinine level was 1.3, which was unchanged. Urinalysis was normal. Chest X ray showed mild basilar interstitial lung disease, and hand films showed osteoarthritis of the distal interphalangeal joint and metacarpal joint (Fig. 1B and C). Levofloxacin treatment was continued (500 mg orally every day) with frequent follow-up visits. Two months after starting treatment, his ulcer had improved erythema but was not completely healed.

Laboratory diagnosis. His wound culture from 23 January 2004 grew flat, creamy colonies on both blood and MacConkey agar (Remel, Lenexa, Kans.). *Burkholderia pseudomallei* was identified by biochemical testing with a Vitek 1 analyzer (bioMérieux, Durham, N.C.) with 99% confidence. The Texas Department of Health laboratory confirmed the identity of the isolate through repeated biochemical testing and PCR.

Discussion. Melioidosis is an infection caused by the gram-negative bacillus *B. pseudomallei*, which is endemic to Southeast Asia and the “Top End” of the Northern Territory of Australia. Cases have also been commonly reported in Taiwan,

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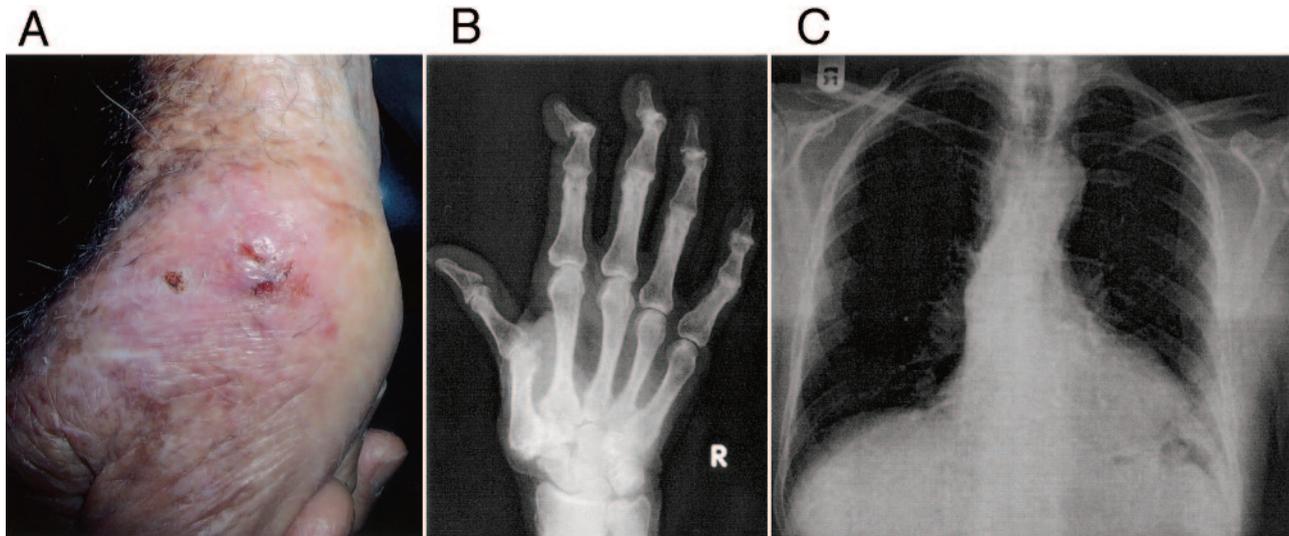


FIG. 1. (A) An ulcerated nodule on the right metacarpal joint of the patient, measuring 2 by 3 cm; (B) film showing the right hand with severe osteoarthritis of distal interphalangeal joints, unchanged since 1996 (C) chest X ray showing mild basilar interstitial lung disease.

Singapore, China, and Malaysia. Recent studies have indicated that the majority of human infections are acquired through percutaneous inoculation during contact with contaminated water or soil rather than through ingestion or inhalation (3). The incidence of melioidosis has a near-linear relationship with severity of rainfall, with 85% of the cases occurring during the rainy season (4). Cases of infection through sexual contact with a patient with chronic prostatitis, inhalation due to near-drowning, mother-child contact, and laboratory-acquired transmission have been reported in the literature (6).

Clinical manifestations of melioidosis range from pneumonia with fulminant septicemia to skin and soft tissue infections. In Thailand, melioidosis accounts for almost 20% of community-acquired septicemias (1). The predominant clinical manifestation of melioidosis in children less than 6 years of age is unilateral suppurative parotitis, while in adults, the predominant clinical manifestation is pneumonia and septicemia, with the fifth and sixth decades being the highest-risk age groups (10). Interestingly, Currie et al. found a higher incidence of prostatic abscesses in male patients (18%) and neurological disease (4%) in their prospective study of cases in the North Territory of Australia than in those reported from Thailand. Comorbid conditions that predispose an individual to infection include diabetes mellitus (35%), chronic lung disease (27%), alcohol abuse (39%), and chronic renal disease (10%) (5). Occupational exposure was found to be an important risk factor in Thailand (10).

The incubation period is influenced by the amount of inoculum, mode of transmission, and host risk factors but has been estimated to be approximately 1 to 21 days from the date of insulting injury. Melioidosis can present as an acute (88%) or chronic (22%) infection (symptoms present for >2 months) and is notorious for relapsing after treatment. In the literature, there are only two case reports of reactivation of melioidosis after primary exposure to a region where melioidosis is endemic after 18 and 28 years in a Vietnam veteran and a World War II veteran, respectively (7, 8). We report a case of reac-

tivated melioidosis in a World War II veteran 62 years after exposure.

Melioidosis is endemic in Southeast Asia, with high rates in Northwest Thailand, which is where the patient was imprisoned for almost 2 years. He had ample opportunity to have acquired infection through environmental exposure. It is unclear if he developed the infection while in Thailand and this was the first manifestation of disease, which would make for the longest incubation period ever reported in the literature, or if he had a previous infection while he was in Thailand and now has had a relapse of disease after a prolonged latent period. He denies travel to areas of melioidosis endemicity and recent exposure to contacts with melioidosis, so the likelihood that he acquired the infection after leaving Southeast Asia is very low. Trauma from the dog bite could be a factor in reactivation of the disease.

We were unable to determine an occult focus of infection as the cause of the cutaneous lesions. While Currie et al. found a high incidence of prostatic abscesses in male patients with melioidosis in Australia, this finding was not supported by studies from Thailand. With a normal prostate examination, normal urinalysis, and low markers of inflammation, we did not pursue an extensive work-up for a prostate abscess or osteomyelitis.

Since *B. pseudomallei* is resistant to aminoglycosides, macrolides, rifamycins, narrow-spectrum and extended-spectrum cephalosporins, and nonureidopenicillins, choice of therapy for treatment is difficult. Additionally, treatment for melioidosis requires a prolonged course of antibiotics characterized by slow clinical improvement, and resistance may develop during therapy. A meta-analysis of nine studies out of Thailand showed that a regimen of ceftazidime or imipenem treatment for severe melioidosis requiring hospitalization during the induction phase followed by a prolonged conventional maintenance drug regimen of chloramphenicol, trimethoprim-sulfamethoxazole, and doxycycline was associated with a reduction in mortality of about 50% (relative risk = 0.46) (9). Fluoro-

quinolones have been used for maintenance therapy, but results have been disappointing, with treatment failures of 29% at 7 months (2). Other oral regimens such as doxycycline alone, amoxicillin-clavulanate alone, or azithromycin plus ciprofloxacin have not compared as well to the conventional combination therapy regimen in terms of relapse rates (11). Since the likelihood of relapse is extremely high, especially after a short course of antibiotics, this patient will remain on long-term therapy for an indefinite period of time, at least until his ulcer completely resolves.

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