

### Disseminated melioidosis involving skin and joint: a case report

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#### Abstract

Melioidosis is an infectious disease that can cause serious morbidity and may result in death if not treated early. Its causative organism, *Burkholderia pseudomallei* is present in soil and water. Here, we report a case of disseminated melioidosis involving skin and joint in a farmer residing in an area where the organism has been found in the soil.

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#### Introduction

Melioidosis, a potentially life threatening infectious disease, is caused by the Gram-negative bacillus, *Burkholderia pseudomallei*, a soil and fresh water saprophyte in tropical and subtropical regions. Although it is regarded as a public health problem in tropical Australia and in Southeast Asian countries, particularly Malaysia, Thailand and Singapore, the increasing number of reported cases in Bangladesh and India are alarming.<sup>1,2</sup> In Bangladesh, this organism has already been isolated from the soil of Kapasia of Gazipur district in 2013 rendering this country as a definite country for melioidosis.<sup>3</sup> Here, we report a case of disseminated melioidosis involving skin and joint from the same region.

#### Case summary

A fifty seven year old male farmer from Gazipur district, Bangladesh, who was a known case of diabetes mellitus, hypertension and ischemic cardiomyopathy presented with intermittent, low to high grade fever (maximum 103°F) for 1 month. He had gradually increasing two painful swellings on the left side of the neck for 20 days, and pain in the right knee for 2 days. He was a smoker with no history of previous tuberculosis or contact. On admission, he was febrile (101°F), dehydrated, having bilateral pedal edema and

two (4cm x 3cm) erythematous, centrally fluctuating, peripherally indurated swellings in left supra and infraclavicular regions without any discharge or regional lymphadenopathy (Fig. 1). His right knee joint



**Fig.1:** Photograph showing left supra and infraclavicular swellings

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**Fig.2:** X-ray of the right knee joint showing periarticular soft tissue swelling

was initially mildly tender but on the 4<sup>th</sup> day of hospitalization it became grossly inflamed with a positive patellar tap and ripple test. Initial investigations revealed neutrophilic leucocytosis (total leucocyte count  $19.35 \times 10^9/L$ , neutrophil 89%), raised ESR (78 mm in 1<sup>st</sup> hour) and serum creatinine (281.6 mmol/L, he had no evidence of previous renal impairment). He had uncontrolled blood sugar level (RBS-17.1 mmol/dl, HbA1c- 10.3%). Chest x-ray posterior anterior view was normal and x-ray of the right knee joint revealed periarticular soft tissue swelling (Fig 2), Montoux test at 72 hours was 6mm. Blood culture demonstrated growth of *B. pseudomallei* which was susceptible to cefixime, ceftriaxone, ceftazidime, cefotaxime, amoxicillin+clavulanic acid, ciprofloxacin, doxycycline, chloramphenicol, imipenem and piperacillin-tazobactam. It was resistance to co-trimoxazole. Cytology of the aspirate from left supraclavicular swelling, showed features of granulomatous inflammation with suppuration. Study of joint aspirate from right knee joint revealed raised leucocyte count (980 cells/cmm, 98% polymorphs) and Gram- negative bacilli. A final diagnosis of disseminated melioidosis presenting with septicemia, septic arthritis (right knee) and acute kidney injury (AKI) was made.

The patient was treated with intravenous imipenem (dose was adjusted according to renal function) and subcutaneous insulin. His general condition improved, joint swelling reduced and a repeat blood culture after 3 days showed no growth of the organism. The patient was discharged on request after two weeks with oral doxycycline (100mg bid) and amoxicillin-clavulanate

(500/125mg bid) for 5 months. A follow up visit after 2 weeks showed disappearance of his neck swellings but his joint was mildly tender and swollen. However, no fluid could be aspirated. He was advised to continue his medications and start physiotherapy once his joint pain subsides. Unfortunately, the patient died of acute myocardial infarction 4 weeks after the follow-up visit.

### Discussion

Melioidosis can affect any organ in the body with a wide spectrum of presentations ranging from acute to chronic, local to systemic and may even be subclinical. Most affected organ is the lung followed by skin and subcutaneous tissue.<sup>1,2,4</sup> Skin and soft-tissue infection comprise 13%–24% of clinical presentations.<sup>1</sup> Primary skin melioidosis is often localized and less severe than other forms of melioidosis. In northern Australia, there were no cases of bacteremia or death among the 32 patients seen over a 10-year period who had primary skin melioidosis.<sup>5</sup> In another study, large majority of patients with primary skin melioidosis had single lesions that were nonspecific in nature, with size varying from several millimeters to several centimeters. The most common presentation was with an ulcer, with or without purulent exudates. Other skin lesions included single pustules, boils, crusted erythematous lesions, and dry asymmetric erythematous flat lesions while cellulitis was rare.<sup>6</sup>

On the other hand in Southeast Asia, primary skin melioidosis has been reported to be associated with necrotizing fasciitis, sepsis and internal organ abscesses.<sup>4,7,8</sup> Blisters, superficial erythematous pustules, clusters of violaceous skin abscesses, cellulitis and subcutaneous abscesses have commonly been reported.<sup>1,4</sup>

Our patient presented in the disseminated form having cutaneous abscess, bacteraemia and septic arthritis. Previously, a melioidosis case was reported in Bangladesh having cutaneous and joint involvement who had a history of being treated as a case of tuberculosis with no response.<sup>9</sup> Cutaneous presentation in a Bangladeshi returning traveler to Belgium was reported as well.<sup>10</sup> In these cases growth of *B. pseudomallei* was detected in either joint aspirate, pus from cutaneous lesions or both. In our case it was isolated from blood. Joint fluid analysis demonstrated Gram negative bacilli although culture showed no growth. Negative culture of joint fluid, in our case,

could be due to the fact that joint fluid aspiration was performed during the course of antibiotic treatment.

Treatment for melioidosis is effective and life saving provided the diagnosis is timely made and the

dose and duration of the appropriate antibiotics are adequate. In our case after 3 days of intravenous imipenem, blood culture revealed no growth of *B. pseudomallei* and there was gradual clinical improvement. Oral amoxicillin-clavulanate with doxycycline was prescribed as maintenance therapy as the isolate was resistant to co-trimoxazole. However, amoxicillin-clavulanate had been reported inferior to co-trimoxazole as maintenance therapy.<sup>11</sup> The reported rate of resistance to co-trimoxazole, as assessed with E-test, was about 13% for Thai isolates but much lower for Australian isolates (0 to 2.5%).<sup>1,12</sup> Although, our patient died due to acute myocardial infarction, mortality due to melioidosis can be as high as 65% in bacteraemic cases if there is a delay in diagnosis, inadequate antibiotic dose, duration or improper combination of antibiotics.<sup>2</sup>

### Conclusion

Melioidosis mimics tuberculosis in clinical, radiological and histo-pathological aspects. Considering the rising numbers of reported cases in our country and a high mortality rate in bacteraemic cases, it is important to suspect melioidosis in appropriate clinical settings where infection does not respond to conventional antibiotics or anti-tubercular medications. Awareness about the extent of this disease in our country needs to be developed among both clinicians and microbiologists.

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### References

1. Cheng AC, Currie B J. Melioidosis: Epidemiology, Pathophysiology, and Management. *Clinical Microbiological Review* 2005; **18**(2): 383-416.
2. Barai L, Jilani SA, Haq JA. Melioidosis-Case reports and review of cases recorded among Bangladeshi population from 1988-2014. *Ibrahim Med Coll J* 2014; **8**(1): 25-31.
3. Medical News. Melioidosis: deadly bacteria in Gazipur soil of Bangladesh. *Bangladesh Med J* 2013; **42**(3): 99.
4. Chaowagul W, White N, Dance DAB, Wattanagoon Y, Naigowit P *et al.* Melioidosis: a major cause of community-acquired septicemia in Northeastern Thailand. *Infect Dis* 1989; **159**: 890-9.
5. Currie BJ, Fisher D, Howard D, Burrow JN, Lo D, Selva-Nayagam S *et al.* Endemic melioidosis in tropical northern Australia: a 10-year prospective study and review of the literature. *Clin Infect Dis* 2000; **31**: 981-6.
6. Gibney KB, Cheng AC, Currie BJ. Cutaneous melioidosis in the tropical top end of Australia: a prospective study and review of the literature. *Clinical Infectious Diseases* 2008; **47**: 603-9.
7. Teo L, Tay Y-K, Mancer KJF. Cutaneous melioidosis. *J Eur Acad Dermatol Venereol* 2006; **20**: 1322-4.
8. Wang Y, Wong C, Kurup A. Cutaneous melioidosis and necrotizing fasciitis caused by *Burkholderia pseudomallei*. *Emerg Infect Dis* 2003; **9**: 1484-5.
9. Uddin KN, Hossain M, Mansur A, Haq JA, Khan AR. Melioidosis- A case report. *J Bangladesh College Phys Surg* 2001; **19**: 71-4.
10. Ezzedine K, Heenen M, Malvy D. Imported cutaneous melioidosis in traveler, Belgium. *Emerg Infect Dis* 2007; **13**(6): 946-7.
11. Wuthiekanun V, Amornchai P, Saiprom N, Chantratita N, Chierakul W, Koh GCKW, *et al.* Survey of antimicrobial resistance in clinical *Burkholderia pseudomallei* isolates over two decades in Northeast Thailand. *Antimicrob Agents Chemother* 2011; **55**(11): 5388-91.
12. Cheng AC, Chierakul W, Chaowagul W, Chetchotisakd P, Limmathurotsakul D, Dance DA *et al.* Consensus guidelines for dosing of amoxicillin-clavulanate in melioidosis. *Am J Trop Med Hyg* 2008; **78**: 208-9.