

## CASE REPORT

# MELIOIDOSIS: A CASE OF MULTIPLE SUBCUTANEOUS ABSCESSSES WITH SEPSIS

MIZANUR RAHMAN KHAN<sup>1</sup>, SADIA RAHMAN <sup>2</sup>, CHOWDHURY ADNAN SAMI<sup>3</sup>, HASAN MOSTAFA RASHED<sup>3</sup>, ABED HUSSAIN KHAN<sup>4</sup>, SHOHAEL MAHMUD ARAFAT<sup>5</sup>

### Abstract:

*Melioidosis has lately expanded its endemic areas to encompass the Indian subcontinent, despite being well-known in Southeast Asia and Northern Australia. Though cases have been reported from Bangladesh, it might be a significantly underdiagnosed cause of infection & death in this agricultural country. We report a case of melioidosis with multiple abscesses & fulminant sepsis in a 55-year-old farmer diagnosed based on pus samples, which revealed gram-negative bacillus Burkholderiapseudomallei.*

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### Introduction:

Melioidosis, commonly called ‘Whitmore’s Disease’, is caused by the bacterium *Burkholderiapseudomallei*, which can often be found in soil and surface water<sup>1</sup>. Whitmore and Krishnaswami discovered this gram-negative bacterium in Rangoon, Burma, in 1911, which can be transmitted by inoculation, inhalation & ingestion.<sup>2,4</sup> People who work in the paddy field have been reported to have a higher risk of melioidosis.<sup>2</sup>

The disease presents as a febrile illness with features ranging from pneumonia, acute septicemia, septic arthritis, and chronic infection leading to abscesses in the deeper organs, such as lung, liver, kidney & spleen. One of the presentations of melioidosis is

skin & soft tissue abscess in a study conducted on melioidosis patients in Bangladesh<sup>3</sup>. Case fatality ranges from 16 to 44% in endemic region<sup>1(CE)</sup>. Without appropriate treatment, septicemia from melioidosis can develop & is associated with a >90% mortality rate.<sup>2</sup> Lately, a modeling study predicted the burden of melioidosis is about 17000 cases a year & 9500 deaths in Bangladesh in a year.<sup>3</sup>

Though the most common presentation of melioidosis includes pneumonia<sup>9</sup>, multiple soft tissue abscess is a rather less common presentation of the disease. However, being an agricultural country, skin and soft tissue involvement with febrile episodes seems to be the more pronounced presentation in our region.

1. Medical officer, Department of Internal Medicine, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh
2. FCPS trainee, Department of Internal Medicine, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh
3. Senior Resident, Department of Internal Medicine, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh.
4. Assistant Professor, Department of Internal Medicine, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh
5. Professor & Chairman, Department of Internal Medicine, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh

**Address of Correspondence:** Dr. Chowdhury Adnan Sami, Senior Resident, Department of Internal Medicine, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh, Email: [sami.adnan.doc@gmail.com](mailto:sami.adnan.doc@gmail.com) Tel.: +8801743119498.

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Here, we report this case where a middle-aged, diabetic man presented with multiple abscesses & fulminant sepsis and was later diagnosed with melioidosis.

#### Case report:

A 55-year-old man presented to us having a fever & multiple soft tissue abscesses for two months. The fever was high grade, intermittent, and accompanied by chills and rigor, relieved by sweating. He was not coughing or experiencing any shortness of breath or chest discomfort. He was anorexic and lost 14 kg weight in 2 months.

He initially presented with acute febrile illness in Chaudhagram Upazila Health Complex (Cumilla), where he was first diagnosed with diabetes with poor glycaemic status, as evidenced by blood sugar of 29 mmol/l and HbA1C 14.3%. He has been prescribed cefixime 400 BD for seven days with insulin. After four days of staying there, he developed joint pain, which first involved his right knee; then the left wrist joint & left ankle; the joints were red, swollen & tender. Joint pain was not associated with morning stiffness or night pain but was so severe that the patient could not walk. Later in the same week, he noticed the development of soft tissue swelling in the medial aspect of his right thigh & was shifted to Cumilla Medical College Hospital for better management.

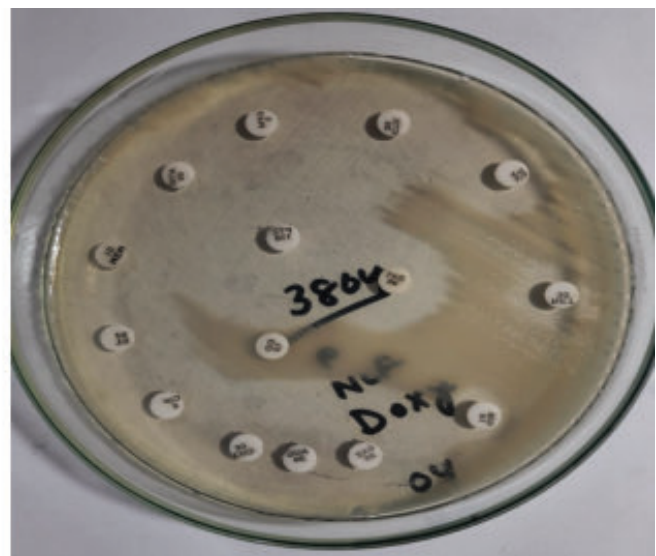
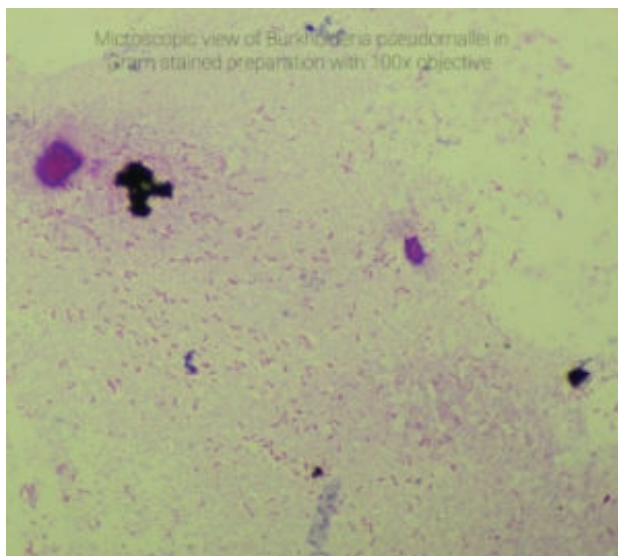
After transfer to Cumilla Medical College, he also developed an abscess over the left dorsum of the hand. He was evaluated thoroughly with a synovial fluid study, where the color was deep straw, slightly hazy with a thick consistency. No macroscopic or microscopic blood was mixed with the fluid (clot was absent), and the cell count was  $10 \times 10^3/\mu\text{L}$  (65% polymorph) with no organism on staining or culture.

However, pus culture from the abscess showed growth of *Acinetobacter*, which was sensitive to Meropenem. The patient developed AKI on CKD, evident by raised s. creatinine to 3.07 mg/dl in the following days. His bilirubin was elevated to 4.1 mg/dl, ALP was 1078 U/L, and Ferritin was 1200 ng/ml. USG revealed poor cortico-medullary differentiation of both kidneys. He was shifted to Bangabandhu Sheikh Mujib Medical University due to the deterioration of his condition.

On examination after admission, he was febrile (temperature 104°F), Glasgow coma scale was 11. The patient was moderately anemic with bipedal edema, but there was no facial puffiness or lymphadenopathy. His right knee joint was swollen and tender. He had a superficial abscess on his right thigh's medial surface & on the left dorsum of the hand (Figure 1). The patient had an oral ulcer but no skin rash, uveitis, or signs of endocarditis. Examination of the nervous system revealed no additional abnormality.



**Fig.-1:** Soft tissue abscess was seen in the left hand



**Fig.-2:** Gram stain and culture of pus demonstrating characteristics of *B. pseudomallei*

Pus analysis revealed plenty of pus cells with gram-negative bacteria on methylene blue stain, which was safety pin shaped. In addition, pus culture revealed a metallic sheen indicative of *B. pseudomallei*, which is resistant to aminoglycosides but sensitive to Meropenem and Ceftazidime (Figure 02). Anti-sera and a latex agglutination test were used to validate pus culture. However, the blood culture did not reveal any growth of bacteria.

#### Discussion:

*Burkholderia pseudomallei*, a saprophytic gram-negative organism, causes melioidosis (an emerging disease in Bangladesh). The infection has an incubation period of a maximum of 21 days and can be acquired by inhalation, direct inoculation, or by ingestion of contaminated soil or water<sup>5</sup>. Melioidosis commonly presents with pneumonia. Among extrapulmonary manifestations of melioidosis include internal abscess (lung, liver, spleen, brain, and subcutaneous tissue), soft tissue abscess, cutaneous infections, lymphadenitis, genitourinary infections, encephalitis, septic arthritis, osteomyelitis, and chronic granulomatous disease, which can have acute (less than two months) or chronic (more than two months) presentations<sup>7,8</sup>. Diabetes, renal illness, thalassemia, excessive alcohol consumption, chronic lung disease, malignancies, steroid therapy, and tuberculosis are common risk factors<sup>4,5</sup>.

Fifty-one reported cases were found from 1961 until 2017, among which cases have been reported from 16 out of 64 districts of Bangladesh<sup>3</sup>. Lately, a modeling study predicted the burden of melioidosis is about 17000 cases a year & 9500 deaths in Bangladesh in a year<sup>3</sup>. Diabetes mellitus is the most typical risk factor in one review article, followed by exposure history to high-risk occupations like farming or contaminated water<sup>1</sup>. Soft tissue abscess was the usual presentation, along with pneumonia & septic arthritis/osteomyelitis in this region<sup>3</sup>.

The clinical presentation of the disease is widely varied & definitive diagnosis requires a skilled microbiological laboratory facility, making it challenging to diagnose. Though pneumonia is the most common presentation, there were no or minimum respiratory complaints in our patient. Instead, the presentation was with high-grade fever, anorexia, and significant weight loss followed by multiple joint pain and soft tissue abscess. Though the patient was not diagnosed case of diabetes mellitus, after his initial visit to the physician, he was labeled with type 2 diabetes with poor glycaemic control, which is a risk factor for such infection.

Another recognized risk factor was our patient being a farmer. So, suspicion should be aroused in a febrile patient with multiple abscesses in the apt geographical area having a probable exposure history.

Identifying the organism requires a culture of the organism from a specimen of blood, sputum, pus, wound swab, or urine<sup>5,7</sup>. In our case, we found the causative organism in both pus staining and culture. Serological investigation might be needed in culture-negative cases.

Management of the disease requires an intensive phase of treatment for 2-3 weeks with IV antibiotics (Ceftazidime or Carbapenems) and an eradication phase for 3-6 months with oral Co-trimoxazole or Doxycycline & Amoxicillin<sup>7</sup>. In our case, we continued management with IV Meropenem for two weeks, and oral Linezolid as sepsis was suspected. After five days of antibiotics, the patient started improving, evidenced by his afebrile status and improvement in his GCS.

His hemoglobin rose to 9.8 g/dl after ten days with one unit blood transfusion, and his erythrocyte sedimentation rate fell to 42 mm in 1st hour. Infection control was evident by normal WBC count and near normal inflammatory markers. Liver function tests improved with 1.2 mg/dl bilirubin, SGPT 28 U/L, S. ALP 197 U/L. Kidney function improved (serum creatinine 1.78 mg/dl). After 18 days of treatment intensively, the eradication phase was initiated with Co-trimoxazole for three months with advice for strict glycaemic control. The patient's follow-up visits after three months demonstrated outstanding clinical as well as a biochemical exemption.

We report this case since our patient presented with multiple abscesses complicated with sepsis, a rather unusual presentation mainly involving skin and soft tissue and sparing lung involvement. As the definite diagnosis requires isolation of etiological organism, in our patient, the diagnosis was delayed due to a lack of clinical suspicion & skilled laboratory support. Though the management of melioidosis comprises both intensive & eradication phases, the patient might recover fully with appropriate treatment & follow-up as our patient did<sup>6</sup>.

Bangladesh being the definite endemic for melioidosis<sup>10</sup>, lack of awareness among both the clinicians & microbiologists and poor microbiological diagnostic infrastructure could lead to underreporting of the disease in our country<sup>3</sup>. Furthermore, considering the disease burden, both common and uncommon presentations of the disease must be thoroughly evaluated in high-risk patients with a suitable clinical scenario.

**Conflict of Interest:**

The authors stated that there is no conflict of interest in this study

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