ORIGINAL RESEARCH PAPER
Volume - 12 | Issue - 12 | December - 2023 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

MELIOIDOSIS, A GREAT MIMICKER: CASE REPORT

General Medicine

Dr. Yoshitha Inala* MBBS *Corresponding Author
Dr. Beeravally Sai Sushmitha Reddy MBBS

ABSTRACT

Melioidosis is an infectious disease caused by an intracellular gram-negative bacterium Burkholderia pseudomallei. Herein, we present a case of Melioidosis in a 40-year-old Indian man who presented with high-grade fever. He was a known case of type 2 diabetes on metformin. 2 years ago, the patient was hospitalized for fever, pain abdomen and bilateral lower limb abscesses, and was treated with IV antibiotics without further evaluation. But during this stay the patient was treated with combined antibiotic therapy of meropenem and ceftazidime for a duration of 10 days and as a result, the patient's clinical and laboratory parameters returned to normal limits and patient was discharged. Upon discharge, the patient was prescribed Doxycycline and Co-trimoxazole for a period of 6 months.

KEYWORDS

Melioidosis, Burkholderia pseudomallei, septicaemia

INTRODUCTION

Melioidosis, caused by the gram-negative bacterium Burkholderia pseudomallei, is an infectious disease that can range from mild to severe symptoms [1]. While many individuals exposed to B. pseudomallei may not experience any symptoms, those who do may exhibit signs such as fever and skin changes, or more severe manifestations like pneumonia, abscesses, and septic shock [2]. This can ultimately lead to fatal outcomes. The disease is particularly prevalent in developing countries, with India reporting a significant number of cases, especially in the southern states of Kerela and Tamil Nadu [3,4].

Melioidosis is not limited to a specific age group and can affect individuals of all ages. In recent years, there have been reports of Melioidosis outbreaks in the United States, specifically linked to the use of contaminated aromatherapy spray imported from India [3]. It is worth noting that more than 50% of people diagnosed with Melioidosis also have diabetes, which significantly increases their risk of contracting the disease. Melioidosis is sometimes referred to as the "Paddy-field disease"[5] or "Pseudoglanders"[6] due to its association with certain occupations or environments. The symptoms of Melioidosis can often be mistaken for tuberculosis, leading to misdiagnosis. Diagnosis typically involves the isolation and identification of B. pseudomallei from infected individuals' bodily fluids, such as blood, pus, sputum, or urine [7]. Treatment usually consists of an initial phase of intravenous antibiotics, followed by a prolonged course of co-trimoxazole.

The disease is prevalent in developing countries, including India, where cases have been reported in various regions. Early and accurate diagnosis, along with appropriate antimicrobial therapy, is crucial in reducing the morbidity and mortality associated with Melioidosis. It is important to note that Melioidosis can affect individuals of all ages and is often associated with diabetes. Misdiagnosis is common, as the symptoms resemble those of tuberculosis. Treatment typically involves a combination of intravenous antibiotics and oral medication.

Case Report

Our patient was a 40-year-old male from the state of Telangana. He presented to General Medicine OPD with fever since 20days which is high grade, continuous associated with chills and rigors, vomiting and pain abdomen which was dull aching and diffuse pain with no aggravating or reliving factors. 2 years ago, the patient was hospitalized for fever, pain abdomen and bilateral lower limb abscesses, got treated with IV antibiotics without further evaluation. He is a known case of diabetes mellitus.

On examination, he was obese, febrile and dehydrated. His body temperature was 101° F, blood pressure 100/60mm Hg, respiratory rate 45/min, and heart rate 116/min. Respiratory examination revealed crepitations on the right side Infra axillary and infra-scapular lung. Normal vesicular sounds at rest of the lung fields. His abdomen was tender at the right hypochondrium and epigastric region. No cardiovascular or neurological abnormality was noted. Healed ulcers were seen over bilateral lower limbs (over the leg and knee region).

Laboratory investigations revealed that multiple hematological and biochemical parameters were deranged [Table 1]. Urine and blood samples were sent for culture.

Table 1: Laboratory Investigations

Laboratory findings		
Biochemical and hematological parameters		Normal limits
Haemoglobin	14.2 gm/dl	14-18 gm/dl
Total leukocyte count	18,620/cubic mm	4,500 to 11,000 /cubic mm
Platelet count	38,000/cubic mm	150,000 to 450,000 /cubic mm
Glycosylated haemoglobin (HbA1c)	8.10%	4% to 5.6%
Total bilirubin	4.0 mg/dl (Direct: 3.4mg/dl)	0.1 to 1.2 mg/dl
Albumin	3.4 mg/dl	3.5–5.5 g/dl
Globulin	3.2 mg/dl	2.0–3.5 g/dl
Albumin/Globulin ratio	0.94	1.0 to 2.0
Serum glutamic oxaloacetic transaminase (SGOT)	197 mg/dl	5 to 40 mg/dl
Serum glutamic pyruvic transaminase (SGPT)	121 mg/dl	7 to 56 mg/dl
Blood Urea	85 mg/dl	5 to 20 mg/dl
Creatinine	2.9 mg/dl	0.7 to 1.3 mg/dl
C-reactive protein	221 mg/dl	0.3 to 1.0 mg/dl
Microbiological parameters		
Urine culture Sterile Blood culture	Burkholderia pseudomallei	

Upon reviewing the patient's chest X-ray, it was evident that there was a homogenous consolidation in the upper and lower right lobe, while the remaining part of the lung exhibited diffuse alveolar opacities. An ultrasound examination was conducted, which identified the presence of hepatomegaly and mild splenomegaly with mild bilateral pleural effusion and mild ascites. Notably, no focal lesions or organomegaly were identified during the examination. Additionally, a CECT (Contrast Enhanced Computerized Tomography) scan of the abdomen showed diffuse hepatomegaly, multiple tiny abscesses in the periphery of both lobes of the liver, mild splenomegaly, multiple abscesses and infarcts of spleen patchy consolidation right lung lower zone. (Figure 1)

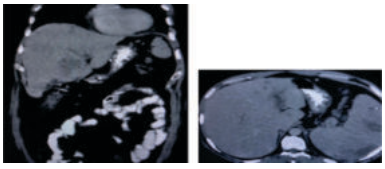

Figure 1 CECT Scan of the Abdomen

The patient received IV fluids and was initially treated with empirical antibiotics, specifically Cefeperazone - Sulbactam and Metronidazole, due to worsening sepsis and lack of clinical improvement. However, as the patient's condition did not improve, antibiotic escalation was performed on the third day of admission, and the patient was given Injection MEROPENEM.

On the fifth day of admission, after receiving the results of the blood culture (Figure 2) and sensitivity report, the patient's treatment with Injection Meropenem was continued, and Injection Ceftazidime was also started. This combined antibiotic therapy was administered for a duration of 10 days. As a result, the patient's clinical and laboratory parameters returned to normal limits. Upon discharge, the patient was prescribed Tab. Doxycycline and Tab Co-trimoxazole for a period of 6 months.

Figure 2: Colonies of Burkholderia Pseudomallei on Mac Conkey Agar

DISCUSSION

Melioidosis is a disease that is often overlooked and understudied, particularly in developing countries where it remains endemic [1]. One of the main issues with this disease is under-reporting, which is a common problem that can lead to a lack of awareness and understanding of the disease. This is often due to a lack of laboratory diagnostic capabilities and a lack of disease awareness among healthcare providers, which can result in under diagnosis.

There are several risk factors associated with Melioidosis, including diabetes, chronic lung, liver, and kidney diseases, excessive alcohol consumption, and malignancy. Diabetes mellitus is the most common risk factor, which imposes a 12-fold risk increase for Melioidosis. In fact, up to 23-60% of diagnosed patients are diabetic [8]. It is important to be aware of these risk factors in order to identify and diagnose cases of Melioidosis early on.

The incubation period of Melioidosis can vary greatly, ranging from a few days to months or even years before symptoms develop [9]. The disease can present in a variety of ways, from asymptomatic infection to acute localized infection or septicaemia, and even chronic infection [10]. It is important to be aware of the different presentations of Melioidosis in order to accurately diagnose and treat the disease.

A study conducted by Vidyalaxmi et al. [11] revealed a significant correlation of 76% between diabetes and Melioidosis. Melioidosis is a systemic disease that commonly affects the lungs, but it can also involve the liver and spleen [12]. It is important to note that Burkholderia pseudomallei, the causative agent of Melioidosis, is resistant to several antibiotics that are commonly used empirically, such as ampicillin, second-generation cephalosporins, macrolides, rifampicin, and aminoglycosides [8].

In cases of systemic Melioidosis, Ceftazidime is the drug of choice [13]. According to Cheng et al., combination therapy of Ceftazidime and Co-trimoxazole has shown better outcomes. It is crucial to follow the recommended treatment guidelines to ensure effective management of Melioidosis, especially in patients with underlying conditions such as diabetes [14].

Our patient's condition significantly improved upon initiation of the appropriate antibiotics, despite the severity and complexity of his infection. Consequently, it is crucial for physicians to maintain a low threshold of suspicion, familiarize themselves with the clinical presentation of Melioidosis, and strive to make an early diagnosis, particularly when patients exhibit suggestive symptoms.

Given that Melioidosis is notorious for its ability to mimic other conditions, it becomes important to wait for an extended duration for blood culture reports, as this particular organism has a slow growth rate. In order to mitigate mortality, morbidity, and the likelihood of recurrence, treatment with broad-spectrum antibiotics for an extended period of time is recommended.

CONCLUSION

Melioidosis is a systemic disease that can involve multiple organs, and it has a significant correlation with diabetes. Burkholderia pseudomallei is the causative agent of Melioidosis which is resistant to several commonly used antibiotics. It is necessary for healthcare professionals to remain vigilant and proactive in the diagnosis and management of Melioidosis. Although the disease is not common in India but early and accurate diagnosis and proper antimicrobial therapy are crucial to reduce morbidity and mortality and achieve a favourable outcome.

Conflicts of Interest: None

Funding: None

Acknowledgement: The authors would like to thank the Department of General Medicine at Kamineni Academy of Medical Sciences and Research Centre, Hyderabad for their constant support and encouragement. Special thanks to all the authors who have made significant contributions in writing, reviewing and submitting the manuscript.

REFERENCES

1. Wiersinga WJ, Virk HS, Torres AG, Currie BJ, Peacock SJ, Dance DA, Limmathurotsakul D (February 2018). "Melioidosis". Nature Reviews. Disease Primers. 4: 17107. doi:10.1038/nrdp.2017.107.
2. Gee JE; Bower WA; Kunkel A (March 2022). "Multistate Outbreak of Melioidosis Associated with Imported Aromatherapy Spray". New England Journal of Medicine. 386 (9): 861–868. doi:10.1056/NEJMoa2116130.
3. Anuradha K, Meena AK, Lakshmi V. Isolation of Burkholderia pseudomallei from a case of septicaemia: A case report. Indian J Med Microbiol 2003; 21:129-32.
4. Jesudason MV, Anbarasu A, John TJ. Septicaemic Melioidosis in a tertiary care hospital in south India. Indian J Med Res 2003; 117:119-21.
5. Orellana C (November 2004). "Melioidosis strikes Singapore". The Lancet Infectious Diseases. 4 (11): 655. doi:10.1016/S1473-3099(04)01190-9. PMID 15534940.
6. Chai LYA; Fisher D (1 August 2018). "Earth, wind, rain, and melioidosis". The Lancet Planetary Health. 2 (8): 329–330. doi:10.1016/S2542-5196(18)30165-7. PMID 30082045.
7. Foong YC, Tan M, Bradbury RS (30 October 2014). "Melioidosis: a review". Rural and Remote Health. 14 (4): 2763. doi:10.22605/RRH2763. PMID 25359677.
8. Ashdown LR: In vitro activities of the newer beta-lactam and quinolone antimicrobial agents against Pseudomonas pseudomallei. Antimicrob Agents Chemother. 1988, 32:1435-6. 10.1128/AAC.32.9.1435
9. Currie BJ, Fisher DA, Howard DM, et al.: The epidemiology of Melioidosis in Australia and Papua New Guinea. Acta Tropica. 2000, 5:121-7. 10.1016/s0001-706x(99)00060-1
10. Shrestha N, Adhikari M, Pant V, et al.: Melioidosis: misdiagnosed in Nepal . BMC Infect Dis. 2019, 19:176. 10.1186/s12879-019-3793-x
11. Vidyalakshmi K, Shrikala B, Bharathi B, Suchitra U. Melioidosis: An underdiagnosed entity in western coastal India: A clinico-microbiological analysis. Indian J Med Microbiol 2007;25:245-8.
12. Dhodapkar R, Sujatha S, Sivasangeetha K, Prasanth G, Parija SC. Burkholderia pseudomallei infection in a patient with diabetes presenting with multiple splenic abscesses and abscess in the foot: A case report. Cases J 2008;1:224.
13. Sookpranee M, Boonma P, Susaengrat W, Bhuripanyo K, Punyagupta S. Multicenter prospective randomized trial comparing ceftazidime plus cotrimoxazole with chloramphenicol plus doxycycline and co-trimoxazole for treatment of severe Melioidosis. Antimicrob Agents Chemother 1992;36:158-62.
14. Cheng AC, Fisher DA, Anstey NM, Stephens DP, Jacups SP, Currie BJ. Outcomes of patients with Melioidosis treated with meropenem. Antimicrob Agents Chemother 2004;48:1763-5.