International Journal of Community Medicine and Public Health
Kottayi RT et al. Int J Community Med Public Health. 2024 Oct;11(10):4059-4063
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: https://dx.doi.org/10.18203/2394-6040.ijcmph20242893

Case Series

Epidemiological and clinical profile of melioidosis cases admitted in a tertiary care centre in North Kerala: a case series

Remya Thattarath Kottayi*, Jayasree Anandabhavan Kumaran

Department of Community Medicine, GMC, Kannur, Kerala, India

Received: 02 July 2024
Revised: 22 August 2024
Accepted: 03 September 2024

***Correspondence:**
Dr. Remya Thattarath Kottayi,
E-mail: drremyacm@gmail.com

ABSTRACT

Melioidosis is a bacterial infection caused by *Burkholderia pseudomallei*. It is endemic in South East Asia and Northern Australia and is also known as Whitmore's disease. The bacteria are present in soil and water in the endemic areas. The transmission is through contamination of wounds, ingestion and inhalation. Recent increase in melioidosis cases in a tertiary care centre since last 10 months led to this study to understand the disease profile. There were 15 cases during this period, among them ten were male (67%). The median age was 55 years. The majority had history of contact with contaminated soil and water. The median duration of symptoms was 30 days. At time of admission, they were provisionally diagnosed as pneumonia (46%) septic arthritis (27%) and Suppurative lymph node with abscess (27%). Diabetes mellitus (67%) was the most common co morbidity. Among the fifteen cases, ten were investigated for tuberculosis by CBNAAT and found negative. Majority of patients had history of contact with contaminated soil and water. So, control measures will remain as a challenge. Diabetes mellitus was the most common associated factor. Its similarity with other diseases can be a reason for delay in diagnosis.

Keywords: Melioidosis, *Burkholderia psuedomallei*, Co-morbidity, Diabetes mellitus

INTRODUCTION

Melioidosis is a bacterial infection caused by *Burkholderia pseudomallei*.[1] It is present in soil and water in the endemic areas, and infection is acquired through skin inoculation or contamination of wounds, ingestion and inhalation. Humans and animals (dogs, sheep, cow etc) are affected by melioidosis.[1] The highest risk for melioidosis exists in person who work in contact with soil and contaminated water.

Chronic diseases like diabetes mellitus, kidney disease, etc are other risk factors for melioidosis.[2] Cases may increase after heavy rain, and other severe weather events because the bacteria rise to the surface of the soil. Case fatality rate is 10% to 50%.[3] It is endemic in South East Asia and Northern Australia and is also known as Whitmore's disease. The incubation period of the disease ranges from one day to many years. Melioidosis is often misdiagnosed because of its wide range of symptoms which often mimic those of other tropical diseases. Melioidosis can have 2 major presentations; acute infection and chronic infections (symptoms lasting >2 months).[1]

Melioidosis can present as septicaemia, localized infection with/without abscesses and ulcers, asymptomatic infections, pneumonia, visceral abscesses, neurologic infection, and musculoskeletal infections.[2] Treatment of Melioidosis is prolonged, and include 2 phases. Intensive treatment with intravenous antimicrobial therapy for 10-14 days and eradication phase with oral antibiotics for 3-6 months.[2] Early case detection and management, including eradication therapy

will prevent further complication due to disease[1].Recent increase in cases in the region, led to this study in understanding the disease profile.

CASE SERIES

Case 1

A 17-year-old male student with known history of type 1 diabetes mellitus and hypothyroidism from a rural area who had a habit of swimming in pond developed fever for four days and was admitted at a private hospital. After that patient had swelling over left side of neck and recurrent fever so he consulted at tertiary care center after 2 weeks and diagnosed as right cervical lymph node abscess.

It was investigated for tuberculosis but CBNAAT was negative, but pus culture was positive for *Burkholderia psuedomallei*. He had abdominal discomfort, his USG report shown hepatic and splenic abscess. He was treated with ceftazidime. Since his fever didn't subside, he got discharged at request and shifted to Private hospital.

Case 2

A 63-year-old male who was a fisherman as well as do watchman work resides in rural area with lot of contaminated water-logged area with comorbidities of T2 DM developed fever and consulted at hospital on the same day. Next day he had pain on left side of neck and consulted the same hospital and given medications.

Symptoms not subsided so, again consulted at same hospital and referred after 1 week to tertiary care center. CT shows sequala of old Koch's infection, FNAC showed suppurative cervical lymphadenitis, but CBNAAT was negative, so he was started on Anti Tuberculosis Treatment as a clinically diagnosed EPTB and discharged. After 1 week patient again admitted at same tertiary care center with history of swelling in left side of neck, it was a neck abscess. The pus was drained and culture from cervical lymph node was found positive for *B. psuedomallei* and treated as per guideline.

Case 3

A 65-year male a manual labor from rural area developed fever, knee pain and swelling since, 28 days and diagnosed as septic arthritis. He had a similar history last month and was diagnosed with melioidosis and underwent arthrotomy and finally got admitted in tertiary care center. He had history of underwent 2 arthrotomies.

He also gave history of leptospirosis infection in previous month. He was a known case of diabetes and he was anemic on investigation. The pus and synovial fluid from the knee joint were sent for culture and found heavy growth of *B. pseudomallei*. Source of infection might be soil

Case 4

A 68-year-old male a known case of HTN and DM developed fever and abdomen pain for 1 week, then consulted private hospital. His USG report shows splenic abscess. After 20 days of initial symptoms and treatment his blood sample was sent for culture at tertiary care centre and it became positive for *Burkholderia .pseudomallei*. He had history of soil exposure while working in his agriculture field area.

Case 5

A 54-year-old male manual labourer (clean septic tank) and an alcoholic presented with c/o pain and swelling over left knee for 3 months and h/o fever on and off type with evening rise of temperature. He had multiple comorbidities including coronary artery diseases, diabetes, hyperthyroidism and history of prostate surgery. He also had anaemia. Patient underwent arthrotomy and the drained Synovial fluid and pus culture and sensitvity shows presence *Burkholderia pseudomallei*. Patient expired due to septicaemia.

Case 6

A 55-year-old female known case of HTN and T2DM not on regular treatment with past h/o underwent surgery for Fracture Left lower limb presented with acute onset of breathlessness and had ICU care for 4 days in a private hospital and got discharged. Then after 2 days, patient developed fever with chills and rigors and severe cough and was re-hospitalized for 2 weeks .Patient noticed blood-stained sputum of 5 episodes and was admitted in another private hospital for further evaluation. They got discharge at request from there and got admitted in tertiary care centre as provisional diagnosis multi-lobar Pneumonia, from here tested for tuberculosis but CBNAAT was negative. Her sputum culture and sensitivity tested positive for *Burkholderia pseudomallei* and treated as per guideline.

Case 7

A 49-year-old diabetic patient from a village was admitted and evaluated for cough and fever of 1 week duration which was not subsided by antibiotic treatment from private hospital. HRCT gave report shows right upper lobe cavitary pneumonia. Patient was a treated case of EPTB 3 years back. She had exposure to soil and water while doing her daily chores. She was initially suspected as pulmonary tuberculosis, but CBNAAT was negative. Her sputum culture and sensitivity yielded heavy growth of *Burkholderia psuedomallei*.

Case 8

A 63-year-old female known case of rheumatic arthritis, Interstitial lung disease, chronic kidney disease on regular medication with multiple admission for breathlessness

(last admitted 3 months back) presented with cough and breathlessness since last 3 weeks H/o multiple admission for breathlessness. She came to tertiary centre for breathlessness, her sputum was sent for tuberculosis CBNAAT, it was negative and the culture yielded predominant growth of *b. pseudomallei*.

Case 9

A 70-year-old male with h/o old PTB 2 years back and diabetic since, 10 years referred from private hospital with complaints of fever for 3-4 days associated with chills and rigor .and cough for the last 10 days, productive in nature with yellowish sputum moderate in amount. Blood in sputum on and off since the last 2 year. Patient also complaints of involuntary micturition. History of hospital admission 1 year back for cough, fever, myalgia and detected Burkholderia species in BAL-confirmed Melioidosis and completed treatment for Melioidosis of intensive phase, but not completed eradication phase. History of frequent episodes of cough and fever since the last 2 year (10 hospital admissions in last 2 year).

On X-ray chest dense consolidation, bilateral upper zone, middle zone, lower zone non homogenous opacity, suspected PTB and CBNAAT done result found to be negative. Sputum culture and sensitivity done shows scanty growth of *burkholderia psedomallei.* But patient got discharge against advice before completing intensive phase treatment. His culture and sensitivity report show resistant to co trimoxazole which is a drug of choice in eradication phase, but it is sensitive to amoxiclav which is also a drug of choice for eradication phase.

Case 10

A 53-year-old male working as hotel supplier in UAE presented with history of swelling over left leg since, 6 years he consulted in many hospitals. There was discharge sinus over left leg since, 3 months diagnosed as Brodie's abscess associated with chronic osteomyelitis. He was a known case of type 2 DM on OHA and history of CAD, ACS S/P PTCA 14 years back History of Splenectomy done 22 years back. He was taken for bone curettage and bead installation. Bone sample was sent for culture and sensitivity and detected scanty growth of *B. pseudomallei* thus started ceftazidime.

Case 11

A 67-year-old male patient carpenter by occupation was a known case of chronic kidney disease on hemodialysis thrice weekly, CAD and CABG done 23 years ago with severe LV systolic dysfunction had admitted to the hospital with history of 5 days fever and cough. It was Associated with breathing difficulty since, 1 day. Patient was treated with IV antibiotics (Piptaz), analgesics, and anti-platelet, bronchodilators and supportive measures. Patient developed acute MI during hospital stay and was started on injection heparin and dual antiplatelets in view of ECG changes and elevated Trop I. Blood sample for culture and sensitivity shows growth of *B. pseudomallei* within a week of symptoms. Patient developed in hospital cardiac arrest and resuscitated and was on ventilator VCV mode and noradrenaline support. Since then, the patient's attenders do not want to continue further treatment in the hospital and was discharged against medical advice.

Case 12

A 43-year-old female, home maker, K/C/O chronic kidney disease on hemodialysis, ADPKD, Systemic HTN presented with c/o fever with chills and rigors since, 2 weeks. Fever was continuous and subsided after medication and peaked after that. Patient also complains of breathlessness on exertion. No diurnal or postural variations. There was also an episode of vomiting and 2 episodes of loose stools which subsided after medication. After 3 week of symptom her dialysis catheter tip was sent for culture yielded significant growth of *B. pseudomellei*.

Case 13

A 47-year-old male unemployed known case of chronic kidney disease-end stage renal disease and coronary artery disease, moderate LV dysfunction presented with right sided proximal thigh pain since past 3.5 months. Patient was not able to walk due to pain since, 1 week, radiating to knee. No history of fever, trauma, fall. The swelling over right hip and proximal thigh. Septic arthritis right hip. Undergone arthrotomy, blood-tinged haemorrhagic fluid was drained and tissues sent for culture and sensitivity yielded scanty growth of *Burkholderia pseudomellei*, sensitive to ceftazidime. CBNAAT for TB was negative.

Case 14

A 66-year-old male currently unemployed but past history of worked in Malasia and resided in an overcrowded room for many years, who is a K/c/o DM and HTN, presented with swelling on the right side of neck, which progressed in size gradually, also associated pain over the swelling, fever was low grade and intermittent mostly during evening hours since, 2 weeks provisionally diagnosed as suppuration? tuberculosis. He had a history of abdomen pain one year back and USG revealed liver abscess and it was treated as a case of melioidosis with injection ceftazidime as per records. They didn't go for follow up, so not treated for eradication phase. CBNAAT was negative for neck swelling aspirate sample .so sample was sent for culture and sensitivity and detected growth of *B. pseudomallei*.

Case 15

A 38-year-old female, a house wife who had habit of washing dress in pond and history of doing agriculture

work with no comorbidity presented with cough with expectoration for 6 months (on and off) with yellow colour sputum. Cough increases at night and there was history of weight loss for last 2 months. Patient also complained of tiredness and evening chills. No history of haemoptysis or fever. No contact with TB. Fiber optic bronchoscopy was done and was suggestive of infective aetiology over left upper lobe lingula. Bronchial wash culture yielded growth of *B. pseudomallei*. No acid-fast bacilli were seen by ZN stain.

DISCUSSION

Among the fifteen study participants majority were male (67%) which is similar to a study done in 2013, by Gopalakrishnan R et al in South India between 2005 and 2010.4 The most common presenting symptom was fever (80%) and site of infection was respiratory system (46%) which is also similar to a study done by Saravu K et al on Melioidosis in Southern India and Vidyalakshmi K et al in western coastal India.[5,6] The most common comorbidity seen in this study is diabetes mellitus, that is similar to the study conducted by Saravu K, Vidyalakshmi K.

This study shows that 67% of patient had exposure with soil and 33% had contact with contaminated water. The public health measures include prevention of contact with contaminated soil or water, the provision of safe drinking water and sanitation. The source of infection is mainly from the environment so that it is difficult to find it and control will remain as challenge. In this study 10 out of 15 patients has undergone CBNAAT test for tuberculosis and found negative before they were diagnosed as melioidosis. Since the disease mimic other diseases especially Tuberculosis, diagnosis becomes another challenge.[7] It can be misdiagnosed in a country like India where TB is common. This can be a reason for delay in diagnosis.

CONCLUSION

The most common presentation in our study was pneumonia. Diabetes mellitus was the most common co morbidity. Majority of patients had history of contact with contaminated soil and water, so that control measures would remain as a challenge. Two patients, who didn't complete eradication phase of treatment had relapse. The relapse can be prevented if we make registration and follow up of melioidosis as mandatory. The mimicking character of melioidosis make it difficult to diagnose it early. Thus, patients shift to multiple hospitals without recovery hence further delaying the diagnosis. This can lead to complication resulting in an increase in mortality.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Melioidosis. Available at: https://www.cdc.gov/me. Accessed on 16th June 2024.
2. An important tool for rapid dissemination of information towards control of diseases. Available at: https://ncdc.mohfw.gov.in. Accessed on 16th June 2024.
3. Gopalakrishnan R, Sureshkumar D, Thirunarayan MA, Ramasubramanian V. Melioidosis:an emerging infection in India. J Assoc Physicians India. 2013;61(9):612-4.
4. Saravu K, Mukhopadhyay C, Vishwanath S, Valsalan R, Docherla M, Vandana KE, et al. Melioidosis in southern India: epidemiological and clinical profile. Southeast Asian J Trop Med Public Health. 2010;41(2):401-9.
5. Vidyalakshmi K, Lipika S, Vishal S, Damodar S, Chakrapani M. Emerging clinico-epidemiological trends in melioidosis: analysis of 95 cases from western coastal India. Int J Infect Dis. 2012;16(7):491-7.
6. Vidyalakshmi K, Chakrapani M, Shrikala B, Damodar S, Lipika S, Vishal S. Tuberculosis mimicked by melioidosis. Int J Tuberc Lung Dis. 2008;12(10):1209-15.
7. John TJ, Jesudason MV, Lalitha MK, Ganesh A, Mohandas V, Cherian T, et al. Melioidosis In India: the tip of the iceberg? Indian J Med Res. 1996;103:62-5.
8. Chrispal A, Rajan SJ, Sathyendra S. The clinical profile and predictors of mortality in patients with melioidosis in South India. Trop Doct. 2010;40(1):36-8.
9. Saravu K, Vishwanath S, Kumar RS, Barkur AS, Varghese GK, Mukhyopadhyay C, et al. Melioidosis-a case series from south India. Trans R Soc Trop Med Hyg. 2008;102(1):18-20.
10. Mohapatra PR, Mishra B. Burden of melioidosis in india and south asia: challenges and ways forward. lancet reg health Southeast Asia. 2022;2:100004.
11. Puthucheary SD. Melioidosis in Malaysia. Med J Malaysia. 2009;64(4):266-74.
12. Chowdhury S, Barai L, Afroze SR, Ghosh PK, Afroz F, Rahman H, et al. The Epidemiology of melioidosis and its association with diabetes mellitus: A systematic review and meta-analysis. Pathogens. 2022;11(2):149.
13. Benoit TJ, Blaney DD, Gee JE, Elrod MG, Hoffmaster AR, Doker TJ, et al. Centres for disease control and prevention (CDC). Melioidosis cases and selected reports of occupational exposures to Burkholderia pseudomallei-United States, 2008-2013. MMWR Surveill Summ. 2015;64(5):1-9.
14. Inglis TJ, Sousa AQ. The public health implications of melioidosis. Braz J Infect Dis. 2009;13(1):59-66.
15. Mukhopadhyay C, Shaw T, Varghese GM, Dance DAB. Melioidosis in South Asia (India, Nepal, Pakistan, Bhutan and Afghanistan). Trop Med Infect Dis. 2018;3(2):51.

16. Wiersinga WJ, Virk HS, Torres AG, Currie BJ, Peacock SJ, Dance DAB, et al. Melioidosis. Nat Rev Dis Primers. 2018;4:17107.

Cite this article as: Kottayi RT, Kumaran JA. Epidemiological and clinical profile of melioidosis cases admitted in a tertiary care centre in North Kerala: a case series. Int J Community Med Public Health 2024;11:4059-63.