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CASE REPORT

Melioidosis with Involvement of CNS: A Case Report in Northeast India

Vishnu M.[1], Rigen Jyoti Kalita[2], Tandra Biswas[3]

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ABSTRACT

Melioidosis is a rare and debilitating bacterial infection, continuing to pose a significant threat to public health in endemic regions. Caused by Burkholderia pseudo mallei, which is a widely distributed environmental saprophyte found in stagnant water and soil. This versatile pathogen can manifest in a wide range of clinical presentation often leading to delayed diagnosis and potentially fatal outcomes.

Patient was 41 year old male from urban part of north east India, presented to emergency with complaints of fever, headache, progressive left sided cheek swelling which extends upto left periorbital region associated with confusion. MRI brain showed left temporal lobe abscesses with blood cultures showing growth of Burkholderia pseudomallei. Despite of diagnosis and treatment patient succumbed.

This case study emphasizes the importance of early recognition, prompt diagnosis, and appropriate treatment in managing meliodosis with cerebral involvement.

KEYWORDS

• Melioidosis • Burkholderia pseudomallei • Brain abscess

INTRODUCTION

Meliodosis is a disease of humans and animals which is geographically restricted to Northern Australia and Southeast Asian parts in countries like India, China, Thailand, Vietnam.

Despite similar environmental conditions, the number of cases of melioidosis reported from Indian subcontinent are very less.[1] Melioidosis was first identified in Rangoon in 1911 by Alfred Whitmore, a British doctor and his assistant, CS Krishnaswami.

AUTHOR'S AFFILIATION:

[1] DNB Resident, Department of Emergency Medicine, Apollo International Hospital, Guwahati 781005, Assam, India.
[2] Associate Consultant, Department of Emergency Medicine, Apollo International Hospital, Guwahati 781005, Assam, India.
[3] Consultant, Department of General Medicine, Apollo International Hospital, Guwahati 781005, Assam, India.

CORRESPONDING AUTHOR:

Vishnu M., DNB Resident, Department of Emergency Medicine, Apollo International Hospital, Guwahati 781005, Assam, India.
E-mail: vishnudev029@gmail.com

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Growth of Burkholderia pseudomallei in agar plate is usually detectable after subculture from blood on to solid media only after 2-3 days of growth, so that early diagnosis and treatment can be delayed.

Central nervous system involvement in melioidosis is rare.

Here we are discussing a case of 41 year old male patient with Type 2 diabetes mellitus who developed brain abscess due to burkholderia pseudomallei

CASE REPORT

41 year old male presented to emergency department with complaints of fever, headache, progressive left sided cheek swelling extending up to left periorbital region for 10 days. It was associated with confusion for past 3 days.

Patient had a history of recent visit to some near by water bodies for water activities.

Patient was initially treated in local hospital for fever with oral antibiotic (Cefuroxime) and referred here for further management.

On examination, patient was febrile (Temp = 104^{o}F), blood pressure 130/80mmHg, respiratory rate 20/min, and heart rate 153/min. Patient was confused, but obeying commands with no signs of meningeal irritation. No organomegaly, respiratory and cardiovascular abnormality was noted. On local examination, swelling over the left cheek was warm and tender with size 4x 5 cm extending up to left periorbital region.

Laboratory investigations revealed elevated septic markers. Urine and blood sent for culture.

Patient admitted in ICU and started on IV antibiotics (Ceftriaxone). Patient developed seizure and altered sensorium on next day of admission, hence antibiotics upgraded to cefepime and vancomycin and antiepileptic (leviteracetam) was added. CT Brain done, which was normal. However MRI Brain with contrast showed abscess in left anterior temporal lobe with cerebritis . Acyclovir was started empirically in view of temporal lobe involvement.

EEG brain was also done, which was normal. Patient had focal seizure in on 3rd day of admission, hence leviteracetam dose increased and lacosamide was added.

Microbiological work up done

- Day 1

Malaria antigen - Negative

Widal test - Negative

Leptospira IgM Antibodies – Negative

Dengue NS1 Antigen, IgM and IgG Antibodies –Negative

- Day 3

Urine culture and sensitivity - Sterile

Sterile Blood culture (2 sites) - Burkhloderia pseudomallei

CSF analysis

Total count - 4cells/cu.mm, Differential Leucocyte Count - 3

Polymorph - 3

Lymphocytes - 97 percentage

On 3th day CSF analysis was done to rule out meningitis.

Blood culture showed growth of *Burkholderia pseudomallei on vitek 2 after 48 hours of incubation, which was* sensitive to Piperacillin+Tazobactum, Meropenem, Imipenem and resistant to Ceftriaxone, cefepime, Gentamicin. Based on culture report, antibiotics upgraded to meropenem 2 gm IV 8th hourly. Antiviral was stopped. Neurosurgery and ENT opinions were taken who advised to continue conservative treatment in view of the nature of the brain lesion not being amenable to surgical drainage.

On the 5th day of admission patient was electively intubated in view of hypoxia and poor GCS. His chest X-ray showed bilateral patchy opacities

As patient had septic shock and circulatory compromise, support of vasopressors and inotropes was given. Patient had cardiac arrest and revived .

However patient deteriorated rapidly despite optimal medical management and supportive care, and finally succumbed to the illness.

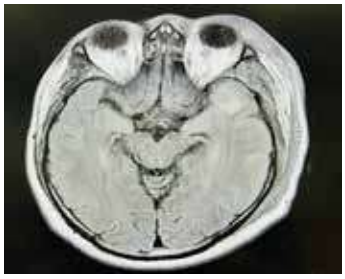


Figure 1: Contrast enhanced MRI brain showing brain abscess in left anterior temporal lobe

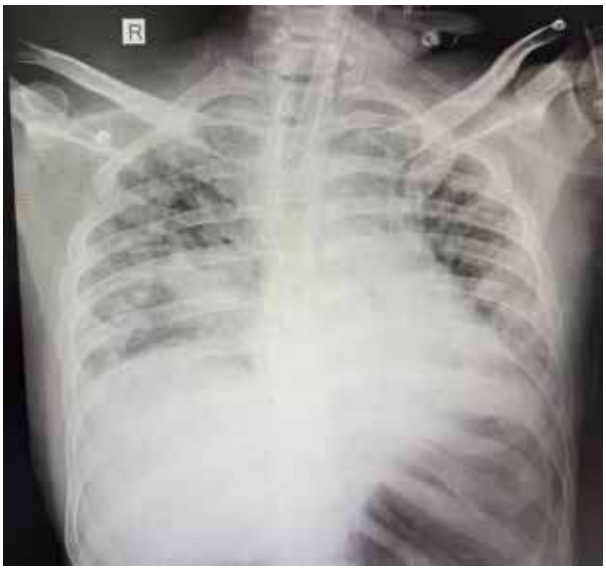
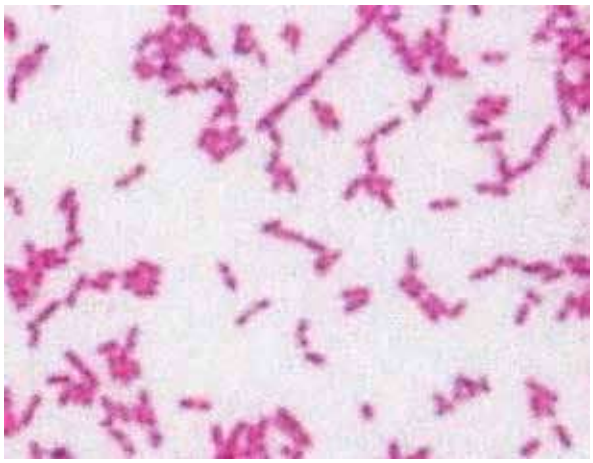


Figure 1: Chest X-ray showing bilateral patchy opacities

Representative gram stain showing safety pin appearance of burkholderia pseudomallei



LABORATORY INVESTIGATIONS

	Day 1	Day 3	Day 5
TLC	19.9x10^3/Mm3	14x10^3/Mm3	9.82x10^3/Mm3
CRP	329.4 mg/L	157.6 mg/L	176 mg/L
SGOT	30 u/L		
SGPT	29 u/L		
S.CR	1.1 mg/Dl	1 mg/Dl	2.6 mg/Dl
PROCAL	53.9 ng/Ml	65.4 ng/Ml	>100 ng/Ml
ESR	140 mm/Hr		
PT	20.2 sec	18.0 sec	
INR	1.5	1.4	

DIAGNOSIS

Melioidosis with involvement of CNS

DISCUSSION

Burkholderia pseudomallei is the causative agent of melioidosis, a disease that can present in a variety of clinical forms, ranging from mild or asymptomatic infections to severe, life-threatening conditions. Cases have been reported from tropical and subtropical regions, particularly Southeast Asia, Northern Australia, and parts of South America.[2,3]

All age groups can develop melioidosis, but incidence peaks between the ages of 40 and 60 years with approximately 75–81% of cases presenting during the rainy season . The disease is more common in the rural areas and predominantly affects people in regular contact with soil and water e.g., rice farmers.[1]

Routes of infection of B. pseudomallei are through ingestion, inhalation, and skin penetration. Nosocomial infections have also been reported to occur through contaminated wound irrigation fluid, antiseptics, and hand wash. The average incubation period of period of melioidosis is 9 days. CNS is rare, with 1.5 to 5% cases of melioidosis having a neurological involvement. Diabetes mellitus is the most significant risk factor for the development of melioidosis, conferring a 12-fold higher risk.[4]

The most frequent presentation of CNS melioidosis is encephalomyelitis, followed by the development of cerebral abscesses. Patients with cerebral abscesses typically present with symptoms such as fever, unilateral weakness, altered mental status, and seizures. The frontal and parietal lobes, cerebellar hemispheres, and brainstem are the areas most commonly affected in CNS melioidosis

Our patient was a 41 year old male presented with complaints of fever ,headache, progressive left sided cheek swelling which extends up to left periorbital region associated with confusion with a history of recent visit to water bodies for water activities. Laboratory investigations revealed elevated septic markers .

Patient was started on empirical IV antibiotics and other symptomatic treatment later changed to specific antibiotics as per blood culture and specificity. Despite of optimal medical management and supportive

care patient finally succumbed.[5]

Medical management of B. pseudomallei includes an intensive phase of 8 weeks and an eradication phase of 6 months. Guidelines recommend ceftazidime and meropenem to be the drug of choice for intensive phase and trimethoprim–sulfamethoxazole for eradication therapy.

Surgical management is warranted to establish the diagnosis and to relieve the mass effect. No definite guidelines are available regarding the choice of surgical strategy for cerebral abscess due to melioidosis. Available options are burr hole and tapping of abscess with stereotaxy if available for surgical drainage of the abscess with excision.

CONCLUSION

CNS melioidosis remains a critical global health concern due to its high mortality and morbidity rates. Newer insights into pathogenesis, improved diagnostic techniques, and antibiotic management strategies are helping clinicians address this life-threatening infection.

However, the challenges posed by antimicrobial resistance and delayed diagnosis continue to hinder optimal outcomes. Further research into vaccines and novel therapeutics will be essential for reducing the burden of this disease, especially in endemic regions.

REFERRENCES

1. Wiersinga W.J., Virk H.S., Torres A.G., Currie B.J., Peacock S.J., Dance DAB, Limmathurotsakul D. Melioidosis. Nat Rev Dis Primers. 2018 Feb 1; 4: 17107. doi: 10.1038/nrdp.2017.107. PMID: 29388572; PMCID: PMC6456913. Limmathurotsakul, D.; Golding, N.; Dance, D.A.; Messina, J.P.; Pigott, D.M.; Moyes, C.L.; Rolim, D.B.; Bertherat, E.; Day, N.P.; Peacock, S.J.; *et al*. Predicted global distribution of *Burkholderia pseudomallei* and burden of melioidosis. *Nat. Microbiol.* **2016.**
2. Limmathurotsakul D., Golding N., Dance D.A., Messina J.P., Pigott D.M., Moyes C.L., Rolim D.B., Bertherat E., Day N.P., Peacock S.J., Hay S.I. Predicted global distribution of Burkholderia pseudomallei and burden of melioidosis. Nat Microbiol. 2016 Jan 11; 1: 15008. doi: 10.1038/nmicrobiol.2015.8. PMID: 27571754.
3. Limmathurotsakul D., Peacock S.J. Melioidosis: a clinical overview. Br Med Bull. 2011; 99: 125-39. doi: 10.1093/bmb/ldr007. Epub 2011 May 9. PMID: 21558159
4. Datta D., Sekar A., Patnaik A., Mohanty S. A Case-Based Review of Management of CNS Melioidosis. Asian J Neurosurg. 2023 Dec 29; 18(4): 836-838. doi: 10.1055/s-0043-1776736. PMID: 38161600; PMCID: PMC10756835.
5. Lipsitz R., Garges S., Aurigemma R., Baccam P., Blaney D.D., Cheng A.C., Currie B.J., Dance D., Gee J.E., Larsen J., Limmathurotsakul D., Morrow M.G., Norton R, O'Mara E., Peacock S.J., Pesik N., Rogers L.P., Schweizer HP, Steinmetz I., Tan G., Tan P., Wiersinga W.J, Wuthiekanun V., Smith T.L. Workshop on treatment of and postexposure prophylaxis for Burkholderia pseudomallei and B. mallei Infection, 2010. Emerg Infect Dis. 2012 Dec; 18(12): e2. doi: 10.3201/eid1812.120638. PMID: 23171644; PMCID: PMC3557896.