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Internal Medicine

"CNS MELIOIDOSIS" IN YOUR ESTEEMED JOURNAL AS A CASE REPORT

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ABSTRACT CNS Melioidosis is a rare and complicated form of Melioidosis with a mortality rate of up to 50%. We hereby present a case of CNS Melioidosis with bacteremia and pulmonary manifestations of Melioidosis based on CT Chest imaging findings, who on prompt initiation of appropriate IV antibiotic therapy along with craniotomy and drainage of cerebral abscess showed drastic recovery. This indolent multi systemic presentation along with the rarity of CNS Melioidosis in general, makes this case report note-worthy.

KEYWORDS : CNS melioidosis, Burkholderia pseudomallei, cerebral abscess

INTRODUCTION:

Melioidosis caused by Burkholderia pseudomallei, a Gram-negative bacterium is a life-threatening infection that is estimated to account for nearly 89,000 deaths per year worldwide [1]. Diabetes mellitus being a major risk factor for melioidosis can increase the number of fatalities caused by Melioidosis in a country like India where Diabetes Mellitus is an epidemic [2]. Though it is being reported from varied geographic areas, it is endemic across tropical regions, especially in southeast Asia and northern Australia. It being a great mimicker has a wide spectrum of clinical manifestations ranging from acute septicemia to chronic infection. So far in literature only 1.5 to 5 percent of the melioidosis cases have been reported to have neurological involvement [3,4]. B. pseudomallei is resistant to many commonly used antibiotics and even in well-resourced settings the case-fatality rate of CNS infection may rise to 50 % and is often associated with permanent disability in survivors as well [5,6]. Hence, it is highly essential to have an index of suspicion of Melioidosis in endemic areas and ensure prompt initiation of antibiotic therapy to improve outcomes.

CASE REPORT:

A 48 years old Female, home maker from West Bengal with a past history of Hypertension, newly diagnosed Type 2 Diabetes Mellitus, presented with complaints of fever since 3 months, high grade, intermittent, associated with chills and complaints of persistent headache since 1.5 months. History of confused talks and inappropriate comprehension since 2 weeks present. She also had history of decreased appetite and weight loss of 6 kgs in 3 months. History of bare foot walking present. There wasn't any history of nausea, vomiting, or visual disturbances. She was initially evaluated at a local hospital and was referred to our hospital in view of clinical worsening and persistent high grade fever.

On examination she was awake, apathetic, disoriented, febrile (102°F) and tachycardic (110 beats/minute). Her attention span was impaired and she was aphasic. Pallor and terminal neck stiffness were present. She was able to comprehend and obey only simple commands. Both pupils were 3mm in size and were equally reactive to light. Her Mini Mental State Examination(MMSE) score was 18/30. Bilateral upper limb and lower limbs were normal in tone and power. She moved all 4 limbs. Rest of the CNS examination couldn't be done as patient wasn't cooperative.

Baseline investigations showed anemia, normal total counts, elevated inflammatory markers and cholestasis [Table 1]. Blood and urine samples were sent for culture and sensitivity and she was empirically started on IV broad spectrum antibiotics (Inj Ceftriazone 2g IV once a day). Scrub serology, Dengue serology, Leptospira IgM and MP QBC were negative. HIV, HBsAg and Anti-HCV were negative. CT Chest showed consolidation of left middle and lower lobes [Figure 1].

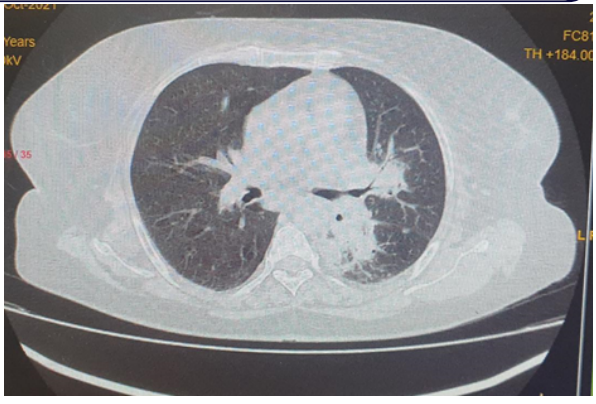

Figure 1 : CT Chest showing consolidation of left middle and lower lobes.

In view of altered sensorium, MRI Brain was done. MRI Brain showed Ring enhancing lesion measuring 2.4x2.0x2.0cms in left frontal region with moderate to severe surrounding edema showing central diffusion restriction with low Apparent diffusion coefficient (ADC) and along with multiple small adjacent ring enhancing satellite lesions, mass effect on the corpus callosum and ipsilateral lateral ventricle - Above features consistent with cerebral abscess [Figure 2]. As she continued to have fever, antibiotics were escalated to Meropenem. Trans esophageal ECHO showed no evidence of cardiac vegetation. Neurosurgeon opinion was obtained and left fronto parietal craniotomy and drainage of cerebral abscess was done on Day 5 post admission.

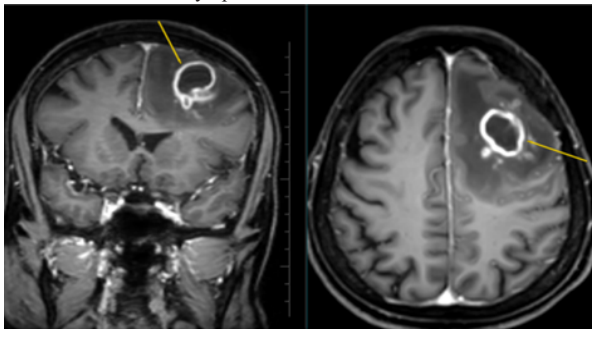

Figure 2 : MRI Brain showing Ring enhancing lesion in left frontal region with moderate to severe surrounding edema

Blood Culture and Intra OP pus sample grew Burkholderia pseudomallei (pan sensitive) [Figure 3,4]. Inj Meropenem was de-escalated to Inj Ceftazidime 2g IV 6th hourly. Biopsy from left frontal lesion showed necrotizing subacute inflammation with ill-formed granulomas and abscess.

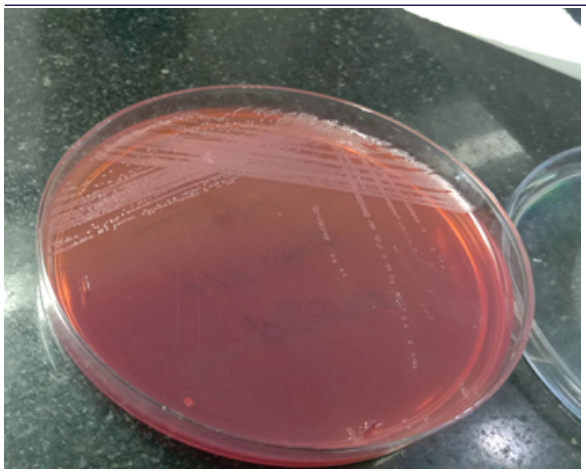

Figure 3 : Blood Culture plates with Burkholderia pseudomallei

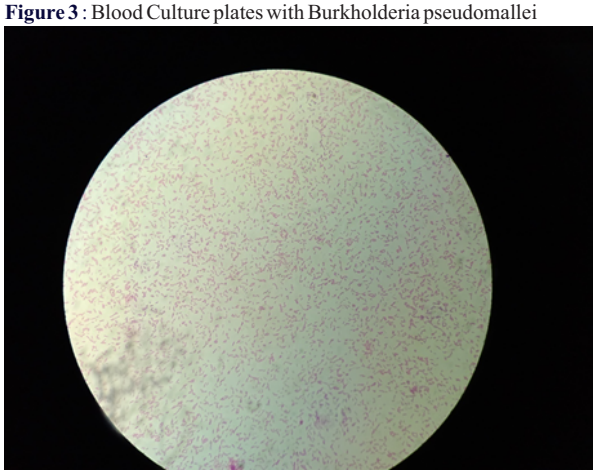

Figure 4 : Microscopic view of gram negative Burkholderia pseudomallei

Patient showed good clinical improvement with improvement in sensorium and she remained afebrile in the post OP period. She was mobilized on Day 3 post surgery and was discharged home a week later. After completing intensive IV antibiotic therapy for 4 weeks, she was started on eradication therapy with oral Trimethoprim-Sulfamethoxazole. On follow up, patient is currently doing well, with no residual neurological deficits and is without any recrudescence or relapse.

Table 1 : Baseline investigations

Parameter	Result	Normal Value
Hemoglobin	9.5g%	11.5 to 16.5 g%
White Blood Cells	8450 cells/mm3	4000 – 11000 cells/mm3
Differential count	Neutrophils-73%, Lymphocytes-24%, Monocytes-3%	40 – 80%, 20 – 40%, 2-10%
ESR	100mm/hour	0 – 20 mm/hour
CRP	166mg/L	Less than 5mg/L
Urea	23 mg/dL	13 – 43 mg/dl
Creatinine	0.7 mg/dL	0.6 – 1.1 mg/dL
Random Blood Sugar	250 mg/dL	<140 mg/dl
Total Bilirubin	0.7mg/dL	0 – 1.3 mg/dL
Serum Albumin	3.2 g/dL	3.5 – 5.2 g/dL
Serum Globulin	2.9 g/dL	2 – 3.5 g/dL
ALT (SGPT)	92 U/L	< 34 U/L
AST (SGOT)	102 U/L	< 31 U/L
GGTP	555 U/L	< 36 U/L

DISCUSSION:

India is emerging as a hotspot for Melioidosis because of its favorable climatic conditions and enormous diabetic population. Melioidosis has varied clinical course and tends to remain indolent in a subset of population. Though our patient was bacteremic, she was hemodynamically stable and was being managed on out patient basis for 3 months before she presented to us. She had the typical risk factors for Melioidosis like Diabetes Mellitus, bare foot walking and was from an endemic area [2]. Entry of the microorganism into the CNS via the blood stream crossing the blood-brain barrier and blood-CSF barrier plays an important role in disease pathogenesis [7]. Blood is found to be the most common specimen that isolates B. pseudomallei.

The incubation period of acute infections on an average ranges from 1–21 days, although severe disease can have even shorter incubation period especially those which occur after inhalation or aspiration of contaminated fresh water [2]. The clinical spectrum of disease varies from localized infection with no systemic manifestations to multiorgan involvement and death. Around 40-60% of all patients with Melioidosis are found to be bacteremic and septic shock occurs in around 20% of all cases [2].

Melioidosis is largely underdiagnosed, mainly owing to a lack of diagnostic microbiological laboratories and a lack of awareness of the disease amongst physicians and laboratory staff. Culture remains the mainstay for diagnosing melioidosis [2]. B. pseudomallei can grow on most routine laboratory media but tend to be overlooked as a contaminant or could be misidentified as other bacteria namely Pseudomonas spp. and Bacillus spp [8]. Contrast-enhanced MRI has a high sensitivity and is the neuroimaging study of choice for CNS melioidosis [9]. Brain CT may appear normal if it is done early. Hence, MRI Brain should be done in all patients in whom CNS melioidosis is suspected. In our patient, MRI Brain report aided the diagnosis as well as expedited the neurosurgical intervention which proved to be detrimental.

A systematic review has reported that at least 67 % of patients with CNS Melioidosis had involvement of at least one extra-neurological organ as well [9]. The consolidation of lung parenchyma in our patient was also likely to be secondary to Melioidosis. But confirmation of the same with Broncho alveolar lavage and fluid analysis wasn't done as Blood cultures and intra OP brain abscess grew Burkholderia pseudomallei. Moreover, patient did not have any respiratory compromise or symptoms and showed good response to IV Ceftazidime therapy.

According to the 2020 Darwin guidelines for the management of Melioidosis, minimum of 3 weeks of intravenous antibiotics is recommended for those with concurrent bacteraemia and pneumonia involving only a single lobe and those with bilateral and unilateral multi-lobar pneumonias who do not have bacteraemia [10]. A minimum of 4 weeks intravenous therapy is recommended for those with concurrent bacteremia and bilateral or unilateral multi-lobar pneumonia [10]. To facilitate the longer duration of IV therapy, Peripheral Inserted Central Catheter (PICC) line access was established for our patient.

After the initial IV intensive therapy, eradication therapy for minimum 3 months with oral antibiotics is recommended to prevent recrudescence of the disease [2]. Trimethoprim–sulfamethoxazole is the preferred agent for eradication therapy followed by amoxicillin-clavulanic acid and doxycycline [2].

In view of the high mortality associated with CNS Melioidosis, timely diagnosis and appropriate initiation of antibiotics is very much crucial.

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