

A Study on a Rare Case of Melioidosis

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Abstract: *B. pseudomallei* is the causative agent of melioidosis, a disease of humans and animals that is geographically restricted to Southeast Asia and northern Australia, with occasional cases in countries such as India and China. *B. pseudomallei* cause a wide spectrum of conditions, ranging from asymptomatic infection to abscesses, pneumonia, and disseminated disease. It is a significant cause of fatal community - acquired pneumonia and septicemia in endemic areas, with high mortality rates. A 54 Year male patient presented with fever and multiple abscess. Routine tests and special tests were performed. Appropriate antibiotic coverage was given. Here, we present a rare case of melioidosis.

Keywords: *B. pseudomallei*, melioidosis, abscess, fever

1. Introduction

B. pseudomallei is the causative agent of melioidosis, a disease of humans and animals. The disease is rare, with only a handful cases reported in the literature. We report a case of melioidosis in a 54 - year - old man who was diagnosed on blood and culture sensitivity examination and isolation of organism.

2. Case Report

A 54 year old male patient who has preexisting diabetes mellitus came with complaints of high grade on and off fever, dry cough, grade 2 shortness of breath since 1 month and right side ankle pain and swelling of right lower limb upto ankle and swelling over right back since 10 days.

Patient also complaint of burning sensation of feet and hands since 2 months and generalised myalgias since 1 month and yellowish - red discolouration of urine since 10 days.

At Presentation Vitals:

Bp - 110/80 mm of hg
Pr - 86 bpm
Rr - 18/min
Temp - 101 F
Spo2 - 98% RA

CVS, RESP, CNS, GIT Examination was found to be normal at the time of presentation

On Examination -

- Right lower limb swelling upto ankle with local rise of temperature and restricted painful ankle movements but with active toe movements seen.
- 3*2 cm solitary swelling over back appx 8cm below inferior margin of right scapula present. skin over swelling is red in colour and tenderness present
- All distal peripheral pulses were felt.

Labarotory Investigations Showed:

neutrophilic leukocytosis (wbc - 14, 120) (hb - 11.2gm%)
elevated quantitative c - reactive protein of 62%,
Elevated bilirubin of 2.4mg/dl (Db - 1.4, IDb - 1.0)
Elevated alkaline phosphatase to 271 mg/dl
Serum creatinine - 0.9mg/dl
Normal serum electrolytes
random blood sugar of 158mg/dl
Cue - 1+glucose
BLOOD and URINE samples sent for culture and sensitivity

XRAY RT ANKLE JOINT - revealed no bony abnormalities

Ultrasound Abdomen

- heterogenous hypoechoic cystic lesions noted in rt lobe of liver appx 5.8*4.3 cms in segment 6 and appx 4.8*3.2cm in segment 7.
- spleen is 14.3 cms enlarged in size with normal echotexture and few hypoechoic areas noted largest measuring 1.5 *1.2 cm in superior pole.
- Impression: granulomatous etiology ? Hepatic and splenic abscess

CT Abdomen:

- multiple well defined hypodense lesions (HU +15 to 25) few of them are coalesced noted in segment 7 and 8 of

liver. on contrast no significant enhancement noted. it is likely suggestive of hepatic abscess.

- multiplescentimetricwell definedhypodense lesions (HU+15 to 25) noted in spleen with no enhancement on contrast. It is likely suggestive of splenic abscess.
- Impression – Hepatic and splenic abscess.

SURGICAL CONSULTATION WAS TAKEN IN VIEW OF CELLULITIS AND ABSCESS IN LIVER AND SPLEEN

Patient is diagnosed as:

RIGHT LOWER LIMB CELLULITIS
HEPATIC AND SPLEENIC ABSCESS
T2DM

Patient is started on:

Injmetrogl 500mg ivtid
Injpiptaz 4.5gm ivtid
Inj human actrapid insulin sc tid
Tab. Paracetamol 650mg tid
Tab chymoral forte (trypsin + chymotrypsin)
Mgso4 dressings
Rt lower limb elevation

DESPITE GOOD ANTIBIOTIC COVERAGE, EVEN AFTER 4 DAYS PATIENT HAD CONTINUOUS FEVER WITH SEVERE PAIN IN RIGHT ANKLE, CALF AND KNEE JOINT AND PATIENT BECAME TACHYPNOIC.

Vitals:

Bp - 110/70 mm of hg
Pr - 110/min
Rr - 36/min
Temp - 103 F
Spo2 - 88% RA

Respiratory system – bilateral basal crepitations (left > right)
Per abdomen - distended, tenderness in righthypochondrium, bowel sounds were sluggish.

BLOOD CULTURE, SENSITIVITY AND ISOLATION showed Methicillin resistant staphylococcus aureus which was sensitive to linezolid, gentamycin, clindamycin and cotrimoxazole. Melioidosis was suspected and special test was sent to the laboratory.

VENOUS DOPPLER of right lower limb was suggestive of 8 - 10cm of thrombus in SSV and thrombosis of CFV, SFV, Popliteal vein

HRCT CHEST showed few tiny nodular opacities in bilateral upper lobes largest measuring 11*11mm in anterior segment of left upper lobe with bilateral minimal pleural effusion

2DECHO – tachycardia noted during study with normal IVC and LVEF of 60% and RVSP of 40.

HRUS RT ANKLE - cobblestone appearance of subcutaneous planes – suggestive of cellulitis.

Lab investigations showed:

ABG – PH=7.5, PCO2=29.8, PO2=109
HB=8.9, WBC=5690, PLT=1, 33, 300
Sr. creat = 1.1
Na= 127, k= 3.3
TB=1.0, DB=0.3, IDB= 0.7
ALK PHOSPHATASE = 70
Qn CRP = 40
CUE = 4 - 8 pus cells
2+ protein
cloudy

Patient is now started on:

Inj. Paracetamol 1gm ivtid
Inj clindamycin 600mg ivbd
Inj tramadol 1amp in 100ml ns ivbd
Inj linezolid 600 mg bd
Injmeropenem 1gm ivbd
injsulfamethoxazole - trimethoprim iv 12thhrly
Tab Ecosprin 150 mg od
Tab Acitrom 2mg od
Connected to 7 - 8 lts o2
Incentive Spirometry performed.
Planned for proctolysis enema
Other antibiotics given before are withheld

within 20 – 24 hrs patient developed irrelevant talk and became drowsy:

Bp - 80/60 mm of hg
Pr - 148 bpm
Rr - 44/min
Spo2 - 80 % on 10 lts o2
Temp - 101 F
UOP – 10 - 25 ml in last 24 hrs
CVS - s1+ s2+
RESP –decreased breath sounds rt and lt lower lobe
GIT - distended and tender
CNS - GCS 7/15
patient drowsy
right plantar mute, left plantar withdrawl

Sr. creatinineraised to 1.2mg/dl then to 1.5 mg/dl
Na=120 mg/dl
K= 3.4
PT= 20.1
INR= 1.5
ABG – PH=7.43/ PCO2= 32.3, PO2=125
HB= 9, PLT = 55000, WBC= 6950, HCT=24.9
DENGUE = IgG +ve

Special Culture Test: The organism isolated was *Bulkholderia pseudomallei* with bipolar safety pin appearance.

Patient is intubated and kept on controlled ventilation mode with fio2 of 100% and shifted to 40 % with PEEP of 5cm H2o.

Patient is started on:

Inj doxycycline 100mg ivbd
Inj noradrenaline 2: 50[at]10ml/hr
Inj vasopressin 1: 50[at]3ml/hr
Inj dopamine 1: 50[at]5 ml/hr

Serum creatinine = 3mg/dl
 PT =38.9, INR = 3.2
 TB=2.1, DB=0.8, IDB=1.3
 ALKALINE PHOSPHATASE=89
 Ph = 7.25, pco2 = 39.9, po2=94

2 FFP Transfusions Done

Inspite of all efforts, mechanical ventilation and 3 ionotropes - patient condition further deteriorated

Despite all efforts, patient couldnot be survived.

3. Discussion

- *B. pseudomallei* is the causative agent of melioidosis, a gram negative obligatory aerobic non - spore forming bacillus, a disease of humans and animals that is geographically restricted to Southeast Asia and northern Australia, with occasional cases in countries such as India and China.¹
- *B. pseudomallei* is found in soil and water.
- Humans and animals are infected by inoculation, inhalation, or ingestion; only rarely is the organism transmitted from person to person.²
- In INDIA, Two thirds of our patient population were from the eastern and northeastern parts.³
- Host compromise is not an essential prerequisite for disease, although many patients have common underlying medical diseases (e. g., diabetes renal failure or alcohol abuse).²
- *B. pseudomallei* is a facultative intracellular organism whose replication in neutrophils and macrophages may be aided by the possession of a polysaccharide capsule. The organism also possesses elements of a type III secretion system that plays a role in its intracellular survival. During infection, there is a florid inflammatory response whose role in disease is unclear.
- *B. pseudomallei* causes a wide spectrum of conditions, ranging from asymptomatic infection to abscesses, pneumonia, and disseminated disease.
- the clinical patterns of cases reported from Malaysia are consistent for the most part from previous case reports from South and Southeast Asia with regard to: pneumonia is the most common primary presentation followed by soft tissue abscesses; diabetes is a major risk factor; bacteremic melioidosis carries a poor prognosis; and septic shock is a strong predictor of mortality.¹
- *B. pseudomallei* also causes chronic pulmonary infections with systemic manifestations that mimic those of tuberculosis, including chronic cough, fever, hemoptysis, night sweats, and cavitary lung disease.
- Besides pneumonia, the other principal form of *B. pseudomallei* disease is skin ulceration with associated lymphangitis and regional lymphadenopathy.
- Spread from the lungs or skin, which is most often documented in debilitated individuals, gives rise to septicemic forms of melioidosis that carry a high mortality rate.
- *B. pseudomallei* exhibits resistance to penicillin's, amino - glycosides and relatively insensitive to macrolides and fluoroquinolones. So, treatment options are limited.

Ceftriaxone and cefotaxime use is associated with a higher failure rate among patients with melioidosis.²⁻⁴ Ceftazidime and carbapenems remain the drugs of choice during the intensive phase therapy. Use of meropenem especially in severe sepsis is advocated. Cotrimoxazole with or without doxycycline is used for the prolonged eradication phase. Doxocycline should not be used as monotherapy as drugresistance is expected.²⁻⁵ Adherence to therapy (24 - week course of therapy) is the major factor that prevents relapse.²

- Surgical intervention, drainage of the abscess, either percutaneously or through an open procedure, has shown good outcomes.^{6,7}
- Awareness of this infection, with all its forms of presentation will help early detection, isolation of the organism and disease management.

4. Conclusions

- The two main goals of melioidosis research are prevention and lowering the mortality rate of infected people. Studies that identify the relative importance of various infection routes as well as ones that give an accurate geographic risk map are required.
- In several regions of Asia, the death rate from melioidosis is higher.
- In some resource - constrained contexts, it may be possible to achieve the goals of prompt antimicrobial drug treatment, early sepsis detection, and appropriate fluid resuscitation, which would be expected to lower mortality from melioidosis.
- When critical care facilities are not available, studies are needed to determine safe and cheap strategies that enhance outcomes.
- In cases presenting with fever with ultrasound evidence of abscesses, melioidosis suspicion should possibly be considered and early treatment with appropriate antibiotic and surgical drainage of abscess without delay may decrease the rate of deaths.
- Septic shock is an important predictor of mortality.
- So, sometimes even on appropriate treatment mortality is inevitable.

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