

Septicaemic Melioidosis: Case Report from a Non-Endemic Area

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ABSTRACT

Melioidosis is a clinically diverse disease caused by the facultative intracellular Gram-negative bacterium, *Burkholderia pseudomallei*. In recent times melioidosis has been increasingly reported in India especially from the southern and coastal states. We report a fatal case of septicaemic melioidosis from the state of Rajasthan with a view to increase awareness about the existence of this disease in an area yet unrecognized.

CASE REPORT

A 49-year-old male presented to the Emergency department of a tertiary care hospital in Jaipur, in September 2010, with high grade fever and breathlessness. There was an associated history of sore throat, pain during swallowing, anorexia, abdominal tenderness with distension since past one week. At the time of admission his vitals were as follows: pulse - 107, blood pressure - 108/72mm Hg, respiratory rate- 24 and SPO₂- 96%.

The patient was admitted under the Department of Internal Medicine for evaluation of Pyrexia of unknown origin (PUO). He was put on non- invasive ventilatory support and i.v. antibiotics (Teicoplanin and Imipenem). On radiological workup (Chest X- ray and HRCT chest) the patient was found to have frank bilateral ARDS. The lab investigations carried out at the time of admission included : Urine routine and culture, routine hematology and biochemistry, throat swab for H1N1 , HIV antibodies , HBsAg, HCV antibodies, blood culture, Dengue antibodies, Widal test and Malaria antigen detection. In view of the increased tachypnoea, the patient was electively intubated and shifted to the medical ICU and put on maximal ventilator support and maximal dose of Vasopressor. Clarithromycin, Fluvir and Fluconazole were added to his antibiotic regimen.

Blood was further collected simultaneously from two separate sites, the right femoral line and left hand peripheral line and inoculated into separate commercial BACTEC vials for automated culture on the BACTEC 9050 system (Sparks, Maryland, USA).

Meanwhile, the lab investigations revealed all other tests to be in normal range or negative except for his blood urea -15mg/dl, total bilirubin-3.27mg/dl, serum creatinine-1.6mg/dl, SGOT-64U/L, SGPT-87U/L and WBC: 14 thousands/microlitres (N85, E01, L09, M04, B01and band cells 06). All the 3 blood cultures grew non lactose fermenting gram negative bacilli on Mc Conkey agar and non- hemolytic colonies on blood agar. The gram stain of the colony revealed gram negative bacilli with typical bipolar staining. Using the Microscan autoScan-4 identification and susceptibility system (Siemens, West Sacramento, California, USA), all the three isolates were separately identified as *Burkholderia pseudomallei*. The identities were reconfirmed using the mini API system (Biomérieux, Marcy-l'Etoile, France) and at the National level Reference lab for *Burkholderia pseudomallei* at CMC, Vellore, India. All isolates were found to be sensitive to imipenem (MIC <=4) and tetracycline

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(MIC<=4) and resistant to ceftazidime (MIC>16) and co-trimoxazole (MIC >2/38).

No history of patient's travel abroad or outside the state of Rajasthan could be elicited. However, when probed, the patient's attendant provided a history of his bathing in spring water for 1½ h, 15d back (during the monsoon season) at a picnic spot in Sawai Madhopur (180 kms from Jaipur city).

The patient responded well to the antibiotic treatment with gradually tapering off of inotropes and decreased FIO₂ and static renal function tests with adequate urine output. However, three days later, the patient's condition suddenly deteriorated and he succumbed to death.

DISCUSSION

The first description of melioidosis was given in 1912 by Alfred Whitmore and CS Krishnaswami as a "Glanders-like disease" among the morphine addicts and vagabonds found dead in the streets of Rangoon, Myanmar [1]. The first report of the presence of *B. pseudomallei* in India was from Scotland in 1953 in a traveler returning from Central India [2].

Melioidosis is endemic in India and cases of human melioidosis have been reported from the following states in India - Tamil Nadu, Kerala, Karnataka, Andhra Pradesh, Maharashtra, Orissa, West Bengal, Assam and Tripura [3]. Ours is the first case of laboratory confirmed septicaemic melioidosis being reported from the state of Rajasthan. This infection is under-diagnosed and under-reported in our country mostly because of the lack of awareness of its existence, low index of clinical suspicion and lack of accurate microbiological services.

The clinical presentation of this disease is quite varied. Localized disease usually manifests as pneumonia, skin ulcers, and subcutaneous abscesses, whereas disseminated disease can present as multifocal pneumonia, subcutaneous abscesses, abscesses in solid abdominal visceral organs, septic arthritis, osteomyelitis, and septicemia [4]. Our patient presented with an acute illness with fever and breathlessness. A recent study from Chennai, South India has reported fever (65.62%) as the most common clinical presentation of melioidosis followed by weight loss (31.25%), joint pain (18.75%), breathlessness (15.52%) and oliguria (9.75%) [5]. The risk factors for melioidosis include diabetes mellitus, excess alcoholism and renal disease and other causes of

immunosuppression [6]. However, no such underlying risk factor was identified in our patient.

Burkholderia pseudomallei is a non fermenting, motile, gram negative bacterium which shows characteristic bipolar appearance on Grams stain. The causative organism can be grown easily by standard laboratory methods. It may be mistaken for *Pseudomonas* species since they have many common phenotypic characteristics. Resistance to gentamycin and colistin in an oxidase positive gram negative bacillus with sensitivity to amoxi-clavulanic acid is a remarkable feature for the identification of this pathogen [7]. It appears as smooth colonies on initial isolation turning dry and wrinkled on further incubation.

This bacterium is widely present as an environmental saprophyte in soil and fresh surface water in the endemic regions. Similar to our case, the majority of melioidosis cases have been documented during the monsoon season [8]. These bacteria have been found in soils at a depth of 25 - 45 cms and their movement to the surface with the rising water table during the rainy seasons has been proposed responsible for its increased transmission rates [9,10]. Humans acquire infection mostly by inhalation of contaminated dust or when soil contaminated with bacteria comes in contact with abraded skin. The primary focus of infection may be lung, skin and subcutaneous tissue or may be indefinite in up to half the patients [7]. It is possible that the aerosolisation of bacteria from surface water or soil while bathing in spring water led to the acquisition of infection in our patient.

Burkholderia pseudomallei are known to be intrinsically resistant to a wide range of antimicrobial agents including beta-lactam antibiotics, aminoglycosides and macrolides. Treatment of *B. pseudomallei* infections is lengthy and necessitates an intensive phase for clinical resolution of acute infection (parenteral ceftazidime, amoxicillin-clavulanic acid or meropenem) followed by the maintenance phase for the eradication of residual intracellular infection to prevent relapse (oral trimethoprim-sulfamethoxazole) [9,11]. In India, the first-line regimen in the acute phase is intravenous ceftazidime. The development of ceftazidime resistance as well as the possible role of carbapenem in treatment of melioidosis has been highlighted in a recent Indian report [12].

CONCLUSION

Melioidosis is expanding gradually into previously considered non-endemic regions. Further studies on the environmental distribution of *B. pseudomallei* as well as sero-prevalence studies would aid in investigating the possibility of this disease being endemic in the state of Rajasthan. Awareness of this rare infection and more vigilance is needed among the Microbiologists and Clinicians for the accurate diagnosis, timely institution of appropriate management and prevention of fatalities.

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