International Journal of Medicine Research
ISSN: 2455-7404
www.medicinesjournal.com
Volume 3; Issue 4; October 2018; Page No. 34-35

Case report: Melioidosis

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Abstract
Melioidosis, an infection caused by a gram-negative bacterium, *Burkholderia pseudomallei* which are transmitted through contact with contaminated soil and water. Clinical manifestations could be extended from soft tissue infection to pneumonia with sepsis. We present a case of a 64-year-old female patient with abscess on the left ring finger with sepsis.

Keywords: melioidosis, *Burkholderia pseudomallei*

Introduction
Melioidosis, also known as Whitmore's disease, is a serious infectious disease caused by the bacterium *Burkholderia pseudomallei* [Allen C. Cheng 2005] [1]. It is a gram-negative bacteria and it is thought to be transmitted via inoculation of contaminated soil and less commonly via aerosol inhalation, leading to a systemic infection which may be complicated by septicemia and/or disseminated abscess formation [Viseth Ngauy 2005] [2]. *B. pseudomallei* infection is broad, it ranges from an asymptomatic, sub-clinical infection or focal infection to disseminated infection [Neonatal Melioidosis 2009]. It is prevalent in tropical climates, especially in Southeast Asia and northern Australia where it is widespread and less prevalent in India, China, and it rarely occurs in American or African tropical areas [Allen C.Cheng 2005, Wipada Chaowagul 2015] [1, 4]. The most common manifestations of melioidosis are pneumonitis with onset of septicemia and skin and soft tissue infections [Viseth Ngauy 2005] [2]. As humans and animals are increasingly shifting around the world, there are further circumstances for melioidosis to spread from established endemic areas to new ranges [David A.B. Dance 2000] [5].

Case Report
A 64-year-old female with a history of diabetes for 10 years admitted to the hospital due to the complaint of swelling and pain on the left ring finger since 2 to 3 weeks. She had a history of fever and vomiting for 4 days and constipation for 7 days. She stated that the lesion initially started as a small wound and began to enlarge and ulcerate, with intermittent purulent discharge over a period of 2 to 3 weeks.

On examination, the patient was febrile (101ºF) with mild pallor. During the time of admission, her blood pressure was 140/90 mmHg, pulse rate 118 beats/min and respiratory rate were normal.

Investigations revealed that the random blood glucose level was increased (389.1 mg/dL). Serum sodium (125mmol/L) and chloride (92mmol/L) were decreased. There were no changes in serum potassium, serum creatinine, and urea. The hematological profile concedes that total leukocytes count was increased (11200cells/cumm) and basophils were zero. Under strict aseptic precautions incision and drainage of left index, finger abscess was done and pus was sent to culture. *Burkholderia pseudomallei* were identified by biochemical testing with a Vitek 1 analyzer. The provisional diagnosis was cellulitis left hand and sepsis.

In order to control blood glucose level, insulin therapy was started according to patient's capillary blood glucose status. She was then started with 2 weeks course of intra-venous Inj. Meropenem 1 g 12 hourly followed by oral Co-trimoxazole for 12 weeks.

Discussion
Melioidosis caused by the Gram-negative bacterium *Burkholderia pseudomallei* is a very serious infection and has been sporadically reported from the Indian subcontinent [Neonatal Melioidosis 2017] [10]. In India, highest number of cases were reported from the southern states like Kerala and Tamil Nadu [Purabi Barman 2011] [6]. Various factors of the host-pathogen relationship along with age, occupation, immunologic competence, and nutritional status of the host lead to the pathogenicity of *B. pseudomallei* [Amorn Ieelarasamee 1989] [7]. The greater numbers of infected persons are possibly asymptomatic and the manifestations mimic other acute and chronic bacterial infections, for example tuberculosis or fungal infections. [Amorn Ieelarasamee 1989] [7]. In this study, patient was presented with swelling and pain in left ring finger 2-3 weeks and also had the history of fever and vomiting for 4 days. One of the common manifestations of melioidosis is skin and soft tissue infection which may result from hematogenous spread and can be the source of systemic infection [Maria Carolyn 2011] [8].

Kingsley *et al* (2016) [9] reviewed 67 cases of melioidosis and found out that diabetes was the most common risk factor [Kingsley, P. V 2016] [9]. In this case, the patient was diabetic since 10 years and it could be the risk factor for the

development of the disease [Kahandawaarachchi *et al* 2017] [10]. It has been put forward that *B. pseudomallei* enter the human body either through inhalation, ingestion or inoculation [Allen c cheng *et al* 2005] [1]. *B. pseudomallei* were obtained from pus in this patient. Current interventions are the early intravenous administration of antibiotics, Ceftazidime or Carbapenems, for 10 to 14 days, followed by oral administration of Co-Trimoxazole or Co-Trimoxazole and Doxycycline for 12 to 20 weeks [Isuru Chamika 2017] [10].

Even if Ceftazidime was reported to be the most effective antibiotic for melioidosis, its therapeutic response is disappointingly slow in most cases, probably because its effectiveness is multifactorial and dependents on the properties of the organism and the clinical symptoms and immune status of the host. In an in vitro study, Carbapenem with a minimum inhibitory concentration was found to be comparatively low [Naveen Mohan *et al* 2015] [11]. It is currently considered as a preferred antibiotic for this disease. *B. pseudomallei* are resistant to Penicillins, first and second generation Cephalosporins, Colistin and Aminoglycosides [Viseth Ngauy *et al* 2015] [2].

In this patient, Meropenem 1gm IV was given in order to prevent the infection. The treatment for melioidosis requires a prolonged course of antibiotics; it may lead to the development of resistance during therapy. [David Dance 2014] [12]. The probability of relapse is significantly high, typically after a short duration of antibiotics, hence the patient will remain on a long-term therapy for an indefinite period of time, or until the ulceration completely cure. [Viseth Ngauy 2005] [2].

Conclusion

Burkholderia pseudomallei were isolated in our patient which was the causative bacteria of melioidosis. The patient had soft tissue infection and fever. Timely detection of the disease and long term use of antibiotics helped to reduce the infection in our patient.

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