Case Report

A Case of Fatal Meliodosis presenting as Septic Arthritis and Septicaemia

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Abstract:
Meliodosis, caused by the gram negative saprophyte Burkholderia pseudomallei, is very difficult to diagnose clinically because of varied presentations and lack of awareness. It causes various clinical manifestations like pneumonia, septicaemia, septic shock, septic arthritis, abscesses in different organs etc. The organism can be difficult to identify in laboratories with little experience of B pseudomallei. For effective and timely initiated treatment, clinicians and microbiologists should communicate with each other. Here we report a case of a middle aged diabetic lady who presented with septic arthritis. Burkholderia pseudomallei was isolated from blood and synovial fluid cultures. The unfortunate woman succumbed to death from septic shock before diagnosis.

Key Words: Meliodosis, Septic Arthritis, Burkholderia pseudomallei, ICU, Septic Shock, Septicaemia

Introduction:
Meliodosis is an emerging infectious disease in Bangladesh. This potentially fatal infection is caused by exposure to soil or water contaminated with the gram negative aerobic bacteria Burkholderia pseudomallei. The clinical manifestations are extremely variable, can affect any organ, and may be localized or disseminated. Severity varies from fulminant septic illness to a chronic infection persisting for more than 2 months. Here we report of a case who presented with septic arthritis, septicaemia and fatal septic shock, and eventually diagnosed as Meliodosis on basis of positive blood and synovial fluid cultures.

Case Report:
A 45 year old diabetic female with chronic kidney disease (CKD) was admitted in Medicine department of BIRDEM (Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine and Metabolic Disorders) General Hospital, Dhaka with complaints of continued high grade fever for 10 days and painful swelling of left knee joint for a week. She was a housekeeper and from middle class family, hailing from Mymensingh, a northern district of Bangladesh. She had no associated history of cough, respiratory distress, abdominal pain or dysuria. The patient also did not have any past history of any joint pain or recent history of trauma to left lower limb. On admission, she was conscious, alert, febrile (Temp 101ºF), and dyspnoeic (resp rate 28/min). Her pulse was 112/min and BP was 140/80 mmHg. There was no added sound on chest auscultation and no organomegaly in abdomen examination. Her left knee joint was swollen, hot, and tender with restricted movement. Immediately fluid was aspirated from that joint and sent for study. As the synovial fluid was cloudy, intravenous ceftriaxone and flucloxacillin were started assuming that she had been suffering from septic arthritis. Unfortunately patient became drowsy few hours later. Her SpO₂ was 91% with 10L/min O₂. She was then transferred to intensive care unit (ICU). On ICU admission her temp was 105ºF, HR 148/min, and BP 160/70 mmHg. There was no added sound on chest auscultation and no organomegaly in abdomen examination. Her left knee joint was swollen, hot, and tender with restricted movement. Immediately fluid was aspirated from that joint and sent for study. As the synovial fluid was cloudy, intravenous ceftriaxone and fluoroaxacillin were started assuming that she had been suffering from septic arthritis. Unfortunately patient became drowsy few hours later. Her SpO₂ was 91% with 10L/min O₂. She was then transferred to intensive care unit (ICU). On ICU admission her temp was 105ºF, HR 148/min, and BP 160/70 mmHg. Her ABG revealed metabolic acidosis with pH 7.25 and base deficit 11.4. She was intubated, and placed on mechanical ventilator. Few hours later, her BP became 80/40 mmHg. Inotrope support with noradrenaline, vasopressin and adrenaline was commenced after adequate fluid resuscitation. As her condition was progressively deteriorating, intravenous Meropenem and Vancomycin were started. Despite all these efforts she succumbed to death 36 hours after hospital admission. Her blood (two samples) and synovial fluid culture reports which we received after her death, showed growth of Burkholderia pseudomallei.
Clinical manifestations of articular Meliodosis are similar to other infective arthritis. It usually involves the large weight-bearing joints, especially knees followed by ankle, foot, shoulder, pelvis and thoracic or lumbar spine. Often soft tissue abscesses with osteomyelitis coexists. In our patient, the disease affected one knee joint followed by septicemia. Though septic arthritis and osteomyelitis can be the primary manifestation of meliodosis, these may occur following dissemination of disease from infection elsewhere in the body also. Kosuwon et al compared patients with septic arthritis caused by *B. pseudomallei* versus other pathogens, and reported that patients with any concomitant disease were 12 times more likely to be infected with Meliodosis. Our patient was diabetic for 10 years, so had a high chance of developing Meliodosis.

A definitive diagnosis can be made by culturing the organism from a clinical sample. Unfortunately culture is time consuming and the result is often too late to be useful, which happened in our case. Although gram staining of sample may be the quickest way to make a diagnosis, such identification is infrequent. *Burkholderia pseudomallei* may be mistaken for *Pseudomonas* species, since they share several common phenotypic characteristics. *Burkholderia pseudomallei* grows well at 42°C but does not produce pigments and is both maltose and lactose oxidative positive. Pseudomonas like gram negative organism resistant to aminoglycosides and colistin should arouse microbiological suspicion of *B. pseudomallei*. Radiological investigation and white cell scanning are not specific for Meliodosis. Indirect hemagglutination, latex agglutination and immunofluorescence can be done if available. Due to its protracted course, treatment of Meliodosis consists of an intensive phase of at least 10 to 14 days of intravenous ceftazidime or carbapenem. This should be followed by oral eradication therapy with trimethoprim-sulfamethoxazole for 3 to 6 months. Though the overall mortality of Meliodosis is about 19-40%; the mortality from septic shock due to Meliodosis is reported to be 80-100% in spite of efficient critical care. So, the prompt use of effective antibiotic is life-saving when Meliodosis is suspected. As our patient was first diagnosed as septic arthritis, she received ceftriaxone and flucloxacinil. Later it was switched to meropenem, but unfortunately it was too late. There are reports of fatal cases of severe Meliodosis who died rapidly in ICU with a median survival of only 2 days.

Since Meliodosis can produce symptoms similar to pyogenic bacterial infections, gram negative sepsis or tuberculosis, only a high degree of suspicion can help in saving the patients from the mortality and morbidity of this disease. A delay in diagnosis can be fatal, like in our disease, since empirical antibiotic often do not provide adequate coverage for *B. pseudomallei*. The unfortunate lady in this case was initially misdiagnosed probably due to lack of clinical awareness and delay in correct microbial diagnosis. Surprisingly, 10 out of 19 published case reports of Meliodosis in Bangladeshi people were diagnosed in BIRDEM Hospital within the period from 2010 to 2014. This may be due to high suspicion and
awareness in this hospital. *Burkholderia pseudomallei* can be difficult to identify in laboratories with little experience of the organism as it broadly resembles other pseudomonas species biochemically and characteristics colony grow in cultures sometimes after 48 hours. The true incidence of disease in Bangladesh may actually be much higher than is currently believed. The broad spectrum of presentations with lack of availability of laboratory technology and unawareness of the condition among many medical practitioners may be responsible for under-reporting in our country.

Although Meliodosis in uncommonly diagnosed, recent data indicate that the disease as such is not uncommon in Bangladesh. Due to extremely broad clinical spectrum, Meliodosis has been referred to as “the remarkable imitator”. This disease presents a diagnostic challenge to both the clinicians and the microbiologists. As the notorious organism of this disease has been isolated in soil of our country, it should be suspected in all patients hailing from northern districts of Bangladesh and presenting with sepsis or other infective complication.

References: