JOURNAL OF CLINICAL AND DIAGNOSTIC RESEARCH

How to cite this article:
SHETTY A K, HEGDE A, SHETTY I N, GOMES L.CELLULITIS WITH MULTIPLE ABSCESSES IN LEG DUE TO BURKHOLDERIA PSEUDOMALLEI INFECTION-A CASE REPORT. Journal of Clinical and Diagnostic Research [serial online] 2008 October [cited: 2008 Decmber 1]; 2:1196-1199.
Available from
http://www.jcdr.net/back_issues.asp?issn=0973-709x&year=2008&month=December&volume=2&issue=6&page=1196-1199&id=330

CASE REPORT

Cellulitis With Multiple Abscesses In Leg Due To Burkholderia Pseudomallei Infection-A Case Report

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ABSTRACT

Burkholderia pseudomallei is the causative agent of melioidosis. It is endemic in Southeast Asian countries and northern Australia. It was rarely encountered in India earlier. Recently, a few cases of melioidosis have been reported from several parts of southern coastal India. Burkholderia pseudomallei is a rare aetiology for cellulitis. We report a case of melioidosis presenting as cellulitis, with multiple abscesses on the leg in a diabetic patient. The causative agent was identified in time and the patient was treated for it's infection. The patient recovered completely after completion of the antibiotic regimen. Melioidosis is an emerging infectious disease in India.

Key Words: Melioidosis, Burkholderia pseudomallei, cellulitis.

Key Messages

Cellulitis with multiple abscesses, Melioidosis due to Burkholderia pseudomallei.

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Introduction

Melioidosis is a disease of humans and animals caused by Burkholderia pseudomallei (B.pseudomallei), previously called as Pseudomonas pseudomallei [2]. It may manifest as an asymptomatic infection, localised skin ulcer or abscess, or chronic pneumonia mimicking tuberculosis and fulminant septic shock with abscess in multiple internal organs[1]. B.pseudomallei is often mistaken for Pseudomonas species, and either treated as such or ignored as a contaminant [6]. B.pseudomallei is widely distributed in soil and stagnant water of endemic areas [1],[13]. Cellulitis is commonly caused by Group A Streptococci, Staphylococci and other bacteria, but rarely by B.pseudomallei[20]. Melioidosis is endemic in Southeast Asia and northern Australia [1],[4],[8]. Sporadic reports of melioidosis from various parts of south India and this part of coastal India are being seen, and there is a lack of awareness about this disease [13],[14]. This is the first case of melioidosis reported in this part of the country, presenting as cellulitis with multiple abscesses in the leg. Melioidosis is now increasingly recognized, and is an emerging infectious disease in India [6].

Case Presentation

A 50 year old female housewife was admitted with swelling of left leg since ten days, and fever since a week. Swelling of the leg started since 2 weeks, it gradually increased and was associated with pain and redness in the area. There was no history of any trauma to the leg. Fever was continuous, high grade and present since a week prior to admission. She was a known type-2 non-insulin dependent diabetic and hypertensive, on irregular treatment. The patient had previously developed a small abscess on the sole of the right foot six months back, for which she was treated with basic antibiotics and the wound healed. The cause of abscess was not investigated. On examination, the patient had cellulitis with multiple abscesses on the ankle, calf and the popliteal fossa. The patient had a temperature of 103^0F, pulse rate of 98/min, blood pressure -200/110 mm Hg, random blood sugar -479mg/dl, total blood count of 28,000/cu.mm., with predominant neutrophilia. Blood urea was 50mg/dl, Serum creatinine was 1.1 mg/dl and Haemoglobin was 8.2 mg/dl. Ultrasonongraphy study of the abdomen was normal.

The patient was started on piperacillin/tazobactam (PTZ) injection. Incision and drainage was done on the sixth day to drain the pus pockets. Culture of the pus sample was done, which grew Gram negative, non-fermenting bacteria. The isolate was identified as B.pseudomallei by standard biochemical tests [2]. Antibiotic susceptibility testing was done and was interpreted as per Clinical Laboratory Standards Institute Guidelines[3]. The isolate was sensitive to ceftazidime, cefotaxime, piperacillin, ciprofloxacin, meropenem, doxycycline, trimethoprim-sulphamethoxazole (TSX) and chloramphenicol, and was resistant to ampicillin, cephalexin, cefuroxime, gentamicin and amoxicillin/clavulanate. The blood culture did not yield growth of any bacteria. The patient remained febrile even after nine days of antibiotic therapy with piperacillin/tazobactam and pus continued discharging. A second sample of pus was cultured, and B.pseudomallei was re-isolated, with a similar antibiotic susceptibility pattern. After B.pseudomallei was identified, antibiotic therapy was changed to the recommended regimen of Ceftazidime and TSX [1]. The patient became afebrile within 48 hours after changing the antibiotics. Discharge from the incision site stopped after a week and gradually the wound became healthy. Diabetes and hypertension were managed with insulin and antihypertensives, respectively. The haemoglobin level was corrected after blood transfusion. Secondary suturing was done to close the incision site. After suture removal, the patient was discharged and put on maintenance therapy with doxycycline and TSX for three months [1]. The patient recovered completely after completion of the therapy.

Discussion

Cellulitis is rarely caused by *B.pseudomallei*. An Indian bacteriologist, C.S. Krishnaswami, discovered and described this bacterium in 1912 while working with his physician colleague, A Whitmore under the British army in Burma [6]. Melioidosis is endemic in Southeast Asia and northern Australia, with the largest number of reports from Thailand [1],[6]. This organism is found more commonly in cleared irrigated sites such as rice paddies and surface waters of endemic areas [1],[14]. In Australia, *B.pseudomallei* has been found in clay soils at a depth of 25 to 45cms. and it has been proposed that the bacteria move to the surface with the rising water table during wet seasons [15]. The majority of melioidosis cases reported, occurred in monsoonal wet seasons [8] , [13] , [14], which was observed in this case also. Melioidosis is increasingly recognized in southern India, and is an emerging infectious disease [1] , [4] , [6] , [8] ,[14]. It has also been reported from this part of the country, which is a coastal area, predominantly with fields of rice-paddies and facing heavy

monsoons [13] , [14]. The cases so far reported here either had septicaemia, septic arthritis, pneumonia or abscesses in internal organs [14]. One case of cellulitis of neck with septicemia was reported [13]. No case of cellulitis of leg with multiple abscesses had been reported so far, and hence this is the first case. Most diseases are from recent infections, but those with latency and reactivation are described up to 29 years after exposure [1]. Modes of transmission include inhalation, ingestion and inoculation from contaminated soil through abrasions or lesions [4],[10],[12]. Localized infection can occur without obvious infected wound or evidence of trauma [14]. Our patient also had no history of trauma or ulcer on the left leg, and probably might have acquired the infection through abrasions on the feet.

The major risk factors for melioidosis include diabetes mellitus, excess alcoholism and renal disease. Other risk factors include chronic lung disease, thalassaemia, malignancies, steroid therapy, iron overload and tuberculosis [1],[7] [12]. Our patient had the risk factor of diabetes. Most of the cases reported earlier had one or more risk factors, with diabetes leading the list. However, the disease can occur even without risk factors [9]. B.pseudomallei can grow easily by ordinary culture methods, but it is usually mistaken for Pseudomonas species[6]. Unless there is awareness among the clinicians and microbiologists, cases may be under-reported, and patient management may go in the wrong direction. B.pseudomallei is characteristically resistant to penicillin, ampicillin, first and second generation cephalosporins, gentamicin, tobramycin and streptomycin [1]. The recommended antibiotic therapy for melioidosis includes an initial intensive therapy with Ceftazidime (50mg/kg, up to 2g),every 6 hours, or Meropenem (25mg/kg, up to 1 g) every 8 hours, or Imipenem (25mg/kg, up to 1 g) every 6 hours with or without TSX (8/40mg/kg, up to 320/1600mg),every 12 hours for a minimum period of 10-14 days, followed by eradication therapy with TSX (8/40mg/kg, up to 320/1600mg) every 12 hours with or without doxycycline (2mg/kg, up to 100mg),every 12 hours, for 3 months. Relapses are common when a single drug is used [1]. In this patient, though PTZ was susceptible in vitro, the patient did not respond clinically and remained febrile even after nine days of antibiotics, draining of the abscess and controlling diabetes. Similar observations were made in some cases reported previously [11]. Only after commencing the recommended therapy, did the patient become afebrile and the pus stopped discharging.

Conclusion

Melioidosis is an emerging infectious disease in India, and can cause infection at almost any site. Possibilities of infection are high in endemic areas facing heavy monsoons, and in patients with risk factors for the disease. An efficient laboratory diagnosis can identify the causative agent even when there is no clinical suspicion. Successful cure from the disease can be achieved by following the proper antibiotic regimen.

Abbreviations

TSX Trimethoprim-sulphamethoxazole
PTZ Piperacillin-tazobactam

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