Burkholderia pseudomallei renal abscess in a patient with Autosomal Dominant Polycystic Kidney Disease.

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Abstract:
Melioidosis, caused by Burkholderia pseudomallei is not reported in hemodialysis patients from India. We report a patient with autosomal dominant polycystic kidney disease (ADPKD) on maintenance hemodialysis who presented with Pyrexia of Unknown origin (PUO), weight loss and renal abscess due to B pseudomallei. Clinical awareness and microbiological expertise is important in making a diagnosis of melioidosis in a case of PUO.

Keyword:
Melioidosis, Burkholderia pseudomallei, ADPKD, Hemodialysis, Renal abscess.

Introduction:
Melioidosis is endemic in southeast Asia (1). Literature on melioidosis from India is limited. It probably is under reported here even though a few case reports and two small series are reported from South India(2). Similarities in clinical presentation with tuberculosis, lack of clinical awareness and microbiological expertise make the diagnosis of melioidosis difficult (3). Case report A 40 year old male from northern India, on maintenance hemodialysis presented with intermittent fever and weight loss of 3 months duration. He was diagnosed to have ADPKD with three other family members having the same disease. He was on hemodialysis through an arteriovenous fistula since the last 11 months. Evaluation of fever that started one month after initiation of dialysis showed splenic abscess, for which splenectomy was done at a hospital in his home town. Cause of abscess was not identified then. Details of antibiotic therapy were not available. A low grade fever recurred after 4 months. He had 20 kg weight loss in the next 3 months. When he presented to us he had left flank pain of 1 week duration. Examination revealed a malnourished gentleman with hypertension, bilateral renal masses and left lumbar tenderness. He had 100\(^0\) F temperature. There was no lymphadenopathy. Evaluation showed haemoglobin – 7g/dL Total WBC count - 14,500 cell/mm\(^3\), Differential count – myelocytes
1%, metamyelocytes 2%, band forms 2%, neutrophils 74%, eosinophils 3%, lymphocytes 10%, monocytes 8%, blood urea – 190 mg/dL and serum creatinine – 8mg/ dL. Chest X ray did not show any evidence of infection.

Ultrasonogram revealed bilateral enlarged cystic kidneys. Left kidney showed a midpole renal abscess with extension in to perinephric space but contained within the Gerota’s fascia. Under ultrasound guidance a pig tail catheter was inserted and left renal abscess was aspirated. Pus sent for microbiological evaluation grew Burkholderia pseudomallei. Blood and urine cultures sent at admission were negative.

**Ultrasound: Left Renal abscess with perinephric extension**

Patient became afebrile with intravenous ceftazidime and oral cotrimoxazole. His appetite improved and started gaining weight. At one month of starting treatment, antibiotic was changed to oral cotrimoxazole and doxycycline which was advised to be continued for 3 months.

**Discussion:**

Melioidosis represents a spectrum of clinical illnesses caused by Burkholderia pseudomallei(3). It is a facultative intracellular gram-negative bacterium. This organism is widely distributed in soil and fresh water in endemic regions occurring between 20°N to 20°S latitudes. It is resistant to environmental changes while outside human body and being intracellular is resistant to defence mechanisms of the body(4). This makes it a difficult organism to control. Infections due to B pseudomallei is considered endemic in Southeast Asia(1). It probably is under reported in India. Having similar geographically features, it is likely that melioidosis has a similar prevalence in India as in the rest of southeast Asia. Low index of suspicion among clinicians and lack of microbiological facilities may be the cause of this under reporting(2). There are case series from Vellore and Mangalore suggesting a higher prevalence, at least in South India(5), (6). These series does not include patients on maintenance dialysis or ADPKD. The mode of transmission is by cutaneous inoculation, inhalation, and ingestion. The different presentations of melioidosis include PUO, rapidly progressive septicemia with or without pneumonia, localised soft tissue infection or subclinical infection and reactivation later(1), (4). Visceral abscess, at times multiple is also a known presentation of melioidosis. Renal abscess has been reported to be between 4% to 12% in case series(7), (8), (9). These also did not include ADPKD patients. Immunosuppressed states like diabetes mellitus, chronic kidney disease, alcoholism, chronic lung disease and solid organ transplantation are identified as risk factors for occurrence of this disease(1),(4), (10). Our case had chronic Kidney disease which is a risk factor for the disease (7). He underwent splenectomy for fever a few months ago with symptomatic
relief. His fever recurred 4 months later with a left renal abscess and pus grew B pseudomallei, probably due to haematogenous spread. Inability to identify the organism in the first instance and lack of long term treatment would have led to the reactivation of the disease at a later date. But demonstration of B pseudomallei in ADPKD renal cyst infection is not reported before. Demonstration of organism by culture is the corner stone of diagnosis. Use of special culture medium with antibiotics (aminoglycoside), enhances the growth of B pseudomallei and suppresses others. Serology and PCR tests are less sensitive and not easily available(11). Hence when clinical suspicion is high, microbiology unit should be alerted regarding special precautions to enhance the diagnosis rate of melioidosis. Our patient became afebrile by day 4 of starting antibiotics and by two weeks, appetite had improved and by 4 weeks, started to gain weight. B pseudomallei can enter a long latency period. Average time for relapse is 21 weeks from hospital discharge. Hence treatment of melioidosis should be long, consisting of an initial short acute phase of parenteral antibiotics and a long term oral eradication phase(12). The acute phase should be at least 2 weeks. Parenteral antibiotics used can be ceftazidime, imipenem or meropenem. Oral cotrimoxazole is added to any one of the parenteral antibiotics mentioned(13). Prognosis also depends on supportive therapy during acute phase like management of shock and ARDS, drainage of pus and good blood sugar control. Eradication phase should be at least 12 weeks to reduce relapses and the current recommendation is for cotrimoxazole with doxycycline. Benefits of adding chloramphenicol to the others as in conventional regimen has not been found to be any better (14). Conclusion We report a patient of ADPKD on maintenance hemodialysis with Burkholderia pseudomallei renal abscess. High index of suspicion and good microbiological support is needed for diagnosis of melioidosis.

References:


