Liver Abscess Due To Unusual Gram Negative Bacilli: Burkholderia Pseudomallei?

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Abstract

Burkholderia pseudomallei, a natural saprophyte of soil, stagnant waters of rice paddies etc. causes infection ranging from short febrile illness, Pyogenic abscesses in various organs to fatal septicemia. We report here two patients, occupationally field workers presenting with liver abscesses along with fever, abdominal pain and tender hepatomegaly. Aspirated pus from liver abscess was cultured and found to grow a non-fermenter later suspected to be Burkholderia pseudomallei based on various evidences. This organism is being documented for the first time from this hospital and brings to the notice the possible prevalence of this organism in this area.

CASE REPORTS

Melioidosis is an infectious disease of humans and animals caused by Burkholderia pseudomallei (B. pseudomallei). The organisms are widely distributed in the soil of rice & in stagnant water throughout the tropics. The disease occurs throughout the world, although said to be prevalent in South East Asia. Complications include localized abscesses, severe community acquired pneumonia, fatal septicemia. We report here, the cases of liver abscesses suspected to be caused by B. pseudomallei in rice field workers, and highlight the prevalence of organism around this region.

CASE 1

A 44 years old diabetic male, resident of a village near Nagunur, presented with a high grade fever, pain in abdomen since two weeks, loose motions and with a history of jaundice. On examination, he showed mild hypochromic anaemia, total serum bilirubin was 1.3 IU/L (0.2-1.0 normal), Alkaline phosphatase was 256 IU/L (42-192 normal). Ultrasound showed hypoechoic lesions in right lobe (76 x 67 mm) with normal gall bladder, pancreas, spleen & both kidneys. About 50ml pus aspirated from the abscess was received by microbiology lab for culture.

The Gram stain of pus showed gram negative bacilli which grew on blood agar as pin-point, non-haemolytic, flat colonies. Gram staining of culture showed typical bipolar staining. The organism was motile, Oxidase & Catalase positive, a non fermenter & utilized citrate and did not produce Indole, H_2S or hydrolyzed Urea. Presumptively the organism was categorized as Pseudomonas spp. other than Pseudomonas aeruginosa. Subsequently the organism was subjected for characterization according to the standard procedures used for Pseudomonas speciation. [1] It utilized glucose, lactose starch oxidatively, decarboxylated arginine, gelatin. Gelatin liquefaction, nitrate reduction tests were positive. It also grew well at 42 ^{O} C suggesting it to be Burkholderia pseudomallei.

CASE 2

A 50 years old diabetic male was admitted to the hospital with fever and abdominal pain since one week. Similar to first patient, this patient also had hypochromic anaemia, and elevated levels of serum bilirubin (1.32 IU/L) and alkaline phosphatase (261 IU/L). Ultrasound showed presence of Pyogenic liver abscess with hepatomegaly. The patient underwent the USG guided aspiration and about 10 ml purulent material was received by microbiology lab for culture. Similarly when grown on culture, organism was found as gram negative diplobacilli with typical bipolar staining. The characterization scheme followed in the similar manner and led to the presumptive identification of B. pseudomallei in this case also.

DISCUSSION

Burkholderia pseudomallei is a saprophytic organism that

routinely can be isolated from environmental niches like water, moist soil & rice paddies. [2] There has been a report from Hyderabad (Andhra Pradesh) about isolation of B. pseudomallei from septicemia following contact with stagnant water. [3] The reported cases are from the village area of Nagunur (Dist. Karimnagar Andhra Pradesh) which is surrounded by rice paddy cultivation. Both patients reported here gave the history of being paddy workers. The mode of infection in these cases could be traumatic inoculation through skin abrasions which is supposed to be one of the common modes of infection. Liver abscess is commonly encountered problem in clinical practice. But isolation of an organism with the typical morphology and biochemical reaction pattern of non-fermenter drew our attention to this pathogen as causative agent. Although its a major public health problem in South East Asia, this disease is an emerging infection in India. It has been reported from North East to Kerala in South India. Previously there have been reports of hepatic abscess and abscess in Parotid region from Manipal, Karnataka. [4,5] Septicemia and isolated liver abscesses due to B. pseudomallei have been reported from Mangalore, Karnataka [6] and from Vellore, Tamil Nadu [7] respectively. Both the patients reported here were diabetic and diabetes is a known pre-disposing factor for melioidosis. [8] At present, no inexpensive, practical and accurate rapid diagnostic tests are commercially available, diagnosis relies on culture of the organism. [9] The treatment of choice is intravenous ceftazidime for at least 14 days or more, followed by maintaining oral therapy with trimehtoprim-Sulfamethoxazole for12-20 weeks to prevent relapse.

Although we could not confirm the isolates serologically as the cultures had become non viable before they could be sent for serotyping, but we strongly suspect the same organism as causative agent based on other evidences. B. pseudomallei, an emerging pathogen may remain underreported in many cases due to low index of suspicion. So we want to draw attention of readers towards the possible prevalence of this organism around this area and its role as potential pathogen of liver abscess.

References

1. Jesudasan MV, Shantha Kumari R, John TJ (1997) Burkholderia pseudomallei - an emerging pathogen in India 15:1-2.
2. Coenye T, Vandamme P (2003) Diversity and Significance of Burkholderia species occupying diverse ecological niches. Environ Microbiol 5:719-29.
3. Forbes BA, Sahm DF, Weissfield AS (1998) Pseudomonas, Burkholderia and similar organisms. In: Bailey and Scott's Diagnostic Microbiology , Chapter 31, 10th ed Mosby Co. St. Louis, pp 448-450.
4. Sengupta S, Murthy R, Kumari GR, Rahana K, Vidhyasagar S, Bhat BKS et al (1998) Burkholderia pseudomallei in a case of hepatic abscess. Indian J Med Microbiol 16:88-89.
5. Rao PS, Shivananda PG (1999) Burkholderia pseudomallei- Abscess in an unusual site. Indian J Pathol Microbiol 42:493-494.
6. Dias M, Anthony B, Aithala S, Hanumanthappa B, Pinto H, Rekha B (2004) Burkholderia pseudomallei septicaemia - A case report. Indian J Med Microbiol 22(4):266-268.
7. Mukhopadhya A, Balaji V, Jesudasan MV, Amte A, Jeyamani R, Kurian G (2007) Isolated liver abscesses in Melioidosis. Indian J Med Microbiol 25(2):150-151.
8. Jesudasan MV, Anbarasu A, John TJ (2003) Septicaemic melioidosis in a tertiary care hospital in South India. Indian J Med Res 117:119-121.
9. Allen C Cheng, Bart J Curie (2005) Melioidosis: epidemiology, pathophysiology, and management. Clin Microbiol Rev 18(2):383-416.

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