Pediatric Research and Child Health

CASE REPORT

Brevundimonas Diminuta Bacteremia: A rare case report in a Male Middle Aged Childhood

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Abstract

Brevundimonas diminuta has rarely been isolated from clinical specimens. We report here a case of B. diminuta bacteremia in a male middle aged childhood who presented with fever, jaundice and abdomen distention. USG abdomen showed moderate hepatomegaly, partially distended gall bladder, mild splenomegaly very minimal ascites with bilateral mild basal pleural effusion. Blood culture was processed by BACT/ALERT 3D 60 (BioMériux). Isolate was identified as B. diminuta. Identification and sensitivity was done by VITEK® 2 COMPACT (BioMériux). We have come across only one report of middle aged childhood sepsis caused by B. diminuta from India [1]. To the best of our knowledge, this is the first case report of B. vesicularis bacteremia in a male middle aged childhood.

Keywords: Bacteremia, B. diminuta, immunocompetent middle aged childhood

Introduction

Brevundimonas diminuta, formerly grouped with Pseudomonas, and has been reclassified as under the genus of Proteobacteria, is an aerobic nonsporing and nonfermenting, slowly growing gram-negative bacillus.

Scientific classification [2]

Kingdom: Bacteria

Phylum: Proteobacteria

Class: Alphaproteobacteria

Order: Caulobacterales

Family: Caulobacteraceae

Genus: Brevundimonas

Species: Diminuta

There are few reports in the literature of infections caused by *B. diminuta* in immunocompromised as well as in healthy patients. Source of infection is either hospital environment or community. These organisms are infrequently isolated in clinical microbiology laboratories. Recently three cases of *B. diminuta* infection have been reported. This might be due to increasing use of better culture and identification facilities, especially automated system. In most of the reports of *B. diminuta* infection isolates have been identified by ***VITEK® 2 COMPACT***. We have come across only one report of sepsis caused by *B. diminuta* in an 18 year old nephrotic syndrome patient from India.

Case Report

A 7-year-old male child presented with moderate intermittent fever of 15 days. Jaundice and abdomen distension for 9 days. History of clay coloured stools for 2-3 days, decreased oral intake since 4 day and altered sensorium since 2 days. There is no history of seizures. On examination, the child was drowsy and irritable, afebrile, with pulse rate of 113/min and respiratory rate of 40/min. Per abdomen examination showed moderate hepatomegaly with no ascites. Examination of the respiratory, cardiovascular and central nervous systems was within normal limits.

Relevant laboratory & sonography findings on the day of admission were:

Hb 10.3 gm%, PCV 31.0%, platelets 175000/mm^3, wbc 7200 /mm^3, Sr.bilirubin total 9.09mg/dl, Direct 8.09mg/dl, SGPT-537iu/dl, GGT-607IU/L, ALP:599IU/L, S.PROTEINE 6.5G/DL, S.ALBUMINE 3.27G/DL, S.GLOBULIN 3.23G/DL, A/G RATIO 1.01, PT:13 sec, INR:1.4sec, aPTT :46.8 sec. bile salts and bile pigments ++. USG s/o mild hepatomegaly, GB wall edema, minimal right side pleural effusion with mild ascites, Blood culture was taken, Brucella +ve, Leptospirosis –ve HB: 9.30 gm%, PCV:28, WBC:9150/mm^3, PLT:678000

Sr.Bilirubin Total: 2.51mg/dL, Direct:1.83mg/dL, SGPT:80.20IU/L, SGOT:155.10IU/L, GGT:37IU/L, ALP:1102.60U/L, TOTAL PROTEINS:6.10 g/dL,

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ALBUMIN:3.68g/dL, A/G :2.4; PT:13 sec, INR:1.4sec, aPTT :46.8 sec.

A provisional diagnosis of bacterial fever with differentials of typhoid, malaria, brucella, leptospirosis, rickettsial fever, viral hepatitis, cholestasis, wilson's disease were considered. Brucella IgM-ELISA positive, leptospirosis IgM & IgG negative, weil felix negative, HCV negative, smear for MP negative, widal test is negative, HAV negative, HIV 1 &2 antibodies negative, KF ring negative, sr.ceruloplasmin-normal.

The blood cultures of the presented case were performed as per standard microbiology protocol using BacT/ALERT® Microbial Detection System (bioMèrieux SA, Marcy l'Étoile, France) for initial detection of growth in the blood sample. The identification and susceptibility testing of the isolate grown were done by Vitek® 2 (bioMérieux, Inc., Durham, NC, USA). The isolate was identified as Brevindimonas dimunata on the automated culture system.

In view of persistant fever and localization signs with working diagnosis of bacterial fever probably in view of long standing entric fever, child was managed with intravenous fluids and ofloxacin after initial blood culture was taken. Later with brucella IgM-ELISA positive, in view of which Bactrium DS,Tab.rifampicin was started. As Tab rifampicin is hepatotoxic, till then culture and sensitivity pattern came and relized that, this was some bacterial infection named Brevendimonas diminuta and sensitive for cephalosporins, quinolones, tetracyclines started ceftriaxone During the course of stay patient became afebrile, abdomen distension decreased, jaundice decreased, sensorium gradually improved and patient became hemodynamically stable. He was discharged after 14 days. We concluded that the brucella IgM positive result was a false positive probably due to cross reaction [3].

Discussion

Brevundimonas diminuta is rarely isolated from environmental specimens (water) and clinical specimens. Even though it is not considered pathogenic, there have been multiple clinical case reports relating this microbe with infections in patients with cancer [4]. All clinical strains that were tested showed that this microbe is intrinsically resistant to fluoroquinolones [4].

The organism has been isolated from Human samples such as Blood [5-7], sputum [8], urine [5,12], empyema [5] ,biopsy specimens, [9] corneal ulcer [10] and pleural fluid [11]. In Most of the cases there was an immunocompromising underlying condition such as hematologic malignancies like leukemia and lymphoma [5,7], and other conditions like Diabetes [13], Hypertension [13], Myelodysplastic Syndrome[14] and Epileptic Disorder [13]. The other factors predisposing patients to this infection remain unknown. To confirm the identification real time PCR and hybridization technique [15] can be done. Good outcomes were noted after appropriate therapy except one case [9]. (Figure 1 and 2)

Figure 1: Colonies of *Brevundimonas diminuta* on blood agar after 24 h of incubation and positive oxidase test performed on the strain

Figure 2: Colonies of *Brevundimonas diminuta* on blood agar after 48 h of incubation

Almost all cases of *B. distension* infection reported in the literature are from other countries. We have not come across any report of middle childhood sepsis caused by *B. diminuta* in Indian patient. Most of the cases of *B. diminuta* infection have been reported in adult age group. This infection was very rarely reported in infants and neonates. Our case is probably the first one of community acquired *B.diminute* infection in an immunocompetent child.

In conclusion, our case report reinforces the hypothesis that *B. diminuta* can cause serious disease in a child without any immunocompromising disease.

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