



## *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 (BioMérieux). Isolate was identified as *B. diminuta*. Identification and sensitivity was done by VITEK® 2 COMPACT (BioMérieux). 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 2-3days, 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 and sonography findings on the day of admission were:

Hb 10.3 gm%, PCV 31.0%, platelets 175000/mm<sup>3</sup>, wbc 7200/mm<sup>3</sup>, Sr. bilirubin total 9.09 mg/dl, Direct 8.09 mg/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<sup>3</sup>, PLT: 678000 Sr. Bilirubin Total: 2.51 mg/dL, Direct: 1.83 mg/dL, SGPT: 80.20 IU/L, SGOT: 155.10 IU/L, GGT: 37 IU/L, ALP: 1102.60 U/L, TOTAL PROTEINS: 6.10 g/dL, ALBUMIN: 3.68 g/dL, A/G: 2.4; PT: 13 sec, INR: 1.4 sec, aPTT: 46.8 sec.

A provisional diagnosis of bacterial fever with differentials of typhoid, malaria, brucella, leptospirosis, rickettsial fever, viral hepatitis, cholestasis, wilsons disease were considered. Brucella IgM-ELISA positive, leptospirosis IgM and 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 (bioMérieux 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 *Brevundimonas diminuta* on the automated culture system.

In view of persistent fever and localization signs with working diagnosis of bacterial fever probably in view of long standing enteric 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 Bacterium 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 *Brevundimonas diminuta* and sensitive for cephalosporins, quinolones, tetra clines started ceftriaxone During the course of stay patient's 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 [4-6], sputum [7], urine [4,11], empyema [4], biopsy specimens, [8] corneal ulcer [9] and pleural fluid [10]. In Most of the cases there was an immunocompromising underlying condition such as hematologic malignancies like leukemia and lymphoma [4,6], and other conditions like Diabetes [12], Hypertension [12], Myelodysplastic Syndrome [13] and Epileptic Disorder [12]. The other factors predisposing patients to this infection remain unknown. To confirm the identification real time PCR and hybridization technique [14] can be done. Good outcomes were noted after appropriate therapy except one case [8] (Figure 1 and 2).

Almost all cases of *B. diminuta* 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.

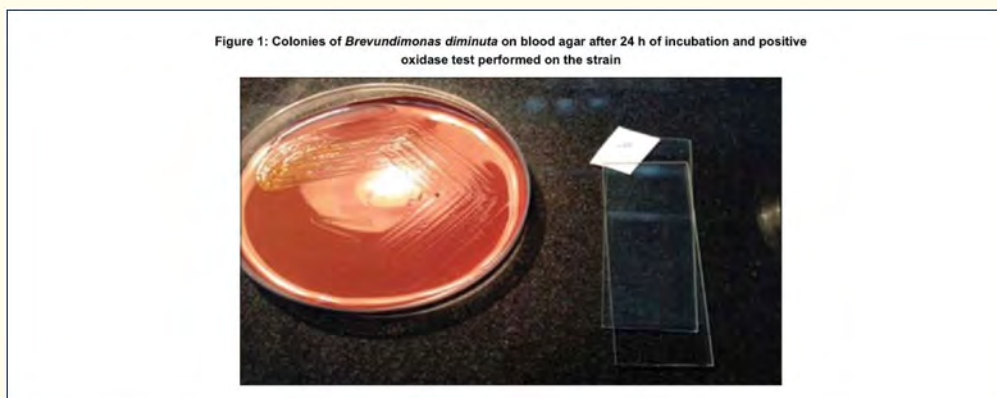


Figure 1



Figure 2

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. diminuta* 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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