

Brevundimonas diminuta causing urinary tract infection

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Abstract

Objectives: To report urinary tract infection caused by *Brevundimonas diminuta* and antibiotic susceptibility pattern of this gram negative bacillus.

Patient and methods: Urine from an infant suffering from fever and vomiting suspected of urinary tract infection was analyzed. His blood was also collected for cell count. Isolation and identification of the organism was done from urine sample, followed by antibiotic susceptibility testing of the organism isolated.

Results: *Brevundimonas diminuta* was isolated from urine specimen. Strain was sensitive to amikacin, imipenem, ticarcillin/clavulanic acid but resistant to ampicillin and ciprofloxacin.

Conclusion: *B. diminuta* is a rare pathogen and can cause urinary tract infection. The organism is resistant to quinolones and this should be opted out for treatment.

Key words: *B. diminuta*, ciprofloxacin resistant

Introduction

Brevundimonas diminuta is a non-lactose-fermenting environmental Gram-negative bacillus previously assigned to the genus *Pseudomonas*.¹⁻³

These organisms are infrequently isolated in clinical microbiology laboratories.⁴ *B. diminuta* infection has not been reported from our laboratory. Here we report a case of *Brevundimonas diminuta* causing urinary tract infection in an infant with its antimicrobial susceptibility pattern.

Patient and Methods

A nine month old infant was brought to hospital with history of fever and vomiting. On examination his temperature was 39°C. Respiratory and Cardiovascular systems were normal. Blood and urine samples were collected and was sent to laboratory for investigations. Blood tests included hemoglobin estimation, total and differential count. Urine sample was processed for presence of nitrate, protein,

bacteria, pus-cells and estimation of specific gravity. Gram's staining was performed on the urine sample. Urine was inoculated on blood agar, MacConkey's agar and CLED medium using a standard loop of internal diameter of 2mm. Semiquantitative technique of Kass concept for significant bacteriuria was followed⁵. Identification of the organism was done by conventional methods⁶ and confirmed by Vitex (BiomereX). Antibiotic sensitivity testing was done by Kirby-Bauer disc diffusion method as per the CLSI guidelines⁷.

Results

Patients hemoglobin was 9.3g/dl, platelet count 293.0x10³/μl, WBC 35.6x10³/μl, MCV 75.4fl, MCH 25.3pg, MCHC 33.5g/dl, Monocytes 11.6%, Eosinophil 0.1%, Basophil 0.1%. Urine nitrate was positive, protein 2+, pH 6, Specific gravity 1.020, WBC numerous, RBC 20-25/hpf Epithelial cells 2-3/hpf. Gram's stain showed gram negative bacilli with plenty of pus cells. Urine sample was further processed for identification and antibacterial susceptible testing. Growth by semiquantitative Kass method showed 10⁵ colony forming units on blood agar. Non lactose fermenting colonies were seen in MacConkey agar. It was identified as *Brevundimonas diminuta* and the strain was susceptible to Amikacin 30μg, Amoxicillin-Clavulanic acid 20/10 μg, cefotaxime 30μg, trimethoprim / sulfamethoxazole 1.25/23.75 μg, Ticarcillin/clavulanic acid 75/10 μg, cefepime 30μg, imipenem 10 μg. Strain was resistant to ciprofloxacin 5 μg. Patient was treated with Ticarcillin/clavulanic acid. Repeat urine sample after three weeks did not yield any bacterial growth on the culture media.

Discussion

Brevundimonas diminuta is a gram negative bacillus which is a nonfermenter, oxidase and catalase positive and not forming indole¹. It was previously assigned to genus *Pseudomonas*. The numerical analyses of whole-cell protein patterns, fatty acid compositions, phenotypic characteristics, DNA base ratios showed it to be categorized in a separate genus³. Xang yang et

al⁸ in their study had a case of urinary tract infection infected with *Brevundimonas diminuta* and was resistant to quinolones. Our study also showed similar results, the strain was resistant to ciprofloxacin.

Conclusion

Brevundimonas is a rare opportunistic pathogen causing urinary tract infection, The organism is resistant to quinolones and this should be opted out for treatment. Adequate antimicrobial agents are still warranted in most of the patients due to infections with this organism.

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