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## CASE REPORT

## Brevundimonas Bactremia - A Rare Case Report in Diabetic Patient

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## ABSTRACT

Brevundimonas vesicularis is infrequently isolated from clinical sample in patient with or without immunosuppression. A 51 year old patient having diabetes with Coronary Artery Disease with Double Valve Disease and Peripheral Vascular Disease is described. The blood culture of the patient was positive after 24 hours by Biomerieux BacT/Alert 3D 60. Identified was done by API ID 32 G automated system. There is a little literature that supports isolation of B. vesicularis from a clinical specimen in India. After overview of literature, it is suggested that third generation cephalosporin, piperacillin/ tazobactam and ciprofloxacin is effective in treating infection caused by B. vesicularis, while efficacy of ampicillin sulbactam has to be studied further.

## INTRODUCTION

Brevundimonas vesicularis is a Gram negative bacillus which is non lactose- fermenting, non- sporulating, aerobic, motile and oxidase positive. The bacilli was formerly under the Pseudomonas group was reclassified as Brevundimonas vesicularis based on DNS- rRNA hybridization studies 16S rRNA cataloguing and 16rRNA gene sequencing (Segers et al,1994) [1]. The organism has been reported to be isolated from hospitals and environment sources. The organism causes various disease which ranges from meningitis to blood stream infection to carditis and arthritis to sickle cell anaemia to diabetes [2]. The role of bacterium to cause life threatening infection is still not clear. A case is presented here of a patient

having Diabetes and Coronary Artery Disease with Double Valve Disease and Peripheral Vascular Disease as the underlying conditions in India. This is a first case of its kind to the best of our knowledge.

## CASE REPORT

A 51 year old male patient was admitted with general weakness and pain in both lower limbs for last 11 years. Patient is a chain smoker and consumes 10-15 cigarette/day. Patient was a known case of diabetes mellitus type – II. The coronary angiography from previous hospital revealed that patient is having Coronary Artery Disease, Triple vessel Disease with Peripheral vascular disease. At the time of admission

the vital statistics were as recorded. Vitals recorded were as under, Blood pressure 120/90, Pulse rate 68/min, Respiratory rate 80/min, body temperature 98.6°F. Examination of respiratory, cardiovascular and central nervous system was within normal limits. The hematogram were under normal limits. Relevant laboratory findings are as Blood Sugar random - 368, Glycosylated Hb - 10, Serum Creatinin - 1.4. Findings are sign of unfolding of arch of aorta were seen in X-Ray. The blood culture was positive after 24 hours and was detected positive by Biomerieux BacT/Alert 3D 60. The pathogen was subculture on Blood agar and Mac Conkey agar. It was oxidase positive and motile. The pathogen was identified as *B. vesicularis* by API ID 32 G automatic identification system (Biomerieux, Marcy I Etoile, France). These include the characteristics of positive activity of maltose/glucose oxidation, negative activity of inositol/ D-sorbitol/ L-arabinose oxidation, L-alanine/ capric acid/ potassium 5 ketogluconate/ trisodium citrate decarboxylation, nitrate reduction and indole production. Of all the Gram Negative antibiotics the organism was resistant only to ampicillin sulbactam. The patient was given Amikacin and Amoxycylav for 6 days. Second blood culture was negative after 5 days of incubation in Biomerieux BacT/Alert 3D 60. The patient underwent CABG X 3 LIMA to LAD, RSVG to OM and PDA on beating heart off pump. Bilateral Femoro Popliteal Bypass Right Saphenous vein graft- Left Composite Graft under S.A. The patient was discharged after 18 days after proper treatment regime.

## DISCUSSIONS

There is only one case of patient having diabetes and continuous ambulatory peritoneal dialysis as underlying conditions by Choi .W et al in 2006. The isolation of *Brevundimonas* spp in patients is in an increasing trend (Table 1) which has lead to a challenge among clinicians as availability of lack of clinical exposures [3-5]. Very few literatures have reported infection caused by *B. vesicularis* from blood sample [3, 6- 9]. Five cases have attributed to community sources [6, 10-11] and three to nosocomial [3, 12-13]. There are several cases of human infections caused by *B. vesicularis* which has been described in Table 1. In this case the organism has been identified from blood by automated identification system Biomerieux BacT/Alert 3D 60 and identification was done by API ID 32 G automatic identification system (Biomerieux, Marcy I Etoile, France). Very few cases of *B. vesicularis* infection in human limit the knowledge of severity of infection caused by *B. vesicularis* and its therapeutic regime. According to research at the CDC, *B. vesicularis* is highly sensitive to all aminoglycosides (98%), carbenicillin (94%), piperacillin (100%), ceftizoxime (94%), with moderate susceptibility to cefoxitine (75%), cefamandole (50%) and lower sensitivity to ampicillin (22%) and penicillin (12%) [14]. There are very few literatures of isolation of *Brevundimonas vesicularis* from all over the globe so to choose a proper antimicrobial treatment regime for patients is a difficult.

**Table 1: Comparison of present case with other studies**

Age	Sex	Underlying conditions	Clinical parameters	Source of culture	Outcome	Author
67Y	M	Hemodialysis, Reused dialyzers	Bacterimia	Blood	Recovered	Vanholder R 1990 & 1992
54Y	F	Systemic Lupus erythematous, Autoimmune Hepatitis, Steroid therapy	Bacterimia	Blood	Recovered	Planes AM 1992
5Y	M	Sickle cell anemia	Pneumonia	Blood	Recovered	Oberhelman RA, 1994
42Y	F	Mitrial valve replacement	Bacteremia	Blood	Recovered	Gilad J 2000
38Y	M	NO	Tonsillitis	Blood	Recovered	Chi CY 2004
40Y	M	Abscess of molar cavity	Infective endocarditis	Blood	Recovered	Yang M 2006
71 Y	M	Trauma, exposed to farm animals	Cutaneous Infection	Soft tissue	Recovered	Panasiti V, 2008
83Y	M	Coronary artery bypass grafting	Bacteremia	Blood	Recovered	Shih Ta Shang 2012
25Y	M	Anaplastic large T-cell lymphoma, neutropenia	Bacteremia	Blood	Recovered	Shih Ta Shang 2012
58Y	M	Endocarditis	Myocardial Infarction	Blood	Recovered	A. Arora 2007
1Y	F	Mild hepatomegaly with ascitis	Bacteremia		Recovered	S.M. Bhatawadwkar 2011
19Y	F	UTI	Bacteremia	Urine	Recovered	G Bhuyar 2011
36 hrs	F	Meningitis	Bacteremia	CSF	Recovered	Sumit Rai 2013
51	M	Coronary Artery Disease with Double Valve Disease and Peripheral Vascular Disease	Bacteremia	Blood	Recovered	Present case

## CONCLUSION

In conclusion, Isolation by *B. vesicularis* is infrequent but steadily increasing. A more focus should be given on its treatment regime and antibiotic susceptibility.

To our best of knowledge this is the first case of person having Coronary Artery Disease, Triple vessel Disease with Peripheral vascular disease with diabetes and smoking as a predisposing factor.

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