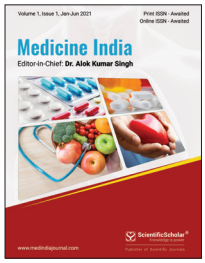
ScientificScholar®
Knowledge is power
Publisher of Scientific Journals

https://medindiajournal.com

Medicine India



Case Report

Prevotella buccae bacteremia in an immunocompetent host – A case report and review of the literature

Sangeetha Isaac[1], Mohammed Afraz Pasha[1], Shalom Isaac[2], Haresh Tulsidas[3]

[1]Department of Internal Medicine, North Alabama Medical Center, Florence, United States, [2]Department of Critical Care Medicine, Christian Medical College, Vellore, Tamil Nadu, India, [3]Department of Internal Medicine, Singapore General Hospital, Singapore.

***Corresponding author:**
Sangeetha Isaac,
Department of Internal Medicine, North Alabama Medical Center, Florence, United States.

sangeethapisaac@gmail.com

Received : 22 February 2023
Accepted : 20 March 2023
Published : 20 May 2023

DOI:
10.25259/MEDINDIA_11_2023

Quick Response Code:

ABSTRACT

Prevotella, a Gram-negative rod, is a normal commensal found on human mucosal surfaces. While infection with *Prevotella* spp. among immunocompromised individuals is common, among immunocompetent individuals, infection with this species is rare. We report an unusual case of a patient with *Prevotella buccae* bacteremia and we have conducted a short review of the literature on prior reports of *P. buccae* bacteremia.

Keywords: *Prevotella buccae,* Bacteremia, Bacteremia in immune-competent individuals, Gram negative rod, Immunocompetent host, *Prevotella* species

INTRODUCTION

Prevotella spp. is common commensals on human mucosal surfaces and has been reported to cause localized infections. Bloodstream infection with *Prevotella* spp. is extremely rare and to date, only a few cases have been reported in the literature with *Prevotella buccae* infection. The paucity of data often leads to a dilemma in clinical management when encountering patients with such rare bacteremia. Here, we report the case of a patient with *P. buccae* bacteremia with a supplementary review of the literature to date.

CASE REPORT

A 74-year-old gentleman presented with complaints of worsening lethargy and non-vertiginous giddiness over a few days duration. He did not complain of any other systemic symptoms. He had a recent history of dental caries for which he was on follow-up with his dentist but did not have any recent dental intervention. He had a medical history of non-ischemic cardiomyopathy with a low ejection fraction of 27%, atrial fibrillation currently in sinus rhythm post-ablation, chronic kidney disease, and thyrotoxicosis post-ablation, now in a hypothyroid state. At presentation, his heart rate was 72 beats/min, blood pressure was 110/70 mm Hg, respiratory rate 18/min, and temperature 99.9 F. General examination was unremarkable except for poor oral hygiene and dental caries.

His systemic examination was unremarkable and there was no focal neurological deficit. His total white blood cell count (WBC) was elevated at 21,130/uL, with a significant left shift, hemoglobin, and platelet counts were normal. His metabolic panel was normal and his creatinine was at the baseline for his chronic kidney disease. Subsequent investigations revealed high C-reactive protein

Table 1: All reported patients with *Prevotella buccae* infection and bacteremia.[1,10-13]

Number	Year	Sex	Comorbidity	Clinical presentation	Treatment	Outcome
1	1998	M	DM, HTN, Iliorenal bypass	Vascular graft infection	Augmentin+Ofloxacillin	Death
2	2006	M	AML post ABMT and neutropenia	Dysphagia and retrosternal pain	Piperacillin+Tazobactam	Improved
3	2015	F	Pregnancy	Sepsis+Retropharyngeal Abscess		Improved
4	2017	F		Breast abscess	Augmentin	Improved
5	2019**	M	CKD, CHF	Bacteremia	Augmentin	Improved

**Patient being discussed in this case report. DM: Diabetes mellitus, HTN: Hypertension, AML: Acute myeloid leukemia, ABMT: Autologous bone marrow transplantation, CKD: Chronic kidney disease, CHF: Congestive heart failure, M: Male, F: Female

of 94.4 mg/L and procalcitonin of 41.9 ng/mL. Urine analysis was negative for pyuria, leukocyte esterase, and nitrites, and urine culture showed no growth. His chest roentgenography was unremarkable. A blood culture specimen was sent using BACTEC non-radiometric continuous monitoring blood culture system. At 48 h, his blood culture grew *P. buccae*. He underwent computed tomography scan of the abdomen and pelvis, which was negative for any abscess, or other sources of infection. Initially, he was commenced on intravenous augmentin empirically and it was continued as per the sensitivity report. He was advised to complete a course of 14 days per recommendations from the infectious disease team. Blood cultures repeated on day 5 of hospitalization were sterile. He completed the full course of antibiotics and had significant clinical improvement. Before discharge, his WBC count had returned to normal. On follow-up at the ambulatory clinic, he was well and symptom-free following the course of antibiotics.

DISCUSSION

The *Prevotella* genus derives its name from Prevol, a renowned French microbiologist. These Gram-negative, anaerobic, pleomorphic, pigmented, or non-pigmented rods were previously designated as *Bacteroides* spp.[1] They are sensitive to bile salts and are differentiated from *Bacteroides* which can tolerate bile salt. The genus *Prevotella* now includes 50 species that ferment glucose and hydrolyze gelatin.[2] These are common commensals on human mucosal surfaces including oral mucosa, the pharynx, the human intestinal microbiome, and the female genital tract.[3] They have been reported in dental, oropharyngeal, pleuropulmonary, abdominal, and genitourinary infections as a part of mixed flora. Members of *Prevotella* spp. have also been reported to cause bacteremia, chronic sinusitis, brain abscess, spinal abscess, endocarditis, skin and soft-tissue infection including necrotizing fasciitis, peritonitis, empyema, and ventilator-associated pneumonia.[4,5] *Prevotella* spp. has been identified to contribute to 0.1% of bloodstream infections.[6,7]

P. buccae was described in 1982 as a *Bacteroides buccae*. The name buccae refers to its major habitat, mouth.[1,2,8] It is non-pigmented and pentose fermenting, commonly implicated in oral, dental, and respiratory infections. Normally, it is a commensal but is thought to reach the bloodstream through a mucosal breach.[1,9] To date, only a few cases of *P. buccae* infection have been reported in the literature, of these three had evidence of bacteremia [Table 1]. Both sexes were involved equally. Among the reported patients, only one was immunodeficient. Three of these patients were immunocompetent and had a breach in the integrity of oral mucosal in the form of mucositis, dental treatment, or extraction. Two of them had oropharyngeal involvement, one patient had a right ileorenal vascular graft infection, and one had a breast abscess respectively. Our patient however is the oldest patient to be reported to have *P. buccae* bacteremia and is the first patient with bacteremia without any obvious dental procedure or a breach in the integrity of oral mucosa. Most of these patients were treated with augmentin similar to our patient and had complete clinical recovery. Piperacillin and Tazobactam were used in one patient. Metronidazole resistance was reported in one of these patients.[1,10-13]

CONCLUSION

Prevotella spp. is a normal commensal of the oral cavity associated with odontogenic infection. *P. buccae* can cause bacteremia in immunocompetent patients following a breach in oral mucosal integrity following mucositis, dental caries, and extraction. Even though the site of infection could be identified in most patients, bacteremia without any identifiable foci of infection can also occur. Clinical response to treatment with augmentin is optimal. Mortality is reduced with the identification of the organism and prompt initiation of the appropriate antibiotics, hence the importance of early diagnosis and intervention.

Author contributions

Sangeetha Isaac: Conception of study + Manuscript draft + Data collection + Review

Mohammed Afraz Pasha: Manuscript draft +Data collection + Critical review

Shalom Isaac: Manuscript draft +Data collection + Critical review

Haresh Tulsidas: Manuscript draft + Critical Review + Expert Opinion.

Declaration of patient consent

Patient's consent not required as patients identity is not disclosed or compromised.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Mohammedi I, Streichenberger T, Beck F, Chevalier JM, Motin J. *Prevotella buccae* bacteraemia associated with infection of a pseudoaneurysm. Eur J Vasc Endovasc Surg 1998;15:175-6.
2. *Prevotella*. Available from: https://www.bacterio.net/prevotella.html [Last accessed on 2019 Jul 15].
3. Sahu KK, Sherif AA, Syed MP, Rajendran A, Mishra AK, Davaro R. A rare cause of sepsis: *Lactococcus garvieae*. QJM 2019;112:447-8.
4. Yanagisawa M, Kuriyama T, Williams DW, Nakagawa K, Karasawa T. Proteinase activity of *Prevotella* species associated with oral purulent infection. Curr Microbiol 2006;52:375-8.
5. Lal A, Akhtar J, Isaac S, Mishra AK, Khan MS, Noreldin M, *et al*. Unusual cause of chest pain, Bornholm disease, a forgotten entity; Case report and review of literature. Respir Med Case Rep 2018;25:270-3.
6. Mani SS, Gunasekaran K, Iyyadurai R, Prakash JA, Veeraraghavan B, Mishra AK, *et al*. Clinical spectrum, susceptibility profile, treatment and outcome of culture-confirmed brucellosis from South India. Indian J Med Microbiol 2018;36:289-92.
7. Weinstein MP, Reller LB, Murphy JR, Lichtenstein KA. The clinical significance of positive blood cultures: A comprehensive analysis of 500 episodes of bacteremia and fungemia in adults. I. Laboratory and epidemiologic observations. Rev Infect Dis 1983;5:35-53.
8. Cockerill FR 3rd, Hughes JG, Vetter EA, Mueller RA, Weaver AL, Ilstrup DM, *et al*. Analysis of 281,797 consecutive blood cultures performed over an eight-year period: Trends in microorganisms isolated and the value of anaerobic culture of blood. Clin Infect Dis 1997;24:403-18.
9. Di Marco Berardino A, Inchingolo R, Smargiassi A, Re A, Torelli R, Fiori B, *et al*. Empyema caused by *Prevotella bivia* complicating an unusual case of spontaneous chylothorax. J Clin Microbiol 2014;52:1284-6.
10. Cobo F, Rodríguez-Granger J, Sampedro A, Navarro-Marí JM. Infected breast cyst due to *Prevotella buccae* resistant to metronidazole. Anaerobe 2017;48:177-8.
11. Jensen KS, Biggs KA, Cardwell MS. Retropharyngeal abscess complicated by *Prevotella buccae* sepsis during pregnancy. A case report. J Reprod Med 2015;60:87-9.
12. Sahu KK, Sherif AA, Mishra AK, Vyas S, George SV. Perineal ulcer: A rare cause of extensive subcutaneous emphysema. BMJ Case Rep 2019;12:e229918.
13. Fanourgiakis PS, Georgala AG, Androulakis II, Vandermies AM, Wolff FC, Skoutelis AT, *et al*. *Prevotella Buccae* bacteremia and febrile neutropenia: Report of one case. Hosp Chron 2006;1:49-51.

How to cite this article: Isaac S, Pasha MA, Isaac S, Tulsidas H. *Prevotella buccae* bacteremia in an immunocompetent host – A case report and review of the literature. Med India 2023;2:12.