

Cerebrovascular Accident in a 65-Year-Old Patient with *Rothia dentocariosa*-Associated Endocarditis

Divyesh Doddapaneni, Vineet Pasam Reddy¹, Madhavi Rayapudi²

Department of Biomedical Sciences, Charles E. Schmidt College of Medicine, Florida Atlantic University, Boca Raton, Florida, ¹Department of Math and Sciences, Wilkes Honors College, Florida Atlantic University, Jupiter, ²Infectious Disease Specialists, Private Practice, Cumming, Georgia, USA

Abstract

A 65-year-old male patient with a history of heart valve replacement surgery after aortic valve stenosis and a family history of heart disease presented to the emergency room with complaints of headache, fever, back pain, and general malaise. Multiple blood samples during the patient's hospitalization cultured showed *Rothia dentocariosa*. The patient was started on daily intravenous ceftriaxone and vancomycin. In the following weeks, the patient's condition deteriorated with additional symptoms, persistent inflammatory markers, and elevated fever consistent with *R. dentocariosa* infection. The patient's clinical progression led to a cerebrovascular accident that was resolved with thrombectomy. Full symptomatic relief occurred after a valve replacement. *R. dentocariosa*, a common mouth flora, is not commonly pathogenic. This case is of particular importance as severe complications involving this bacterium are rare. There is an extreme paucity of cases involving deadly complications of *R. dentocariosa*, and there is no general consensus involving standard treatment regimen for this bacterium. We believe that this paper adds to clinical knowledge surrounding *R. dentocariosa*.

Keywords: Bacteremia, cerebrovascular accident, endocarditis, ischemic stroke, *Rothia dentocariosa*, thrombectomy

INTRODUCTION

This case describes the progression of *Rothia dentocariosa*, a normally nonpathogenic Gram-positive bacterium that inhabits the oropharynx and upper respiratory tract,^[1] in a 65-year-old immunocompetent male with a medical history of aortic valve stenosis, prostate cancer, and migraines. Infection with *R. dentocariosa* is exceedingly rare (Boudewijns *et al.*, 2003)^[2] and has some association with immunocompromised patients^[1] and recent dental procedures.^[3] There have also been cases that show *Rothia*-mediated pathology in immunocompetent patients.^[4] *R. dentocariosa* has previously been associated with bacteremia in pediatric populations.^[5] Many cases have reported endocarditis as a consequence of *R. dentocariosa* infection;^[3,6,7] Cases have been reported of patients with mitral valve prolapse who developed *R. dentocariosa*-associated endocarditis.^[8] A case has also been reported of cerebellar hemorrhage after *Rothia*-associated endocarditis.^[9] This bacterium is known to present difficulty in accurate laboratory diagnosis.^[10]

While the first-line treatment for Gram-positive bacterial endocarditis is typically vancomycin, there is no general

medical consensus on proper treatment for this bacterium. Other antibiotic regimens have been used to some success, including administration of ceftriaxone and rifampin^[4] as well as penicillin G with and without co-administration of gentamicin.^[2,3] Valve replacement with further antibiotic treatment has been used to treat the associated endocarditis.^[6] Intravenous (IV) drug users may be uniquely affected by this bacterium as infection has been reported if users lick their needles, thus transmitting *R. dentocariosa* from the oropharynx into the blood.^[7]

Objective

To alert clinicians on potentially fatal complications involving *R. dentocariosa* and to describe our treatment protocols. From our observations, antibiotic susceptibility testing for

Address for correspondence: Mr. Divyesh Doddapaneni, 777 Glades Road BC-71, Boca Raton, Florida 33431, USA. E-mail: ddoddapaneni2015@health.fau.edu

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

How to cite this article: Doddapaneni D, Reddy VP, Rayapudi M. Cerebrovascular accident in a 65-year-old patient with *Rothia dentocariosa*-associated endocarditis. J Global Infect Dis 2020;12:156-8.

Received: 03 December 2019 **Revised:** 04 February 2020

Accepted: 03 May 2020 **Published:** 29 August 2020

Access this article online

Quick Response Code:



Website:
www.jgid.org

DOI:
10.4103/jgid.jgid_136_19

this bacterium is challenging and no established treatment regimen is currently in use. We suggest that our treatment regimen of IV vancomycin, ceftriaxone, and penicillin G used at different time-points during the disease was ineffective at preventing serious *Rothia*-mediated complications and that valve replacement was ultimately curative.

CASE REPORT

A 65-year old male with a medical history of aortic valve stenosis, hypertension, and migraines presented to the emergency room (ER) with sudden-onset pain throughout his body during a trip to Florida. The patient reported progressively worsening frontal headaches, fever, malaise, backache, and hair pain for the past 5 days. Seven years prior, he had a bioprosthetic aortic valve replacement surgery without complications. He has a compliant with metoprolol (12.5 mg P.O BID) use for hypertension management. The patient denied any water activities or exposure during his trip. In light of his recent travel and other physical examination findings, the initial clinical picture supported an acute bacterial infection and was treated with doxycycline (P.O). Several days later, the patient returned to the hospital with additional symptoms of nuchal rigidity and neck pain. The patient was alert, hydrated, and in no acute distress. Vital signs showed a heart rate of 96, temperature of 99.2°F, respirations of 18, body mass index of 34.09, and O₂ saturation of 92% on room air. A chest X-ray showed mild cardiac enlargement with no acute infiltrate. An abdominal ultrasound showed hepatosplenomegaly. A head computed tomography (CT) was negative for acute intracranial hemorrhage. A blood culture (with tubes from both hands) revealed *R. dentocariosa* bacteremia. Repeat blood cultures 12 h later also confirmed and cultured *Rothia* bacteremia. Complete blood cell (CBC) revealed mild thrombocytopenia (49 k/μL platelets), but bone marrow aspirate revealed normal trilineage hematopoiesis. Peripheral blood smear revealed megakaryocyte hyperplasia without features of peripheral consumption or destruction. Hematological evaluation supported blood abnormalities secondary to an infectious process. The patient was referred to an outpatient infectious disease clinic. He started on ceftriaxone (2 g IV QD). As the patient's condition worsened, the treatment regimen was altered to include vancomycin (500 mg IV). This regimen was continued for several days until the patient returned to the ER with joint pain in both knees and bilateral swelling in his feet, ceftriaxone and vancomycin were discontinued, and penicillin G sodium (2.4 mU IV QD) was prescribed. A week into his modified treatment regimen, the patient presented to the ER with sudden-onset left-sided neurological symptoms. Head CT angiography revealed an intra-arterial thrombus in the right middle cerebral artery at the M1 segment. Head CT revealed stroke involvement of the right basal ganglia and insular cortex. There was no occlusion or hemodynamically significant stenosis of the extracranial carotid or vertebral arteries. In addition, there was no acute intracranial hemorrhage, hydrocephalus, or mass effect.

A CBC revealed elevated erythrocyte sedimentation rate and C-reactive protein levels. The patient was not a viable tissue plasminogen activator (TPA) candidate, and so athrombectomy was performed. This thrombus cultured *Rothia*. Following the thrombectomy, a transesophageal echocardiography was performed and showed vegetation. During a follow-up visit 2 weeks later, the patient reported feeling slightly better. Penicillin G was discontinued and ceftriaxone (2 g IV BID) was prescribed for several weeks to control endocarditis symptoms. The patient was also placed on ASA (P.O 300 mg QD) to prevent further septic emboli. The patient's symptoms were completely relieved after performing a valve replacement 2 weeks later.

DISCUSSION

Complications of bacterial endocarditis with *R. dentocariosa* are extremely rare. They typically present in middle-aged adults after valve replacements and are more common in immunocompromised patients. The patient's CBC revealed normal white blood cell and absolute neutrophil counts, suggesting a nonimmunocompromised state. He also was not taking any immunosuppressive medications. Although the patient does have a history of thrombocytopenia (49 k/μL platelets), due to the absence of other hematological findings, it is likely benign. As evidenced by the cerebrovascular accident (CVA), *R. dentocariosa* has the potential to present with severe complications. Physicians must make a concerted effort to follow-up on complications after initial infection and be specifically cautious about its possible risk and association with CVAs. We hope that this paper will spur more timely methods to identify *R. dentocariosa* bacteremia as well as identify methods to promptly treat any complications associated with the bacterium. Because *R. dentocariosa* literature is rare, we hope that this paper will also add to the available literature to better inform physicians on infections involving this bacterium and potential treatment approaches.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Ramanan P, Barreto JN, Osmon DR, Tosh PK. *Rothia* bacteremia: A 10-year experience at Mayo Clinic, Rochester, Minnesota. *J Clin Microbiol* 2014;52:3184-9.
2. Boudewijns M, Magerman K, Verhaegen J, Debrock G, Peetermans WE, Donkersloot P, *et al.* *Rothia dentocariosa*, endocarditis and mycotic

- aneurysms: Case report and review of the literature. *Clin Microbiol Infect* 2003;9:222-9.
3. Willner S, Imam Z, Hader I. Endocarditis in an unsuspecting host: A case report and literature review. *Case Rep Cardiol* 2019;2019:7464251.
 4. Schwob JM, Porto V, Aebischer Perone S, Van Delden C, Eperon G, Calmy A. First reported case of spondylodiscitis in an immunocompetent patient. *IDCases* 2020;19:e00689.
 5. Yang CY, Hsueh PR, Lu CY, Tsai HY, Lee PI, Shao PL, *et al.* *Rothia dentocariosa* bacteremia in children: Report of two cases and review of the literature. *J Formos Med Assoc* 2007;106:S33-8.
 6. Fridman D, Chaudhry A, Makaryus J, Black K, Makaryus AN. *Rothia dentocariosa* endocarditis: An especially rare case in a previously healthy man. *Tex Heart Inst J* 2016;43:255-7.
 7. Chowdhary M, Farooqi B, Ponce-Terashima R. *Rothia dentocariosa*: A rare cause of left-sided endocarditis in an intravenous drug user. *Am J Med Sci* 2015;350:239-40.
 8. Shakoor S, Fasih N, Jabeen K, Jamil B. *Rothia dentocariosa* endocarditis with mitral valve prolapse: Case report and brief review. *Infection* 2011;39:177-9.
 9. Sadhu A, Loewenstein R, Klotz SA. *Rothia dentocariosa* endocarditis complicated by multiple cerebellar hemorrhages. *Diagn Microbiol Infect Dis* 2005;53:239-40.
 10. von Graevenitz A. *Rothia dentocariosa*: Taxonomy and differential diagnosis. *Clin Microbiol Infect* 2004;10:399-402.