

Thrombocytopenic Purpura in a 40-year-old Patient with *Rothia dentocariosa*-associated Endocarditis

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Abstract

A 40-year-old male patient with a history of dental disease was sent to the emergency room mainly for fever, unclear consciousness, and purpura. Computed tomography reveals subarachnoid hemorrhage and blood analysis reveals platelet reduction. The patient was started daily intravenous piperacillin tazobactam glucocorticoid and gamma globulin. Two weeks later, symptoms improved but still had severe complications such as fever, platelet reduction, hepatosplenic abscess, and severe myocardial injury. Subsequently, *Rothia dentocariosa* was cultured from the blood samples of patient's limb. The patient was started on daily injections of tigecycline and penicillin. Ten days later, symptoms improved and amikacin was tried, which was later confirmed to be ineffective in this patient. Cardiac ultrasound revealed aortic valve vegetations and magnetic resonance imaging revealed brain abscess formation. Then, antibiotics were adjusted to vancomycin and meropenem. Finally, the patient underwent valve replacement. Infectious endocarditis – after surgery, vancomycin and meropenem were utilized for a week leading to symptom resolution. The patient was transferred to rehabilitation hospital. This case will provide clinical experience for the treatment of *R. dentocariosa*.

Keywords: Brain abscess, case report, infectious endocarditis, *Rothia dentocariosa*, subarachnoid hemorrhage, thrombocytopenic purpura

INTRODUCTION

Rothia dentocariosa is an aerobic coccoid, rod-shaped, nonspore-producing, inactive, catalase-positive Gram-positive bacteria found in the mouth of about 1.4%–29% of healthy individuals in the population, and *Rothia* infections are classically described as opportunistic diseases.^[1] Risk factors associated with *R. dentocariosa* endocarditis include periodontal disease or manipulation and intravenous (IV) drug usage.^[1-4] In a literature assessment published by Franconieri *et al.* in 2020, they identified 51 patients with RIE caused by *Rothia* spp. from 1990 to 2018 that 28 cases caused by *R. dentocariosa*.^[5] *R. dentocariosa*-infected endocarditis is exceedingly uncommon, and hence, there are no clear treatment recommendations.

This article expounds on the detailed diagnosis and treatment of a patient with *R. dentocariosa* infection to remind clinicians that the complications caused by *R. dentocariosa* infection are diverse and progress rapidly. However, verifying *R. dentocariosa* was a challenge. There only one positive result from a series of blood cultures, but it clarified

the direction for treatment. In our opinion, for such rare bacteria, every favorable outcome should be valued. This patient, at different stages of disease progression, we applied tigecycline, penicillin, vancomycin, and meropenem for treatment. Amikacin was not effective for this patient. We believe that tigecycline combined with penicillin is beneficial for treatment with *R. dentocariosa*. The combination of vancomycin and meropenem may prevent and cure brain abscesses more effectively when treating *R. dentocariosa*. When patient gets infected with endocarditis and creates a valve vegetation that cannot be healed with antibiotics, valve replacement is the only radical cure. We suggest that once the heart valve vegetation is formed, the patient should be operated as soon as possible without the contraindications

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of surgery to minimize the treatment cycle and reduce the chance of complications.

CASE REPORT

A 40-year-old male patient presented with fever of unknown cause, and blood tests showed that the platelets were at normal levels, IV antibiotics 1 week in the community clinic. Then, he was found in the bathroom, consciousness with fever, temperature of 40°C, and was sent to emergency room. Computed tomography examination revealed subarachnoid hemorrhage [Figure 1a]. Complete blood cell revealed platelet – $26 \times 10^9/L$, C-reactive protein – 120.45 mg/L, myoglobin – 159.10 ng/ml, creatinine kinase-MB isoenzyme – 6.5 ng/ml, hypersensitive cardiac troponin I (TNI) – 2272.31 ng/L, procalcitonin (PCT) – 3.6 ng/ml, interleukin – 6 31.4 pg/ml, N-terminal pro-B-type natriuretic peptide – 1381.00 pg/ml, D-Dimer – 3.85ug/ml, PCT – 8.06 ng/ml, TNI – 2834 pg/ml, and brain natriuretic peptide – 2630 pg/ml. The sputum smears cultured Gram + cocci and Gram-bacilli. It's the results of our pathogen culture test of the patient's oral cavity. No bacteria were seen in the cerebrospinal fluid (CSF) smear. The CSF cultures were negative. Bone marrow puncture results megakaryocytic hyperplasia, granular hyperplasia, granulocytes, neutral early, middle, and lobar granulocytes, some granulocytes cytoplasm; erythroid hyperplasia, juvenile erythroid, decreased ratio, roughly normal form; lymphoid ratio and roughly normal; and 59 megakaryocytes and platelet were infrequent. Before this onset, there were no periodontal abscess and caries and no oral surgery recently. The patient was started daily IV piperacillin tazobactam glucocorticoid and gamma globulin in provincial hospitals. Two weeks later, platelet numbers were normalized, still intermittent inexplicable fever, then he returned to our hospital. On the 2nd day of admission, the patient had fever with temperature of 41°C. On the same day, he received meropenem (1 g iv q8h). The patient with sustained platelet reduction was given subcutaneous injections of recombinant human prothrombopoietin. The patient on the third day after admission, sputum culture was *Acinetobacter baumannii*, the drug sensitivity suggested tigecycline sensitivity, with antibiotic was changed to tigecycline (50 mg iv q12h). Five days later, the *R. dentocariosa* was cultured from the blood samples. Unfortunately, no susceptibility test was performed. This patient showed more symptoms associated with *R. dentocariosa* infection, such as high fever, thrombocytopenia, and cerebrovascular accidents. However, the current treatment approach is not uniform, and the more prevalent treatment regimen is vancomycin in combination with penicillin.^[6] The patient had been given tigecycline for three days before the blood culture results, and the clinical symptoms had improved significantly, so the antibiotics were not replaced after the blood culture results. We elected the continued application of tigecycline with penicillin (3.2 million u iv q6h), and the symptoms improved dramatically. One week later, platelet numbers were normalized, and no positive results were yielded in multiple blood cultures. *A. baumannii*

is still cultured from the sputum; we switched tigecycline to amikacin (0.75 g iv bid) and continued treatment with penicillin. The patient developed high fever in the 2nd day, and we assume that amikacin was ineffective in this patient. Cardiac ultrasound demonstrated aortic valve vegetations swinging with the cardiac cycle [Figure 1b]. Numerous instances documented endocarditis caused by *R. dentocariosa* infection,^[2,3,7] and in general, the most commonly involved valve was the aortic valve, followed by mitral valve.^[4] This result provides evidence for *R. dentocariosa* infection. We adjusted the antibiotics to tigecycline (50 mg iv q12h) and ceftriaxone (2 g iv q12h). After 10 days, the patient had no fever, blood composition was normal, but the valve vegetation remained, magnetic resonance imaging (MRI) intensive examination shows that the brain abscess had formed [Figure 1c]. The antibiotic regimen was changed to vancomycin and meropenem; in the next 19 days, the patient still had intermittent fever, and blood composition was essentially normal. MRI revealed that the brain abscess was smaller, but the heart valve vegetation is still there. Eventually, the patient underwent a heart valve replacement procedure. Valve and redundant pathology [Figure 1d] showed inflammatory exudate with cellulose necrosis, fibroblasts, and capillary proliferation [Figure 2]. Unfortunately, no bacterial growth was observed in the valve vegetation culture. Vancomycin and meropenem were continued for 1 week after the surgery, and the aforementioned symptoms were completely dissipated. The patient was transferred to the rehabilitation center.

DISCUSSION

Rothia is an uncommon cause of endocarditis. Despite this, endocarditis is the most prevalent infection associated with *Rothia*.^[4] It has been reported to cause pneumonia, septic arthritis, peritonitis, endophthalmitis, bacteremia, and other. Early indications of the condition, cerebrovascular accident,

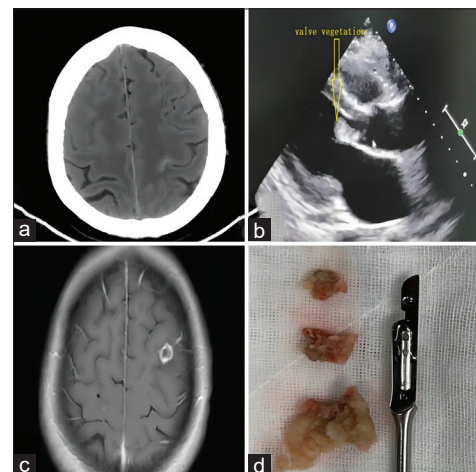


Figure 1: (a) Computed tomography CT revealed subarachnoid hemorrhage. (b) Cardiac ultrasound revealed aortic valve vegetations. (c) MRI revealed brain abscess formation. (d) Surgical removal of Aortic valve vegetations

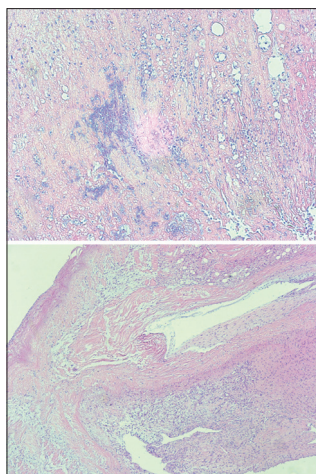


Figure 2: Valve and redundant pathology showed inflammatory exudate with cellulose necrosis, fibroblasts, and capillary proliferation

and thrombocytopenic purpura as the main symptoms are more rare. This patient regularly cleaned teeth by himself, we assumed that this behavior promotes gum damage and bacteria enter the blood. Previously, the patient's blood tests showed normal platelet levels and no history of affecting platelet medication. It is our belief that the infection leads to the platelet destruction, when the infection was controlled, platelets will return to normal without special treatment. We anticipated that this case will provide diagnosis and treatment experience for patients with *R. dentocariosa* infection.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his permission for his images and other clinical information to be

published in the journal. The patient understands that his name and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Research quality and ethics statement

The authors followed applicable EQUATOR Network (<http://www.equator-network.org/>) guidelines, notably the CARE guideline, during the conduct of this report.

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. Willner S, Imam Z, Hader I. *Rothia dentocariosa* endocarditis in an unsuspecting host: a case report and literature review. *Case Reports in Cardiology* 2019;2019:7464251.
3. 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.
4. Elkattawy S, Alyacoub R, Younes I, Mowafy A, Noori M, Mirza M. A rare report of *Rothia dentocariosa* endocarditis. *J Community Hosp Intern Med Perspect* 2021;11:413-5.
5. Franconieri F, Join-Lambert O, Creveuil C, Auzou M, Labombarda F, Aouba A, et al. *Rothia* spp. Infective endocarditis: A systematic literature review. *Infect Dis Now* 2021;51:228-35.
6. Doddapaneni D, Reddy VP, Rayapudi M. Cerebrovascular accident in a 65-year-old patient with *Rothia dentocariosa*-associated endocarditis. *J Glob Infect Dis* 2020;12:156-8.
7. 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.