Bacteremia and Mycotic Aneurysm due to Rothia Mucilaginosa

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Abstract

Objective: The objective of this paper is to report a case of Rothia mucilaginosa mycotic aneurysm that primarily presented for evaluation of weakness and headache.

Methods: Radiologic imaging demonstrated multiple intracranial parenchymal hemorrhages.

Results: Angiography revealed a basilar artery mycotic aneurysm and subsequent coiling of the aneurysm ensued. The patient was treated for Rothia mucilaginosa bacteremia with an aggressive course of antibiotics.

Conclusions: Despite their low virulence, Rothia mucilaginosa can be considered as a cause of mycotic aneurysm, especially in the setting of bacteremia and underlying prosthetic heart valves.

Keywords: Rothia mucilaginosa, Bacteremia, Aneurysm

Case

A 32 year-old Caucasian female presented to the emergency room with 3 days of headache, nausea and vomiting. She also reported subjective fevers, chills and generalized weakness during this time. Unlike her usual headaches, the patient stated that her current headache is more severe and unrelieved with NSAIDs. She has taken 10 aspirin tablets per day in addition to ibuprofen and acetaminophen over the past 3 days.

Past medical history was significant for infective endocarditis with aortic and mitral valve replacement 2 months prior at another hospital and multiple splenic infarctions. She has been noncompliant with anticoagulation since discharge. The patient strongly denied IV drug use.

On physical examination, the patient was drowsy but arousable. Temperature was 98.3 F, blood pressure 130/82 mmHg, pulse rate 94/min, and respiratory rate 19/min. Cardiovascular exam revealed a grade 2/6 holosystolic murmur appreciated at the apex. The abdomen was tender at the left upper quadrant with no hepatosplenomegaly. Neurologic examination was normal.

Laboratory results were significant for the following: white blood cell count 9.4/mm³, hemoglobin 14.2 g/dL, hematocrit 42.2%, platelets 77,000/mm³, and troponin 0.38 ng/mL. Hepatitis C antibody was positive but viral RNA was undetectable. Serum chemistry results were remarkable for Na+=129 and K+=3.4. Urinalysis was normal and an HIV test was negative. A toxicology screen was positive for benzodiazepines, amphetamines, and cannabinoid. Due to her known history of infective endocarditis, the patient received broad spectrum antibiotics empirically (vancomycin, gentamicin and ceftriaxone) in addition to two units of platelets.

Computed tomography (CT) of the head revealed multiple intraparenchymal hemorrhages in the cerebellum and cerebrum (largest lesion 3.2 x 2.8 cm) (Figure 1). Subsequent magnetic resonance imaging (MRI) of the brain showed a right panhemispheric subdural hematoma and vasogenic edema in the left frontoparietal area (Figure 2). Given the history of infective endocarditis, medication noncompliance, and presence of splenic infarcts, the cause of cerebral hemorrhage was most likely septic embolization. The presence of a subdural hematoma was concerning for a mycotic aneurysm. A CT angiography of the head demonstrated beading of the middle cerebral arteries but no aneurysms. On day 6, angiography revealed a posteriorly projecting 2 mm basilar artery aneurysm and subsequent coiling of the aneurysm ensued.
neurosurgical intervention was indicated and the patient died of causes secondary to the intracranial hemorrhage.

**Discussion**

Rothia mucilaginosa are gram-positive cocci that are usually seen in pairs or clusters on smears [1]. They are part of the normal oral flora and can be associated with dental caries and periodontal disease [2]. Virulence is low in healthy individuals but it can cause endocarditis, pneumonia, meningitis and bacteremia in immunocompromised hosts [1-3]. Risk factors include mainly neutropenia followed by diabetes mellitus, chronic liver disease, and infection with HIV [1]. Specifically, our patient had predisposing factors such as previous episode of infective endocarditis with prosthetic valves, chronic hepatitis C infection, and polysubstance abuse. The patient was also at an increased risk of intracranial hemorrhages due to her over intake of aspirin a few days prior along with her thrombocytopenia.

Although there is currently limited data on the susceptibility pattern of R. mucilaginosa, it is generally sensitive to vancomycin and beta-lactams, except oxacillin [1]. According to recent review by Ramanan et al., a combination of vancomycin and an antipseudomonal beta-lactam is recommended for empirical treatment in neutropenic patients [4]. In cases where the organism is resistant to beta-lactams, aminoglycoside and glycopeptides can be used [1].

Our case is distinguished from others reported for the occurrence of both intraparenchymal and subarachnoid hemorrhage due to the development of a mycotic aneurysm. To our knowledge, this is the first reported case of R. mucilaginosa infective endocarditis complicated by mycotic aneurysm.

**Conclusion**

Despite their low virulence, *R. mucilaginosa* can be considered as a cause of mycotic aneurysm, especially the setting of bacteremia and underlying prosthetic heart valves. While other cases reported of *R. mucilaginosa* had intracranial involvement
the development of a mycotic aneurysm as presented in our case demonstrates the hypercoagulable nature of this organism which had not been described before.

Contributor Statement

Amber Hoang contributed to literature search, figures, data collection, data analysis, data interpretation, and writing. Kristen Wisler contributed to figures, study design, data collection, data analysis, and editing. Alex L. Rico contributed to figures, study design, data analysis and editing.

Declaration of Interests

The authors declare that they have no conflicts of interest.

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