

A Case of Aspergillus Endocarditis Presenting as Endophthalmitis

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ABSTRACT

Aspergillus endocarditis is an uncommon, but often fatal, disease that usually occurs in patients who have had prior cardiac surgery. Endophthalmitis is a very rare complication of infective endocarditis, especially at presentation. We report a case of Aspergillus endocarditis in a 68-year-old woman who presented with endophthalmitis.

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KEY WORDS: Aspergillus; Endocarditis; Endophthalmitis.

Introduction

Fungal endocarditis represents 1.3-6% of all cases of infective endocarditis¹⁻³⁾ and is considered to be the most severe form of infective endocarditis. Aspergillus is the second most common fungal organism causing infective endocarditis, after Candida; these fungal infections of the heart are usually fatal.^{4,5)} Endophthalmitis is a very rare complication of infective endocarditis,^{6,7)} especially in the setting of Aspergillus infection. We report a case of Aspergillus endocarditis presenting as endophthalmitis. To the best of our knowledge, this has not been reported in the Korean literature before.

Case

A 68-year-old woman with a history of bronchial asthma was admitted to the hospital with a one-week history of pain and visual loss in the right eye. Three months prior to presentation, she had voluntarily stopped taking medication for bronchial asthma; she had no history of ocular trauma/surgery or dental procedures. She had been taking antibiotics for the two months leading up to admission due to arthritis of the left sacroiliac joint. Nevertheless, joint culture and biopsy had been negative. At the time of admission, her vital signs were stable, and her physical examination was unremarkable except for her ophthalmologic problem.

She denied having fever or other symptoms. Electrocardiography and chest radiography were normal. Laboratory tests showed leukocytosis with left shift (WBC: 12,800/ μ L, neutrophils: 78.9%) and an elevated erythrocyte sedimentation rate (ESR: 22 mm/h, RR: 20< mm/h). The patient was presumptively diagnosed with endogenous endophthalmitis, and she was treated with broad spectrum antibiotics and pars plana vitrectomy (PPV). All blood and vitreous cultures were negative. Six days after PPV, the patient developed fever (37.8°C), vertigo, and azotemia. Brain and abdominal imaging raised the suspicion for leptomeningitis and focal infarction of the left kidney. Transesophageal echocardiography demonstrated mild mitral regurgitation and multiple vegetations (6.8×6.3, 3.8×10.2 mm) attached to the mitral valve and chordae tendineae of the anterior mitral leaflet (Fig. 1). Three days later, the patient developed sudden mental changes. Brain imaging showed intracranial hemorrhage due to mycotic aneurysm rupture in the right middle cerebral artery (Figs. 2 and 3). The patient underwent emergent decompressive craniectomy and trapping of the proximal portion of the aneurysm, but unfortunately she expired two weeks later despite strenuous supportive care. The aspirated aneurysm tissue revealed many fungal hyphae consistent with Aspergillus (Fig. 4).

Discussion

Fungal endocarditis is an uncommon disease: fungi are responsible for less than 10% of all cases of infective endocarditis.¹⁻³⁾ Aspergillus is the second most common organism causing fungal endocarditis after Candida (18% vs. 63%).⁸⁾ Factors predisposing to Aspergillus endocarditis include underlying cardiac abnormalities,

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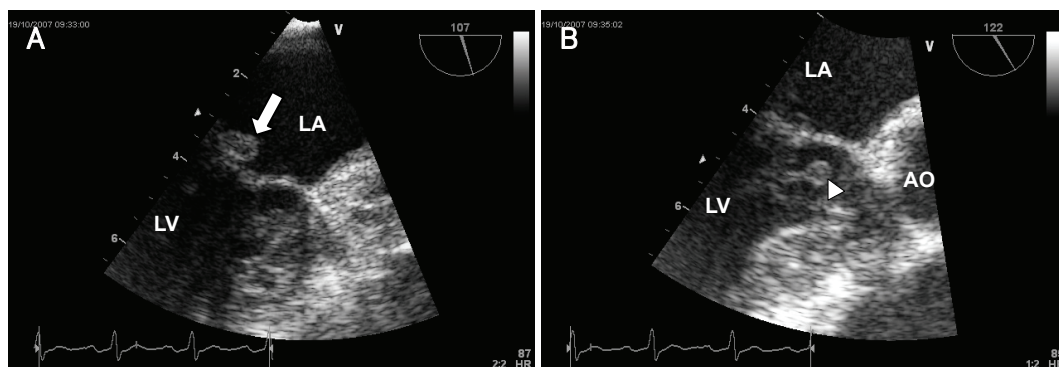


Fig. 1. Transesophageal echocardiography findings. Multiple vegetations are attached to the posterior mitral valve (A: white arrow) and chordae of the anterior mitral leaflet (B: arrow head). LA: left atrium, LV: left ventricle, AO: aorta.

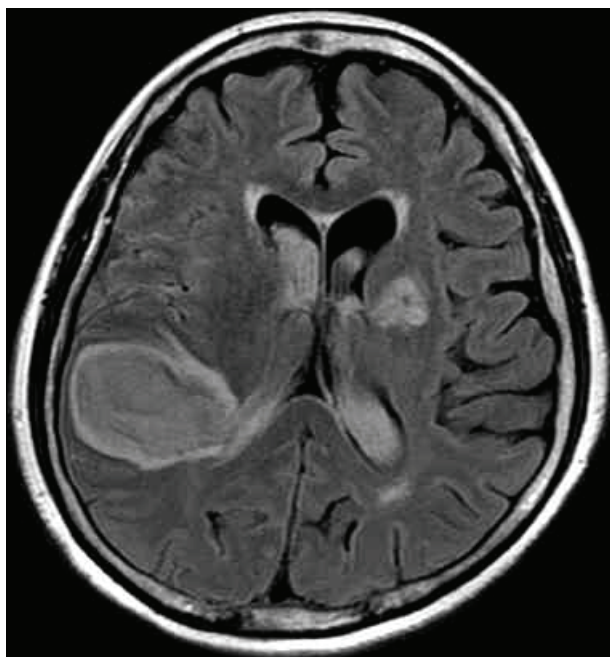


Fig. 2. Magnetic resonance imaging (MRI) of the brain. There is acute intracerebral hemorrhage in the right temporoparietal lobe, with intraventricular hemorrhage.



Fig. 3. 3D-computed tomographic angiography of brain. There is a fusiform aneurysm in the right middle cerebral artery (arrow).

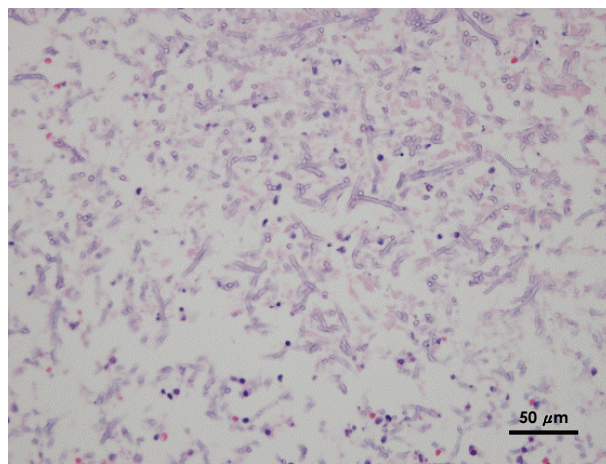


Fig. 4. Pathologic findings of aspirated cerebral aneurysm tissue. There are many fungal hyphae against a necrotic background. Branching hyphae with acute angles are occasionally noted, as well (H & E, $\times 400$).

prosthetic heart valves, indwelling central venous catheters, prolonged use of broad-spectrum antibiotics, and less frequently, intravenous drug use.⁴⁾⁵⁾ There are no consistent or pathognomonic features of *Aspergillus* endocarditis, but the most common clinical features include fever, embolic episodes, and new or changing heart murmur.⁹⁾ Blood cultures are usually negative and almost never contribute to the diagnosis of invasive *Aspergillus* infection. However, blood cultures are important for excluding bacteria and *Candida* as causes of endocarditis.⁵⁾ *Aspergillus* endocarditis has a mortality rate higher than 50%, despite combined medical-surgical treatment.⁸⁾

Endophthalmitis is a serious intraocular inflammatory disorder resulting from infection of the vitreous cavity. Exogenous endophthalmitis occurs when infecting organisms gain entry to the eye by direct inoculation, as through intraocular surgery or penetrating trauma. Endogenous endophthalmitis, which accounts for only 2-8% of all endophthalmitis cases,¹⁰⁾ occurs when microorganisms spread to the intraocular tissue from sources within the body, usually via the blood stream. Endogenous endophthalmitis may be bacterial or fungal. The

most common sources are liver abscess, meningitis, endocarditis, urinary tract infection, and wound infection.¹¹⁾ The right eye is more commonly affected than the left eye is, a phenomenon that is probably due to direct blood flow from the heart. Endogenous *Aspergillus* endophthalmitis is a very rare disorder, and any patient with endogenous ocular *Aspergillus* should be evaluated for fungal endocarditis. In the present patient, *Aspergillus* did not grow in the blood and vitreous cultures, but the history of long-term antibiotic use, vegetation on the mitral valve, and *Aspergillus*-like fungal hyphae in aspirated cerebral aneurysm tissue suggested that the endophthalmitis might have been caused by fungemia secondary to *Aspergillus* endocarditis. The patient was on long-term antibiotics due to culture-negative arthritis of the left sacroiliac joint, and it is possible that this arthritis was a manifestation of fungal endocarditis.

However, because there were no other symptoms or signs suggesting endocarditis at the time of presentation, and because her joint symptoms had improved after antibacterial therapy alone, it seemed unlikely that she had fungal arthritis. Prolonged antibiotic use could have played a role in the development of this infection.

Thorough systemic evaluation and treatment are imperative in patients with endogenous endophthalmitis, since such a condition is usually associated with life-threatening disease.¹²⁾ We should always consider fungi as a cause of infection, particularly in patients with culture-negative endocarditis or with medical con-

ditions predisposing them to fungal endocarditis.

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