

Successful Surgical Intervention in An Unusual Case of Aspergillus Endocarditis with Acute Myeloid Leukemia

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Abstract- Endocarditis due to Aspergillus infection is a rare complication in patients with hematological malignancies. Here, we present a case of aspergillus endocarditis in a patient with acute myeloid leukemia (AML) successfully treated with antifungal therapy and surgical treatment. The patient was a 51 years old male, a known case of AML who was admitted to our medical center for evacuating his valvular vegetations and repairing his atrial septal defect. He underwent an open heart surgery to relinquish his thromboses and also received an antifungal regimen. The patient tolerated the procedure well and eight months after his surgery, the patient remains asymptomatic. Successful treatment of this severe case of aspergillus endocarditis justifies a multidisciplinary method to be as a safe and effective approach to manage these patients.

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Introduction

Aspergillus species are the opportunistic pathogens that can potentially develop serious invasive infections in many organs such as lungs, sinuses and heart. Lungs are the most common sites for invasive aspergillosis, but aspergillus also can occur in a diffused form. Despite antifungal therapy and surgical interventions, disseminated form of infection, especially aspergillus endocarditis, can be lethal and carries a poor prognosis (1). Most of the cases are immunocompromised patients with an underlying hematological malignancies or solid organ transplant recipients (2). Here, we present a case of aspergillus endocarditis in a patient with acute myeloid leukemia (AML) successfully treated with antifungal therapy and surgical treatment.

Case Report

A 51-year-old male, who had received a 45 days regimen of arsenic trioxide and cytarabine for his AML, was referred to our medical center because of cough, fever, myalgia and constitutional signs and symptoms.

On physical examination a *crescendo-decrescendo* systolic ejection murmur was heard in the second intercostal space at the upper left sternal border. His upper and lower extremities were edematous but there were no signs compatible with impaired perfusion.

One month after completion of his chemotherapy protocol, he developed pulmonary signs and symptoms including dyspnea, pleuritic chest pain and cough. Simultaneously, his left leg became red and swollen, which was painless on palpation. To rule out deep vein thrombosis (DVT), imaging studies were done and the findings revealed paradoxical septic embolism.

Two weeks after occurrence of pulmonary emboli and DVT, in association with impairment in visual acuity, his conjunctiva and episclera became red and painful.

Computed tomography (CT) of the brain revealed multiple low density areas in the right frontal lobe. It was also suggestive of an ophthalmic artery embolization. After radiologic evaluation and with an impression of endogenous endophthalmitis, he underwent an intravitreal ceftazidime, vancomycin and amphotericin B injection in his right orbit for three times. Unfortunately, because of severity of the injury and despite the therapeutic interventions, he lost his vision in the affected eye.

Transesophageal echocardiography (TEE) showed two moderately large, unilateral vegetations at the level of the tricuspid valve. Also secundum-type atrial septal defect (ASD) was confirmed. A chest CT showed a large rounded hyper dense mass in the middle lobe of the right lung (Figure 1). According to these findings a cardiac surgery was planned but the challenge was his severe thrombocytopenia. There was a risk of intracranial hemorrhage during cardiopulmonary bypass (CPB). To correct his thrombocytopenia and simultaneous anemia, platelets and packed red blood cells (RBC) were transfused. After transfusion, anemia was corrected but thrombocytopenia was still present. It was hypothesized that thrombocytopenia is due to the recurrence of AML. A peripheral blood smear was done but it was negative for blast cells. It was concluded that thrombocytopenia is due to the platelet consumption by tricuspid valve vegetations.



Figure 1. Chest CT shows a large rounded hyperdense mass in the middle lobe of the right lung.

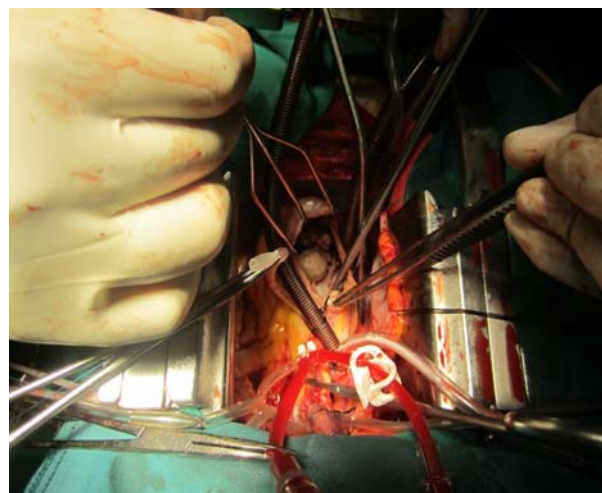


Figure 2. Surgical exposure of right atrial vegetations via a right atriotomy.

Patient was taken to the operating room for removal of the vegetations and repairing the ASD. After induction of general anesthesia, the chest was opened via a sternotomy. Just before beginning CPB, 5 units of platelets were transfused. After the heart arrest, right atrium was opened. There were two large masses on the septal leaflet and anterior leaflet of the tricuspid valve. Masses were removed and then moderate sized ASD in the sinus venosus zone was exposed and closed with a pericardial patch (Figure 2). The patient was weaned off CPB without any need for inotropic support.

The patient tolerated the procedure well and admitted to intensive care unit. Platelets were increased and three days after operation, platelet count reached normal level. Cultures from both of the two thromboses were positive for aspergillus. Hence, liposomal amphotericin followed by voriconazole were administered. Patient was discharged from our hospital seven days after the operation. One year after his surgery, the patient remained asymptomatic and echocardiographic findings showed no new vegetation or recurrence of the primary lesion.

Discussion

Successful treatment of aspergillus endocarditis requires a combined surgical debridement and antifungal therapy protocol. To the best of our knowledge, so far, no comparative randomized trial has been conducted in this issue. The two widely accepted antifungal agents for most of the aspergillosis cases are amphotericin B, in traditional or liposomal form, and voriconazole. In a large, randomized controlled trial, it has been shown that voriconazole is associated with better survival rates, less

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renal complications and electrolyte abnormalities when compared to amphotericin B (3). To achieve a better outcome, surgical intervention is important to be considered in almost all cases of invasive aspergillosis.

The mortality rate in aspergillus endocarditis is very high and despite surgical and medical treatments, it carries a poor prognosis. It has been stated that the overall survival rate for aspergillus infections is about 10% (4). This ratio is believed to be lower in patients with underlying hematologic malignancies. In a series of seven patients with aspergillus endocarditis with a concurrent hematologic malignancy, four of them treated with a combined surgical-medical therapy, and three received only medical therapy. None of these seven patients survived (5).

This poor prognosis is mostly because of the delayed diagnosis which is a common scenario in fungal endocarditis (4). In our patient, chemotherapy induced immunosuppression along with his hematologic malignancy were two indicators of poor prognosis.

The most well-known complications of infective endocarditis are cardiac, neurologic and septic (6). In our patient, blindness occurred because of the central embolization and consequent ischemic events of central nervous system. Unfortunately, in our patient, this rare complication happened because of a delay in diagnosis and quick immigration of the thromboses to the brain.

The combined surgical-medical approach has been shown to be associated with an overall better outcome in comparison with the only medical treatment. Nonetheless, mortality is about 100% among patients who receive medical therapy as the only treatment strategy (7).

In order to reduce the mortality rate and achieving better results in this group of patients, simultaneous

surgical and medical interventions should be considered. Anyhow, more studies are needed to establish an effective and safe approach to manage these patients.

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