Journal of Cardiovascular Diseases & Diagnosis

Ali et al., J Cardiovasc Dis Diagn 2018, 6:4
DOI: 10.4172/2329-9517.1000325

Case Report Open Access

Aspergillus Endocarditis in a Diabetic Patient with Brucellosis: A Case Report

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Received: May 15, 2018; **Accepted:** June 07, 2018; **Published:** June 09, 2018

Abstract

Endocarditis is associated with significant morbidity and mortality world over especially in the developing countries. The disease has varied presentations. Common etiological agents include *Streptococcus viridians*, Coagulase negative Staphylococcus, *Staphylococcus aureus* and *Enterococus* in the culture positive endocarditis. Rarely fungi may also lead to vegetations which are often large in size and require surgery beside medical treatment. We present a case case report of endocarditis due to *Aspergillus* species with Brucellosis presented is in a lady treated with valvular replacement and antifungal therapy with voriconazole.

Keywords: Aspergillus; Endocarditis; Vegetation

Introduction

Endocarditis is associated with significant morbidity & mortality world over especially in the developing countries. It is not a single disease, but rather may have different presentations depending on the organs involved, the underlying cardiac disease (if any), the causative microorganism, the presence or absence of complications and the patient's characteristics [1]. Fungal valve endocarditis is rare especially when blood cultures are negative [2]. There are few reported cases of endocarditis due to Aspergillus species. The case report presented is in a young non-intravenous drug user treated with valvular replacement and antifungal therapy with voriconazole.

Case Presentation

A 38-years-old female from rural background of Punjab presented with history of cough and fever for 1 month. She got various general practitioner treatments but did not improve. She was admitted Rawalpindi Institute of Cardiology in Rawalpindi, Pakistan with above mentioned complaints. She was febrile with temperature of 99°F. Her blood pressure was 110/70 mmHg. The chest was clear with bilateral vesicular breathing. She was anemic. She had systolic murmur at aortic area and diastolic murmur at mitral area. Her Hb was 8.7 g/dl, total leucocyte count 12.8 × 109/ul, ESR was 130 mm/hr. CRP was 172 g/dl. RA factor was negative. Her blood glucose was 251mg/dl. She had normal cardiac, liver and coagulation profile. She had urea 82 mg/dl and creatinine 1.3 mg/dl. Transesophageal Echocardiography showed severe mitral stenosis, moderate mitral regurgitation and severe aortic stenosis. The left atrium was dilated and normal sized left ventricle. Two freely mobile vegetations 17 mm × 12 mm attached to the posterior mitral leaflet on the left atrial side. Another vegetation 12 mm in size was seen at right coronary cusp area (Figure 1). Three sets of blood cultures were taken and empirical therapy with Vancomycin, Ceftriaoxine and Levofloxacin started. Blood cultures remained negative. However, she remained febrile with no change in size of vegetation. Her serological test for *Coxiella burnetti* was negative but positive for *Brucella abortus*. Vancomycin, ceftriaxone and Levofloxacin were stopped and antifungal therapy with intravenous Voriconazole was started to cater for the possibility of fungal endocarditis, Doxycycline and Rifampicin for possible brucellosis. She became afebrile after a few days and size of vegetations also decreased. Her ESR and CRP also followed a decreasing trend. Because of the large sized vegetations with the risk of embolization it was decided to operate the patient rather to treat her on medical management alone. Double valve replacement of both mitral and aortic valve was performed. The vegetations were subcultured and observed. A greenish colored growth of *Aspergillus* species was isolated. Microscopy showed hyphae, conidiophores and conidia. (Figures 2 and 3). Oral voriconazole 200 mg twice daily was continued for 8 weeks with follow up for any complication or relapse of vegetation. Patient remained afebrile and is monitored monthly.

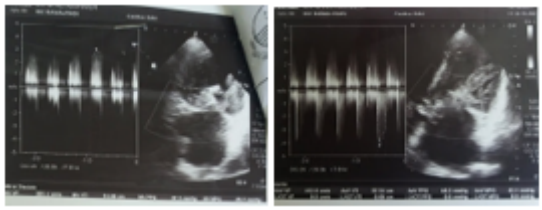

Figure 1: Transesophageal echocardiography showed dilated left atrium, normal sized left ventricle. Two vegetations 17 × 12 mm attached to the posterior mitral leaflet on the left atrial side, freely mobile seen. Another vegetation 12 mm in size seen at RCC.

Discussion

Endocarditis is of interest to the medical specialists, cardiologists and cardiac surgeons due to its varied presentations. The diagnosis can be straight forward in a few patients with typical valvular heart disease and fever. However, often the typical text book presentation and typical signs are missing at presentation and sometimes it is complicated by its complications. Durack and his colleagues from Dukes University in

1994 proposed criteria for its diagnosis based on the presence or absence of major and minor criteria [3].

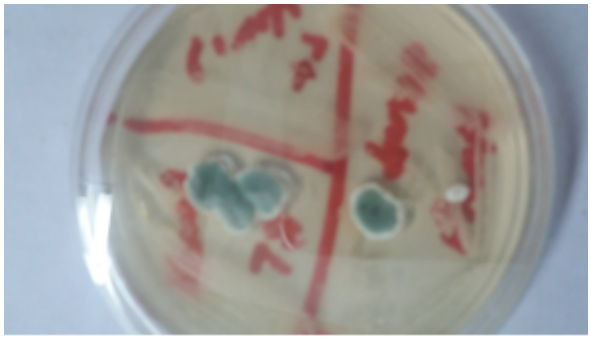

Figure 2: Growth of vegetation on sabouraud dextrose agar.

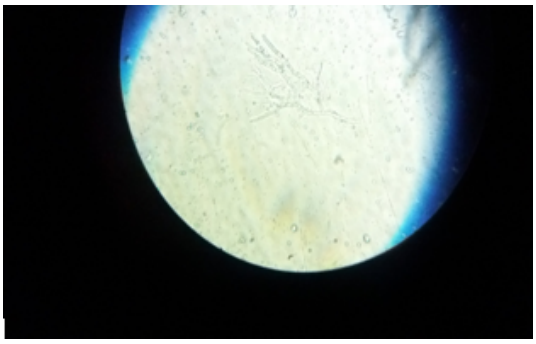

Figure 3: Microscopy showing hyphae, conidiophores and conidia.

It has been validated in a number of trials and studies and modified to include serological evidence and Staphylococcal bacteremia. The presentation can be acute in onset or chronic. Based on the vegetations it can involve the right or the left side of heart. It can be native valve or prosthetic valve endocarditis. The common causatives are *Streptococcus viridians, Enrerococci, Staphylococci* and less commonly fungi. Often the vegetations are large and rapid in onset especially in Staphylococcal endocarditis. It could be chronic in cases of fungal endocarditis. The most common fungi isolated are *Candida species, Aspergillus* and another endemic mycosis [4]. Often the cultures remain negative and diagnosis is evidenced by serological tests e.g. *Coxiella burnetii,* brucellosis or HACEK like organisms. Due to large sized vegetations in *Staphylococcal aureus* and fungal endocarditis early treatment and surgery is often required due to avoid septic embolization [3].

The empirical therapy for fungal endocarditis includes Amphotericin, Caspofungin or different azoles. Aspergillus endocarditis or endemic fungi are less common than Candida endocarditis. Fungal endocarditis can develop in immunocompromised patients, intravenous drug users and those with different cardiac devices or central venous line catheters. The mortality rate with fungal endocarditis remains high. Two phase treatments have evolved. Initial induction phase consists of antifungal therapy combined with valve surgery. Antifungal therapy is often given for greater than 6 weeks followed by suppression therapy due to high relapse rate. Patients that are unfit for surgery can be treated with long term oral antifungals with follow up [4].

Postoperatively, the vegetation yielded growth of *Aspergillus species* and voriconazole 200mg twice daily was started for a period of thirteen weeks with an excellent clinical response.

Aspergillus species can cause severe widespread invasive infections beside infection in sinuses and lungs. It can invade also heart, and central nervous system. *Aspergillus* most commonly infects immunocompromised hosts in the respiratory tract. Aspergillus endocarditis is relatively uncommon. Our patient had history of rural background and exposure to brucella in the past with grade 2 renal disease. Aspergillus species account for approximately 20 to 30% of all fungal endocarditis cases [5,6]. Ratio of Aspergillus to Candida (1: 2) has also remained constant over the last three decades [5].

Conclusion

Successful treatment of endocarditis requires the combination of antifungal therapy and surgical debridement. The recommended antifungal therapy for most invasive Aspergillus infections, including Aspergillus endocarditis, is voriconazole [7]. The superiority of voriconazole to amphotericin B deoxycholate was demonstrated in a large, randomized controlled trial of invasive Aspergillus infections, the majority of which involved the lungs and sinuses (92%). Voriconazole was associated with improved survival, and less nephrotoxicity, electrolyte abnormalities, and infusion-related events than with Amphotericin [8]. An Intravenous liposomal amphotericin formulation is an alternative treatment option, with equal efficacy and less nephrotoxicity than amphotericin B in the treatment of invasive Aspergillus infections [9]. Finally, surgical debridement is imperative for the survival of almost all cases of Aspergillus endocarditis.

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