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RESEARCH ARTICLE

A fatal case of fungal endocarditis caused by *Candida parapsilosis*in a patient with rheumatic heart disease

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Abstract

Fungal infection of heart is increasing in frequency Most of the cases we found Candida albicans as a Cause of endocarditis but non albicans species are increasing due to increase use of azole antifungal that are associated with high mortality Here we are reporting here a fatal case of Candida parapsilosis endocarditis in Rheumatic heart disease patient

INTRODUCTION

Fungi are being reported as a major cause of human disease since last three decades. Increased use of broad spectrum antibiotics, immunosuppressive drugs, any underlying immunosuppressive conditions like human immunodeficiency virus infection, solid tumor or diabetes are the major responsible factors [1, 2]. Among the fungi, *Candida species* are leading cause of blood stream infections. *Candida albicans* is the commonest pathogen followed by *Candida tropicalis* and *Candida parapsilosis*[1]. Endocarditis has been reported in approximately 5-25% patient of candidemia.[1] Both native and prosthetic valve may be affected and are associated with an exceptional high mortality and recurrence rates[1-3]. Most of the cases are caused by *Candida albicans*. Here we report a rare fatal case of endocarditis due to *Candida parapsilosis* in a patient with rheumatic heart disease.

Case report

The case reported herein is a fatal case of *Candida parapsilosis*endocarditis in a 60 years old female patient with a history of mitral valve replacement 1 year ago. The patient had history of breathlessness, progressive pallor for which she was investigated for heart disease and diagnosed as a case of mitral valve stenosis with pulmonary hypertension by 2-D Echocardiography one year ago. Mitral valve replacement with prosthetic valve was done. The patient had an uneventful early post-operative course. Patient had diabetes but her compliance with oral anti diabetic drugs was poor. After 9 months of the replacement surgery she developed breathlessness on exertion and mild fever. When her symptoms increased in severity she came to hospital and was admitted and investigated routinely.

Haemogram revealed mild anemia but no leukocytosis and random blood sugar level was about 300 mg/dl, Creatinine level was 1.4 gm%. Positive clinical finding were presence of bilateral crepitus in lung and a hollow systolic murmur radiating to neck on auscultation. 2-D Echocardiogram revealed large mobile vegetation on orifice of prosthetic valve with grade 3 aortic regurgitation (Moderate pulmonary hypertension) that was indicative of infective endocarditis.

Blood was collected and processed for bacterial and fungal pathogen by blood culture method on day 2 of admission. No growth was found on bacterial culture. Fungal culture showed white to creamy colonies on Sabourauds dextrose agar media in about 2 days after inoculation. Gram stained smear of the growth showed budding yeast cell with pseudohyphae. A provisional report stating *Candida species* grown was send to the clinician at this stage and a repeat blood culture specimen was also asked to look for repeated isolation. Fluconazole therapy was started by clinician. Germ tube test was performed along with control and was negative. Corn meal agar with Tween 80 was inoculated by Dalmau method showed sage brush appearance and few satellite lesions(spider colony) from the line of inoculation characteristic of *Candida parapsilosis* as shown in figure 1. Chrome agar showed creamy to pale pink colonies. The isolate was confirmed by Sugar fermentation and sugar assimilation tests. The patient however did not respond to the fluconazole treatment expired on day 8 of admission due to congestive heart failure and renal failure.

Discussion

Prosthetic valve endocarditis (PVE) due to Candida species is relatively uncommon and has accounted for only 5% to 10% of all cases of PVE [1]. Both early on set (within the first 60 days after insertion of the prosthesis) and late onset endocarditis are described. [2] Predisposing factors for Candida endocarditis include cardiac surgery, prosthetic valves, intravenous drug abuse (Heroin), neonates, Iatrogenic immunosuppression (chemotherapy), prolonged intravenous antibiotic therapy, previous valvular disease, preexisting bacterial endocarditis , pacemaker implantation, intravenous catheter, diabetes or any immunosuppressive condition like human immunodefiency virus infection [1-6] .the definitive diagnosisof endocarditis is made by Microbiological or pathological criteria suggested by Von Reyn.With the use of Dukes criteria, other condition included as persistent candedemia, with any of the following criteria : vegetation visualized on an echocardiogram, new vascular regurgitation, persistent fever and vascular phenomenon. Most of the patients present with fever, changing murmur, splenomegaly, congestive heart failure, chorioretinitis, and cutaneous lesion [1-4].Our patient presented with a hollow systolic murmur radiating to neck on auscultation, 2-D Echocardiogram revealed large mobile vegetation on orifice of prosthetic valve with grade 3 aortic regurgitation (Moderate pulmonary hypertension).

Patients of fungal endocarditis are usually managed by combined antifungal therapy and surgical valve replacement. Mostly the causative organism is *Candida albicans* but now a day there is an increased tendency to develop non albicans endocarditis mainly by *Candida tropicalis* followed by *Candida parapsilosis*[1-4]. Early reports of *Candida parapsilosis*endocarditis were mostly associated with history of intravenous narcotics use [3]. More recently, the species has emerged as an important nosocomial pathogen with clinical manifestation including Fungemia, endocarditis, endopthalmitis, septic arthritis, peritonitis all of which usually occur in association with invasive procedures or prosthetic devices [1-4].Experimental studies have generally shown that *Candida parapsilosis* is less virulent than *Candida albicans* or *Candida tropicalis*[3] .

However, characteristics of *Candida parapsilosis* that may relate to its increasing occurrence in nosocomial setting include frequent colonization of the skin, particularly the subungual space, and an ability to proliferate in glucose containing solution with a resultant increase in adherence to synthetic material [3.] Recently developed molecular technique showed some unique epidemiological pattern for the acquisition of *Candida parapsilosis* endocarditis (a) Implantation of a contaminated heart valve allograft despite disinfection during allograft processing (b) It may be due to glove tears during the intervention [2].*Candida parrapsilosis* is usually susceptible to amphotericin B and azole group of drug although resistance has been reported.

Here in our case the patient had three predisposing factors, firstly the patient had uncontrolled diabetes, as already discussed that *Candida parapsilosis* is very prone to multiply in glucose media and diabetes leads to immunosuppression. Secondly, the patient was of old age group about 60 years of age and received prolonged intravenous antibiotic therapy during mitral valve replacement surgery and thereafter for prophylaxis. Both the age and prolong antibiotic therapy were risk factors for Candida parapsilosis infection. Thirdly, the patient's mitral valve was replaced by synthetic valve to which *Candida parapsilosis* has a normal attraction. Unfortunately the patient had not received any prophylactic antifungal therapy after the mitral valve replacement but received fluconazole after getting provisional report of Candidemia. She did not respond to fluconazole and died on 8th day of admission. Most likely it was strain of *Candida parapsilosis* resistant to fluconazole.

Now from which source the patient got the infection is controversial question but it may be from improperly disinfected synthetic valve or likely from patient's own flora.
From this case we can conclude that in any post-operative patientwho is suspected to have fungal endocarditis blood culture should be investigatedearly and speciation of identified fungus is important as it may give clue for proper management of specific antifungal therapy.

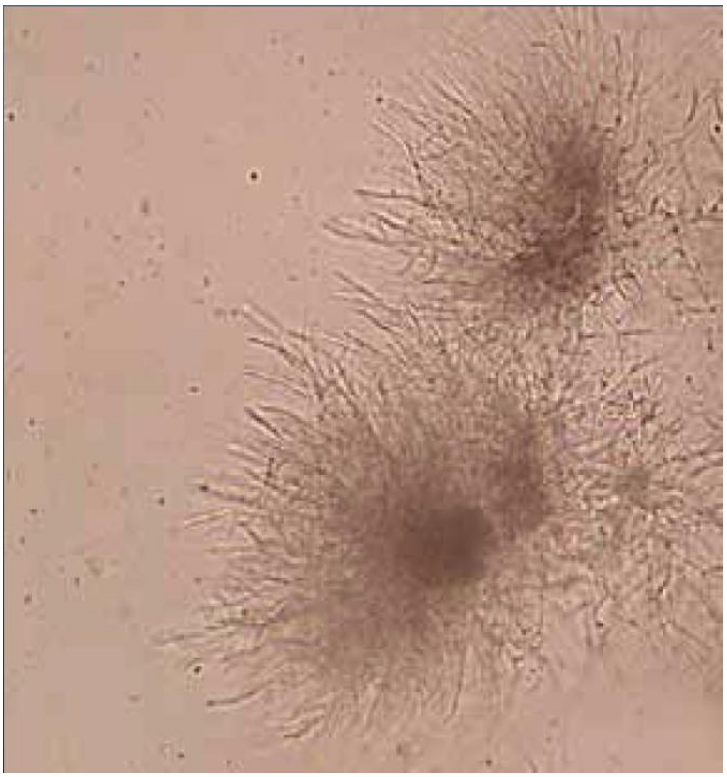

Figure 1. Candida parapsilosis on corn meal agar showing characteristic spider colony along the steak line

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