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Case report

Mitral-Valve Endocarditis due to *Candida albicans*: A Case Report

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SUMMARY

Infective endocarditis (IE) is a serious infection among endovascular infections. Fungal endocarditis, especially caused by *Candida albicans*, is very rare, and its diagnosis is often difficult due to the negative results of blood culture and the presence of nonspecific symptoms. In this study, a patient who developed endocarditis on a normal valve due to infection with *Candida albicans* is presented.

Key words: **endocarditis, *Candida albicans*, diagnosis**

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INTRODUCTION

Infective endocarditis is a serious inflammatory disease of the endocardium affecting cardiac valves. Due to decreased incidence of rheumatic heart disease, increasing longevity, and the appearance of new predisposeing factors, its epidemiologic features have been modified. Endocarditis due to fungal pathogens is still uncommon and accounts for only 2% of all cases of endocarditis but is considered to be its worst form (1). Immunosuppressive drug consumption, antimicrobial therapy, intravenous drug addiction, and cardiac surgery interventions have been considered the main risk factors for developing this disease (2-5). In this article, the authors present a case of native mitral valve *Candida* endocarditis in a patient with no apparent risk factors.

CASE REPORT

A 17-year-old young man was referred to the emergency room with a chief complaint of heart palpitations. The patient was diagnosed with paroxysmal supraventricular tachycardia (PSVT). He underwent an electrophysiology study (EPS) ablation and was discharged in a good general condition. One week after discharge, the patient was referred to the infectious disease department with fever, nausea, vomiting, and diarrhea as the chief complaints. He had no history of the disease, and there was no evidence of previous valvular damage. Also, he had not any chest pain, shortness of breath, ague nor abdominal pain. There was nothing important in his case history regarding illicit drug use or intravenous drug abuse.

On admission, the patient's vital signs were: blood pressure - 110/70 mmHg, heart rate - 90 beats/ min, respiratory rate - 18 breaths/ min, and oral temperature - 39 ^{0}C. The patient was alert and oriented. There were no remarkable findings during the examination of the abdomen and thyroid. Also, there was no sign of lymphadenopathy in the cervical and supraclavicular lymph nodes.

A complete blood count showed the following values: hemoglobin - 121 g/ dL, white blood cell count (WBC) - 13 x 10^9 cells/L, platelet count - 288000 /mm^3, mean corpuscular hemoglobin (MCH) - 79 picograms (pg)/cell, erythrocyte sedimentation rate (ESR) - 60 mm/ hr and C-reactive protein (CRP) - 115 mg/L. Blood analysis indicated a plasma creatinine level of 79.56 μmol/L and blood urea of 3.93 mmol/L. Urine dipstick showed a specific gravity of 1.015 (~ UOsm 220 mOsm/kg), pH - 7, trace protein was negative for glucose, blood, ketones, bilirubin, urobilinogen, and nitrites.

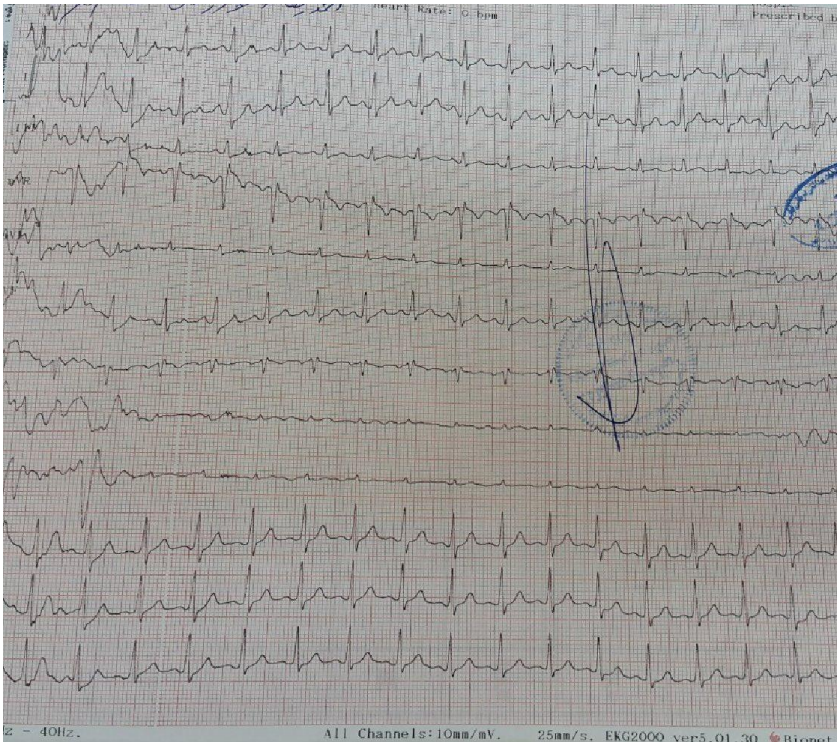

Figure 1. **Electrocardiogram of the patient**

Figure 2. **Transesophageal echocardiography view of an echocardiogram showing a bulky vegetation**

In the patient's blood cultures, *Escherichia coli* (*E. Coli*) was growing and was susceptible to ciprofloxacin, ceftazidine, meropenem, and ceftriaxone for two times. All liver enzymes, total bilirubin, and coagulation studies were within normal range. Abdominal ultrasound demonstrated normal results. Considering the history of cardiac manipulation and the presence of fever, high ESR, and positive blood culture, the patient with a probable diagnosis of infectious endocarditis underwent electrocardiography (ECG) (Figure1). Transthoracic echocardiography (TTE) was negative. A week later, transesophageal echocardiography (TEE) was performed (Figure 2). TEE showed mitral valve vegetation with a size of 3/4 x 2/2cm. According to this finding, surgery was considered the best treatment choice because of the valve involvement and the danger of embolization. Therefore, the patient was transferred to the Shaheed Rajaee Heart Center in Tehran, Iran. The mitral valve was replaced and fungal mass was completely removed. In the histopathological evaluation, *Candida albicans* was isolated from the resected valve and the removed mass. Postoperatively, his cardiovascular function was good and responded well to medical therapy. However, ten days after the first surgery and mitral valve replacement, the patient was feverish again, and the signs of mitral insufficiency appeared. Repeated transesophageal echocardiography was done, and as the mitral valve dehiscence and bulky vegetation were seen, the patient underwent an urgent cardiosurgery, but eventually, probably because of the acute heart failure and uncontrolled sepsis, he died. It should be mentioned that at this treatment center the patients who die with confirmed clinical diagnosis do not normally receive an autopsy.

DISCUSSION

Fungal endocarditis is quite rare among different types of endocarditis, however, it can occur in certain conditions such as manipulation of valves, valve replacement, the placement of the central venous catheter, pacemaker insertion, administration of broad-spectrum antibiotics, immunodeficiency, and the simultaneous presence of bacterial endocarditis. Detection of fungal endocarditis is very difficult because its symptoms are nonspecific and it is very difficult to isolate this organism from blood culture; the vegetation is usually histopathologically confirmed (6, 7). In a study of 91 patients with fungal endocarditis, 77 patients were diagnosed at autopsy (2). Among different species of fungi, *Candida*, particularly *Candida albicans*, is the most common cause (8). On the other hand, *Candida* is a normal inhabitant of microbial flora in the human skin and gastrointestinal tract, and its entrance into bloodstream and endothelium does not commonly occur during in-hospital procedures (9). In this case report, the background for the development of endocarditis was the result of ablation therapy. The patient's two blood culture sets were reported positive for *Escherichia coli*, and the patient was treated for culture-negative endocarditis, but the fever continued. Then, the patient underwent surgery and *Candida albicans* was isolated from valve vegetation. Considering the fact that the role of candidemia in *Candida* endocarditis has not been proven, we do not expect candidemia to be widely seen as a precursor to fungal endocarditis. On the other hand, we know that bacterial endocarditis predi-

sposes to the incidence of fungal endocarditis if fungi reach the valve. Therefore, it might have been initially gram-negative endocarditis, in which *Candida* was a secondary infection that resulted in massive vegetation. However, the gram-negative bacteremia in this patient was transient and due to the manipulation of peripheral vessels. Even though endocarditis was fungal from the beginning, it did not improve and the fever did not stop. Based on the current evidence, the peak of IE incidence changed from young ages with valvular rheumatic diseases to senile valve calcifications in the elderly. Nevertheless, the predisposing factor in fungal IE is changed from intra-venous drug abuse to the use of cardiac devices. This patient was a young man that presented with fever after percutaneous coronary intervention (PCI) and ablation. In this situation, IE should be strongly suspected, even if the first echocardiography was normal. It should be repeated after 7-10 days. The major predisposing factor in this patient was the traumatic valve due to PCI and ablation with surgical intervention.

CONCLUSION

Considering the fact that it is not possible to achieve the suitable treatment for fungal endocarditis, surgery is the best option in this situation, which should be performed before the infection develops in the heart valves. Also, compared to bacterial endocarditis, antifungal remedies should be the choice for long-term suppressive therapy.

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Conflict of interest

All the authors declare that there are no competing interests.

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Endokarditis mitralne valvule izazvan *Candidom albicans*: prikaz slučaja

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SAŽETAK

Infektivni endokarditis (IE) spada u red ozbiljnih endovaskularnih infekcija. Gljivični endokarditis, naročito onaj izazvan *Candidom albicans*, veoma je redak. Dijagnozu nije lako postaviti zbog negativnih rezultata kulture krvi i prisustva nespecifičnih simptoma. U ovom radu prikazan je bolesnik kod koga se razvio endokarditis na normalnoj valvuli zbog infekcije *Candidom albicans*.

Ključne reči: **endocarditis, *Candida albicans*, dijagnoza**