

Combination of medical and surgical therapy in the management of *Brucella* endocarditis

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Özet

Brucella endokardit tedavisinde medikal ve cerrahi tedavi kombinasyonu

Bu yazıda, nativ aort kalp kapağını tutan bir *Brucella* endokarditi olgusu sunulmuştur. Kırkdört yaşında erkek hasta nativ aort kapağı tutan *Brucella* endokardit tanısını almış olarak hastanemize başvurdu. Hastanemizde *Brucella* tanısı klinik özelliklerle ve pozitif kan kültürü ve seroloji tetkikleri ile kondu. Medikal tedavi (doksisisiklin ve rifampisin) yetersizdi ve ekokardiyografide vejetasyon kitlesi ve dördüncü derece aort yetmezliği bulguları izlendi. Acil olarak aort kapak replasmanı yapıldı ve kan ve kapak kültürlerinde *B. melitensis* üredi. Hasta ameliyat sonrası 8. gün taburcu edildi ve aynı antibiyotik tedavisine 3 ay devam edildi. Hasta ameliyat sonrası 30. aya kadar düzenli olarak kontrol edildi ve hastada klinik olarak tam iyileşme gözlemlendi.

Anahtar kelimeler: Endokardit, kapak replasmanı, aort kapağı, *Brucella melitensis*

Abstract

Here, we present a case of *Brucella* endocarditis of the native aortic valve. A 44-years-old man was admitted to our hospital with a pre-diagnosis of *Brucella* endocarditis of the aortic valve. In our hospital, the diagnosis of brucellosis was established by clinical features, positive blood culture and positive serology. Medical treatment (doxycycline and rifampicin) was insufficient and echocardiography showed a mass of vegetation and fourth degree aortic insufficiency. Replacement of the aortic valve was carried out as emergency procedure. Blood and valve cultures were positive for *Brucella melitensis*. The patient was discharged on 8th postoperative day and received the same antibiotic therapy for 3 months. The patient was regularly controlled throughout postoperative 30 months, and the clinical status has been found excellent.

Key words: Endocarditis; valve replacement; aortic valve; *Brucella melitensis*

Introduction

Brucellosis is a disease with high morbidity and low mortality. The most frequent cause of death in *Brucella* infections is due to the involvement of the cardiac tissue. Brucellosis is endemic in some rural areas of Turkey including the region of Isparta. Brucellosis is also endemic in countries of Mediterranean basin and Middle East (1, 2). It is a systemic disease, and almost every organ can be affected. One of the most frequently isolated species of *Brucella* is *Brucella melitensis* in infective endocarditis (3). *Brucella* endocarditis produces highly destructive lesions in the valve structure (4). Aortic valve is predominantly involved, commonly resulting in cardiac failure. In cases of BE, replacement of the

valve is almost always necessary besides antibiotic treatment for long periods of time (2, 5). Here, we present a *Brucella* endocarditis of the native aortic valve which was successfully treated with a combination of valve replacement and antibiotic therapy.

Case

A 44-years-old male farmer, was admitted with fever, myalgias and arthralgias. After the diagnosis of brucellosis he was treated with doxycycline (200 mg bid) and rifampicin (600 mg bid) for a week in the hospital, and thereafter discharged with the same medical therapy. He was readmitted 3 weeks after, with the persistence of the previous symptoms, additionally he had dyspnea and early fatigue. Significant aortic regurgitation and vegetative mass on the aortic valve were revealed by echocardiography. Left ventricle of the patient was dilated but ventricular

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functions were otherwise normal. While continuing with the same antibiotic treatment, the antifailure therapy by Aspirin (100 mg id), Ramipril (2.5 mg, id) and Furosemide (40 mg bid) was initiated. On physical examination, heart rate was 90 per minute, and the systemic blood pressure was 95/45 mmHg. A moderate diastolic aortic murmur was heard. Other findings were divergent arterial pressure, collapsing pulses and edema of the lower limbs. On chest x-ray enlargement of the cardiothoracic ratio was detected. During his first admission, the patient had a positive Rose Bengal reaction, positive Wright test with 1/640 titer, positive indirect immunofluorescence with 1/320 titer and negative blood cultures. In the second admission the laboratory findings were; Hb 13.2 g/dl, white blood cell (WBC) count 9000/mm³, C-reactive protein (CRP) 4.5 mg/L, BUN 36 mg/dl and creatinin 1.0 mg/dl. *Brucella spp.* was identified in the blood cultures but the species could not be identified. Echocardiographic examination revealed enlarged left ventricle (Dd 65 mm, Ds 50 mm) with good contractility (ejection fraction of 50 %), a moderate enlarged left atrium (49 mm) and fourth degree of regurgitation. Additionally, a floppy mass was found on the aortic valve (Figure 1), which was interpreted as vegetation. There was not any pressure gradient on aortic valve, but there were fourth degree aortic regurgitation and normal coronary angiography at cardiac catheterization.



Figure 1: Echocardiographic view; the aortic valve with vegetation.

The operation was immediately performed under cardiopulmonary bypass following four weeks antibiotic treatment. The aortic valve, which was found to be tricuspid, had several small vegetations and all the cusps were almost destroyed (Figure 2). A mechanical prosthesis (Carbomedics 23R) was used for replacement of the aortic valve. Aortic valve

tissue and blood cultures were positive for *Brucella melitensis*.

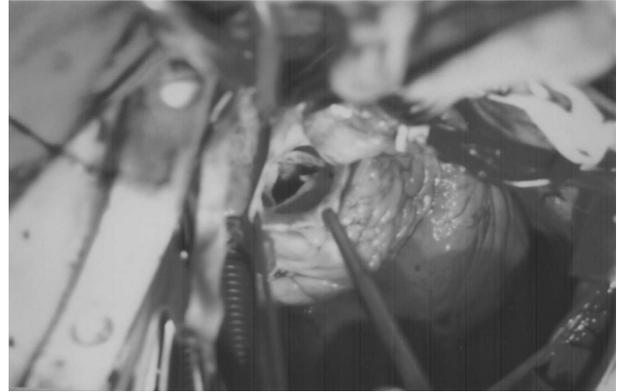


Figure 2: Operative view of aortic valve; destroyed aortic valve with pieces of vegetations.

The postoperative course was uneventful, and the patient was discharged from the hospital on the postoperative 8th day. The patient was kept under the same antibiotic therapy (doxycycline and rifampicin), because of high serum *Brucella* Wright test titers for three months. No signs or symptoms of recurrence has been observed in the patient within the follow-up period of 30 months.

Discussion

Endocarditis is a serious and fatal complication of systemic brucellosis. *Brucella* endocarditis incidence ranges from 0.7 to 10.9 % of endocarditis cases in different countries (6, 7). Although the mortality rate for brucellosis is less than %1, BE accounts for %80 of its death (8). Despite a few cases which were cured by antibiotic therapy alone, BE usually requires immediate or emergency cardiac surgery (9). Hemodynamically significant valvular lesions generally necessitate surgical intervention in most of the circumstances. In the present case, we performed an immediate surgery due to the inability to control infectious process and progression of the congestive cardiac failure. The accepted treatment for BE is a combination of valve replacement and antibiotic therapy (1,2,5,6) although Cohen et al (9) reported that antibiotic treatment alone resulted in complete recovery in a patient with BE. In the present case, although appropriate antibiotic therapy was conducted, surgical therapy was inevitable.

Brucella endocarditis is a destructive process predominantly involving the aortic valve (8). It is more frequent in men than in women and the aortic valve is usually affected. Rapid hemodynamic

deterioration and congestive heart failure is the usual final episode (1, 2). Valvular incompetence, presence of vegetations and congestive heart failure urge an early surgical intervention, similar to the present case. The three most frequent agents of human brucellosis are *Brucella melitensis*, *B. abortus*, *B. suis* and less frequently *B. canis* (10). Most of the cases in western world are caused by *Brucella abortus*, a species known to be responsible for mild disease and uncommonly associated with suppurative complications (11). In Turkey and other Mediterranean countries, *Brucella melitensis* is endemic which is known to cause acute severe disease with greater virulence (12). Treatment should be started on the base of high clinical suspicion, and culture results should not waited for antibiotic medication due to the fulminant course of the disease (1).

In our case, medical therapy was started after diagnosis was established. In the follow-up period, surgical intervention was planned when aortic insufficiency was detected, which led to excellent results. There is no consensus about the duration of the antibiotic therapy after surgery. The duration is ranged from 2 weeks to 13 months in the literature (1, 5, 11, 12). In the present study, antibiotic therapy was maintained up to normalisation of the serum titers for 3 months post-surgery.

In conclusion, BE is a rare, but serious complication of brucellosis. It is suggested that, BE of the native aortic valve should be safely treated with a combination of antibiotic and surgical therapy.

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