

BRUCELLA ENDOCARDITIS IN IRANIAN PATIENTS: COMBINED MEDICAL AND SURGICAL TREATMENT

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Abstract—Brucella endocarditis is a rare but serious complication of brucellosis and is the main cause of death related to this disease. It is not rare in the endemic areas and actually accounts for up to 8-10% of endocarditis infections. We report seven adult cases of brucella endocarditis in Imam-Khomeini Hospital. Contrary to previous independent reports, female patients were not rare in this study and accounted for three out of seven. Four patients were cared for by combined medical and surgical treatment and were recovered. Three of the patients that did not receive the combined therapy could not be saved. This report confirms the necessity of prompt combined medical and surgical treatment of brucella endocarditis.

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INTRODUCTION

Brucellosis is a worldwide infectious disease and Iran is an endemic region for this disease. Cardiovascular complications are rare, occurring in only 2-3% of cases (1,2,3), but are serious and can be fatal when happen. About 85% of mortalities in brucellosis are due to cardiovascular complication (1). Endocarditis is the most common cardiovascular complication (4,5).

This type of endocarditis is rare in nonendemic countries (2,3), but accounts for 8-10% of all infectious cases in endemic areas (1) and, therefore, it warrants more careful attention by physicians. In this study we report seven cases of brucella endocarditis, its diagnosis and treatment.

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PATIENTS AND METHODS

We describe clinical and laboratory observations in adult patients admitted in Imam-Khomeini Hospital from 1989 to 1994 (1368-1373). The patients were between 28 and 58 years old. A brief history of the patients was as follows:

Case one

A 58-year-old man was admitted because of fever, sweating and coughing. There was diastolic murmur of aortic insufficiency (AI) on examination. Wright agglutination and mercapto ethanol (2ME) titers were 1/1280 and 1/160, respectively. *Brucella melitensis* grew in his bone marrow culture. Echocardiography revealed large vegetation on left coronary cusp of aortic valve. He received suitable antibiotics and his aortic valve was replaced by a prosthetic valve. Hemopericarditis was found on operation. He recovered and left the hospital.

Case two

A 28-year-old female was admitted with history of valvular heart disease and a year old brucellosis. On examination, there was systolic murmur of aortic stenosis and mitral regurgitation. Wright agglutination titer was 1/640. *Brucella melitensis* grew in her blood and bone marrow cultures. Echocardiography showed large vegetation on the aortic valve. She was operated on and her aortic valve was replaced by a prosthetic valve, while she was receiving antibiotics. She left the hospital in good condition.

Case three

A 50-year-old female was admitted with a-year-old history of brucellosis. She had heart failure symptoms for the past 3 months. On auscultation, there were systolic

and diastolic murmurs of aortic stenosis and insufficiency. Wright agglutination and 2ME titer were 1/640 and 1/40, respectively. Blood cultures grew brucella melitensis. In echocardiography, large vegetation was seen on aortic leaflet. She expired due to severe heart and renal failure and disseminated intravascular coagulopathy (DIC).

Case four

A 44-year-old female was admitted with history of heart disease and involvement of mitral and aortic valves such as mitral stenosis, regurgitation and aortic insufficiency. She had a-year-old history of brucellosis. She was first admitted because of fever and dyspnea; she received medical treatment for brucellosis and left the hospital in good condition, but was readmitted 50 days later with heart failure symptoms. Wright agglutination and 2ME titers were 1/1600 and 1/40, respectively. Blood cultures grew brucella melitensis. Echocardiography showed vegetation on mitral and aortic valves. She had symptoms and signs of pericarditis and left leg thrombophlebitis as well. She was referred to surgery for replacement of both mitral and aortic valves, but was not operated due to severe pulmonary dysfunction, and expired (Fig. 1).

Case five

A 30-year-old man, referred to us from Tabriz, in a very bad condition. He was first treated for brucellosis six months ago. During the second admission in Tabriz, with heart failure, brucella melitensis grew in his blood and bone marrow cultures. On examination, he had

diastolic murmur of aortic insufficiency, hepatomegaly and clubbing of fingers. Echocardiography showed a large vegetation (6×8 mm) on noncoronary cusp of aortic valve and AI⁺⁺. He died the day after admission with heart failure.

Case six

A 38-year-old man, with history of rheumatic heart disease admitted because of symptoms of heart failure. On examination, he had systolic ejection murmur in aortic valve area (AS), pansystolic murmur and diastolic rumble at the apex (MS, MR), and hepatomegaly, ascites, and edema in lower limbs. Wright agglutination titer was 1/1280. Blood cultures grew brucella melitensis. Echocardiography and Doppler (transthoracic and transesophageal) showed severe aortic stenosis (with 60 mmHg gradient), mitral stenosis (MS) and mitral regurgitation (MR). There was a vegetation on aortic valve. Aortic ring abscess was also seen. The patient was operated on, while receiving suitable antibiotic therapy. The echocardiographic findings, including a mural abscess beneath the noncoronary cusp, were confirmed on operation. Aortic and mitral valves were replaced by prosthetic valves. The patient was discharged in good condition while on medication.

Case seven

A 50-year-old man was admitted with the history of rheumatic heart disease (mitral stenosis and regurgitation), low grade fever for the past few months, and sudden right side hemiplegia and aphasia (Broca).

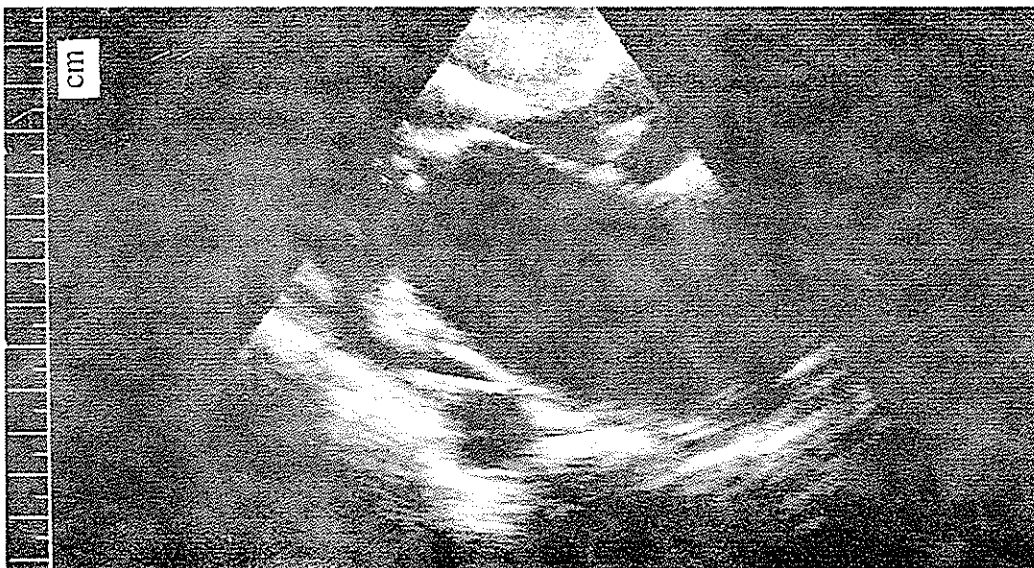


Fig 1. Echocardiography that shows vegetation both on aortic and mitral valve leaflets (case 4).

Brain CT scan showed frontoparietal infarction. *Brucella melitensis* grew in his blood cultures. Echocardiography showed multiple vegetation on aortic and mitral valves. The patient, while receiving suitable antibiotic therapy, underwent surgery urgently and both aortic and mitral valves were replaced by prosthetic valves. He left the hospital, continuing with medical treatment and physiotherapy.

Antibiotics given to the patients were the combination of doxycycline (200 mg/day) or tetracycline (2 g/day), rifampicin (600-900 mg/day), and co-trimoxazol (sulphamethoxazole, 2400 mg/day plus trimethoprim, 480 mg/day) at least for 12 weeks.

RESULTS

The clinical and laboratory findings in seven patients are summarized in Table 1. Four of the patients were operated on replacing one or two valves. Three patients who did not receive the combined medical and surgical treatment, did not survive.

DISCUSSION

As mentioned earlier, brucella endocarditis is a rare

but most fatal complication of brucellosis. Iran is an endemic region, so this type of endocarditis may account for up to 8-10% of infectious endocarditis cases in this country. Since the earlier reports by Peery et al in the late fifties (5,6) other studies have been carried out on cardiovascular complications of brucellosis (4,8,15,16). Most of these published reports concern just one or a few patients. A large number of reports are usually related to endemic countries (7,19). Reports from western countries show that the brucella abortus is the most common cause of brucella endocarditis (8,9,10,11). In our country and other endemic areas nearly all cases of endocarditis are due to brucella melitensis. This type of brucella is more aggressive and possibly explains the more common cardiovascular complications of brucellosis in these countries. In the present study, brucella melitensis was the cause of endocarditis in all cases. Brucella endocarditis is subacute and usually the patient has a history of brucellosis in the previous months. The average interval between brucellosis and cardiovascular manifestations of endocarditis is about nine months (5). Before admission four of the patients had a history of previous brucellosis, for one year, due to cardiac symptoms. The history was not clear in the other patients.

As mentioned in other independent reports (2,3,5), aortic valve is the most commonly involved. Aortic involvement was seen in all of our patients. In three

Table 1. Summary of important findings in adult patients with brucella endocarditis.

Case	Sex	Age	History of VHD	Main symptom	Blood or bone marrow culture	Cardiovascular involvement	Vegetation on echocardiography	Operation	Outcome
1	M	58	?	Fever and sweating	<i>Brucella melitensis</i>	AI	+	AVR	Recovered
2	F	28	+	dyspnea	<i>Brucella melitensis</i>	AI mild MR	+	AVR	Recovered
3	F	50	?	HF, RF DIC	<i>Brucella melitensis</i>	AI	+	-	Died
4	F	44	+	HF pulmonary dysfunction	<i>Brucella melitensis</i>	MR, AI pericarditis thrombophlebitis	+	-	Died
5	M	30	?	HF	<i>Brucella melitensis</i>	AI	+	-	Died
6	M	38	+	HF	<i>Brucella melitensis</i>	AS, MS, MR aortic ring abscess	+	AVR MVR	Recovered
7	M	50	+	Thromboembolic event HF	<i>Brucella melitensis</i>	MS, MR AI	+	AVR MVR	Recovered

Abbreviation: AI=aortic insufficiency, AS=aortic stenosis, AVR=aortic valve replacement, DIC=disseminated intravascular coagulopathy, F=female, M=male, HF=heart failure, MR=mitral regurgitation, MS=mitral stenosis, MVR=mitral valve replacement, RF=renal failure, VHD=valvular heart disease.

patients, mitral valve was involved as well.

Three of our patients (40%) were female, whereas there was no female patient reported in western studies. Female patients have also been rare in the endemic area reports. This is probably because of previous rheumatic involvement of cardiac valves both in males and females of our country which may serve as a predisposing factor for brucella endocarditis.

Preexisting valvular abnormalities have been reported in about 50% of patients (1). At least in four cases in this study there was the history of valvular heart disease before diagnosis of brucella endocarditis (57%). In other three patients, the history of previous heart disease was not reliable. An important note concerning our patients was the presence of large vegetation on the valve leaflets of all cases. Two-D echocardiography, specially transesophageal, was very useful in detection of brucellosis.

The main problem of our patients, also reported by other studies, was the heart failure symptom. Only one patient represented with thromboembolic event, although he had heart failure symptoms as well. It should be noted that progressive congestive heart failure is the most common cause of death in brucella endocarditis (1,5).

Although there are a few reports of successful and cautious medical treatment of brucella endocarditis in adults (12,13,14), this study confirms the results of most other groups (15,16,17,18) that every adult patient with brucella endocarditis (while on proper antibiotic therapy), should be operated on as soon as possible, otherwise he or she may die due to progressive congestive heart failure or other complications.

The treatment of brucella endocarditis in children is somewhat different. There is a report of successful medical treatment of this problem in childhood brucellosis (19).

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