The Role of Antibiotic Treatment Alone for the Management of Brucella Endocarditis in Adults: A Case Report and Literature Review

Ali Mert, MD,1 Funda Kocak, MD,1 Resat Ozaras, MD,1 Fehmi Tabak, MD,1 Muammer Bilir, MD,2 Serdar Kucukuglu, MD,3 Recep Ozturk, MD,1 and Yildirim Aktuglu, MD1

Endocarditis is a rare complication of brucellosis but it is the main cause of the mortality in this disease. The accepted treatment for Brucella endocarditis (BE) is a combination of valve replacement and antibiotics. Conservative antibiotic treatment alone is not recommended by most of the authors as it is considered ineffective and increase the risk of mortality. In our literature search, we found 14 adult patients with BE treated only with antibiotics with a favorable outcome. In this report, we described a patient treated with antibiotics alone and reviewed the literature. Depending on the data from the growing literature and our patient we suggest that in selected patients with BE who do not have congestive heart failure, valvular destruction, abscess formation, or a prosthetic valve, conservative antibiotic treatment may be a valid alternative to surgery. (Ann Thorac Cardiovasc Surg 2002; 8: 381–5)

Key words: brucellosis, endocarditis

Introduction

Brucellosis is a systemic infectious disease caused by gram-negative bacilli, the genus Brucella. Almost every organ is involved in different degrees.1) Although Brucella endocarditis (BE) is a rare complication of brucellosis, it is the main cause of the mortality related to this disease.2-4) By necropsy, endocarditis was found in 35 out of 44 patients who had died of brucellosis (80%).4) Indeed when treated by antibiotics alone, this complication is usually fatal. Therefore the most effective therapy for BE is a combination of antibiotic administration with valve replacement.2) To our knowledge, only 14 adult cases have been cured by antibiotic therapy only, which have been reported in the English-language literature.3,5-14) We report another patient with BE cured solely by medical treatment.

Case Report

A 60-year-old male was hospitalized in November 1997 with chills, fever, and back pain for seven days. He had a history of brucellosis in January 1997 and use of some antibiotics and also a relapse of brucellosis in July 1997. He had used doxycycline + rifampin, and developed rifampin-induced thrombocytopenia, then switched to ciprofloxacin (1,000 mg/d, per os (po), six weeks) + gentamicin (160 mg/d, intravenous (iv), two weeks) + prednisolone. He had also a history of acute rheumatic fever when he was 17.

On physical examination, blood pressure was 130/80 mmHg, pulse rate was 76 beats/min. Fever (axillary: 38°C) and splenomegaly (3 cm) were noted. An aortic systolic murmur (grade III/VI) and mitral diastolic rumble (III/VI) were audible. The remaining was normal. Laboratory studies were as follows: hematocrit 31%, leukocyte 5,000/mm³ (granulocyte 80%, lymphocyte 20%), platelets 161,000/mm³, erythrocyte sedimentation

From 1Infectious Diseases and Clinical microbiology and 2Internal Medicine, Cerrahpasa Medical Faculty, Istanbul University, and 3Cardiology Institute, Istanbul, Turkey

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Address reprint requests to Ali Mert, MD: Infectious Diseases and Clinical Microbiology, Cerrahpasa Medical Faculty, Istanbul University, 34303 Aksaray, Istanbul, Turkey.
rate 32 mm/hour. The others were normal. Slide (Rose-Bengal) and tube (Wright: 1/2,560) agglutination tests were positive. Anti-Brucella IgG and IgM antibodies by ELISA were also positive. Chest X-ray revealed cardiomegaly with a cardiothoracic index of 0.59. Electrocardiography showed a normal sinus rhythm with positive voltage criteria for left ventricular hypertrophy. Transthoracic and transesophageal echocardiography revealed oscillating vegetations on the anterior mitral (13×7 mm) (Fig. 1) and noncoronary aortic leaflets (Fig. 2) (10×8 mm) and also revealed aortic and mitral valve disorders (stenosis and insufficiency). Heart failure was not detected. The isolates of automated hemoculture (BACTEC 9240) system were identified as genus Brucella by conventional biochemical tests and also by lam agglutination test using antisera. Further identification of Brucella strains were not performed.

The diagnosis was BE and surgical treatment (valve replacement) with antibiotics was planned. However the patient rejected this and he was prescribed a medical combination treatment of doxycycline (200 mg/day, po) + ciprofloxacin (1,000 mg/day, po) + trimethoprim/sulfamethoxazole (320/1,600 mg/day, po) for four months. During a follow-up of 18 months, he was free of the disease.

Discussion

Although brucellosis is a controlled disease in developed countries, the prevalence of it is not exactly known in developing ones and still remains a health problem. The prevalence is higher in the Mediterranean area, the Arabian Peninsula, Mexico, and Central and South America.\textsuperscript{1)} Brucellosis is endemic in Turkey which is located between Asia and Europe, and also is a Mediterranean country. During the last decade (between 1991 and 2000), about 9,000 cases yearly were reported to the Turkish Ministry of Health (incidence: 14/100,000). A screening of the general population for seropositivity (Wright test, n: 1,054/58,707, 1.8%) reveals a much higher rate in our country.\textsuperscript{15)}

Endocarditis is a rare complication of brucellosis: five big series reviewing 1,500 patients with brucellosis reported only 12 (0.8%) cases with endocarditis.\textsuperscript{16-20)} Although overall mortality of brucellosis is low (<1%), endocarditis is responsible for the majority of deaths related to this disease.\textsuperscript{1,3)} Brucella series from Turkey (a total of 566 patients, four with endocarditis) reported the rate of endocarditis as 0.7%.\textsuperscript{21-24)} Also in our unit, we have followed-up 140 patients with brucellosis within 10 years and only one (0.7%) had endocarditis.

The combination of antibiotic administration with valve replacement which is a very expensive option is recommended as the most effective therapy of BE.\textsuperscript{2)} Brucellosis is more prevalent in the countries with poor conditions and lower income, and therefore BE may also be estimated to be more common. Valve replacement may not be feasible for every patient in these countries. The exact role of medical treatment alone is not known in the management. In the English-language literature, 14 well-documented patients cured by medical treatment alone have been described.\textsuperscript{3,5-14)} Thirteen of these cases have been reviewed and pub-
Table 1. Clinical features of the patients with Brucella endocarditis treated with antibiotics treatment alone

<table>
<thead>
<tr>
<th>Reference No.</th>
<th>Year</th>
<th>Age/sex</th>
<th>History of rheumatic fever</th>
<th>Underlying cardiac disorder</th>
<th>Time up to diagnosis (months)</th>
<th>Brucella type</th>
<th>Valve involved</th>
<th>Presence of vegetation</th>
<th>Presence of heart failure</th>
<th>Antibiotics used</th>
<th>Duration of treatment (months)</th>
<th>Duration of follow-up (months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>1954</td>
<td>25/M</td>
<td>(+)</td>
<td>Mitral stenosis and regurgitation, aortic regurgitation</td>
<td>1</td>
<td>B. abortus</td>
<td>Aortic</td>
<td>No echo</td>
<td>(-)</td>
<td>TS (24 d) + SM (10 d) + sulfadiazine (10 d)</td>
<td>3.5</td>
<td>18</td>
</tr>
<tr>
<td>6</td>
<td>1957</td>
<td>33/M</td>
<td>(+)</td>
<td>Mitral stenosis</td>
<td>1</td>
<td>B. abortus</td>
<td>Aortic</td>
<td>(-)</td>
<td>(-)</td>
<td>TS + SM</td>
<td>3.5</td>
<td>18</td>
</tr>
<tr>
<td>8</td>
<td>1985</td>
<td>40/F</td>
<td></td>
<td></td>
<td>5</td>
<td>B. abortus</td>
<td>Mitrval</td>
<td>(+)</td>
<td>(-)</td>
<td>TS (2 m) + SM (14 d) + GM (21 d)</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>7</td>
<td>1985</td>
<td>35/F</td>
<td></td>
<td>Mitral stenosis</td>
<td>1</td>
<td>B. melitensis</td>
<td>Mitrval</td>
<td>(-)</td>
<td>(-)</td>
<td>TS + SM + RIF</td>
<td>1.5</td>
<td>12</td>
</tr>
<tr>
<td>9</td>
<td>1989</td>
<td>51/M</td>
<td>(-)</td>
<td>Aortic regurgitation</td>
<td>6</td>
<td>B. melitensis</td>
<td>Aortic</td>
<td>(+)</td>
<td>(-)</td>
<td>TS + RIF</td>
<td>1.5</td>
<td>12</td>
</tr>
<tr>
<td>10</td>
<td>1989</td>
<td>30/M</td>
<td>(+)</td>
<td>Brucella spp.</td>
<td>6</td>
<td>B. melitensis</td>
<td>Aortic</td>
<td>(+)</td>
<td>(-)</td>
<td>TS (42 d) + amikacin (16 d) + TMP/SMX (28 d)</td>
<td>1.5</td>
<td>12</td>
</tr>
<tr>
<td>11</td>
<td>1989</td>
<td>18/M</td>
<td>(-)</td>
<td>Brucella spp.</td>
<td>1</td>
<td>B. melitensis</td>
<td>Aortic</td>
<td>(+)</td>
<td>(+)</td>
<td>TS (42 d) + SM (38 d) + RIF (14 d)</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>12</td>
<td>1990</td>
<td>25/M</td>
<td>(+)</td>
<td>Aortic valve prosthesis</td>
<td>2</td>
<td>B. melitensis</td>
<td>Aortic</td>
<td>(-)</td>
<td>(-)</td>
<td>TS + TMP/SMX</td>
<td>1.5</td>
<td>NA</td>
</tr>
<tr>
<td>12</td>
<td>1990</td>
<td>31/F</td>
<td>(-)</td>
<td>Bicuspid aortic valve</td>
<td>1</td>
<td>B. melitensis</td>
<td>Aortic</td>
<td>No echo</td>
<td>(-)</td>
<td>TS + sulfadiazine</td>
<td>1.5</td>
<td>NA</td>
</tr>
<tr>
<td>12</td>
<td>1990</td>
<td>15/M</td>
<td>(-)</td>
<td>Marfan syndrome</td>
<td>1</td>
<td>B. melitensis</td>
<td>Mitrval</td>
<td>No echo</td>
<td>(-)</td>
<td>TS + sulfaaxin</td>
<td>1.5</td>
<td>NA</td>
</tr>
<tr>
<td>13</td>
<td>1990</td>
<td>56/F</td>
<td>(-)</td>
<td>IHSS</td>
<td>1</td>
<td>B. melitensis</td>
<td>Aortic, mitral</td>
<td>(+)</td>
<td>(-)</td>
<td>DS (7 m) + RIF (7 m) + GM (2.5 m)</td>
<td>6</td>
<td>36</td>
</tr>
<tr>
<td>14</td>
<td>1993</td>
<td>42/M</td>
<td>(-)</td>
<td>Bicuspid aortic valve</td>
<td>3</td>
<td>Brucella spp.</td>
<td>Aortic</td>
<td>(+)</td>
<td>(-)</td>
<td>DS + CIP + TMP/SMX</td>
<td>1.5</td>
<td>12</td>
</tr>
<tr>
<td>3</td>
<td>1997</td>
<td>55/M</td>
<td>(-)</td>
<td></td>
<td>1</td>
<td>B. melitensis</td>
<td>Aortic</td>
<td>(+)</td>
<td>(-)</td>
<td>DS (6 m) + RIF (6 m) + GM (3 w)</td>
<td>1.5</td>
<td>12</td>
</tr>
<tr>
<td>Present case</td>
<td>1997</td>
<td>60/M</td>
<td>(+)</td>
<td>Aortic and mitral valve disorders</td>
<td>23 d</td>
<td>Brucella spp.</td>
<td>Aortic, mitral</td>
<td>(+)</td>
<td>(-)</td>
<td>DS (24 m) + SM (30 m) + GM (3 m)</td>
<td>1.5</td>
<td>12</td>
</tr>
</tbody>
</table>

In conclusion, the patients with BE are generally seen in developing countries where health services and especially surgical facilities are inadequate. On the basis of current data in the literature and of our patient, we suggest that antibiotic treatment alone may be an alternative in patients with BE without prosthetic valves, heart failure, abscess formation, or valvular destruction.

References

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