

Native Mitro-Aortic Infective Endocarditis Secondary to Brucellosis

Brucellosis is a zoonosis with worldwide distribution, but it rarely causes endocarditis. *Brucella* infective endocarditis (BE) is an entity with subacute presentation, characterized by extensive valve destruction and myocardial abscess formation, usually requiring combined medical and surgical therapy. Without prompt treatment, it progresses to heart failure and death. (1) The following is a case of infective endocarditis secondary to *Brucella*.

We describe the case of a 40 year-old male patient, farmer, smoker, who was admitted to the department of cardiology due to 1-week history of progressive dyspnea and persistent fever. On admission, he was febrile (38,5 °C), with blood pressure of 110/70 mm Hg, good peripheral perfusion, tachypnea (35 per minute), and heart rate of 95 bpm. Auscultation revealed a grade 4/6 diastolic murmur in the aortic area and grade 3/6 systolic murmur in the mitral valve area, and crepitant rales at both lung bases. Palpation revealed hepatomegaly, and ankle edema was observed in both legs. The electrocardiogram showed sinus rhythm with left ventricular overload, and the chest x-ray revealed enlarged heart and signs of flow redistribution in both lungs. Lab tests detected high erythrocyte sedimentation rate (55 mm) and 12,100/mm³ white blood cell count with initially negative blood cultures. The transthoracic echocardiography showed increased left ventricular (LV) diameters (diastolic diameter, 61 mm, systolic diameter, 33 mm) and increased tricuspid aortic valve diameter. A highly mobile vegetation of 25 x 11 mm attached to the left coronary leaflet was found at the level of the ventricular outflow tract, with extensive prolapse in the LV outflow tract. Severe aortic regurgitation without stenosis was observed. The mitral valve presented a severe regurgitant jet originated in the mid portion of the anterior mitral leaflet, at the level of the mitral-aortic intervalvular fibrosa, and image consistent with sessile vegetation of 10 x 9 mm in the atrial aspect of the anterior mitral leaflet (Figures 1 & 2). Positive serologic test for *Brucella abortus* was obtained during follow-up, together with a positive Rose-Bengal test, positive agglutinations to *Brucella* at 1/640, and a titer of 1:1024 determined by the indirect immunofluorescence test. Treatment was started with doxycycline, streptomycin, and rifampicin.

Due to persistent heart failure, aortic valve replacement with mechanical prosthesis (size 21), and mitral valve repair was performed.

Culture of material excised at the operation was positive for *Brucella abortus*. Postoperative course was uneventful, with clinical improvement and absence of fever, and reduction of *Brucella* antibody titers. A 6-week course of antibiotics was indicated by the Department of Infectious Diseases due to the pa-

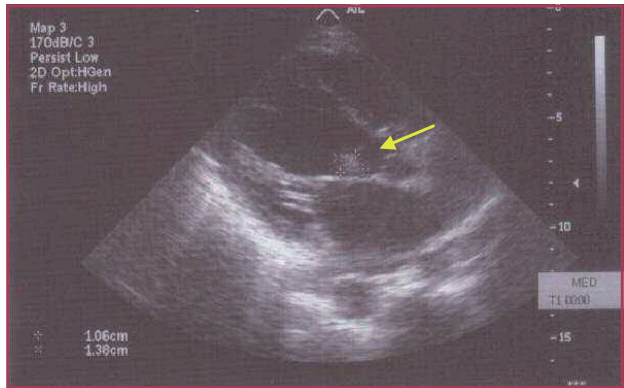


Fig. 1. Transthoracic echocardiography. Parasternal long axis view showing vegetation of 1.0 x 1.3 cm diameter attached to the ventricular wall is observed, close to the left ventricular outflow tract.

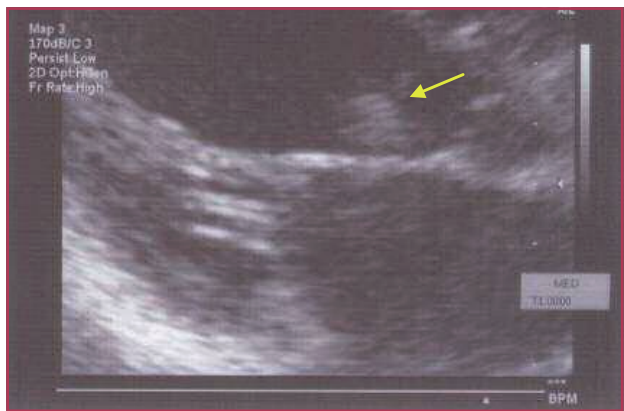


Fig. 2. Transthoracic echocardiography. Parasternal long axis view with zoom on the formation described above, showing lower echo-refraction with respect to the valve structure, and the vegetation occupying almost 50% of the of the left ventricular outflow tract diameter

tient's good progress, who is currently on follow-up.

While brucellosis is a rare disease, it occurs in Asia, Middle East, and South America. It is a systemic infectious disease caused by gram-negative bacilli of the genus *Brucella*, which in the case of humans, generally corresponds to the *Brucella melitensis* strain. Typically, it is a mild, asymptomatic disease that can affect multiple organs as it progresses, with an incubation period of 2-6 weeks though it may occasionally be much longer. (2)

Endocarditis is a rare but severe complication of brucellosis, affecting 2% of the cases and is the main cause of mortality (80%) in these patients. It mostly affects the left coronary valves, predominantly the aortic valve (29%), also causing abscesses in the ascending aorta. Morbidity rate is high, with focal complications in 30-40% of cases. As in the case of our patient, a history of work in rural areas in contact with unpasteurized food (particularly milk) or infected animals are common risk factors. (3)

Even with a high level of suspicion, diagnosis may be difficult to confirm. Serologic tests are more sensitive than blood cultures, but they are not specific and are difficult to interpret in endemic areas. They may also be negative in early stages of the disease. The most common tests are Huddleston, Rose-Bengal, Wright, 2-mercaptoethanol, and complement fixation. As a result of the slow growth of the bacteria and the need for specific culture media, the negative blood culture rate is higher than for other types of bacterial endocarditis. (4) Due to the high valvular endocardial damage, treatment is rarely limited to the use of antibiotics alone and surgical procedures are also necessary. (5)

Indications for surgical intervention include refractory heart failure, sepsis resulting from a myocardial abscess, severe valvular dysfunction, and embolism. Valve replacement with aggressive debridement of infected tissue is the most important part of the treatment, and should be complemented with a course of antibiotics before and after surgery. (6)

Brucella infective endocarditis is a rare entity with a high morbidity rate, and also represents the most common cause of death in patients with brucellosis. A high index of suspicion for this disease is necessary to diagnose it in potentially exposed patients in endemic areas. In Argentina, it is a mandatory reportable disease.

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Epicardial Cryoablation of Ventricular Tachycardia in Chagas Disease: Emergency Hybrid Treatment

Ventricular tachycardias (VT) associated to nonischemic structural heart disease present larger scars in the epicardial area than in the endocardial area. At

the same time, the density of slow conduction channels within the epicardial scar is higher than in the endocardium. (1) The combined (epicardial and endocardial) ablation of VT achieves high success rate and low recurrence; (2) however, it is a major challenge to avoid lesions in the coronary arteries during the procedure.

We describe the case of a patient with Chagas disease and electrical storm, where the left ventricular epicardial and endocardial voltage mapping was fused with a multidetector computed tomography angiography (MDCTA) to directly visualize the relationship between the myocardial scar and the coronary arteries. A hybrid treatment with radiofrequency and cryoenergy was used in order to minimize risks.

A 69-year-old male patient with dilated Chagas cardiomyopathy (ejection fraction 28%) was referred to our center due to electrical storm. He had been treated with implantable cardioverter defibrillator (ICD) 12 months before as primary prevention of sudden cardiac death.

He had incessant sustained monomorphic ventricular tachycardia (SMVT) without hemodynamic decompensation, with multiple ICD shocks, refractory to amiodarone treatment. Surface electrocardiogram (ECG) met epicardial VT criteria (3) (Figure 1).

The patient underwent an emergency catheter ablation procedure. The pericardial cavity was reached using Sosa's technique. (4) Voltage mapping determined a large anterolateral epicardial scar region in basal and medial segments. The VT breakout site was obtained with activation mapping in the basal anterolateral region. At this level, ventricular fractionated and mid-diastolic potentials were observed, and the slow conducting zone of the tachycardia circuit (isthmus) was localized with entrainment maneuvers. Previously, a MDCTA was performed and merged with the epicardial voltage mapping. As a result, it was possible to determine the exact relationship between the scar and the coronary arteries. The use of radiofrequency on that site interrupted the arrhythmia in a few seconds (3.4 sec.), as shown in Figure 2, top.

Then, the VT substrate was treated using the dechanneling technique with an 8 mm tip focal cryoablation catheter, to reduce the risk of coronary artery lesion (Figure 2, bottom) until the abnormal electrograms, described by Haissaguerre (5) (LAVAs), were eliminated.

A different VT morphology was induced, which did not present electrocardiographic criteria for epicardial VT. A transeptal puncture was performed to access the left ventricle and voltage mapping was created. A slow conduction zone (isthmus) was localized at the endocardial level, on a voltage channel that divided the scar into two. The use of radiofrequency interrupted the VT in 3.9 sec. (Figure 3).

Several consolidation lesions were targeted on this point to close the voltage channel. (5) No VT was induced by any protocol of programmed ventricular