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Case Report

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Brucellosis as an unusual cause of mitral infective endocarditis

Abstract

Brucellosis is an infectious disease caused by bacteria. We present the case of 48-years old man, who was admitted for acute renal failure in the context of prolonged fever. Renal biopsy revealed a non specific interstitial nephritis suggesting an infectious origin. Wright serology was positive and a history of unpasteurized milk was confirmed. Two Dimentional Trans thoracic echography 2D (TTE) showed mitral valve vegetation. Despite the initiation of an appropriate antibiotic therapy, the patient experienced embolic episodes that prompted the decision for a surgical treatment. Peroperative examination found a massive infection of the mitral valve and rupture of anterior valvular chordae. Antibiotics were maintained for 6 months with an unremarkable course during follow up.

Keywords: infective endocarditis, brucellosis, mitral valve

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Abbreviations: BE, brucellosis endocarditis; 2D (TTE), two dimensional trans thoracic echocardiography; VKA, Vit K anticoagulant

Introduction

Brucellosis is a world-wide zoonosis and systemic disease affecting various organs. The causative organism is an intracellular proteobacteria gram-negative bacillus of the genus Brucella. Human brucellosis is a multi organ disease, transmitted via unpasteurized animal milk and cheese. A renewed scientific interest in human brucellosis has be enfueled by its recent re-emergence.[1,2] Symptoms are nonspecific including fever, sweating, malaise, headache, back pain, loss of appetite and they can develop suddenly, evenly or over a week period. Involvement of any organ is often referred as localized disease and can be assessed as a complication of acute brucellosis or manifestation of chronic brucellosis.[3,4] Brucellosis endocarditis (BE) is rare but it is the cause of death in 80% of cases with brucellosis.

Case report

A 48 year old man, farmer originated from South West Tunisia, was first admitted in the nephrology department for acute renal failure in the context of prolonged fever, severe denutrition and loss of appetite. Laboratory exams revealed increased inflammatory biomarkers as well as severe anemia. Renal biopsy showed a non specific interstitial nephritis suggesting an infectious origin. Wright serology returned positive and patient history confirmed consumption of unpasteurized goat milk. Electrocardiogram showed sinus tachycardia and 2D trans thoracic echography 2D (TTE) found a large 25mm mass located in the atrial side of the anterior mitral valve suggesting a vegetation that has resulted in a severe mitral stenosis leading to pulmonary edema (Figure 1) (Figure 2). One day later, the patient developed an ischemic stroke in the right capsulo-lenticular brain area. He received high dose of antibiotics (Vibramycin, Rifampicin and Bactrim) and subsequently underwent a successful urgent surgery with mitral valve replacement number 21. Peroperative examination found a massive infection of the mitral valve with rupture of the anterior valvular chordae (Figure 3). Soon after surgery, renal function returned to normal, general status substantially improved. Antibiotics were maintained for 6 months with an unremarkable course during follow up. After discontinuation of antibiotics, the patient was kept only on oral anti vit K anticoagulant (VKA).

Figure 1 Two-dimensional echocardiography (Left parasternal view) showing large vegetation originated from the anterior mitral valve.

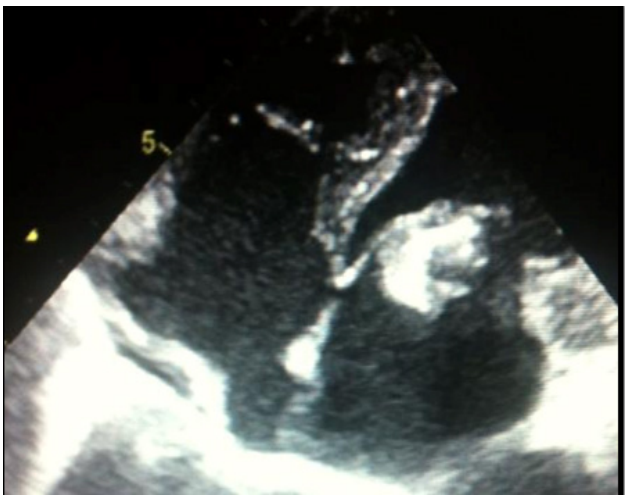

Figure 2 The same vegetation seen on four chamber apical view.

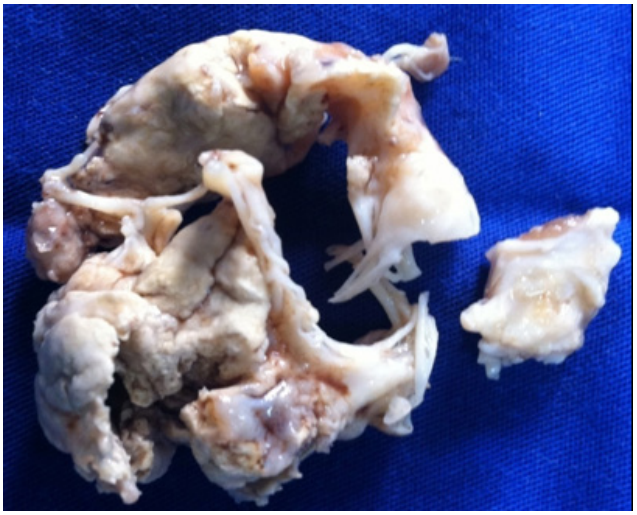

Figure 3 T Preoperative view showing the mitral vegetation (Yellow Arrow) and the ruptured chordae (Red Arrow).

Discussion

We reported a case of brucellosis infection endocarditis involving the mitral valve that resulted in pulmonary edema and stroke. Clinical course was favorable after prolonged antibiotic therapy and surgical mitral valve replacement.

Prevalence of human brucellosis

Human brucellosis is a multisystemic infectious disease with a high prevalence reported in the Mediterranean areas, the Arabian Peninsula, Mexico, central and South America.[4] Osteoarticular involvement is the most common focal complication of brucellosis. However, cardiovascular involvement such as BE is rare occurring in 1 to 11% of all types of Brucella infections causing high mortality rates (80%) mainly due to congestive heart failure.[4,5]

The organism

Brucella abortus and Brucella melitensis were reported to be the most frequently isolated species as opposited to Brucellasuis that was rarely found (5% of cases). B. melitensis is known to cause more severe disease associated with disabling complications.[5] Serology using febrile agglutinins has a high rate of false negativity in complicated and chronic cases. However, ELISA for brucellosis is highly sensitive and specific. High Brucella titer in the course of BE has been reported by Cohen et al.[6] In our case the organism is Brucella melitensis.

Presentation of endocarditis

The aortic valve was predominantly affected (75%), but mitral, both mitral and aortic valves, and prosthetic valves were equally affected (8,3%).[7,8] The infection of a previously healthy valve most often involves the aortic valve, whereas secondary infection of pre-damaged valve prevail on the mitral valve[9] like in our case. Myocarditis and pericarditis are usually associated to BE. Electrocardiogram changes may reflect involvement of the cardiac conduction system (i.e. right or left bundle branch blocks or atrioventricular blocks). In our case we have not found an involvement of the cardiac conduction system, as well as a normal left ventricular ejection fraction suggesting no per-myocardial involvement. Many of the previously reported case series showed that regurgitant lesions were more common than stenotic lesions.

Complications of brucella endocarditis

Complications that can be seen in the course of BE are disseminated intravascular coagulation with embolic events (transient ischemic attacks, myocardial and other organ infarctions), and myocardial abscesses .Septic emboli dislodged from valve vegetations may cause infected infarcts of any organ, leading to relapse. In a series of 44 necropsies on cases of fatal brucellosis, Peery and Belter[10] found myocardial abscesses in 43% of cases. Abscess formation is more common in endocarditis caused by Brucella than other types of microorganisms.[11] Left ventricular failure can occurs when there is a myocarditis or myopericarditis. Our case had transient ischemic attacks in the right capsule- lenticular area but no mitral valve abscess.

Treatment

Medical therapy in BE can be applied to patients with mild extravalvular involvement. The antibiotics used should penetrate the cellular walls of macrophages and must have bactericidal effects. In selected cases where there is no abscess formation or previous prosthetic valve, conservative antibiotic therapy can be sufficient instead of combined surgical and medical therapy.[12] A combination of at least two antibiotics is recommended as the single antibiotic treatment has a higher relapse rate.[13] However, this combination has a higher incidence of recurrence, as high as 15 to 40%.[14] The treatment recommended by WHO for acute brucellosis in adults is the combination of rifampicin 600 mg a day and doxycycline 100 mg a day for a minimum of 6 weeks,[14] according to Ariza et al.,[15] Gentamicin 3 mg/kg a day can be added in cases of endocarditis for duration of 2 weeks. Jacobs et al.[16] recommended a combination of antibiotic with valve replacement as the most effective therapy.[16]

The indications of surgery for BE were reported in the guidelines of the American Heart Association for the management of infective endocarditis.[17] The main aim of surgery is the removal of the infected materials and affected valves with radical excision. Furthermore, Duran et al.[18] recommended vegetectomy in patients with single vegetation. Vegetations frequently present themselves as bulky masses causing septic emboli in other organs. Because endocarditis is a rare focal complication of brucellosis, most of the reported cases in the literature included single reports or small series. To conclude, a combination of medical and surgical treatments is required for BE. The decision for timing of surgery is important. Wright serologic test titer values should be taken as a reference in determining the duration of the postoperative antibiotic treatment.

Prognosis

Although overall mortality due to brucellosis is low (<1%), endocarditis is responsible for the majority of deaths (80%) related to this disease. Congestive heart failure is responsible for the majority of deaths in Brucella endocarditis.

Conclusion

The diagnosis of BE is rather difficult, and Brucella species do not grow in routine blood culture systems because requiring a special culture media. The diagnostic work-up includes a meticulous history taking, clinical examinations and detailed laboratory tests. The variability in clinical presentations of BE requires a well-planned diagnostic strategy.

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Conflicts of interest

The authors declare there is no conflict of interests.

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