

Case Report

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Brucellar Pericarditis: You Can Get from Your Pet!

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ABSTRACT

Background: Brucellosis is a worldwide zoonotic systemic infectious disease with a diverse clinical presentation. Cardiovascular affections are not frequent, and the main cardiac manifestation of Brucellosis is endocarditis. Pericarditis without endocarditis is extremely rare.

Case Presentation: In this case report, we present an exceptional case of pericarditis caused by Brucellosis in the absence of concomitant endocarditis in a 30-year-old woman, one-month postpartum, from the countryside. The lady presented with night sweats, mild fever, weight loss, dyspnea and chest pain. A diagnostic workup revealed positive titers for Brucella, indicating that the patient was suffering from systemic Brucellosis. The patient recovered completely, after receiving appropriate oral non-steroidal anti-inflammatory and dual antibiotics treatment, and responded well without any sign of relapse during a six month follow-up period.

Conclusion: Pericarditis can occur during Brucellosis as an isolated cardiac symptom. Brucellar pericarditis should always be kept in mind in patients with pericarditis and pericardial effusion, although the prevalence of pericarditis in Brucellosis is very low.

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Introduction

Brucellosis is a worldwide zoonotic disease, caused by Gram-negative coccobacilli Brucella, which is particularly endemic in the Mediterranean region, the Middle East, the Arabian Peninsula, Central and South America, Asia, and Africa [1]. It is a systemic infection, and almost every organ of the human body can be affected by Brucella. Brucellosis has various clinical symptoms and signs; therefore, it is sometimes difficult to diagnose [2]. The incidence of cardiovascular complications in Brucellosis, such as endocarditis, myocarditis or pericarditis, is reported to be very low. Pericarditis constitutes a particularly infrequent manifestation of Brucella infection, especially when there is no other concurrent cardiac lesion [3]. Despite the widespread of Brucellosis worldwide, reports of Brucella pericarditis without concomitant endocarditis are uncommon. We report a case of Brucellar pericarditis in the absence of endocarditis.

Case Report

A 30-year-old woman, presented to the emergency department (ED), with progressive dyspnoea on exertion, two-pillow orthopnea, night sweats, mild fever, weight loss, and severe shooting central chest pain for three weeks. The pain started at rest, worsened with deep inspiration and lying down, but improved when the patient sat up. She had fever without rigour, fatigue, weakness and smelly perspirations. Four weeks earlier, she had been admitted to another hospital for expected delivery, and her pregnancy and labour were uneventful. In the last week, she asked medical advice and had been treated with oral antipyretics by her general practitioner as an upper respiratory infection, the

fever subsided with oral antipyretics, but the other symptoms remained and worsened. Then, she was empirically treated for suspected postpartum endometritis by the obstetric team, but again the symptoms remained and worsened. She had no history of previous medical illness.

She was referred to our hospital for further investigations due to persistent symptoms. On presentation, her physical examination revealed- temperature: 38.1°C, the pulse rate: 120 regular beats/min, blood pressure: 120/70 mmHg. She was tachypneic with oxygen saturation via pulse oximetry of 97% on room air. Her jugular veins were dilated, but there was no Kussmaul sign. The left ventricular impulse was diminished. The heart sounds were weak. Her liver was soft and painless, palpable 3-4cm below the right costal margin. The spleen was palpable in deep breathing.

Admission laboratory data revealed anaemia 10.5 g/dl. Urine culture was sterile. Erythrocyte sedimentation rate was high, and C-reactive protein concentration was elevated. Electrolytes, hepatic and renal function tests were within normal limits. Serial cardiac troponins were negative. Tuberculin skin test, tuberculosis culture and acid-resistant bacillus in sputum were negative.

Chest X-ray revealed an enlarged cardiac silhouette (figure 1). Electrocardiogram showed sinus tachycardia. Echocardiogram showed moderate to large pericardial effusion (1.9cm) without tamponade (figures 2). Prominent septal bounce and respiratory variation in mitral inflow velocities were noted (>25%), indicating hemodynamic disturbances, but it did not suggest the presence of cardiac tamponade (figure 3). Also, dilatation of the inferior vena cava (2.1cm) was noted with loss of inspiratory collapse. Left ventricular ejection fraction was estimated to be 70-75%.

Based on the echo findings, a diagnosis of acute pericarditis with moderate to severe pericardial effusion was formulated. Abdominal ultrasonography showed small ascitic effusion and splenomegaly.

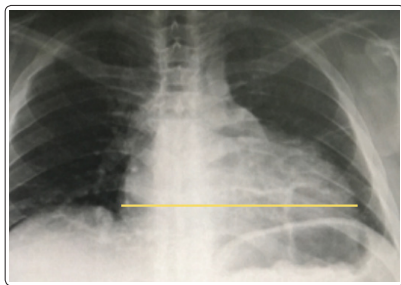


Figure 1: Chest X ray revealed cardiomegaly

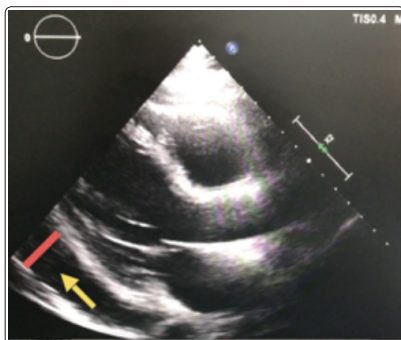


Figure 2: Two-dimensional echocardiogram. Long axis parasternal view. There is a large pericardial effusion (arrow) but no tamponade

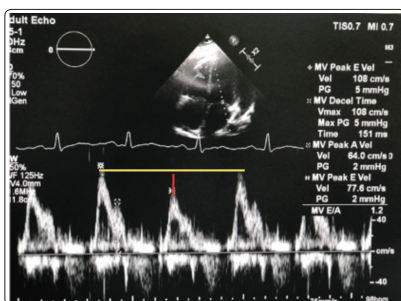


Figure 3: Doppler of mitral inflow shows respiratory variation in mitral inflow velocities (>25%)

The lady was admitted to the hospital and started colchicine 0.5 mg twice a day plus ibuprofen 600 mg thrice a day. Her course of hospitalization showed intermittent fever; mainly in the afternoon associated with chills. Repeated echocardiogram showed the same amounts of pericardial fluid. CT of the abdomen and chest were negative for an infectious source.

The patient's condition deteriorated during the hospital stay with persistent intermittent fever, jugular veins further dilation, tachycardia, pulsus paradoxus, pericardial effusion and worsening of dyspnea. Therefore, additional extensive laboratory blood tests were performed. These tests were tumour markers, rheumatoid factor, antinuclear antibodies, anti-double-stranded DNA antibodies, and serum immunoglobulin but did not reveal the cause. Serological studies for Coxsackie, Echo, CMV, Mycoplasma pneumonia, Coxiella burnetti, Chlamydia psittaci, Toxoplasma gondii, HSV1, HSV2, EBV, HBV and HCV were all negative. A Brucella standard agglutination (STA) test was positive at a dilution of 1:160. Blood culture was negative. Polymerase chain reaction (PCR) results for Brucella in the blood as well as bone marrow culture were also negative.

Our patient was living in a rural area. Upon reevaluation of the family for Brucellosis, it was found that the patient was encouraged by her mother from the time of delivery to consume dairy products including fresh cheese, raw cow milk and other animals raw unpasteurized products. Following these findings, a diagnosis of Brucella-related pericarditis with pericardial effusion was made.

From the sixth day of her hospitalization, the lady was on treatment with oral doxycycline 100 mg twice daily plus oral rifampicin 600 mg once daily. Fever subsided, and other symptoms regressed rapidly four days after the initiation of therapy. No drug side effects were observed during the follow-up. Echocardiographic study before discharge showed no pericardial effusion. Our patient was discharged in good health condition with a 6-week course of oral ibuprofen 600 mg three times daily and dual antibiotics; oral doxycycline (100mg X 2) and oral rifampicin (600 mg X 1). The patient attended for treatment and follow-up to the outpatient clinic every two weeks. No symptoms of recurrence or adverse drug reactions were observed during the follow-up. Six months later, the patient remained wholly asymptomatic and without any pathological echocardiogram findings.

Discussion

Infected animals and their products, particularly unpasteurized milk and dairy products, are common sources of infection to the human [1]. Our patient was living in a rural area and had a history of eating fresh cheese, drinking raw cow milk and other animals raw unpasteurized products.

The clinical manifestations of Brucella infection have a great variety. The incidence of cardiovascular involvement in Brucellosis (endocarditis, myocarditis and pericarditis) was reported to be as low of 1% of cases [3]. Involvement usually takes the form of endocarditis and is usually fatal. Myocarditis or pericarditis without endocarditis is rare. Cases of isolated pericarditis due to Brucella are sporadic, and a better prognosis was reported [3,4]. Brucella may exclusively invade the pericardium causing an inflamed, thickened pericardium with pericardial effusions.

In a retrospective study from Spain (Malaga), it was stated that only 1.5% among 530 cases of brucellosis (8/530) showed cardiac involvement, while only 0.2% (1/530) was diagnosed with pericarditis without associated endocarditis [5]. Andriopoulos and others stated that pericarditis or pericardial effusion in Brucellosis develop almost exclusively in the presence of endocarditis [6]. In our case, the lady presented with severe chest pain, dyspnea and isolated pericarditis with pericardial effusion, in the absence of concomitant myocarditis or endocarditis. In a study performed in Turkey in 1028 cases of Brucellosis that were analyzed, pericardial involvement was detected in 0.7% of cases [7].

The cause of pericarditis in Brucellosis is uncertain. The likely mechanism is considered that pericardial involvement can take place through either direct affection by the microorganism, as suggested by pericardial fluid cultures or by local deposits of immunocomplexes seen in cardiac biopsies or may be indirect, aseptic, counteractive, via immunocomplex deposits [3,8].

The duration of symptoms before the hospitalization of our patient lasted approximately 21 days which concordant with other reports [9,10]. As our patient, usual symptoms of these patients are chest pain, dyspnea, and fever. There is pericardial friction rub in half of the cases [11]. Cardiac tamponade is rarely observed, and consequently, pericardiocentesis is only occasionally required

[5,9]. In a Turkish study, isolated pericarditis was observed in four adult cases, and Brucellosis diagnosis was made. Three of the patients had a history of raw milk and fresh cheese consumptions [12].

In general, the diagnosis of Brucellosis is based on the demographic and epidemiologic characteristics of the disease, the presence of symptoms, results of serological tests, and isolation of the microorganism by blood, bone marrow, or pericardial fluid culture [3]. In our case, fever, chest pain and dyspnea were the symptoms. Variable ECG findings are seen in Brucella pericarditis patients [3]. Our patient had only sinus tachycardia. The standard gold test for Brucellosis is blood culture sampling that was negative in our case, and this can be explained by that it is difficult to isolate the microorganisms [13]. The diagnosis of our subject was confirmed by blood serology. Echocardiography is the imaging modality of choice for evaluation of patients with fever, dyspnea and chest pain. Echocardiogram in the case study showed pericardial effusion without any additional endocardial abnormalities, and not had cardiac tamponade. In pericarditis with significant pericardial effusion, particular 2D and Doppler parameters are classically seen. These include signs of echo-free space around the heart, ventricular interdependence, i.e. septal bounce, an inspiratory septal shift, an inspiratory decrease in the early diastolic filling across the mitral valve, with the opposite occurring during expiration. Most of these features were seen in the echo of our patient.

Therefore in this reported case, the diagnosis of Brucellar pericarditis was established from Sero agglutination test against Brucella (positive at a titer of 1:160), the history of patient's exposure to the microorganism (as a patient in a rural area and was found to consume animal raw unpasteurized products) and the very good response to treatment.

The choice of antibiotics and duration of therapy are similar to the treatment of Brucellosis without pericardial involvement. Our patient received combined dual antibiotic treatment for six weeks (rifampin–doxycycline), and her signs and symptoms regressed within days after initiation of therapy. The response was complete, with no signs of relapses during the follow-up period.

Conclusion

Brucellar pericarditis should always be kept in mind in patients with pericarditis, particularly in cases where contraction of Brucellosis is possible, such as consumption of unpasteurized dairy products. Our reported case emphasizes that we can get Brucellar pericarditis from our pet, even in the absence of concomitant endocarditis. Moreover, there is no difference between brucellosis cases with and without isolated pericarditis in the choice of antibiotics and the duration of treatment.

Conflict of Interest: No conflict of interest to declare.

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References

1. Pappas G, Akritidis N, Bosilkovski M, Tsianos E (2005) Brucellosis. *N Engl J Med* 352: 2325-2336.
2. Sasmazel A, Baysal A, Fedakar A, Göçer S, Sunar H, et al. (2010) Treatment of Brucella endocarditis: 15 years of clinical and surgical experience. *Ann Thorac Surg* 89: 1432-1436.
3. Gatselis NK, Makaritsis KP, Gabranis I, Stefanos A, Karanikas K, et al. (2011) Unusual cardio-vascular complications of Brucellosis presenting in two men: two case reports and a review of the literature. *J Med Case Rep* 5: 22.
4. Altas MH, Karli A, Sensoy G, Koken O, Yurek B, et al. (2018) A case of Brucellosis presenting with pericardial and pleural effusion. *Clin Respir J* 12: 285-287.
5. Colmenero JD, Reguera JM, Martos F, Delgado M, Causse M, et al. (1996) Complications associated with Brucella melitensis infection: A study of 530 cases. *Medicine* 75: 195-211.
6. Andriopoulos P, Tsironi M, Deftereos S, Aessopos A, Assimakopoulos G (2007) Acute brucellosis: presentation, diagnosis, and treatment of 144 cases. *Int J Infect Dis* 11: 52-7.
7. Buzgan T, Karahocagil MK, Irmak H, Baran AI, Karsen H, et al. (2010) Clinical manifestations and complications in 1028 cases of Brucellosis: a retrospective evaluation and review of the literature. *Int J Infect Dis* 14: e469-e78.
8. Alarcon GS, Bocanegra TS, Gotuzzo E, Hinostroza S, Carrillo C, et al. (1981) Reactive arthritis associated with Brucellosis: HAL studies. *J Rheum* 8: 621-625.
9. Heibig S, Beall CA, Myers R, Harder E, Feteih N (1983) Brucella aortic endocarditis corrected by prosthetic valve replacement. *Am. Heart J* 106: 594-596.
10. Gomez Huelgas R, De Mora M, Porras JJ, Nuño E, SanRoman CM (1986) Brucella and acute pericarditis: fortuitous or causal association? *Infect. Dis* 154: 544.
11. Demirdag K, Özden M, Özbay Y, Yüce P, Kalkan A (2005) A case of acute Brucellosis with pericardial involvement (in Turkish). *J Klimik* 18: 77-79.
12. Kaya S, Eskazan AE, Elaldi N (2013) Brucellar pericarditis: a report of four cases and re-view of the literature. *J Infect Dis* 17: e428-e432.
13. Yang EJ (2005) Brucella species. In: Mandell GL, Bennett JE and Dolin R, editors. *Mandell, Douglas and Bennett's principals and practice of infectious disease*, 6th eds. Philadelphia: Churchill Livingstone 2751-2768.

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