

Acute pericarditis during early-diagnosed Brucellosis: a case report

M. Ceccarelli¹, E. Venanzi Rullo¹, B.A.V. Cama¹, G.F. Pellicanò²

¹Department of Clinical and Experimental Medicine, Unit of Infectious Disease, University of Messina, Messina, Italy

²Department of Human Pathology of Adult and Developmental Age "Gaetano Barresi", University of Messina, Messina, Italy

ABSTRACT: Brucellosis is a zoonotic disease, still endemic in the Mediterranean regions, usually involving hematopoietic organs such as bone marrow, spleen and liver. Pericarditis, and above all isolated pericardial effusion without myocarditis or endocarditis, is an extremely rare complication, usually symptomatic, of the *Brucella* infection.

We present this case to highlight the need for the execution of at least a transthoracic echocardiogram (TTE) in every case of suspected brucellosis, even when there is no sign or symptom of complications.

— **Keywords:** *Brucella melitensis*, Brucellosis, Pericarditis, Infectious pericarditis, Fever, *Brucella* pericarditis.

INTRODUCTION

Brucellosis is a zoonotic disease, still endemic in the Mediterranean regions, usually involving hematopoietic organs such as bone marrow, spleen and liver¹⁻⁴. However, it can also be complicated by other localizations^{5,6}. The most frequent one is spondylodiscitis, but brucellosis can also cause cardiovascular complications such as endocarditis, myocarditis and pericarditis^{1,7-11}. Pericarditis is an unusual isolated report in the case of brucellosis, and rarely asymptomatic¹.

We present this case to highlight the need for the execution of at least a transthoracic echocardiogram (TTE) in every case of suspected brucellosis, even when there is no sign or symptom of complications.

CASE REPORT

A 20-year-old patient came to the emergency room (ER) of our hospital complaining of fever (T max = 39.0°C) for six days. She was previously attended by her General Practitioner who prescribed acetaminophen and an antimicrobial therapy with levofloxacin, which had little to no effect. She reported to be affected by anemia, for which she was followed as an outpatient in the Hematology Unit of our hospital, and polymenorrhea. She was also an obese patient waiting for a sleeve-gastrectomy surgery.

The physical examination revealed a low-grade fever (37.3°C), achantosis nigricans of the left side of the patient's neck and a depressed mood. Blood tests run in the ER highlighted a normal White Blood Cell (WBC) count, with an increased percentage of lymphocytes (37%), a decreased percentage of neutrophils (50 %), and an increased C Reactive Protein (CRP), 3.70 mg/dl (normal value < 0.50 mg/dl). Her chest X-Ray did not reveal any disorder. For the history of fever and the altered blood test results, she was admitted in our ward. Microbiological examinations, such as blood cultures, Wright reaction (a standard agglutination test, SAT), Enzyme-linked Immunosorbent Assay (ELISA) test to dose specific IgM and IgG vs. *Brucella melitensis*, Cytomegalovirus (CMV), Epstein-Barr Virus (EBV) and Human Immunodeficiency Virus (HIV), were performed on the 1st day after the admission. On the 2nd day of the admission, the patient underwent an abdominal ultrasound (US), which resulted negative. On the 3rd day of the admission IgM for *Brucella melitensis* resulted positive, with negative IgG and a negative SAT. Other ELISA tests resulted negative for acute infection. On the same day, she also underwent a TTE, which highlighted the presence of a partially organized mild pericardial effusion.

A double antimicrobial treatment with Rifampin 900 mg once a day and Doxycycline 100 mg bis in die (bid) was begun against the brucellosis, while no anti-inflammatory treatment was started. The antimicrobial therapy was well tolerated, without any adverse effect.

She was discharged in good health conditions on the 10th day after the admission, with the suggestion of completing a six-week cycle of the dual antimicrobial therapy.

DISCUSSION

Brucellosis is a well-known zoonosis, still endemic in the Mediterranean basin. Transmission route usually involves non-pasteurized milk from infected animals – usually cows, sheep and goats – and its dairy products, but it can also be considered an occupational disease.

Our patient did not report to have any risk factor associated with the usual transmission route of *Brucella melitensis*, neither she told us to be interested by the possibility of an occupational disease. However, the epidemic outbreak happening during the year the patient came to our attention, lead us to look for the infection. A positive ELISA test highlighted the presence of IgM, but not of IgG, therefore an extremely recent infection.

Despite the fact that the infection was so acute, the patient had already developed complications, which more frequently occur during sub-acute and chronic forms⁵.

Pericardial effusion, and above all isolated pericardial effusion without myocarditis or endocarditis, is an extremely rare complication of the *Brucella* infection^{1,12}. Causes of cardiac damage in brucellosis are still uncertain, and some authors hypothesize for it to be a consequence of either a direct action of the microorganism or a deposit of immunocomplexes¹.

Pericardial effusion is usually symptomatic^{1,12}. However, in our case the only sign reported was a persistent fever, resistant to acetaminophen and antimicrobial treatment. It is also possible, because of her obese habitus, that the patient did not notice any difference with her usual dyspnea after exercise. If our routine in the suspect of brucellosis did not include a TTE, we would have not arrived at the right diagnosis of the problem.

Although guidelines for the management of acute pericarditis suggest the use of high-dose NSAIDs, especially ibuprofen and colchicine to prevent complications and recurring episodes, we did not start any anti-inflammatory therapy¹³. In our case, pericardial effusion was highlighted to be only “mild”, moreover, it was “partially organized”. Thus, an anti-inflammatory treatment was deemed as not necessary. As a matter of fact, several studies reported that the antimicrobial treatment is curative in the case of a pericardial effusion related to *Brucella*^{1,8,9,11,14}. On the other hand, other studies reported the efficacy of an anti-inflammatory treatment with steroids^{7,10}.

However, being the knowledge over this rare occurrence mostly based on case-reports, there is no consent over the best treatment to choose.

CONCLUSIONS

Isolated pericardial effusion is an extremely rare complication of brucellosis, although usually with a benign course. There are still no recommendations for its best treatment.

CONFLICT OF INTEREST:

The Authors declare that they have no conflict of interests.

REFERENCES

1. Kaya S, Eskazan AE, Elaldi N. Brucellar pericarditis: a report of four cases and review of the literature. *Int J Infect Dis* 2013; 17: e428-e432.
2. Pappas G, Akritidis N, Bosilkovski M, Tsianos E. Brucellosis. *N Engl J Med* 2005; 352: 2325-2336.
3. Torkaman Asadi F, Hashemi SH, Alikhani MY, Moghimbeigi A, Naseri Z. Clinical and diagnostic aspects of brucellosis and antimicrobial susceptibility of brucella isolates in hamedan, Iran. *Jpn J Infect Dis* 2017; 70: 235-238.
4. Cascio A, Pellicano G, Pernice LM, David A, Iaria C. Bone marrow biopsy findings in brucellosis patients with hematologic abnormalities: useful remarks. *Chin Med J* 2013; 126: 1000.
5. Ulu-Kilic A, Metan G, Alp E. Clinical presentations and diagnosis of brucellosis. *Recent Pat Antiinfective Drug Discov* 2013; 8: 34-41.
6. Cascio A, Iaria C. Brucellar aortitis and brucellar spondylitis. *Lancet Infect Dis* 2015; 15: 145-146.
7. Delmastro B, Libero L, Bordino C, Birlucchio C, Alfani M, Mantovani M, Casabianca A, Anelli A. [A case of pericarditis in acute brucellosis]. *Minerva Med* 1989; 80: 1245-1249.
8. Gomezhuelgas R, Demora M, Porras JJ, Nuno E, Sanroman CM. Brucella and acute pericarditis - fortuitous or causal association. *J Infect Dis* 1986; 154: 544.
9. Sabzi F, Faraji R. Brucella pericarditis: a forgotten cause of chest pain. *Caspian J Intern Med* 2017; 8: 116-118.
10. Ugartemendía MC, Curós-Abadal A, Pujol-Rakosnik M, Pujadas-Capmany R, Escrivá-Montserrat E, Jané-Pesquer J. Brucella melitensis pericarditis. *Am Heart J* 1985; 109: 1108.
11. Ataman Hatipoglu C, Yetkin A, Ertem GT, Tulek N. Unusual clinical presentations of brucellosis. *Scand J Infect Dis* 2004; 36: 694-697.
12. Gatselis NK, Makaritsis KP, Gabranis I, Stefos A, Karanikas K, Dalekos GN. Unusual cardiovascular complications of brucellosis presenting in two men: two case reports and a review of the literature. *J Med Case Rep* 2011; 5: 22.
13. Imazio M, Gaita F, LeWinter M. Evaluation and treatment of pericarditis: a systematic review. *JAMA* 2015; 314: 1498-1506.
14. Colmenero JD, Reguera JM, Martos F, Sánchez-de-Mora D, Delgado M, Causse M, Martín-Farfán A, Juárez C. Complications associated with *Brucella melitensis* infection: a study of 530 cases. *Medicine (Baltimore)* 1996; 75: 195-211.