# Pleural and Pericardial Effusions: Rare Presentations of Brucellosis, Iran

**Abdolreza Soudbakhsh[1], Maryam Roham[1], SeyedAhmad SeyedAlinaghi[2], Hamid Emadi Kochak[1], and Willi McFarland[3]**

[1] *Department of Infectious and Tropical Diseases, Imam Khomeini Hospital, Tehran University of Medical Sciences, Tehran, Iran*

[2] *Iranian Research Center for HIV/AIDS (IRCHA), Tehran University of Medical Sciences, Tehran, Iran*

[3] *University of California, San Francisco, USA*

***Received: 25 Oct. 2009 ; Received in revised form: 21 May 2010; Accepted: 13 Jun. 2010***

**Abstract-** We report a rare case of brucellosis presenting with pleural and pericardial effusions in a 35 year-old male rancher in Iran with fever and dyspnea. Such findings should prompt inclusion of brucellosis in the differential diagnosis in endemic areas.



*Acta Medica Iranica* 2011; 49(5): 325-326.

**Keywords:** Brucellosis; Pericardial effusion; Pleural effusion; Iran

## Introduction

Although brucellosis is a rare zoonotic disease in industrialized countries, it remains endemic in developing countries of the Middle East, Mediterranean, Asia, and Central and South America. Transmission is through direct contact with infected animals, ingestion of contaminated dairy products and inhalation of infectious aerosol particles. Patients with brucellosis can present with a wide spectrum of clinical manifestations. Among the rarest complications in the course of brucellosis are cardiac and pulmonary involvement (1-6), with a few reports of associated pericardial and pleural effusions in the literature (5,7,8). We report a case of brucellosis which caused pericardial and pleural effusions in Iran.

## Case Report

A previously healthy 35 year-old male, Afghani immigrant cattle rancher presented with a one month history of fever, chills and headache and was hospitalized in the Infectious Disease Department of Imam Khomeini Hospital. Mild dyspnea was reported for a few days prior to admission. The patient had a history of consuming dairy products and had taken various unidentified antibiotics over the preceding month. At hospitalization, physical examination revealed a temperature of 39.2 °C, blood pressure of 100/70 mmHg, tachycardia (118 beats/min), a respiratory rate 20/min, muffled heart sounds and pulmonary rales.

Laboratory tests showed leukocytes at 8500/mm3 (granulocyte 68%, lymphocyte 32%), a hemoglobin of 11.3 g/dl, platelets of 285,000/mm$^3$, mild elevations of serum aminotransferase levels, high levels of C-reactive protein (22 mg/l) and an erythrocyte sedimentation rate of 77 mm/h, a creatinine phosphokinase (CPK) level of 79 U/l, a positive standard tube Wright agglutination test (titer 1:160) specific for brucellosis in association with 2-Mercaptoethanol (2ME: 1/80), and elevated titer the brucella-specific enzyme linked immunosorbent assay of IgG (>150 U/ml) and IgM (4/4 U/ml).

The sputum smear was negative for tuberculosis by Bacille Calmette and Ziehl-Nielsen, and the tuberculin skin test by Purified Protein Derivation was also negative. Lumbar puncture yielded clear, colorless cerebrospinal fluid and glucose and protein values were normal.

Moderate pericardial effusion was evident in echocardiography. X-ray showed cardiomegaly. Computed tomographic (CT) of the brain was normal. The high resolution CT chest scan with contrast showed large pleural and pericardial effusions bilaterally with predominance on the left side. The pleural fluid sample was clear and straw colored with a normal glucose concentration but protein and lactate dehydrogenase (LDH) levels above normal (5 g/1 and 416 U/l, respectively). Cultures from bone marrow, pleural fluid and blood were negative for *brucella melitensis*. Analysis of bone marrow aspirates and biopsy as well as pleural fluid were negative for malignancy.

The patient was treated with oral trimethoprim-sulfamethoxazole and doxycycline for 12 weeks and

**Corresponding Author**: SeyedAhmad SeyedAlinaghi
Iranian Research Center for HIV/AIDS, Imam Khomeini Hospital, Tehran University of Medical Sciences, Tehran, Iran
Tel: +98 21 66947984, Fax: +98 21 66947984, E-mail: s_a_alinaghi@yahoo.com

intramuscular streptomycin for 14 days. Fever and headache subsided after two days. A repeat echocardiogram showed substantial improvement of the pericardial effusion after one week of treatment. Radiological findings were normal after one month of treatment. Complete resolution of signs and symptoms was evident at three months follow-up.

## Discussion

Brucellosis continues to be an important public health problem in developing countries and remains endemic in Iran. The most common cause of mortality in brucellosis involves cardiac complications such as pericardial effusion (3). Cases of brucellosis presenting with fever and dyspnea in association with pericardial and pleural effusions are rare in the literature, even from countries where brucellosis is epidemic or hyper-endemic.

For our patient with unusual clinical presentation, the diagnosis of brucellosis was based on a constellation of several findings: 1) a positive result of an agglutination test for brucellosis (titer 1:160); 2) a positive serologic test for anti-brucellosis specific antibodies (i.e., detection of IgG antibodies by ELISA), and 3) a history of consumption of dairy products and work on a ranch, and 4) the patients symptoms resolved with appropriate antibiotics. Tuberculosis was ruled out by standard tests. Neoplasia was excluded by cytologic examination of pleural fluid and by resolution through imaging studies at post-treatment follow-up. Of note, however, all cultures were negative for *Brucella* species, which may be due to the previous, but inadequate, antibiotic therapy.

In conclusion, this report details a case of brucellosis in a 35 year-old male rancher which led to pericardial and pleural effusions by the time of presentation. We conclude brucellosis should be considered in the differential diagnosis of pericardial and pleural effusions in endemic areas, even respiratory and heart disease specialties.

## References


1- Pappas G, Bosilkovski M, Akritidis N, Mastora M, Krteva L, Tsianos E. Brucellosis and the respiratory system. Clin Infect Dis 2003;37(7):e95-9. Epub 2003 Sep 8.

2- Corbel MJ. Brucellosis: an overview. Emerg Infect Dis 1997;3(2):213-21.

3- Biyik I, Oto O, Ergene O. Brucella pancarditis with dissecting aortic root abscess, left ventricular pseudoaneurysm and ventricular septal defect. J Int Med Res 2007;35(3):422-6.

4- Kochar DK, Gupta BK, Gupta A, Kalla A, Nayak KC, Purohit SK. Hospital-based case series of 175 cases of serologically confirmed brucellosis in Bikaner. J Assoc Physicians India 2007;55:271-5.

5- Kerem E, Diav O, Navon P, Branski D. Pleural fluid characteristics in pulmonary brucellosis. Thorax 1994;49(1):89-90.

6- Kochar DK, Sharma BV, Gupta S, Jain R, Gauri LA, Srivastava T. Pulmonary manifestations in brucellosis: a report on seven cases from Bikaner (north-west India). J Assoc Physicians India 2003;51:33-6.

7- Hatipoglu CA, Bilgin G, Tulek N, Kosar U. Pulmonary involvement in brucellosis. J Infect 2005;51(2):116-9. Epub 2004 Nov 11.

8- Papiris SA, Maniati MA, Haritou A, Constantopoulous SH. Brucella haemorrhagic pleural effusion. Eur Respir J 1994;7(7):1369-70.