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BRUCellosIS PRESENTING WITH PERICARDIAL AND LOCULATED PLEURAL EFFUSION: A CASE REPORT



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Farhad Malek

Department of Internal Medicine, Faculty of Medicine, Semnan University of Medical Sciences, Semnan, Iran.

Ali Davarian*

Department of Internal Medicine, Faculty of Medicine, Semnan University of Medical Sciences, Semnan, Iran. Ischemic Disorders Research Center, Golestan University of Medical Sciences, Gorgan, Iran*Corresponding Author
alidavarian@gmail.com

Gholam-ali Mahdavi

Department of Internal Medicine, Faculty of Medicine, Semnan University of Medical Sciences, Semnan, Iran.

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ABSTRACT:

Objective: There are rare reports about pericardial and loculated pleural effusion in brucellosis. Clinical Presentation and Intervention: A 32 year old male was admitted to the hospital with a 20 days history of fever, night sweats, anorexia and pleuritic type chest pain. Chest X-ray, Chest spiral CT-scan and echocardiography revealed right pleural and pericardial effusions, respectively. Blood culture serology for brucella was positive. The patient was treated using Doxycycline and Rifampin and Streptomycin. Clinical symptoms relieved after completion of treatment.

Conclusion: This report revealed that pericardial and loculated pleural effusion may be associated with brucellosis.

Introduction:

Brucellosis, or Maltese fever, a zoonosis infection, is prevalent in the Mediterranean countries. Fever, hepato-splenomegaly and arthritis/arthralgia are the usual clinical manifestations of diseases. However, it rarely affects the lungs, presenting with pleural effusions and pneumonia mostly described in subacute and chronic brucellosis. Cardiovascular manifestations including endocarditis, myocarditis and pericardial effusion are very rare. We present a rare case of brucellosis with concurrent pericardial and loculated pleural effusion.

Case report:

A 32-year-old male shepherd was admitted to the hospital with a 20 days' history of fever, night sweats, and anorexia. The patient had anorexia, nausea, vomiting and diarrhea started a week before admission in addition to weight loss of 7 kg. He had right sided pleuritic type chest pain and non-productive coughs during the past 20 days. He had no history of consuming raw milk or fresh cheese. Physical examination revealed oral temperature of 39 °C, blood pressure of 100/70 mmHg, tachycardia (110 beats/min), a respiratory rate of 24/min, normal heart sounds and diminished lung sounds on the base of right lung. Hemoglobin was 11.7 g/dL, white blood cell count was 13,000/μL (Neutrophil 70%, lymphocyte 20%) and platelet count was 296,000/μL. Electrolytes, hepatic and renal function tests were normal. ESR was 40 mm/h, CRP was 39.7 mg/L, LDH was 1028 and Retic count was 1.6%. Serum Wright Agglutination Test and Coombs Wright were 1:640 and 2 ME were 1:320. Blood cultures were negative. His chest x-ray revealed right pleural effusion (Fig.1). Mild pericardial effusion mostly around right atrium found in trans-thoracic echocardiography. A spiral chest CT-

scan confirmed the effusions. Pleural tap was serohemorrhagic and exudative and analysis revealed 48,000/μL RBC and 1670/μL WBC (poly 64%, Leukocyte 36%), Adenosine Deaminase was 40 U/L and no malignant cell was seen in cytology. Pleural fluid Wright Agglutination Test and Coombs' Wright were 1:640 and 2ME were 1:320. Tuberculin skin test, sputum and pleural fluid acid fast stain and culture for tuberculosis were all negative. The patient treated with Doxycycline 100 mg p.o bid, Rifampin 600 mg p.o Daily (for 6 weeks) and Streptomycin 1 gram IM Daily (for 2 weeks). Due to intermittent fever and loculated pleural effusion chest tube was inserted. After 14 days of treatment, clinical symptoms and laboratory data and CXR improved. The patient was discharged on the 20th day and completed a 8-week course of treatment. At two weeks follow up he had no symptom and normal CXR.

Discussion:

We report a rare case of brucellosis with pericardial and loculated pleural effusion. Patient's occupational history guided us to evaluate and treat the patient for brucellosis. He also evaluated for malignancy and tuberculosis.

Brucellosis is a zoonotic disease which is endemic in Middle Eastern countries. It could be asymptomatic with only positive serological markers of infection or manifest as multisystem involvement which makes the diagnosis difficult. The most common symptoms include malaise, fever, night sweats, back pain, arthralgia and weight loss, often without physical findings. Respiratory system involvement is very rare in brucellosis, varies between 1-6% in different studies. The most common symptom of respiratory brucellosis is dry cough. However, dyspnea and pleuritic chest pain, hilar and paratracheal lymphadenopathy, bronchopneumonia, pleural effusions, and empyema may be seen. Brucella organisms are rarely isolated from expectorated sputum. Hematogenous spread and inhalation of contaminated aerosols are the most probable transmission routes. However, the exact mechanism of pulmonary brucellosis is still unknown.

In a systematic review and meta-analysis done by dean et. al in 2012 on 57 studies related to brucellosis, 6% of patients found to have respiratory manifestations, including cough, bronchopneumonia, pleural effusion and adhesion. Similarly, pourbagher et. al in 2006 identified pleural effusion in 2.8% of 251 cases of brucellosis. Zengi et. al in 2006 reported a case of brucellosis with fever, right-sided pleural effusion and hilar lymphadenopathy. Analysis of pleural fluid revealed exudative infiltration with neutrophils predominance.

Cardiovascular complications in brucellosis including endocarditis, myocarditis and pericarditis are very rare (<1.5%). The most common cardiovascular symptoms are chest pain, dyspnea and

fever. Friction rub could be heard in half of the cases. Pericarditis is not necessary except cardiac tamponade. In our case, there was a mild pericardial effusion. Fever, dyspnea, chest pain and sinus tachycardia may lead to use of echocardiography and finding of pericardial effusion. Common cardiovascular symptoms may not always present. Four cases reported by Gastelis et al., 2011 and Anguita M et al., 1991 had no chest pain but pericardial effusion detected on routine echocardiography (10, 12).

Concurrent presentation of pleural and pericardial effusion in brucellosis is very rare. Soudbakhsh et al., 2009 reported a case of brucellosis presented with dyspnea, tachycardia, muffled heart sounds and pulmonary rales. CXR revealed bilateral pleural and pericardial effusions. The patient treated with oral trimethoprim-sulfamethoxazole and doxycycline for 12 weeks and intramuscular streptomycin for 14 days. Similarly, Altas et al., 2016 reported a case of childhood brucellosis in a who was misdiagnosed and treated for lobar pneumonia without any resolution after 5 days. This case was also presented with both pleural and pericardial effusion in radiologic findings. All effusion resolved after treating with doxycycline and rifampicin (6 weeks) and streptomycin (2 weeks).

The gold standard test for diagnosis of brucellosis is blood culture. However isolation of microorganism is very difficult. Positivity rates for Brucella cultures vary from 10% for non-blood samples to 50% for blood cultures and 92% for bone marrow. In case of brucella pericarditis, pericardial fluid culture from pericardiocentesis is not necessary. This should only be preserved in patients with cardiac tamponade. Due to low rates of body fluid cultures positivity and difficulty of bone marrow cultures, blood serology is commonly used for diagnosis. In our case, blood culture was negative. So the diagnosis is confirmed by blood and pleural fluid serology. As our country is endemic for tuberculosis, we had to rule out tuberculosis as a probable differential diagnosis as well as malignancy. Pleural fluid analysis revealed increased level of ADA, and exudative effusion with polymorphonuclear cell dominance. However, these characteristics were in favor of Tuberculosis, it was ruled out by negative sputum acid fast staining and culture for bacillus de Koch and negative pleural biopsy. Metastatic malignant lesions were also ruled out by negative cytology of pleural fluid analysis. Dikensoy et al. in 2002 reported a study on pleural fluid characteristics of two cases with brucella pleurisy. Their study revealed exudative effusions as well as increased ADA level, which was similar to our case.

Two major antimicrobial regimens are recommended for treatment of uncomplicated brucellosis (excluding neurobrucellosis, spondylitis and endocarditis). Doxycycline 100 mg orally twice daily for six weeks, plus streptomycin 1 gr intramuscularly once daily for the first 14-21 days or Doxycycline 100 mg orally twice daily plus rifampin 600-900 mg (15mg/kg) orally once daily for six weeks. Gentamycin (5mg/kg) for 5-14 days is also suggested as an equally efficient substitute for streptomycin. Doxycycline-streptomycin is the gold standard treatment and has been proven to be more efficient.

Conclusion:

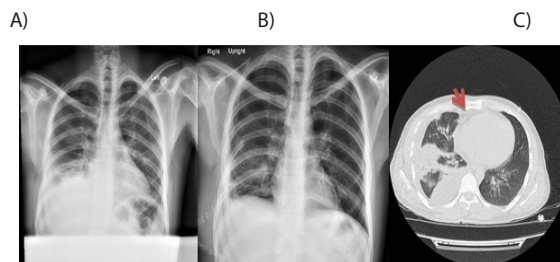
In conclusion, concurrent presentation of loculated pleural and pericardial effusions are uncommon complications of brucellosis. In endemic areas for brucellosis, brucellosis should always be kept in mind in differential diagnosis of pericardial and pleural effusions. On the other hand, patients with diagnosis of brucellosis should always be worked up for asymptomatic pericardial effusions.

Conflict of interest:

The authors declare that they have no conflict of interest to declare.

Fig 1. Radiologic findings A: Chest x-ray Before the initiation of treatment and B: After 14 days of treatment. C: Chest spiral CT-scan revealed lobar pneumonia in right lower lobe and right pleural

effusion. Note the pericardial effusion (shown by arrow).



REFERENCES:

- Dean AS et al.: Clinical manifestations of human brucellosis: a systematic review and meta-analysis. *PLoS neglected tropical diseases* 2012;6:e1929.
- Pappas G et al.: Brucellosis and the respiratory system. *Clinical infectious diseases: an official publication of the Infectious Diseases Society of America* 2003;37:e95-99.
- Mandell GL et al.: Mandell, Douglas, and Bennett's principles and practice of infectious diseases, ed 7th. Philadelphia, PA, Churchill Livingstone/Elsevier, 2010.
- Madkour MM, Al-Saif A: Respiratory Brucellosis; Madkour's Brucellosis. Berlin, Heidelberg, Springer Berlin Heidelberg, 2001, pp 144-149.
- Corbel MJ: Brucellosis in humans and animals. World Health Organization, 2006.
- Erdem H et al.: Respiratory system involvement in brucellosis: the results of the Kardelen study. *Chest* 2014;145:87-94.
- Pourbagher MA et al.: Clinical pattern and abdominal sonographic findings in 251 cases of brucellosis in southern Turkey. *AJR American journal of roentgenology* 2006;187:W191-194.
- Zengi A et al.: Exudative pleural effusion due to brucellosis in a patient with chronic obstructive pulmonary disease. *Tropical doctor* 2006;36:253-254.
- Colmenero JD et al.: Complications associated with Brucella melitensis infection: a study of 530 cases. *Medicine* 1996;75:195-211.
- Gastelis NK et al.: Unusual cardiovascular complications of brucellosis presenting in two men: two case reports and a review of the literature. *Journal of medical case reports* 2011;5:22.
- Delmastro B et al.: [A case of pericarditis in acute brucellosis]. *Minerva medica* 1989;80:1245-1249.
- Soudbakhsh A et al.: Pleural and pericardial effusions: rare presentations of brucellosis, Iran. *Acta medica Iranica* 2011;49:325-326.
- Altas MH et al.: A case of brucellosis presenting with pericardial and pleural effusion. *The clinical respiratory journal* 2016.
- Purwar S et al.: Utility of Serological Tests in the Era of Molecular Testing for Diagnosis of Human Brucellosis in Endemic Area with Limited Resources. *Journal of clinical and diagnostic research: JCDR* 2016;10:DC26-29.
- Papiris SA et al.: Brucella haemorrhagic pleural effusion. *The European respiratory journal* 1994;7:1369-1370.
- Hatipoglu CA et al.: Unusual clinical presentations of brucellosis. *Scandinavian journal of infectious diseases* 2004;36:694-697.
- Dikensoy O et al.: Increased pleural fluid adenosine deaminase in brucellosis is difficult to differentiate from tuberculosis. *Respiration; international review of thoracic diseases* 2002;69:556-559.
- Bennett JE et al.: Principles and Practice of Infectious Diseases. 2015.
- Hasanjani Roushan MR et al.: Efficacy of gentamicin plus doxycycline versus streptomycin plus doxycycline in the treatment of brucellosis in humans. *Clinical infectious diseases: an official publication of the Infectious Diseases Society of America* 2006;42:1075-1080.
- Solera J et al.: Doxycycline-rifampin versus doxycycline-streptomycin in treatment of human brucellosis due to Brucella melitensis. The GECMEI Group. *Grupo de Estudio de Castilla-la Mancha de Enfermedades Infecciosas. Antimicrobial agents and chemotherapy* 1995;39:2061-2067.
- Skalsky K et al.: Treatment of human brucellosis: systematic review and meta-analysis of randomised controlled trials. *BMJ* 2008;336:701-704.