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SHORT REPORT

Q fever endocarditis in Iran: A case report

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Summary In this report, we describe the first chronic case of Q fever endocarditis in a 72-year-old woman in Iran. The patient developed radiation-associated heart disease status post (s/p) coronary artery bypass surgery, mitral and aortic valve replacements, and tricuspid valve repair. Endocarditis was also suspected due to a history of heart valve surgery. Blood cultures were negative, but a diagnosis of Q fever endocarditis was confirmed based on serologic titers (IgG phase I 1:32,768). The patient was treated with doxycycline and hydroxychloroquine.
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Case report

The patient was a single 72-year-old Iranian woman had migrated to the United States at the age of 24 years. She had worked as a nurse in Chicago and traveled to Iran for 2—3 months each year to visit her family. The patient returned to Iran in 2009 living in a suburb in Tehran. She recently had contact with wild pigeons, and there was a farm located in her neighborhood. Pastures for grazing sheep and goats were located approximately 2 km from the patient's house, and animals have been observed to travel near her home.

The patient had a history of hypertension, breast cancer, mastectomy, radiotherapy with cobalt (Co) for 5 weeks (1970), atrial fibrillation (1996),

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Table 1 Biochemical and hematological laboratory test results on the first day of admission.

WBC	5700
Serum cr	0.74
Pleural fluid protein	4.3
Serum protein	7.2
Pleural fluid LDH	121
Serum LDH	227
Pleural fluid WBC	1485 (84% lymph)
Pleural fluid cytology	Negative
Blood cultures 6×	Negative
Urine culture	10,000 ≤ Gram negative rod
Pleural fluid culture	Negative
PPD	Positive

hypothyroidism (2005), bilateral knee arthroscopy, cholecystectomy, aortic valve replacement (AVR), mitral valve replacement (MVR), aortic arch bypass graft surgery (2007), tricuspid valve repair (2007), osteoporosis, atrial fibrillation, proximal aortic calcification, severe stenosis of aortic valve, stenosis and failure of the mitral valve, and coronary heart disease. The patient had been immunized with the Bacillus Calmette-Guérin (BCG) vaccine and was a smoker during 1978—1996 and for a few months in 2007. The patient had drug sensitivity to simvastatin, atorvastatin, heparin, and narcotic drugs. In the USA, She had consumed a small amount of alcohol per year and consumed pasteurized dairy products.

The patient was hospitalized in Iran on February 9, 2012 due to fever, chills, cold swelling, ascites, and clay-colored bowel movement. She had fever for the first 3 days of hospitalization, after which her condition improved for 3 days; however, the fever relapsed. On initial examination, the blood pressure, heart rate, and oxygen (O_2) saturation at room ambiance were 103/53 mmHg, 80 beats/min, and 92%, respectively. A pleural tap was carried out and she underwent cardiac catheterization. Due to a urinary tract infection, she was treated with a course of Ciprofloxacin for 10 days. There was no leukocytosis, the pleural fluid was exudative, and blood cultures were negative (Table 1).

She traveled to the United States 10 days after hospital admission in Iran. On February 23, 2012, she was hospitalized in Boston due to shortness of breath and coughing, followed by the development of intermittent fever for 1 week. The fever was accompanied by night sweats and chills without shivering; there was no daytime fever. Several weeks prior to this incident, she had a mild nonproductive cough. She did not have dysuria or urgency. She experienced 2—3 kg weight loss several months before hospitalization.

According to a CT scan of the lungs, pleural effusion in the right lower lobe (scattered opacity with ground glass appearance), centrilobular emphysema in the superior lobe, and scattered osteopenia in the thoracic vertebrae were observed. No evidence of endocarditis was present on echocardiography.

The patient was hospitalized and treated for decompensated heart failure attributed to severe tricuspid regurgitation as the primary diagnosis, but the fever and dry cough persisted. On February 28, a pleural tap was performed and she underwent cardiac catheterization on March 1, which revealed occlusions of her vein grafts to the right coronary artery (RCA) and left anterior descending artery (LAD) and elevated right atrial pressures attributed to severe tricuspid regurgitation. According to the transesophageal echocardiogram, severe tricuspid regurgitation was confirmed, and well situated mitral and aortic bioprosthetic valves with no evidence of valvular vegetation were observed. Infection was considered a precipitating factor for decompensated heart failure. However, viral pneumonia was also a suitable differential diagnosis according to the affected region in the lung and the duration of disease. Tuberculosis was unlikely due to the pattern of pulmonary involvement. Lung infarction was a possibility according to the differential diagnosis based on the computed tomography scan. We isolated the patient, and a sputum test for tuberculosis, diagnostic panel of respiratory viruses, and repeated blood cultures were conducted.

After 6 days of hospitalization, the patient was temporarily discharged because she did not have fever during the previous 2 days. After discharge, the fever recurred and shortness of breath increased. Furthermore, she was unable to climb the stairs for more than a half set of stairs. Blood cultures were found to be negative again. We were unable to detect *Bartonella henselae* immunoglobulin M and G, *Bartonella quintana* immunoglobulin M and G, brucellosis immunoglobulin M and G, tuberculosis (T-SPOT), or human immunodeficiency virus (HIV) infection using serologic analyses. At the second stage, phase I and II antibodies against *Coxiella burnetii* (IgM & IgG) were evaluated by indirect immunofluorescent assay (Focus Diagnosis, Cypress, CA, USA) and antibody titers of IgM and IgG phase I against *C. burnetii* were 1:2048 and 1:32,768, respectively. Furthermore, antibody titers of IgM and IgG phase II against *C. burnetii* were 1:128 and 1:32,768, respectively. According to these results, Q fever endocarditis was considered the final diagnosis for this patient, which is superimposed on radiation-associated heart disease.

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