

## Q fever Mitral Valve Endocarditis: A Disease Difficult to Diagnose and Treat

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### Abstract

Q fever is a rare systemic infection caused by *Coxiella Burnetii*. The presentation with Q fever endocarditis is insidious, with negative blood cultures, and often it is not obvious in diagnostic imaging studies until hemodynamic changes or valve destruction is reached. We report a case of Q fever endocarditis involving native mitral valve on top of rheumatic heart disease and severe mitral stenosis in 45 years old male admitted to the hospital with fever and left lower lobe pneumonia with pleural effusion. Was investigated for pulmonary Tuberculosis, which was negative. Echocardiography showed severe mitral valve stenosis with mass attached to the mitral valve leaflet. Blood cultures were negative. Serology for *Coxiella Burnetii* was positive. Challenges in the diagnosis, surgical treatment and different aspects of this rare case are described.

### Keywords

Q fever endocarditis; Culture negative endocarditis; Rheumatic valve disease.

### Introduction

Q fever is a worldwide zoonosis is caused by *Coxiella Burnetii*. Farmers and animal caretakers are more susceptible to this rare infection [1]. Blood culture-negative endocarditis is typically a common presentation with single valve involvement. It can affect diseased native valve or prosthetic valve. Clinical diagnosis and surgical treatment are challenging [2,3].

### Case Presentation

45-year-old Saudi male who had a history of fever and shortness of breath for the last two months. He was investigated in another hospital, but no final diagnosis was made. The patient was admitted in our hospital under Infectious disease service with suspicion of pulmonary tuberculosis, due to fever and left lower lobe pneumonia with atelectasis and effusion in chest X-ray, but extensive investigation ruled out tuberculosis (figure 1).

TTE echocardiography done which showed severe mitral valve stenosis with large echo dense mobile mass 0.6cm X 0.7cm attached to the mitral valve leaflet with marked left atrial dilatation and dense smoke sign found in the left atrium with severe pulmonary hypertension and right ventricular hypertrophy. TransEsophageal Echocardiography (TEE) confirmed the diagnosis of mobile mass on the posterior mitral leaflet with severe mitral valve stenosis (figure 2)

He was treated as culture-negative endocarditis but continued to have fever. His atypical presentation prompted serologic assays for Rickettsiosis. Serology was positive for *Coxiella Burnetii* with high titre of immunoglobulin G and positive immunoglobulin M titre. The patient was started on oral doxycycline and hydroxychloroquine and was referred to us for mitral valve replacement. His fever subsided and his left lung lower lobe consolidation and effusion disappeared. He was haemodynamically stable with normal sinus rhythm. Patient underwent mitral valve replacement after two weeks of treatment with the specific antibiotics for Q fever.

### Operative findings

There was severe pulmonary hypertension. The left atrium was dilated. The mitral valve showed severe mitral valve stenosis with rheumatic thickened valve. There was a mass of vegetation like attached to the P3 of the posterior mitral valve leaflets with destruction of part of the leaflet at that area like a cavity formation with attached mobile fragile mass to that area suggestive of vegetation. (Figure 3) The whole mitral valve was excised and sent for microbiology examination outside the country to confirm the diagnosis.

Mitral valve replacement was done using mechanical valve size 31. It was smooth intraoperative and postoperative recovery and he was discharged on the 10th postoperative day on doxycycline and hydroxychloroquine for 2 years.

### Discussion

Q fever endocarditis is caused by *Coxiella burnetii*, which is linked to the Rickettsia family. Although it represents 3 % to 5 % of endocarditis cases, it is a lethal and widely

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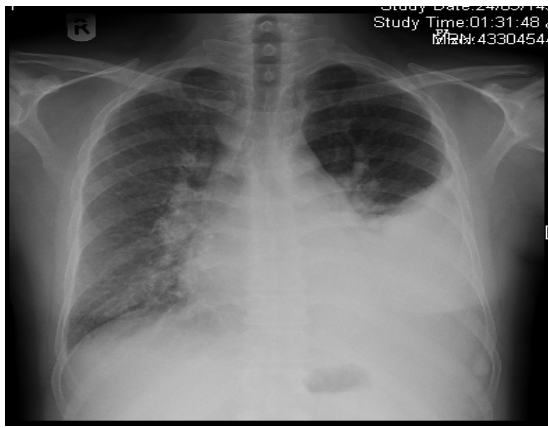
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**Figure 1:** chest x-ray showing left pleural effusion with left lower lobe atelectasis.



**Figure 2:** TEE showing echo dense mobile mass on atrial side of PMVL.



**Figure 3:** The excised rheumatic mitral valve showing the vegetation attached to P3 of the PMVL

endocarditis and negative blood culture with the unusual presentation with no response to broad antibiotic treatment raised the suspicion of Q fever endocarditis which was confirmed with serology test.

We conclude that *Coxiella Burnetti* infection should be highly suspected in cases of blood cultures negative endocarditis especially if the valve is previously diseased and fever continue in spite of antibiotic treatment. Surgical removal of the diseased valve and valve replacement with postoperative prolonged course of specific antibiotic treatment is mandatory to eradicate the infection.

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underestimated disease because of unawareness of the disease and its slow course, whereas it occurs worldwide [1,4].

It is a highly resistant intracellular microorganism that is frequently involved in negative blood culture endocarditis, this underlines the particular resistance of the bacterium and the importance of early surgical eradication and valve replacement, followed by long-term medical treatment (2-3 years of doxycycline and hydroxychloroquine) under serologic guidance [5 ,6] .Thierry G. Mesana and his colleagues suggested a list of circumstances in cardiac surgery that highly indicate Q fever endocarditis and aggressive search is recommended in those situations:

<b>1. Preoperative circumstances</b>
A. Any negative blood culture endocarditis.
B. Isolated inflammatory syndrome with native-prosthetic valve
C. Cardiac failure with exposure to farm or pet animals
<b>2. Intraoperative circumstances</b>
A. Unexplained inflammatory aspect of native or prosthetic valve.
B. Unexpected or repeated paravalvular leaks requiring reoperations.
C. Early-unexpected bioprosthetic cusp deterioration [7].

Our patient presented initially with pulmonary symptoms and fever and the direction of the investigation was directed to Tuberculosis. The presence of previous cardiac disease and mass attached to diseased mitral valve shifted the investigation towards