



# A Case Presentation of Intracardiac Thrombus Formation and Development of Massive Pulmonary Embolism Following Brucella Infection

*Brusella Enfeksiyonu Sonrası Intrakardiyak Trombüs Oluşumu ve Masif Pulmoner Emboli Gelişen Bir Olgu Sunumu*

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## ABSTRACT

*Brucella infection can lead to vascular complications such as intracardiac thrombus. In this case, we presented a case of acute pulmonary embolism due to right atrial thrombus secondary to brucella infection. A 74-year-old male patient presented with complaints of shortness of breath and palpitations. He exhibited hypotension and tachycardia in vital signs, along with hypoxia and hypocarbia in laboratory parameters. The patient had a diagnosis of brucella and under active medical treatment. Transthoracic echocardiography revealed a worm-like hyperechoic intracavitary mass in the right atrium which has rough contours and synchronously move with adjacent heart wall during heart cycles. The right atrium and right ventricle were dilated. Computed tomography showed a hypodense lesion consistent with embolism in the left main pulmonary artery. Due to hemodynamic instability and the development of shock, the patient received thrombolytic therapy. Following stabilization of vital signs, the patient was discharged smoothly on vitamin K antagonist (VKA) therapy.*

## ÖZET

*Brusella enfeksiyonu intrakardiyak trombüs gibi vasküler komplikasyonlara yol açabilir. Bu vakada, brusella enfeksiyonuna sekonder sağ atriyal trombüs nedeniyle akut pulmoner emboli gelişen bir olgu sunulmuştur. Yetmiş dört yaşında erkek hasta nefes darlığı ve çarpıntı şikayetleriyle başvurdu. Vital bulgularında hipotansiyon ve taşikardi, laboratuvar parametrelerinde hipoksi ve hipokarbi mevcuttu. Hastanın brusella tanısı vardı ve aktif medikal tedavi altındaydı. Transtorasik ekokardiyografide sağ atriyumda solucan benzeri hiperekoik intrakaviter, kaba konturlu ve kalp pilleri sırasında komşu kalp duvarıyla senkronize hareket eden bir kitle görüldü. Sağ atriyum ve sağ ventrikül dilate idi. Bilgisayarlı tomografide sol ana pulmoner arterde emboli ile uyumlu hipodens bir lezyon görüldü. Hemodinamik instabilite ve şok gelişmesi nedeniyle hastaya trombolitik tedavi uygulandı. Vital bulguların stabilize edilmesini takiben hasta K vitamini antagonisti (VKA) tedavisi ile sorunsuz bir şekilde taburcu edildi.*

## Case Presentation

A 74-year-old male patient presented to the emergency department with sudden-onset dyspnea and palpitations. He had a documented diagnosis of brucellosis and had been receiving rifampicin therapy for five weeks. Vital signs revealed a body temperature of 36.4 °C, heart rate of 112 beats/min, respiratory rate of 32 breaths/min, and blood pressure of 100/72 mmHg. Despite supplemental oxygen (4 L/min via mask), arterial blood gas analysis showed pO<sub>2</sub> 50 mmHg, pCO<sub>2</sub> 26.3 mmHg, and oxygen saturation of 78%.

Electrocardiography demonstrated sinus rhythm with negative T waves in leads V1–V3. Transthoracic echocardiography revealed dilatation of the right atrium and right ventricle with a left ventricular ejection fraction of 50–55%. A worm-like hyperechoic intracavitary mass with irregular borders was observed in the right atrium, moving synchronously with the cardiac cycle, suggesting thrombus formation (Figure 1, 2). Systolic pulmonary artery pressure was estimated at 45–50 mmHg, and tricuspid regurgitation jet velocity was 2.73 m/s. Physical examination showed no lower extremity asymmetry, and Homans sign was negative.

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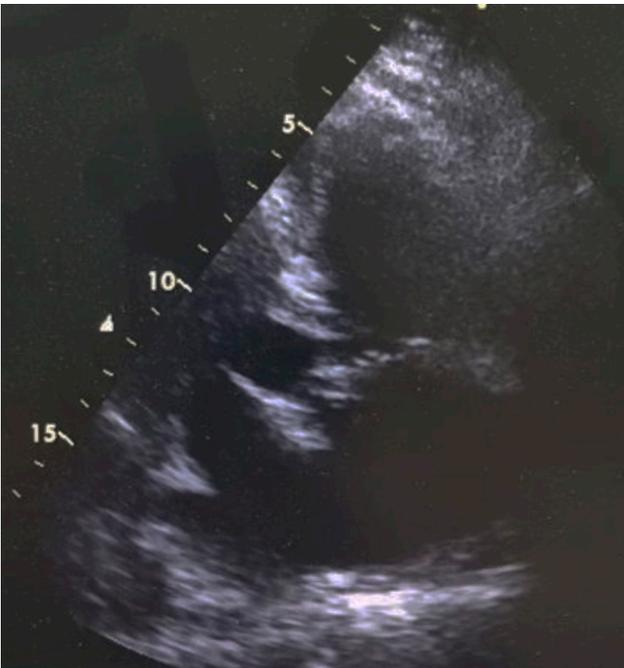
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**Figure 1.** Apical four-chamber view transthoracic echocardiography performed on the patient.



**Figure 2.** Apical four-chamber view transthoracic echocardiography performed on the second day of hospitalization after medical treatment.



**Figure 3.** Apical four-chamber view transthoracic echocardiography performed on the patient.

Laboratory evaluation demonstrated creatinine 1.53 mg/dL (reference range [RR]: 0.67–1.17), C-reactive protein 95 mg/L (RR: 0–5), D-dimer 5.25  $\mu$ g/mL (RR: 0–0.5), and troponin I 1422.9 ng/L (RR: 0.01–19.8). Pulmonary computed tomography angiography confirmed massive embolism in the left main pulmonary artery.

The patient was admitted to the coronary intensive care unit with a pulmonary embolism severity index (PESI) score of 124 (Class IV). Intravenous alteplase (100 mg over 120 minutes) was administered according to current guidelines (1,2). Oral anticoagulation with a vitamin K antagonist and low-molecular-weight heparin was initiated. Follow-up echocardiography performed on the second day showed complete resolution of the right atrial mass (Figure 3).

Subsequent echocardiographic evaluation demonstrated mild-to-moderate right heart enlargement with preserved left ventricular systolic function. No thrombus was detected; however, a Chiari network was visualized at the previously suspected thrombus location. Etiological evaluation, including lower extremity venous Doppler ultrasonography, travel history, family history, and medication review, revealed no alternative risk factors for pulmonary embolism. The patient was discharged after achieving therapeutic international normalized ratio levels, with outpatient follow-up scheduled.

## Discussion

This case demonstrates acute pulmonary embolism associated with a right atrial thrombus in a patient with brucellosis without conventional thromboembolic risk factors. Intracardiac thrombus formation represents a rare vascular complication of brucellosis, which is a

multisystem zoonotic infection capable of inducing endothelial dysfunction and prothrombotic states.

Previous reports have described vascular manifestations of brucellosis, including deep vein thrombosis, portal vein thrombosis, and arterial aneurysms (3). Direct endothelial injury, immune-mediated inflammation, and hypercoagulability have been proposed as potential mechanisms. In our patient, the absence of common risk factors and the visualization of a Chiari network suggest that local flow disturbance combined with infection-related endothelial damage may have contributed to thrombus formation.

Right heart thrombi are associated with high mortality (4) and require prompt treatment. Thrombolytic therapy was preferred due to hemodynamic instability and resulted in rapid clinical and echocardiographic improvement.

## Conclusion

Brucellosis should be considered a rare etiological factor in patients presenting with intracardiac thrombus and pulmonary embolism without classical risk factors. Early recognition and timely thrombolytic therapy may lead to favorable clinical outcomes.

## References

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