



## Acute Lower Extremity Embolism Resulting in Rheumatic Mitral Stenosis: A Case Report

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### Abstract

A 52-year-old woman was admitted with sudden onset of acute arterial occlusion in the right lower limb. We found 3-4/6 diastolic murmur and, in the ECG, rapid ventricular response in atrial fibrillation. The patient underwent an emergency operation. We applied transthoracic and transesophageal echocardiography to investigate the etiology of thromboembolism and diagnosed the patient with mitral stenosis. The patient was recommended for a mitral valve surgery. Preoperative coronary angiography revealed a normal picture. The mitral valve was resected in the operation. We also performed carbon-coated bileaflet prosthetic valve replacement. The left atrial appendix was ligated. The patient did not have any postoperative clinical problems. Having recommended appropriate medical treatment, the patient was discharged. In conclusion, thromboembolism and atrial fibrillation in patients with rheumatic heart diseases should be kept in mind throughout the diagnosis process.

**Keywords:** Thromboembolism; Mitral Stenosis; Atrial Fibrillation.

### Akut Alt Extremitte Embolisi İle Ortaya Çıkan Romatizmal Mitral Darlığı: Olgu Sunumu

### Özet

Elliki yaşında bayan hasta sağ alt extremitede ani başlayan akut arteriel tıkanıklık bulgusu ile yatırıldı. Mitral dinleme odağında 3-4/6 diastolik üfürüm ve elektrokardiografisinde hızlı ventrikül yanıtı atrial fibrilasyon tesbit edildi. Acil ameliyata alındı. Tromboemboli etiyolojisini araştırmak amacıyla yapılan transtorasik ve transözefageal ekokardiografisinde mitral stenoz tesbit edildi. Hastaya mitral kapak cerrahisi önerildi. Ameliyat öncesi yapılan koroner anjiyografisinde koronerler normal olarak saptandı. Operasyonda mitral kapak çıkartılarak karbon kaplı bileaflet protez kapak ile replasman yapıldı. Sol atrial apendix bağlandı. Operasyon sonrası klinik problem yaşanmadı. Uygun medikal tedavi düzenlenerek hasta taburcu edildi. Sonuç olarak kliniği tromboemboli ile ortaya çıkan ve atrial fibrilasyonu olan hastalarda romatizmal kalp hastalığı akılda tutulmalıdır.

**Anahtar Kelimeler:** Tromboemboli; Mitral Stenoz; Atrial Fibrilasyon.

### INTRODUCTION

Despite significant advances in the treatment of cardiovascular diseases, acute peripheral arterial occlusions are still a crucial issue since they may result in loss of function of vital organs due to limb-threatening ischemia and reperfusion. Early intervention affect death and survival rates significantly. Acute limb ischemia is usually caused by thrombosis in the atherosclerotic area or an embolism from the proximal source accumulating in the bifurcation regions (1). Etiologically, non-atherosclerotic thrombosis cases are more common in younger people (2). 80% of arterial embolisms entail cardiac sources (3). The highest risk for intracardiac thrombus development is carried by patients with mitral stenosis and atrial fibrillation (4). The frequency of left atrial thrombus in mitral stenosis range between 15-65% (5). The most important complication of these thromboses is systemic embolisation, which is seen in 10-45% of patients with mitral stenosis (6). Although there is considerable decrease in the number of rheumatic heart diseases, they still constitute one of the causes avoidable death and morbidity.

### CASE REPORT

A 52-year-old female patient was admitted to the emergency room of our hospital with a sudden onset of pain, sense of coldness, and feeling and movement limitation in the right leg. The physical examination revealed findings of acute arterial occlusion in the right lower extremity. Femoral, popliteal, and distal pulses were not present in the lower right lower extremity during the palpation examination and doppler test. We detected 3-4/6 diastolic murmur in the focal point of the mitral of the heart. We also detected atrial fibrillation with rapid ventricular response in the electrocardiography test. There was no additional issues in patient's history apart from total thyroidectomy and hysterectomy. The patient was hospitalised with a diagnosis of acute arterial obstruction in the right lower extremity. To prevent a potential extension of acute ischemia period, we avoided invasive or ultrasound procedures. After a rapid preparation for surgery and having the patient's written consent, we applied right femoral embolectomy under local anesthesia under emergency conditions. Using a 4F fogarty embolectomy catheter from 20 cm of the proximal, we removed the thrombus and achieved antegrade flow. The distal

arterial bed was clean. With improved flow in the right lower extremity, we applied a postoperative transthoracic echocardiography to define the etiology of the thromboembolism. We observed calcification in the mitral valve which showed limited opening with a valve space of 1,1cm<sup>2</sup> and a maximum of 20 mmHg over the valve along with a gradient, mild to moderate tricuspid failure of about 8 mmHg, a pulmonary artery pressure of 55 mmHg and an ejection fraction of 55%. To exclude the left atrial thrombus, we performed transesophageal echocardiography. The left atrium was clean and the fibrotic valve area of the mitral valve was 1,1 cm<sup>2</sup>. The patient was recommended for mitral valve surgery. We performed a pre-operative coronary angiography and observed that coronary arteries were angiographically normal. The patient was operated in our clinic. During the operation, we identified a highly calcified and fibrotic mitral valve with notably limited valve expansion. Without damaging the annulus and papillary muscles, we removed the flap. We replaced the valve with a 26 No. bileaflet carbon coated mechanical prosthesis (ATS) and applied De-Vega annuloplasty to the tricuspid valve. The left atrial appendage was minimized by connecting with silk suture. After a smooth postoperative follow-up period, we noticed that the mechanical prosthesis valve functioned normally in the electrocardiography. With appropriate anticoagulation and medical treatment, the patient was discharged on postoperative day 8.

## DISCUSSIONS

The first symptom of the 52-year-old female patient was acute lower extremity embolism due to left atrial thrombus caused by rheumatism-induced mitral stenosis and atrial fibrillation. Because congestion due to acute thromboembolism can result in gangrene and loss of organs, early diagnosis and treatment are essential. Rheumatic heart diseases can remain asymptomatic for a long time and can surface with different clinical syndromes over time. Heart failure and thromboembolic problems are the most common clinical pictures (7). In cases with presumed arterial embolism, practitioners often detect a noticeable source of embolism and, most frequently, a heart disease accompanying atrial fibrillation (8). For patients diagnosed with arterial embolism, arterial embolectomy is the preferred method of treatment (9). The majority, up to 99% to be precise, of cases with mitral stenosis is connected to rheumatic fever. Following rheumatic carditis, there are fibrous thickening, shrinkage, rigidity, and calcification in the valves and fusion in commissures (10). Untreated mitral stenosis and atrial fibrillation are often seen in the pathogenesis of atrial thromboses. The reason for this is the deterioration of contractile function of the left atrial appendage and reduction of blood flow velocity due to

stasis. Besides, atrial fibrillation is also among the factors that trigger formation of thromboses (11). The presence of mitral stenosis and left atrial thrombus, diameter of the left atrial, and patient's hemodynamic status are among important factors in determining treatment options. If the mitral valve area is below 1,5 cm<sup>2</sup>, surgery should be the treatment option even in asymptomatic patients under high risk of thromboembolism (12). As a result of the developments in diagnosis and treatment of such patients, embolic events resulting from rheumatic heart diseases and atrial fibrillation have declined. To prevent potential complications, patients with mitral stenosis should be closely monitored at regular intervals. To conclude, we believe that averting atrial fibrillation is also very important.

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