

# Anterolateral papillary muscle rupture as a rare complication of unusual infective endocarditis

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## Abstract

The rupture of mitral papillary muscles is a very rare complication of the infective endocarditis. We report a case of anterolateral papillary muscle rupture resulting in severe mitral regurgitation, due to infective endocarditis in a young man without previous heart disease.

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## Introduction

Infective endocarditis (IE) is not a rare disease (1). It is more frequent in the presence of valvular disease (1). The IE lesions consist on vegetations and valvular destruction that are located essentially on the valves. The rupture of the mitral papillary muscle due to IE is a very rare complication (2, 3). We report here the case of severe mitral regurgitation occurring on normal mitral valve with anterolateral papillary muscle rupture due to IE.

## Case presentation

A diabetic 26-year-old man was admitted to our center due for prolonged fever. He had no history of rheumatic or congenital heart disease. He had been well until three weeks ago, when he began to have fatigue and general malaise, as well as loss of appetite. At admission, the patient was febrile at 39°C and tachycardic. His lung sounds were clear, and no cardiac murmur was audible. There were no signs of heart failure.

The laboratory tests showed an inflammatory syndrome. An echocardiographic evaluation revealed a normal global systolic left ventricular function, no valvular disease but we noted a 15 x 11 mm mobile oscillating large mass with anechogenic content attached to the mitral anterolateral papillary muscle (**Figure 1** ).

Despite the intravenous antibiotic therapy, fever had persisted. A thoraco-abdominal computed tomography revealed multiple hypodensities of the brain, the liver and the spleen consistent with septic emboli. The usual blood cultures were negative and these results were attributed to prior antibiotics. Few days after hospitalization, the patient's clinical condition worsened and pulmonary congestion appeared suddenly. The physical examination revealed a new pansystolic murmur consistent with mitral regurgitation. There was no electrocardiographic change suggesting an acute or subacute myocardial infarction.

Transthoracic echocardiography (TTE) and transesophageal echocardiography (TEE) examinations were repeated. Echocardiographic studies showed a hyperdynamic left ventricle with no regional wall-motion abnormality but we noticed severe mitral regurgitation with a prolapse of the anterior mitral valve due to the rupture of the mitral anterolateral papillary muscle, which explained the patient clinical status (**Figure 2** ). The diagnosis of IE complicated by severe mitral regurgitation was established. The patient was admitted to intensive care unit for stabilization with medical therapy. Then, he underwent urgent prosthetic mitral valve replacement. On surgical inspection, total complete rupture of the tip of anterolateral papillary muscle was found (**Figure 3** ).

The histologic examination of the resected tissues revealed a non-specific inflammation with fibrosis. The valve culture was negative. Given the histologic examination results, the diagnosis was a mitral valve IE complicated by anterolateral papillary muscle rupture due to direct germ invasion. After 8 weeks of IV antibiotic therapy, the patient was uneventfully discharged.

## Discussion

IE is a commonly encountered clinical problem, especially in the patients with predisposing heart disease (1). Most often, the mitral valve regurgitation in IE is due to the destruction of the valvular leaflets themselves. The isolated rupture of the antero-lateral papillary muscle is much rarer and has only been described to the best of our knowledge in four previous cases (3 - 6). There are many possible causes of ruptures of papillary muscle in IE that include ischemic necrosis due to coronary embolism (7), deposition of bacteria due to aortic regurgitation (8), or direct invasion along the sub-valvular apparatus by virulent germ like staphylococcus (9). In our case, the cause of mitral regurgitation was due to direct germ invasion of the papillary muscle. The transesophageal echocardiography (TEE), with the trans-gastric view is essential to determine the mechanism of mitral regurgitation in such cases (10). The ruptured anterolateral papillary muscle is well-defined as a separate mass attached to the chordae (10). Although we were unable to show any bacteria on histological examination and culture of the papillary muscle, active inflammation was a strong criterion for the IE diagnosis. The absence of isolated germ may be explained by the use of empiric antibiotics in our patient at admission.

**In conclusion**, if a huge mass is observed attached to the mitral apparatus on echocardiography in the case of sepsis, the diagnosis of IE should be made even in the absence of valvular disease and the rupture of the papillary muscle in the setting mitral regurgitation should be considered.

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