Mitral Valvular Cyst Mimicking a Solid Mass: Misdiagnosis with Imaging Modalities

Solid bir Kitleyi Taklit Eden Mitral Kapak Kisti: Görüntüleme Yöntemleri ile Yanlış Tanı

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Abstract

This report describes a mitral valvular cyst mimicking a solid mass in an 80-year-old patient. The diagnosis was based on histopathological evaluation of the resected material. This report emphasizes the possibility of misdiagnosis by echocardiographic and other imaging modalities of a mitral valvular mass in a patient without any clinical signs and symptoms.

Keywords: Intracardiac mass, Imaging modalities, Misdiagnosis

Özet

Bu vaka raporunda 80 yaşında kadın hastada solid kitleyi taklit eden mitral kapak kistini sunmayı amaçladık. Tanı rezeke edilen materyalin histopatolojik olarak incelenmesiyle konuldu. Bu vaka, herhangi bir klinik semptom ve şikayeti olmayan bir hastada ekokardiyografi ve diğer yardımcı görüntüleme yöntemlerinin yanlış tanıya yol açabileceğini vurgulamaktadır.

Anahtar Kelimeler: *İntrakardiyak kitle, Görüntüleme yöntemleri, Yanlış tanı*

Introduction

The differential diagnosis of mitral valvular masses includes atypical myxoma [1,2], papillary fibroelastoma [3,4], filamentous strand [5], lipoma [6], valvular thrombus [6], vegetation [7], and organizing marantic (thrombotic) endocarditis [8]. In one particular patient, we surprisingly came across a unique mitral valvular mass that has not been reported in the literature. Here, we also discuss the differential diagnosis of mitral valvular mass.

Case Report

An 80-year-old woman presented at our cardiology department with chest pain and dyspnea, both of which were associated with physical activity. She had been in her usual state of health until one year before the presentation of these symptoms, and her symptoms increased in frequency and intensity in the two months after presentation. Her past medical history included hypertension, which was controlled with an antihypertensive agent. She denied having fevers, chills, palpitations, hemoptysis, or syncopal attacks. On physical examination, she was hemodynamically stable. Her vital signs were as follows: temperature, 37°C; heart rate, 67 beats/min; respiratory rate, 18 breaths/min; blood pressure, 150/90 mm Hg; a grade 2/6 holosystolic murmur and a moderate mid-diastolic murmur were audible in the apex. No abnormal neurological signs or symptoms were found. Electrocardiogram showed sinus rhythm. Chest radiography revealed no pathological findings. Laboratory tests were within normal limits, and blood cultures taken on multiple occasions were negative. We performed echocardiography and coronary angiography because the patient had a history of chest pain and dyspnea. A two-dimensional transthoracic echocardiogram (TTE) showed an echodense spherical, immobile homogeneous tumor-like mass (2×2.5 cm) without internal echolucent areas located on the left atrial side of the posterior mitral leaflet (Figure 1A). The tumor was sessile with a regular surface and seemed to originate from the mitral valve itself and was not swinging the during cardiac cycle. The anterior leaflet itself was not involved. On Doppler color flow mapping, mild mitral regurgitation was seen in the left atrium, but no obstruction of the diastolic transmitral flow was found. The patient could not tolerate a transesophageal echocardiography, so magnetic resonance imaging (MRI) was taken. MRI showed a well-defined homogeneous hypo-intense mass sized 2x2.5 cm on the posterior mitral leaflet, suggestive of calcification and fibrosis (Figure 1B). In coronary angiography, coronary arteries were free of obstructive disease, and the mass had no feeding artery.

The diagnosis was thought to be an atypical myxoma, and therefore the patient was referred to surgery. The patient underwent surgical resection under cardiopulmonary bypass. The operation was performed with a cardiopulmonary bypass with bicaval cannulation, and the heart was arrested with cold blood cardioplegia and moderate hypothermia (28°C to 32°C). When the left atrium was opened, a well-circumscribed, encapsulated nodule with a smooth surface, 2.5x2.5 cm in size, also involving a part of the anterior mitral leaflet, was discovered on the atrial side of the posterior mitral leaflet. An incision was made into the mass, the necrotic material that filled the mass was drained (Figures 2A,B), and the other parts of the mass were also resected. Mitral valve repair was performed; however, severe mitral regurgitation developed despite aggressive attempts at repairing the valve. Finally, mitral valve replacement was performed with the St. Jude Medical prosthesis. The patient's postoperative course was uneventful.

Histologic features of the resected material included fibrosis, calcification, vegetation, and a pattern of inflammation. The inflammation was composed of lymphocytes, plasma cells, and eosinophils (Figure 2C). The final diagnosis was a cystic mitral valvular mass together with chronic inflammation.

Discussion

The major findings in the present case were firstly the misdiagnosis by clinical images of a mitral valve mass and secondly that the resected mitral mass was not related to the anticipated diagnoses, such as atypically located myxoma, papillary fibroelastoma, filamentous strand, lipoma, valvular thrombus, bacterial vegetation, and organizing marantic (thrombotic) endocarditis, which have been reported in the literature [1-8]. We sought to

Fig. 1 — A: Apical four-chamber view demonstrating a mass on the posterior leaflet of the mitral valve, B: MRI image showing a hypo-intense mass on the posterior mitral leaflet (arrows).

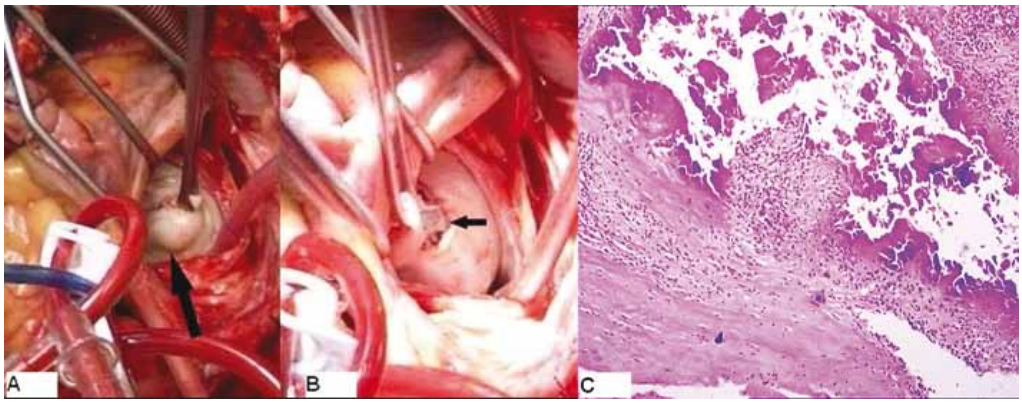

Fig. 2 — A: A well circumscribed, encapsulated with smooth surface nodule sized 2.5x2.5 cm on the posterior mitral leaflet (arrow) was identified intraoperatively, B: After drainage of the mass, the cavity could clearly be seen (arrow), C: Histopathology revealed fibrosis, calcification, vegetation, and a pattern of inflammation.

differentially diagnose this mitral valvular mass.

Filamentous strands of the mitral valve are defined as highly mobile filamentous masses <1 mm thick attached to the atrial surface of mitral leaflets. The majority of strands were found to be <1 mm thick and 1 to 10 mm long. Valvular masses >1 mm in width were not considered strands [5]. However, this was not the diagnosis in this patient because the mass was sessile and measured 2.5x2.5 cm.

Our patient's mitral valvular mass also did not display typical features of papillary fibroelastoma, such as flower-like appearance with multiple papillary fronds attached to the endocardium by a short pedicle, like a sea anemone [3,4].

Lipomas affect the entire pericardium and can be massive. Occasionally a lipoma may arise from the mitral and tricuspid valves, and differential diagnosis with a myxoma becomes necessary [6].

Endocarditis, with its potential for life-threatening consequences, should always be considered when a patient presents with valvular masses. Although vegetations most frequently originate from the atrial side of the atrioventricular valves, they have several morphologic characteristics that differentiate them from tumors, such as movement in phase with valve motion, association with valvular regurgitation, flail leaflets, ring abscess, paravalvular leaks, and clinical sepsis. This patient also lacked the symptoms and peripheral stigmata of endocarditis, making endocarditis unlikely [7].

Thrombotic endocarditis should also be considered in the presence of a history of cancer, hypercoagulability, or previous embolic manifestations. Although valvular thrombosis can be associated with thrombotic endocarditis, a complete review of systems in this patient failed to reveal any signs of connective tissue diseases, cancer, hypercoagulability, or previous embolic manifestations; furthermore, physical examination and laboratory investigations showed no evidence of such diseases [8].

Intracardiac thrombi may mimic cardiac tumors. Mitral valvular thrombi most often appear in patients with a prosthetic mitral valve. No prosthetic valve, atrial fibrillation, or mitral stenosis were present in this patient; hence thrombus would be an unlikely diagnosis [9,10].

After much consideration and investigation, the most appropriate diagnosis in this patient was, although rare, atypically located myxoma arising from the posterior mitral leaflet. About 90% of cardiac myxomas arise from the atrial septum, but left atrial myxomas are known to arise from almost any part of the atrium including the mitral valve itself [1,2]. Embolization occurs in about 45% of patients with cardiac myxoma. Because a myxoma in the mitral valve produces early embolization compared to other cardiac myxomas [1], surgery was performed. However, the final diagnosis was completely different from the pre-surgery diagnosis. For this reason it should be kept in mind that imaging modalities can cause mistakes, and we strongly believe that this case will contribute much to the literature.

Conflict interest statement The authors declare that they have no conflict of interest to the publication of this article.

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