

A NEOVASCULARIZED LEFT ATRIAL MASS ASSOCIATED TO MITRAL STENOSIS

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Summary

The discovery on echocardiography, of a large left atrial mass obliges the clinician to perform a differential diagnosis including tumor versus thrombus.

a 43 years old man without any cardiac antecedent, reported dyspnea and palpitation since 10 months. The cardiac auscultation revealed an irregular rhythm with diastolic murmur at the apex. The electrocardiogram showed an atrial fibrillation. The transthoracic echocardiography revealed a severe mitral stenosis with a left atrial huge mass, confirmed on transesophageal echocardiography. After 4 weeks of an efficient anticoagulant treatment, the mass persisted on echocardiography. So we decided to resect the mass and to achieve a mitral valve replacement. The preoperative coronarography showed neovascularization among the mass and fistula from the circumflex artery. A vascular tumor was suggested especially myxoma, but the histological exam concluded at an organized thrombus. *Conclusion:* coronary neovascularization is a specific sign for left atrial thrombus in mitral stenosis, but surgery is the best option to confirm diagnosis.

Keywords : left atrial mass, thrombus, mitral stenosis, neovascularization.

INTRODUCTION

The discovery on echocardiography, of a large left atrial mass obliges the clinician to perform a differential diagnosis including tumor versus thrombus. In fact, magnetic resonance imagery could be useful to identify the mass but it couldn't distinguish tumor from organized thrombus. Certainly, surgery is the diagnosis key, but what about angiographic coronary? Hasn't any place to recognize this mass?

OBSERVATION

A 43 years old man, without a definite history of rheumatic fever was admitted in our department in October 2008, for dyspnea and palpitation evolving since 10 months. Physical examination revealed an irregular pulse, at a rate of 100 beats/min, and polypnea at 30cycles/min. A prominent diastolic murmur continuing to the first sound was noted at the apex. The electrocardiogram revealed an atrial fibrillation with a right bundle block. The chest X-ray film showed an enlarged left atrium and a pulmonary congestion.

A transthoracic echocardiography was performed (Figure 1), and had showed a critical mitral stenosis, with a mitral valve area of 0,7cm² by planimetry and 1 cm² by pressure half time.

The peak/mean gradients across the mitral valve were 16/8 and there was mild regurgitation. There was severe pulmonary arterial hypertension (70 mmHg) and mild functional tricuspid regurgitation. The mitral valve appeared rheumatically deformed, with moderately thickened leaflets, and commissural fusion, but there weren't calcifications. Other valves were normal. The left atrium was enlarged with an area of 40 cm². A huge intra atrial mass was apparent on two dimensional mode echocardiography. This mass was well-circumscribed, surfacing 10 cm², heterogeneous, sticking to the atrial wall. On transesophageal echocardiography (Figure 2), we found that the mass was located on left atrial appendage which was enlarged too, than extended to the left atrial. Moreover, this one contained an important spontaneous contrast. The sub_valvular chordae were thickened and shortcut but without calcifications. As it was about a severe mitral stenosis, with an enlarged atrium and an atrial fibrillation, we thought that it was a thrombus. So, the patient had benefited from an efficient anticoagulant treatment for 4 weeks. But, on the echocardiographic control, we noted the persistence of the mass. A transthoracic tomography was performed to identify the mass limits and connections (Figure 3). It showed the presence in the left atrium of a tissular mass,

measuring 6 cm of long axis, with an ovular form, and regular borderlines. Therefore, a surgical resection of the mass and a mitral valve replacement were indicated. Because our patient was aged more than 40 years, an angiographic coronary was realized before surgery. There weren't coronary lesions but we discovered neovascularizations arising from a branch of the left circumflex artery (LCX) with fistula formation manifested by a dense mass stain and squirring of contrast material into the left atrial cavity. Considering the clinical and paraclinical data, we suggested two diagnosis: a thrombus or a vascular tumor mainly myxoma as it was located on the left atrium, and it was ovular and well-circumscribed. Given the systemic embolism risk, a decision to carry out an emergency operation was made. The surgery was accomplished through a conventional median sternotomy and full cardiopulmonary bypass with ascending aortic perfusion and bi-caval drainages. A standard left atrial incision through the interatrial groove was performed after aortic clamping. The mass was easily enucleated, friable and dark red coloured. The fistula was found to open at the atrium and arising from circumflex artery. So, it was sutured. The mitral valve was replaced with mechanic prosthesis. Mitral valve repair was not undertaken because of excessive leaflet thickening and shortness of chordae to both the anterior and posterior leaflets (fig 5). Postoperatively, the patient made an uncomplicated recovery. The histological exam concluded at an organized thrombus associated to rheumatic mitral disease.

DISCUSSION

Thrombosis within the left atrium is a common place phenomenon in rheumatic heart disease, the genesis of which is influenced by the type of mitral valve dysfunction, dilatation of the left atrium and the presence of atrial fibrillation.

Detection of such thrombi by trans-thoracic or trans-esophageal echocardiography is very specific (99%) [1] and important as they are potential sources of thromboemboli. In fact, the treatment is based on heparinotherapy associated to aspirin for at least 4 weeks and surgical resection will be indicated every time an efficient anticoagulant treatment failed. But, in our case, we were not sure that it was a thrombus and not a tumor.

Myxoma is the main differential diagnosis suggested in our patient, as we know that this kind of tumor is located in 90% on left atrium.

It is in general well circumscribed and has an ovular form. Moreover, angiographic demonstration of abnormal vessels arising from the coronary arteries has been for long time reported as an isolated congenital cardiac anomaly, concomitant with cardiac tumors, especially myxomas [2].

The magnetic resonance imagery (RMI), is very contributive to differentiate thrombus from myxoma. After gadolinium injection, myxoma is lifting up on periphery whereas thrombus is unchanged. However, thrombus could also lift up on periphery when it is organized [3, 4].

Angiographic coronary could be helpful to make diagnosis. On literature, many studies suggested that neovascularity and fistula formation from coronary arteries to the left atrium was usually associated to organized atrial thrombosis in patients with mitral valve disease.

The first publication was reported by Marshall et al. in 1965 [5] ; He described a "tumor vascularity" demonstrated during selective coronary angiography in a patient with unsuspected left atrial myxoma. Later et al. observed similar findings in a patient with mitral stenosis and severe coronary atherosclerosis. Although a large left atrial thrombus was found at operation, the presence of neovascularity was related not to the thrombus but to coronary artery disease, at that time. Standen used selective coronary angiography in 1975 [6], described "tumor vascularity" with abnormal vessels arising from the left circumflex artery to the left atrium in a patient with severe mitral stenosis. A left atrial thrombus was found at surgery.

Colman et al. in 1981[7], had performed a retrospective study including 507 patients with mitral valve diseases. The preoperative coronary angiograms were reviewed. Atrial thrombosis was present in 15% (76 patients). Among 30 patients having angiographic neovascularity and fistula formation, the thrombi were always arising from the circumflex coronary artery. These coronary findings had a specificity of 98,8% and a sensibility of 33% for the diagnosis of thrombus in left atrium. No relation was found between these signs and the size and the histologic age of the thrombi. Morgan et al. [8] had retrospectively enrolled, 75 patients with severe mitral stenosis between 1984 and 1986. They reviewed echocardiograms and coronarograms before mitral valve replacement. They showed that coalition of left atrial mass on echocardiography to neovascularization on coronarography is specific of thrombosis (99-100%).

The mechanism of fistula and neovascularization is not clear. Standen [6] suggested that the fistula formation in the left atrium results from partial necrosis of the organized thrombus with ulcerated surface, which allows coronary blood to escape into the left atrial cavity. However, Colman et al. [7] found no correlation between neovascularization with fistula formation and histologic findings of left atrial thrombi.

CONCLUSION

Adding to RMI, angiographic coronary could be contributive to differentiate thrombus and tumor. Certainly, coronary neovascularization is a specific sign for left atrial thrombus in mitral stenosis. But, surgery remains the best option to confirm diagnosis and to treat the mass.

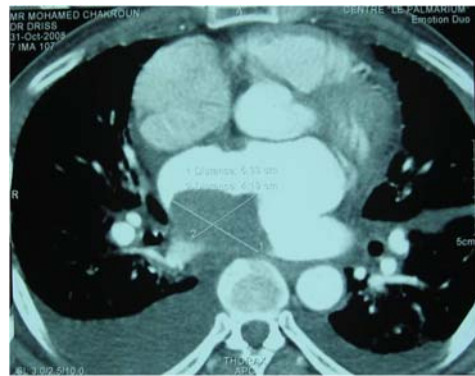


Figure 3: The Transthoracic Tomography showing a left atrium tissular mass



Figure 1: Transthoracic Echocardiography : 4 chambers view showing a well-circumscribed mass in the left atrium

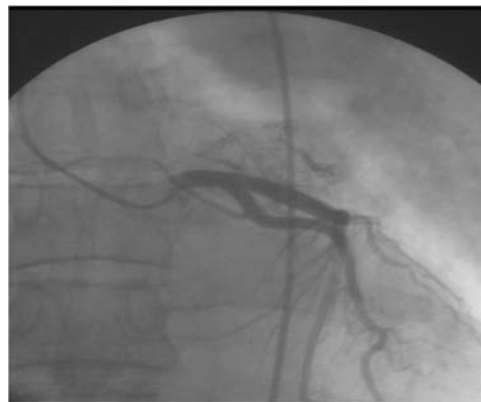


Fig 4A



Figure 2: Transesophageal Echocardiography showing important spontaneous contrast and a large mass in both the left atrium and the appendage

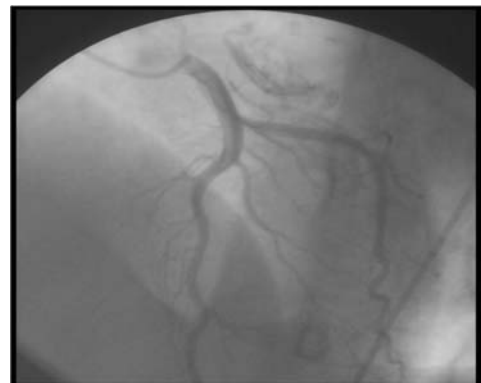


Fig 4B

Figure 4: Angiographic coronary (a) face incidence (b) cranial Left anterior oblique incidence neovascularization and the fistula



Fig 5A



Fig 5b

**Figure 5: Surgery findings: (a) Left atrial mass
(b) Thickened mitral leaflets**

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