Case Report

A Neovascularized Left Atrial Mass

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Received 17 November 2011; Revised 11 February 2012; Accepted 25 February 2012

Academic Editor: Michael S. Firstenberg

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Background. The discovery of a large left atrial mass through echocardiography obliges the clinician to perform a differential diagnosis to distinguish tumor from thrombus. The neovascularization of the mass could be helpful to predict the type of the malformation and whether it is in favour of a vascular tumour rather than a thrombus. **Observation.** A 43-years-old man who had no cardiac antecedent reported that he have had 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 huge left atrial mass, confirmed through transesophageal echocardiography. After 4 weeks of an efficient anticoagulant treatment, the mass was still persistent in the 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. Considering the characteristic of the mass (neovascularization and resistance to anticoagulant), we strongly suspected a vascular tumor especially myxoma, but the histological exam revealed an organized thrombus. **Conclusion.** Coronary neovascularization is a specific sign for left atrial thrombus in mitral stenosis, but surgery is the best way to confirm diagnosis.

1. Background

The discovery of a large left atrial mass through echocardiography obliges the clinician to perform a differential diagnosis to distinguish tumor from thrombus. In fact, magnetic resonance imagery could be useful to identify the mass but it couldnot distinguish tumor from organized thrombus. Certainly, surgery is the best solution for a successful diagnosis, but what about angiographic coronary? Does it play any role in the recognition of this mass?

2. Observation

A 43-year-old man who had no 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 30 cycles/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 0,7 cm² 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 were 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 were 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, and sticking to the atrial wall. On transesophageal echocardiography (Figure 2), we found that the mass was located on a huge left atrial

FIGURE 4: Angiographic coronary showing the neovascularization and the fistula.

FIGURE 5: Surgery findings: left atrial mass which seems to be friable and irregular.

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 were usually associated with organized atrial thrombosis in patients with mitral valve disease.

The first publication was reported by Marshall Jr. et al. in 1965 [5]. He described a “tumor vascularity” demonstrated during selective coronary angiography in a patient with unsuspected left atrial myxoma. Other authors 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 at that time, related not to the thrombus but to coronary artery disease. Standen used selective coronary angiography in 1975 [6] and he described “tumor vascularity” as 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 sensitivity 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 resulted from partial necrosis of the organized thrombus with ulcerated surface, which allowed 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.

4. Conclusion

Considering this case report, the management of atrial mass will be based first on the clinical history (mitral stenosis, permanent atrial fibrillation evaluating since many years, etc) and the echocardiography (well-limited mass, echogenicity, etc). When we suspect a thrombus, a treatment test by anticoagulation could be very helpful to confirm the diagnosis.

In atrial mass persistent despite an efficient anticoagulation, we can perform either RMN or coronarography. After gadolinium injection in RMN, myxoma is lifting up on periphery whereas thrombus remains unchanged. However, thrombus could also lift up on periphery when it is organized. But during coronarography, we can easily conclude to thrombus when we discovered a neovascularization of the mass.

Finally, surgery remains the best option to confirm diagnosis and to treat the mass.

Conflict of Interests

The authors declare that they have no conflicts of interests here.

Authors' Contributions

All authors contributed to the elaboration of this paper. The authors have read and agreed upon its content and upon the fact that readily reproducible materials described in the paper will be freely available to any scientist wishing to use them for noncommercial purposes.

References

- [1] H. Juey-Jen, C. Jin-Jer, L. Shen-Chang et al., “Diagnostic accuracy of transesophageal echocardiography for detecting

left atrial thrombi in patients with rheumatic heart disease having undergone mitral valve operations,” *American Journal of Cardiology*, vol. 72, pp. 677–881, 1993.

- [2] A. C. Burns, S. Osula, A. Harley, and A. Rashid, “Left circumflex coronary artery to left atrial fistula in a patient with mitral regurgitation after excision of a left atrial myxoma,” *Annals of Thoracic Surgery*, vol. 72, no. 5, pp. 1732–1733, 2001.
- [3] D. H. Kim, S. Choi, J. A. Choi et al., “Various findings of cardiac thrombi on MDCT and MRI,” *Journal of Computer Assisted Tomography*, vol. 30, no. 4, pp. 572–577, 2006.
- [4] M. B. Srichai, C. Junor, L. L. Rodriguez et al., “Clinical, imaging, and pathological characteristics of left ventricular thrombus: a comparison of contrast-enhanced magnetic resonance imaging, transthoracic echocardiography, and transesophageal echocardiography with surgical or pathological validation,” *American Heart Journal*, vol. 152, no. 1, pp. 75–84, 2006.
- [5] W. H. Marshall Jr., R. M. Steiner, and L. Wexler, ““Tumor vascularity” in left atrial myxoma demonstrated by selective coronary arteriography,” *Radiology*, vol. 93, no. 4, pp. 815–816, 1969.
- [6] J. R. Standen, ““Tumor vascularity” in left atrial thrombus demonstrated by selective coronary arteriography,” *Radiology*, vol. 116, no. 3, pp. 549–550, 1975.
- [7] T. Colman, J. de Ubago, A. Figueroa et al., “Coronary arteriography and atrial thrombosis in mitral valve disease,” *American Journal of Cardiology*, vol. 47, pp. 973–977, 1981.
- [8] F. Morgan, H. Jui-Sung, L. Ching-Ben et al., “Coronary neovascularization as a specific sign for left atrial appendage thrombus in mitral stenosis,” *American Journal of Cardiology*, vol. 67, 1991.