

Giant Pedunculated Thrombus with Normal Left Ventricular Systolic Function Mimicking Myxoma

Norberto G. Allende, M.D., Fernando Sokn, M.D., Raúl Borracci, M.D., Arnaldo Milani, M.D., Ana Kusselevski, M.D., Jesus Camilletti, M.D., Jorge Trongé, M.D., and Perelmuter Hector, M.D.

Department of Cardiology, Clínica IMA, Adrogué, Buenos Aires, Argentina

A 74-year-old woman with a history of essential thrombocythemia was admitted to the Coronary Care Unit because of atypical chest pain. The transthoracic echocardiogram showed normal left ventricular (LV) diameter and preserved regional and global systolic function. A pedunculated mobile mass measuring 25 mm × 14 mm was visualized in the LV cavity, attached to the midanterior wall. Because of the typical echocardiographic appearance, a myxoma was suspected. The patient evolved with left hemiparesis and negative T-waves in the electrocardiogram. Left ventriculotomy with excision of the ventricular mass was performed. Histopathological examination revealed an organized thrombus. (Echocardiography 2011;28:E31-E33)

Key words: left ventricular mass, cardiac tumor, thrombus, mass, left ventricular thrombi, essential thrombocythemia

During the last two decades echocardiography has become the cornerstone in the diagnostic evaluation of intracardiac masses. With the advent of new technologies, other imaging modalities such as multidetector computed tomography and magnetic resonance have emerged as complementary techniques to add information about these disorders.^{1,2} However, echocardiography is still used as the initial approach to diagnosis because of its wide availability and low cost.

Case Report:

A 74-year-old woman with a history of essential thrombocythemia was admitted to the Coronary Care Unit (CCU) because of atypical chest pain. Her medical records revealed a previous admission to another hospital two years earlier because of unstable angina, and a percutaneous coronary angioplasty to the left anterior descending coronary artery (LAD) was performed.

Upon arrival to the CCU she was asymptomatic with a normal electrocardiogram (ECG). Laboratory tests showed normal CKMB and troponin values. Platelet count was 915,000/mm³, hematocrit 35%, hemoglobin 11.6 g/dL and white-cell count was 35,600 (89% polynuclear cells). Twelve hours after admission, a transthoracic echocardiogram was performed showing

mild left atrial enlargement, normal left ventricular (LV) diameter and preserved regional and global systolic function. A pedunculated mobile mass measuring 25 mm × 14 mm was visualized in the LV cavity attached to the mid anterior wall, with wide oscillations during the cardiac cycle (Fig. 1). Its echogenicity was similar to that of the myocardium, but slightly heterogeneous with a small hypoechogenic core.

Because of its echocardiographic appearance and in the setting of normal ventricular systolic function, a myxoma was suspected. Nevertheless, a short trial of anticoagulation with low molecular weight heparin was started since LV thrombus could not be ruled out.

The next morning the patient experienced left hemiparesis and routine ECG revealed deep negative T-waves in the anterior leads without any detectable increase in CK MB values. On the repeat echocardiogram, there was hypokinesis of the LV apical segments with a global ejection fraction of 52% and no changes in the intracavitary mass. On coronary angiography, there was total occlusion of the distal LAD without evidence of other significant lesions.

One week later, left ventriculotomy with excision of the ventricular mass and saphenous vein graft to the distal LAD was performed (Fig. 2). Surgical inspection revealed a 25 mm × 15 mm brown-yellow mass with a smooth surface attached to the ventricular wall by a thin 1 mm stalk. During the first postoperative days, the patient worsened her hemiparesis. She was discharged 10 days later with improvement in her neurological symptoms.

Address for correspondence and reprint requests: Norberto Gustavo Allende, M.D., Av General Pacheco 1700, Don Torcuato, Buenos Aires, Argentina. Fax: 54-011-42141415; E-mail: gallende@arnet.com.ar

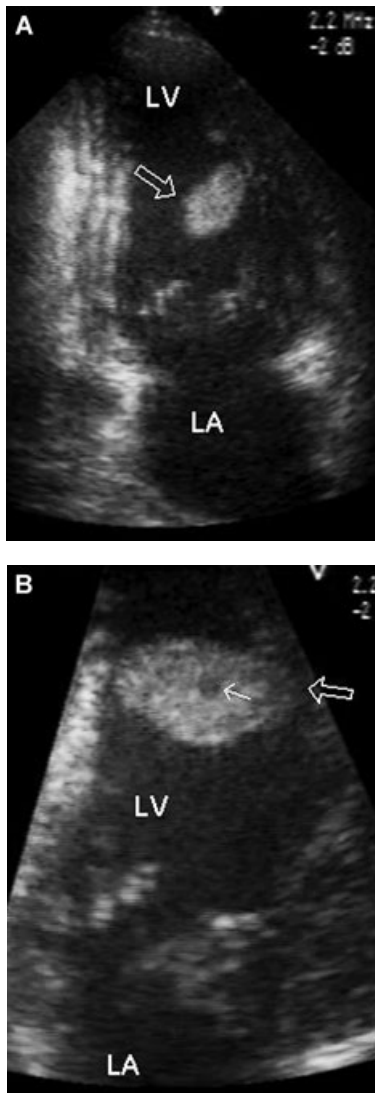


Figure 1. **A.** Echocardiogram; apical two-chamber view (systole): a mobile mass is visualized in the LV cavity. **B.** Zoom imaging of the mass (diastole) showing the hypoechoic core (thin arrow) and thin stalk (thick arrow). Note how the mass moves during the cardiac cycle. LV = left ventricle; LA = left atrium.

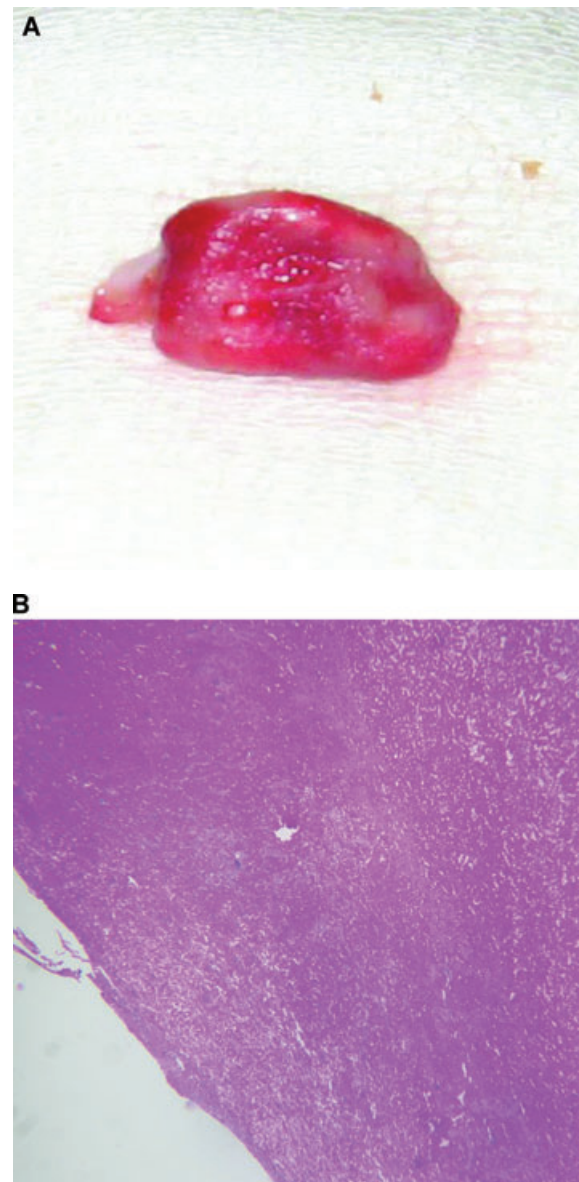
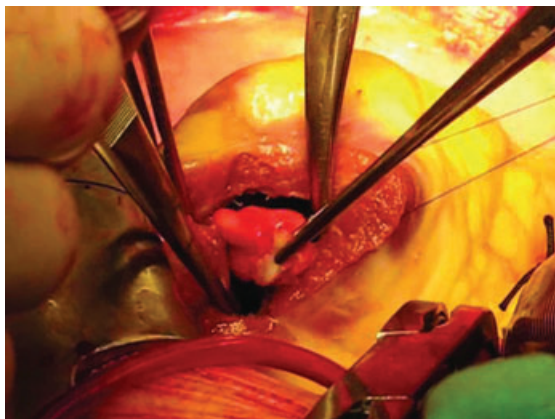


Figure 3. **A.** Photograph of the excised mass. **B.** A microscopic view of the specimen, stained with hematoxylin–eosin shows amorphous material with granulation tissue in the outer edge.

Figure 2. Photograph of the operative field during surgical removal of the mass from an apical left ventriculotomy.

Histopathological examination of the excised mass revealed an organized thrombus with fibrin, abundant red blood cells, polynuclears, lymphocytes, and some hemorrhagic areas (Fig. 3). There was no evidence of tumor cells.

Discussion:

When a cardiac mass is discovered, several diagnoses must be considered: primary and metastatic tumors, thrombi, and some congenital remnants. Tumors involving the heart may be intracavitary, intramural, or extracardiac. Most atrial tumors are intracavitary whereas ventricular tumors are more commonly intramural. Myxoma is the most frequent primary tumor in adults but less than 5% of them are located in the ventricles. However, the mass observed in our case had all the typical features of myxomas: ovoid shape, thin stalk, marked mobility and small echo-free spaces within its structure. Ventricular thrombus is often found as a complication of myocardial infarction or dilated cardiomyopathy^{3,4} but it is extremely rare in the setting of a normal ventricular systolic function. In this scenario a hypercoagulable state is usually found.^{5–7} Because of the echocardiographic features of this mobile, pedunculated mass and the finding of a preserved LV systolic function, myxoma was our first diagnosis. Even after surgical excision, macroscopic inspection of the mass did not allow to make the differential diagnosis of its nature. Other reports have described the misdiagnosis of intracavitary thrombus as myxoma.^{8,9}

Essential thrombocythemia has a high incidence of thrombotic complications affecting the arterial or venous systems,¹⁰ but to our knowledge there are no previous descriptions of intracardiac thrombosis in that setting. Nevertheless, this hematological disease might have contributed to thrombus formation in our patient. Patchy fibrosis caused by microvascular ischemia or during the previous acute coronary syndrome could have initiated the endocardial lesion favoring platelet aggregation and thrombus growth.⁷

LV thrombus resolution with anticoagulation has been reported in the literature,⁵ but given the well organized surface shown during direct inspection and histopathological examination, that would not be expected in this case.

Although in our patient we interpreted the cardiac and neurological complications as embolic in origin, we cannot exclude the role of intrinsic vascular phenomena characteristic of essential thrombocythemia.

In conclusion, LV organized thrombus may present with echocardiographic features indistinguishable from those of myxoma and should be considered as an alternative diagnosis, specially in the presence of hematological diseases. Surgical excision of the mass is recommended in order to confirm the diagnosis and, most importantly, to prevent embolic complications.

References

1. Altbach MI, Squire SW, Kudithipudi V, et al: Cardiac MRI is complementary to echocardiography in the assessment of cardiac masses. *Echocardiography* 2007;24:286–300.
2. Araoz PA, Mulvagh SL, Tazelaar HD, et al: CT and MR imaging of benign primary cardiac neoplasms with echocardiographic correlation. *Radiographics* 2000;20:1303–1319.
3. Duncan K, Nanda NC, Foster WA, et al: Incremental value of live/real time three-dimensional transthoracic echocardiography in the assessment of left ventricular thrombi. *Echocardiography* 2006;23:68–72.
4. Srichai MB, Junor C, Rodriguez L, et al: Clinical, imaging, pathological characteristics of left ventricular thrombus: A comparison of contrast-enhanced magnetic resonance imaging, transthoracic echocardiography, and transesophageal echocardiography with surgical or pathological validation. *Am Heart J* 2006;152:75–84.
5. Sivasankaran S, Harikrishnan S, Tharakan JM: Left ventricular thrombi in the presence of normal left ventricular function. *Indian Heart J* 2002;54:196–198.
6. Kawamoto J, Ishibashi K, Shibukawa T, et al: Left ventricular thrombus with a normal heart. *Gen Thorac Cardiovasc Surg* 2007;55:322–324.
7. Vaganos SA, Fox KR, Kitchen JG: Left ventricular thrombus in the absence of detectable heart disease. *Chest* 1989;96:426–427.
8. Hesse B, Murphy RT, Myles J, et al: A left atrial appendage thrombus mimicking atrial myxoma. *Circulation* 2006;113:e456–e457.
9. Yadava OP, Yadav S, Juneja S, et al: Left ventricular thrombus sans overt cardiac pathology. *Ann Thorac Surg* 2003;76:623–625.
10. Schafer AI: Thrombocytosis. *N Engl J Med* 2004;350:1211–1219.

Supporting Information

Additional Supporting Information may be found in the online version of this article:

Movie clip 1A: Panoramic apical two-chamber view showing a pedunculated mobile mass in the LV cavity attached to the mid anterior wall.

Movie clip 1B: Zoom imaging of the mass showing wide oscillations during the cardiac cycle. Note the central hypoechogenic core.

Please note: Wiley-Blackwell are not responsible for the content or functionality of any supporting materials supplied by the authors. Any queries (other than missing material) should be directed to the corresponding author for the article.