Myocardial Infarction and Myxoma in the Left Atrium

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Abstract

Myxomas are the most common benign primary cardiac tumors, with the majority located in the left atrium; 80% originates in the atrial septum, and 5% are biatrial. Clinically, they often manifests with signs and symptoms of mitral valve disease or thromboembolic events. This report illustrates a case of myxoma in the left atrium, protruding through the mitral valve into the left ventricle and simulating mitral stenosis, which developed to ischemic stroke (AIS) and acute myocardial infarction (AMI) with thromboembolic complications. Echocardiography continues to be a valuable tool in the diagnosis, and surgical treatment is immediately necessary to prevent fatal outcomes.

Keywords: **Myxoma; Heart Neoplasms; Stroke; Myocardial Infarction; Echocardiography.**

Introduction

Myxoma, although a rare condition, is the most common primary cardiac tumor, totaling 50% of the benign heart tumors[1-3]. Its manifestations are variable and among them we highlight the presence of dyspnea, syncope or embolic events such as ischemic stroke and acute myocardial infarction[4,5].

Objectives

To report a case of a patient who presented ischemic stroke and acute myocardial infarction and embolic complications of left atrial myxoma.

Case report

MDS, female, 58 years old, previously healthy, was admitted to the emergency room in August 2011 with signs of hypertension, hemiparesis, and dysarthria. The cranial computed tomography (CT) showed frontal cortico-subcortical hypodense area to the left, suggesting previous vascular ischemic injury and ischemic gap in right corona radiata, confirming the diagnosis of ischemic stroke. There was no record of ECG in this hospitalization.

After discharge, she was referred for follow-up in cardiology outpatient clinic and underwent transthoracic echocardiography (TTEcho) and Color Doppler Echocardiography of the carotid and vertebral arteries (CVD), which were not performed.

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In February 2012, she developed sudden chest pain associated with dyspnea. She sought treatment in the Municipal Hospital emergency room, where was suggested the diagnosis of acute coronary syndrome (ACS). In the medical history, she reported high blood pressure (HBP), diagnosed five months earlier after hospitalization due to ischemic stroke, which resulted in mild dysarthria as sequelae. She denied previous arrhythmias or heart disease. Reported being former smoker and allergic to aspirin. She was under regular use of atenolol 50mg / day. In this occasion were performed ECG (Figure 1) and cardiac enzyme levels, with diagnostic for AMI without ST elevation (troponin I = 1.47 ng/ml) and atrial fibrillation (AF) of unknown onset. She was later transferred to the University Hospital for further investigation and management of the case.

On examination, the patient was pale (+ / 4 +), hydrated, eupneic in room air. BP = 100 x 60 mmHg, HR = 68 bpm, irregular heart rhythm with presence of diastolic murmur (3+ / 6+) and systolic murmur (2+ / 6+) in the mitral valve. Respiratory tract, abdomen and limbs unchanged. The TTEcho revealed a large heterogeneous mass in the left atrium (LA), suggestive of myxoma, measuring 8.0 x 4.5 x 4.0 cm, attached to the interatrial septum, moving towards the mitral valve and causing mitral stenosis (maximum and average diastolic gradients LA-LV, respectively 13 mmHg and 9 mmHg) and mild regurgitation with mild LV systolic dysfunction (Figure 2).

The Color Doppler Echocardiography of carotid and vertebral arteries showed mild atheromatous disease unobstructed. She underwent cineangiocoronariography (CAT), which showed no coronary obstruction. Thus, the patient was referred to cardiac surgery for resection of the myxoma (Figure 3).

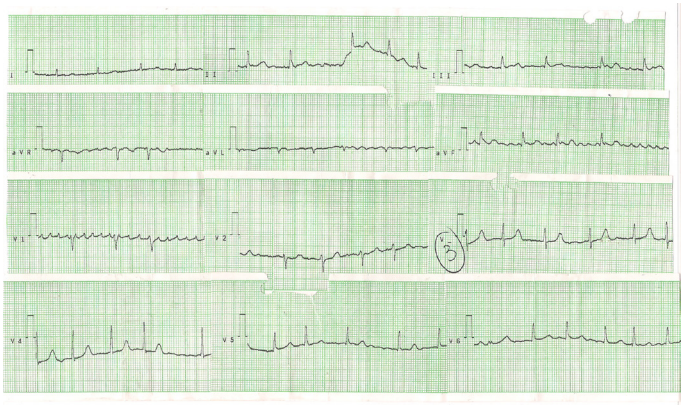

Figure 1 - *Electrocardiogram with AF.*

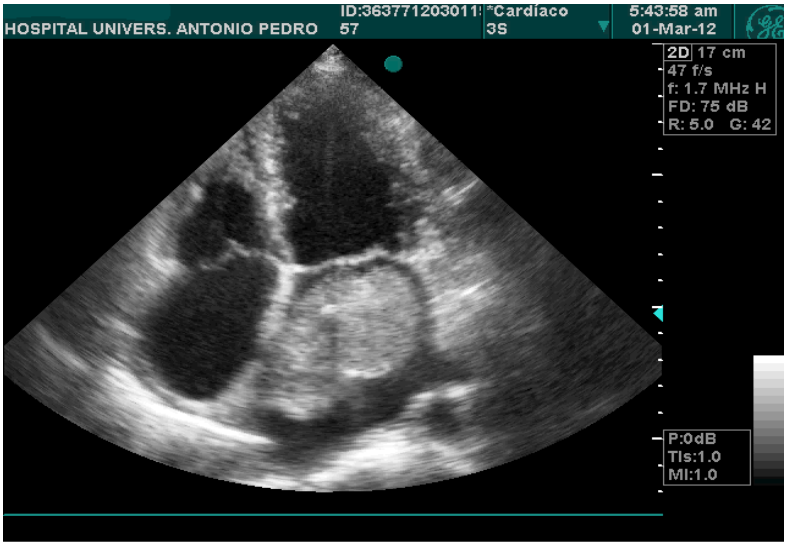

Figure 2 - *Transthoracic echocardiogram in apical four-chamber view showing a huge mass in the left atrium suggestive of myxoma.*

There were no complications in the postoperative period; the patient kept AR to HR controlled and used anticoagulation. The histopathologic report for the mass confirmed the diagnosis of myxoma. To date, the patient is asymptomatic and without postoperative complications.

Discussion

Primary cardiac tumors are rare, accounting for 0.2% of all tumors found in humans, accounting for less than 5% of all cardiac tumors. About 70% of the affected patients are women, mostly between the third and sixth decades of life[1-4]. Myxomas are usually friable gelatinous masses, pedunculated, solitary (94%), and sporadic, but may be associated with autosomal dominant syndromes in 7% of the cases[6-8]. It is estimated that the growth can vary between 1.3 and 6.9 mm/month and the average weight is 37 g, reaching up to 180 g[3]. Histologically, it derives from multipotent mesenchymal cells of the subendocardium and presents as differential diagnosis the intracavitary thrombus and rhabdomyoma[8-10]. Usually arise from the interatrial septum, and in 80% of the cases are located in the LA and 18% in RA. However, rarely occur in the ventricles, vena cava, aorta and pulmonary arteries, as well as other organs[5,9,10,11].

Echocardiography is the gold standard diagnostic method for assessing the location and extent of the myxoma and detecting the recurrence, with a sensitivity of up to 100%[2,9]. TTEcho is a noninvasive method and has a sensitivity of 95%, but does not

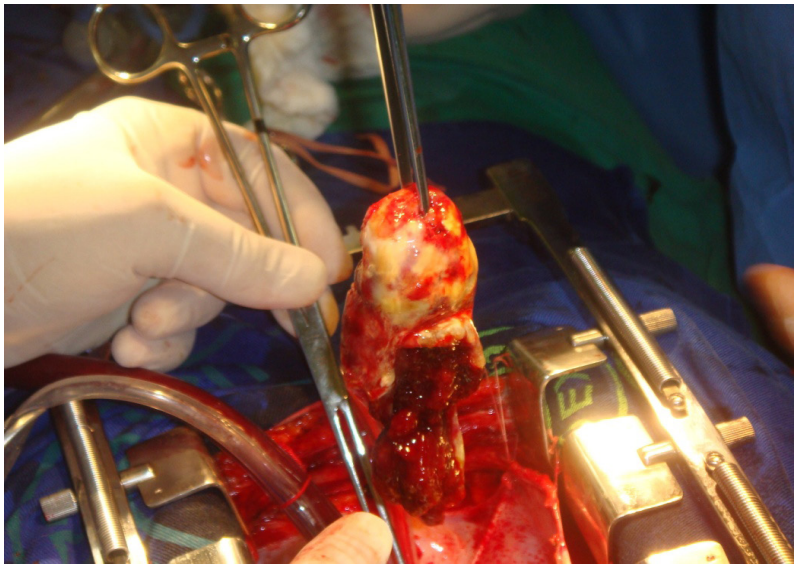

Figure 3 - *Mass suggestive of myxoma resected in cardiac surgery.*

identify tumors smaller than 5 mm in diameter, requiring, in such cases, transesophageal echocardiography. Other tests, such as CT and MRI, provide additional information and can be useful for demonstrating associated complications. A chest x-ray and ECG are nonspecific, the latter being essential to assess the presence of arrhythmias or heart block as a result of direct tumor infiltration in cardiac conduction tissue or irritation of the myocardium itself.

The CAT is very useful in the preoperative assessment of these patients, ruling out obstructive atherosclerotic disease, and as a tool for surgical planning[4,5,7,12].

As soon as myxoma is diagnosed, the surgical procedure should be immediately scheduled due to the high risk of thromboembolic events and possible fatal outcomes[2,5,13]. Generally, surgical treatment is definitive and recurrence is uncommon (3% in sporadic tumors, and 22% in familial tumors), possibly due to incomplete resection. The recurrence can be local or extracardiac. Therefore, it is recommended periodic echocardiographic studies for monitoring these patients[1,3,9,10].

This case depicts a patient diagnosed with ischemic stroke in the emergency room, based on the results of cranial CT, which, however, was discharged without further tests, including without ECG. According to the patient, it was not possible to book a visit to the cardiologist, TTEcho, and CVD through outpatient service. It is known that in cases of ischemic stroke, one should always look for the event etiology, which may be thrombotic or embolic, resulting in changes in follow-up and treatment of these patients.

The patient was 58 years old, presenting as risk factors only newly diagnosed mild hypertension, and past smoking habits, which may not justify as the cause the thrombotic origin instead of embolic. Thus, maybe if the ECG, the TTEcho, and CVD had been performed in the same hospitalization, the etiology could be defined in the first event. However, as it was not possible to book these tests through an outpatient service, in February 2012 the patient presented a new event with typical chest pain and ACS, requiring hospitalization. At this moment, the initial ECG showed an AF of unknown onset, corroborating the hypothesis of embolic origin. There was no ST elevation, but troponin I was positive, confirming the diagnosis of AMI without ST elevation. From this moment, TTEcho and CVD were requested, in addition to CAT, to complement the investigation of ACS.

By following-up the case, it was found by TTEcho a large mass within the LA, suggesting atrial myxoma, and for this reason she was referred to the University Hospital for better management of the case. On physical examination, it was noted in the cardiovascular system the presence of mitral diastolic murmur, simulating mitral stenosis. It is known that cardiac auscultation in atrial myxomas can vary greatly depending on location, size, mobility, and movement of the tumor through the valves. In 15% of the cases, it can be listened a protodiastolic murmur called tumor plop, as identified in this patient[3,5].

The signs and symptoms can be quite different, making diagnosis difficult, since, depending on the characteristics and location of the tumor, as well as the degree of physical activity and body position, this may have an asymptomatic course or evolve with thromboembolic events, culminating even in sudden death[10.13]. The classic triad found in patients with cardiac myxoma is characterized by blood flow obstruction, thromboembolic events (40% of the cases) and, optionally, constitutional symptoms, such as asthenia, fever or weight loss due to the production of interleukin-6[2,7,10,12,13]. The most common manifestations are dyspnea, atypical thoracic pain, and syncope. Dyspnea and atypical chest pain would result from embolism of tumor fragments or thrombus formed on its surface, leading to myocardial infarction (0.5%) and ischemic stroke (20%). Furthermore, the tumor protrusion into the left ventricle through the mitral valve during diastole, causing temporary obstruction to the mitral valve flow, could explain the chest pain and myocardial ischemia during stress[7,9,10, 12].

Although systemic embolization is frequent, the involvement of the coronary artery leading to occlusion is extremely rare, and the myxoma rarely causes AMI. Another plausible hypothesis for the occurrence of AMI would be the presence of a highly vascularized mass in the left atrium, leading to ischemia by coronary steal effect[7]. But in this case, the patient, although having normal coronary arteries, suffered acute myocardial infarction and ischemic stroke probably by the mechanism of embolization from myxoma[2,3,6,7,11].

Conclusion

Although myxomas have a benign histological characteristic, these tumors can evolve with unfavorable outcomes, culminating in sudden death[5.8]. For this case report, we highlight the importance of echocardiography for the diagnosis of patients suffering from thromboembolic events without other apparent causes, because this impacts decisively in the treatment and prognosis of this disease[2,9,13].

References

1. Pontes JCDV, Silva JVR, Benfatti RA, Duarte JJ. Mixoma atrial esquerdo múltiplo. Relato de caso. Rev Bras Cir Cardiovasc. 2011;26(3):497-9.
2. Demir M, Akpinar O, Acarturk E. Atrial myxoma: an unusual cause of myocardial infarction. Tex Heart Inst J. 2005; 32: 445-7.
3. Zipes D, Libby P, Bonow O, Mann L. Braunwald tratado de doenças cardiovasculares: tumores primários cardíacos.. 7ª.ed. Rio de Janeiro :Elsevier;2007.p.1741-4.
4. Gismondi RA, Kaufman R, Correa GA, Nascimento C, Weitzel LH, Reis JOB, et al. Mixoma em átrio esquerdo associado a doença arterial coronariana obstrutiva: relato de caso. Arq Bras Cardiol.2007;88(1):e1-e3.
5. Barbuto C, Sueth DM, Pena FM, Vieira MA, Franklin MM, Teixeira MM. Mixoma atrial esquerdo - relato de caso. Rev SOCERJ .2006;19(2):180-3.
6. Konagai N, Cho M, Shigematsu H. Left atrial myxoma associated with acute myocardial infarction and multiple cerebral infarctions: report of a case. Surg Today.2010;40(12):1159-63.
7. Alvarez JR, Quiroga JS, Cereijo JMM, Lopez LR. Coronary steal by left atrial myxoma. Cases Journal.2009;2:6741.
8. Braun S, Schrotter H, Reynen K, Schwencke C, Strasser RH. Myocardial infarction as complication of left atrial myxoma. Int JCardiol 2005; 101(1):115-21.
9. Yoo M, Graybeal DF. An echocardiographic-confirmed case of atrial myxoma causing cerebral embolic ischemic stroke: a case report. Cases J. 2008;1:96.
10. Meira EBS, Ho CL, Santos MMF, Pimenta J. Mixoma de atrio esquerdo provocando infarto agudo do miocárdio. Arq Bras Cardiol.1996;67(5):347-9.
11. Ozaydin M, Dogan A, Altinbas A. Left atrial myxoma presenting with acute myocardial infarction – a case report. Angiology.2005, 56(6):767-9.
12. Vazir A, Douthwaite H. Rapidly growing left atrial myxoma - a case report. J Med Case Reports. 2011;5:417.
13. Britta V, Thomas D, Mereles D, Rottbauer W, Katus HA. Systemic embolization and myocardial infarction due to clinically unrecognized left atrial myxoma:Case reports. Case Report Med.2011;2011:1-3.