Revista Médica del
Hospital General de México

PERMANYER

Check for updates

CLINICAL CASES

Left atrial myxoma debuting with ischemic stroke

Oscar E. Garmendia-Lezama

Cardiology Service, Hospital General de México Dr Eduardo Liceaga, Secretaría de Salud, Mexico City, Mexico

Abstract

The myxomas are the most common primary cardiac tumors. The majority of them are benign and can be an incidental finding or be almost asymptomatic. The symptoms depend on their location, with the most common being the left atrium, which carries an increased risk of clots. The main effects of the clots are on the central nervous system, but occasionally they can involve the respiratory, peripheral, or coronary system. The case of a 30-year-old patient without comorbidities with left atrial myxoma, which manifests with ischemic stroke, is presented.

Keywords: *Left atrial myxoma. Ischemic stroke.*

Introduction

Myxomas are the most common primary heart tumor[1]. It is estimated that more than 75% of myxomas originate in the left atrium, either in the mitral annulus or at the edge of the oval fossa of the interauricular septum; 20% arise from the right atrium, whereas 5% come from both the atrium and ventricle[2,3]. Atrial myxomas are associated with a triad of complications, including obstruction, embolisms, and constitutional symptoms (such as fever and weight loss)[2,4].

Due to the high systolic pressure and its location, left atrial myxomas were highly associated with an increased risk of systemic embolization, particularly in the central nervous system, retinal arteries, as well as viscera, spleen, kidneys, adrenal glands, abdominal aorta, iliac and femoropopliteal arteries[5]. Therefore, patients may have a variety of presentations, such as transient ischemic attack, hemiplegia, vision loss, chest pain, and dyspnea. The defects in neurological embolizations are probably the most serious complications of embolizations associated with left atrial myxomas[6].

Clinical case

A 30-year-old woman with no personal pathological history, who 5 h before admission presented a clinical picture characterized by loss of alertness of 5 min accompanied by dysarthria, right hemiparesis on cardiovascular examination presented a protodiastolic murmur “tumor plop” on the left parasternal border.

The computed tomography (CT) image of the simple skull shows that; ischemic cerebral infarction in the subacute phase located in the left hemisphere with involvement of the temporal lobe, inferior frontal gyrus, deep area of the semioval center, lenticular nucleus, dorsolateral portion of the head of the caudate nucleus, anterior arm and knee of the internal capsule, rostral area of the thalamus and short gyrus of the insula, exerts a slight effect on volume and obliterates the corresponding gyrus (Fig. 1).

Transthoracic echocardiogram is observed in the left atrium with diameters of 37 × 37 × 49 mm, left atrium volume 38 mL/m^2, multilobed and hypomobile tumor with the consistency of different echogenicities and

Correspondence:
Oscar E. Garmendia-Lezama
E-mail: oscar.garmendia@yahoo.com

Date of reception: 05-06-2024
Date of acceptance: 07-10-2024
DOI: 10.24875/HGMX.24000039

Available online: 01-04-2025
Rev Med Hosp Gen Mex. 2025;88(3):173-176
www.hospitalgeneral.mx

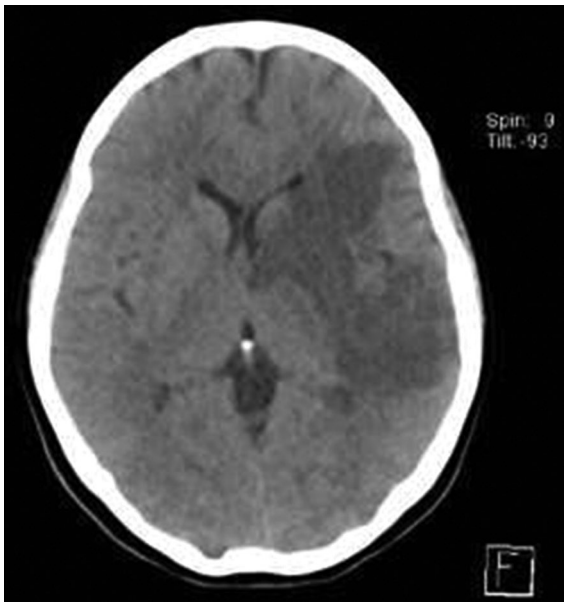

Figure 1. Ischemic cerebral infarction in the subacute phase located in the left hemisphere with temporal lobe involvement.

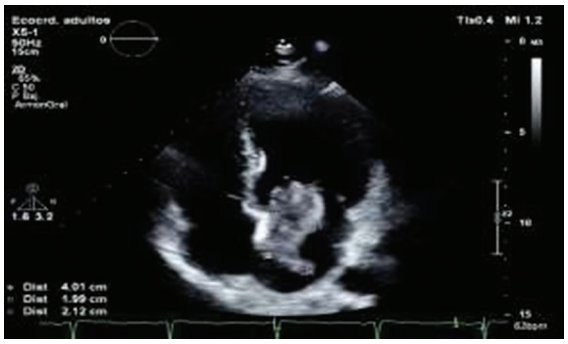

Figure 2. Apical axis four chambers are observed in the left atrium tumor is 40 × 20 mm and the larger lobe is 21 × 20 mm.

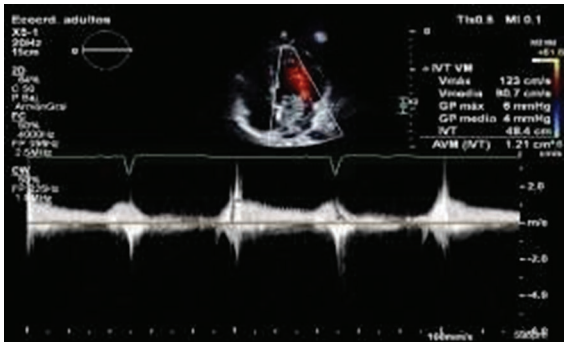

Figure 3. Continuous Doppler to the mitral valve presents functional stenosis of mild grade medium gradient 4 mmHG Maximum velocity of 1.2 m/s, insufficiency is mild with contracta vein of 2 mm.

cystic areas, of gelatinous consistency, adhered to the interatrial septum with a base of 25 × 27 mm very proximal at the anterior level of the septum and through it near the aortic valve. The size of the tumor is 40 × 20 mm and the larger lobe is 21 × 20 mm (Fig. 2), slides through the anterior leaflet of the mitral without being attached to it and interferes with the opening, causing functional stenosis of mild degree area by 3D planimetry 2.3 cm^2, mean gradient 4 mm Hg, maximum velocity of 1.2 m/s, the insufficiency is mild with a 2 mm contract vein (Fig. 3).

A right auriculotomy was performed, an interauricular septum was opened, finding a left atrial tumor with a pedicle attached to the middle third of the interatrial septum, so the septum was resected, obtaining a mucoid-like tumor exit of approximately 5 × 4 cm. (Fig. 4) A biopsy (2408739) is performed, which describes; a fragment of tissue of irregular shape and surface, measuring 4.3 × 3.8 × 1.2 cm., white with translucent areas and areas of hemorrhage, of soft consistency, serial cuts are made, observing solid and heterogeneous in which white areas are intermingled with dark brown. The presence of atrial myxoma is concluded.

Discussion

Cardiac myxoma is a neoplasm of uncertain histogenesis that occurs only on the endocardial surface, most often in the atrial location. Histological diagnosis is based on the finding of typical cells in a matrix rich in mucopolysaccharides. Cardiac myxoma cells are histologically and histogenetically different from the spindle cells of soft-tissue myxomas. It has been postulated that the cells that give rise to this tumor are the so-called "subendothelial reserve cells," which are totipotent and have the capacity to form vascular structures[7] and express endothelial and neural markers. The existence of a population of aneuploid cells in a tumor is generally considered to be evidence that the lesion is neoplastic[8]. The presence of aneuploidy, as well as the finding of chromosomal abnormalities in cases of myxomas, supports the neoplastic origin of this tumor.

The size and location of the myxomas determine the clinical manifestations of obstruction to intracardiac blood flow, with the simulation of valvulopathies of various types, especially mitral narrowing. The size of the

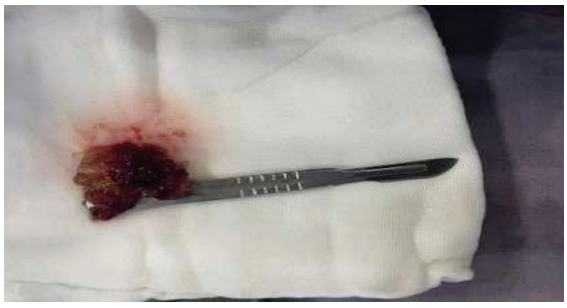

Figure 4. Mucoid tumor of approximately 5 × 4 cm.

tumor and also the different positions of the body can determine the severity of the obstruction and symptoms vary from dyspnea due to heart failure or syncope, to sudden death due to complete obstruction.

Embolization is a common manifestation, which is associated with small tumors (< 4.5 cm^2). Most emboli migrate to the central nervous system and cause strokes; however, they can migrate to any part of the arterial system and produce a variety of signs and symptoms. There are reported cases of embolism to the lower limbs or to the coronary limbs, among others. In some cases, cardiac and extracardiac manifestations may occur, including acute myocardial infarction, cerebrovascular events, pulmonary embolism, and fever of unknown origin; however, a classic triad has been established, consisting of obstructive and constitutional symptoms, as well as embolic events[5].

Cerebrovascular events associated with cardiac myxomas have been observed in up to 22% of cases, with a predominance in females[1]. The ideal imaging study is brain nuclear magnetic resonance imaging given the high rate of false negatives that CT of the skull yields. They have a low mortality rate and the ideal time for tumor resection is still unclear; despite this, it has been recommended that it be postponed until 4 weeks after the stroke event to reduce the risk of perioperative death[9].

Diagnosis is challenging; it is made through transthoracic, transesophageal echocardiogram, and cardiac magnetic resonance imaging, although it can sometimes be identified by cardiac CT. The echocardiogram can easily visualize the mass and describe the location, shape, size, number, and morphological characteristics; in addition, it assesses the hemodynamic consequences of the tumor[10]. On tomography, myxomas may be well-defined and appear lobed, smooth, mobile, round, or oval, with a narrow pedicle; they are generally heterogeneous and have patchy foci of calcification and enhancement[11].

As for treatment, expertise is required and will always be surgical. It is important to determine the origin and malignancy of these tumors in the pre-operative period. A well-known example is renal carcinoma with expansion to the right atrium, which can be mistaken for a primary tumor before being taken to surgery. In addition, not all of them are real tumors because there are "pseudotumors," thrombi, cysts, and tuberculomas[11]. Post-operative echocardiographic follow-up is recommended since the tumor recurrence rate after successful resection reaches up to 4-7%[12].

Conclusion

Atrial myxomas are the most common primary cardiac tumors, with embolization being one of their most frequent forms of presentation, most emboli migrate to the central nervous system, which is why atrial myxoma should be considered one of the main causes of cerebrovascular events in young patients without comorbidities.

Funding

The authors declare that they have not received funding.

Conflicts of interest

The authors declare no conflicts of interest.

Ethical considerations

Protection of humans and animals. The authors declare that no experiments involving humans or animals were conducted for this research.

Confidentiality, informed consent, and ethical approval. The authors have followed their institution's confidentiality protocols, obtained informed consent from patients, and received approval from the Ethics Committee. The SAGER guidelines were followed according to the nature of the study.

Declaration on the use of artificial intelligence. The authors declare that no generative artificial intelligence was used in the writing of this manuscript.

References

1. Ha JW, Kang WC, Chung N, Chang BC, Rim SJ, Kwon JW, et al. Características ecocardiográficas y morfológicas del mixomaauricular izquierdo y su relación con la embolia sistémica. Soy J Cardiol. 1999;83:1579-82.
2. Jelic J, Milicić D, Alfirević I, Anić D, Baudoin Z, Bulat C, et al. Mixoma cardíaco: enfoque diagnóstico, tratamiento quirúrgico y seguimiento. Una experiencia de veinte años. J Cardiovasc Surg (Torino). 1996;37:113-7.

3. Li H, Guo H, Xiong H, Xu J, Wang W, Hu S. Características clínicas y resultados quirúrgicos del mixoma auricular derecho. Cirugía Con Tarjeta J. 2016;31:15-7.
4. Pinede L, Duhaut P, Loire R. Presentación clínica del mixoma cardíaco auricular izquierdo. Una serie de 112 casos consecutivos. Medicina (Baltimore). 2001;80:159-72.
5. Wang Z, Chen S, Zhu M, Zhang W, Zhang H, Li H, et al. Risk prediction for emboli and recurrence of primary cardiac myxomas after resection. J Cardiothorac Surg. 2016;11:22.
6. Lee VH, Connolly HM, Brown RD. Manifestaciones del sistema nervioso central del mixoma cardíaco. Arco Neurol. 2007;64:1115-20.
7. Pucci A, Gagliardotto P, Zanini C, Pansini S, Di Summa M, Mollo F. Histopathologic and clinical characterization of cardiac myxoma: review of 53 cases from. A single institution. Am Heart J. 2000;140:134-8.
8. Barlogie B. Abnormal cellular DNA content as a marker of neoplasia. Eur J Cancer Clin Oncol. 1984;20:1123-5.
9. Thygesen K, Alpert JS, Jaffe AS, Chaitman BR, Bax JJ, Morrow DA, et al. Fourth universal definition of myocardial infarction (2018). J Am Coll Cardiol. 2018;72:2231-64.
10. Aguilera B, Suárez-Mier MP, García-García R. Muerte súbita por embolia cerebral de mixoma de la aurícula izquierda. Cuad Med Forense. 2011;17:149-53.
11. Coley C, Lee KR, Steiner M, Thompson CS. Complete embolization of a left atrial myxoma resulting in acute lower extremity ischemia. Tex Hear Inst J. 2005;32:238-40.
12. Yuan SM. Cardiac myxoma: a rare cause of acute myocardial infarction. Turk Gogus Kalp Dama. 2016;24:166-72.