
Left Ventricular Lipoma

Paulo Manuel Pêgo-Fernandes, Carlos Alfredo Batagello, Fábio Fernandes, Fabio Biscegli Jatene, Sérgio Almeida Oliveira

São Paulo, SP - Brazil

We report the case of a 21-year-old female referred to our institution complaining of dizziness when standing up, which improved in the dorsal decubitus position and at rest, after a few minutes. The symptom, which had lasted for years, was not accompanied by vertigo, syncope, or neurological changes, but was gradually getting worse. Trans-thoracic echocardiogram showed a hyperechoic mass in the middle-apical region of the left ventricular posterior wall and normal pericardium. The cardiac nuclear magnetic resonance allowed the diagnosis of the left ventricular tumor suggestive of lipoma. Surgery was performed and the tumor was resected. The patient recovered well and is currently asymptomatic.

Primary cardiac tumors account for 5% to 10% of all neoplasias of the heart and pericardium, with an incidence in autopsies ranging from 0.0001% to 0.05%¹. Approximately 75% of the primary cardiac neoplasias are benign, 40% being myxomas and most of the remaining being lipomas, papillary fibroelastomas, and rhabdomyomas^{1,2}. According to Fernandes et al³, most tumors are located on the left side of the heart, myxoma being the most frequent histological type.

With the appearance of modern techniques of diagnostic and surgical procedures, cardiac neoplasias have been diagnosed earlier, having, therefore, a greater chance of cure. The modern era of diagnosis began with the development of angiography, which allows the visualization of cardiac tumors *in vivo*. Goldberg et al⁴ reported the first angiographic diagnosis of left atrial myxoma, and Crafoord⁵ performed the first successful excision of an intracardiac tumor, a left atrial myxoma, using total extracorporeal circulation under direct visualization. Since then, successful sur-

gical excision of several cardiac tumors has become possible, complete cure being obtained in many cases².

Our case report illustrates the experience of the Surgical Division of InCor of the Hospital das Clínicas of the Medical School of the University of São Paulo in the treatment of a rare cardiac tumor, the left ventricular lipoma. Kosuru et al⁶, in a review of the literature, reported only 6 cases of lipoma in the interventricular septum.

Case report

A 21-year-old single female of mixed heritage, born in the state of Bahia, was referred to InCor of the Hospital das Clínicas of the Medical School of the University of São Paulo (HCFMUSP) complaining of dizziness when standing up, but with improvement, after a few minutes, in the dorsal decubitus position and at rest. She reported that the symptom had been occurring for 1 year and was not accompanied by vertigo, syncope, or neurological changes. In the past year, the frequency of the symptom increased, with the appearance of fatigue on moderate exertion, and occasional orthopnea and nocturnal paroxysmal dyspnea. The patient had neither previous cardiovascular antecedents, nor familial history, systemic hypertension, or diabetes. She also denied smoking, alcoholism, and medication use. Among the morbid antecedents, she reported being hit by a motor vehicle 7 years earlier, but no fractures occurred nor was surgery required. On physical examination, the patient was in good general condition, had good psychomotor development, and no neurological signs or nystagmus. On cardiovascular examination, she had full and symmetric pulses, good peripheral perfusion, regular cardiac rhythm, no murmurs in the vascular regions, no postural hypotension, no jugular venous distension, and no edema. The cardiac sounds were low in B1, presence of B4, and a mild ejective cardiac murmur was heard in the mitral region. On physical examination, the remaining systems showed no abnormalities. The biochemical investigation showed no alteration in the following serum levels: sodium, potassium, urea, creatinine, glycemia, thyrotropic hormone, mucoproteins, alkaline phosphatase, and total bilirubins and fractions. The erythrocyte sedimentation rate was

Instituto do Coração do Hospital das Clínicas - FMUSP
Mailing address: Paulo Manuel Pêgo-Fernandes - InCor - Divisão Cirúrgica
Av. Dr. Eneas C. Aguiar, 44 - 2º andar - Cep 05403-000 - São Paulo, SP, Brazil
E-mail: paulopego@incor.usp.br
Received 12/30/02
Accepted 4/29/03
English version by Stela Maris C. e Gandour

slightly elevated (29 mm) and the hemoglobin level was borderline (11.6 g/dL). Her hematocrit was 35%, serum leukocytes were 4,700 mm³, and platelets were 250,000 mm³. Her chest X-ray showed no alterations. The transthoracic echocardiogram showed the following characteristics: normal-sized left ventricular cavity (50 x 34 mm), delta D 32%, aorta 33 mm, left atrium 32 mm, mitral valve escape, and a hyperechoic mass measuring 45 x 33 mm in the middle-apical region of the left ventricular posterior wall with normal pericardium. The esophageal echocardiogram showed an intact interventricular septum with a 41 x 31 mm hyperechoic mass attached to the middle-apical region with hyperrefringent spots inside. The computed tomography of the brain suggested ethmoidal sinusopathy and no encephalic lesions. Nuclear magnetic resonance of the heart provided the diagnosis of cardiac tumor suggestive of lipoma due to the reduction in the magnetic signal in the triple R sequence. The tumor measured 34 x 28 mm and was located in the inferior wall, close to the implantation of the posteromedial papillary muscle occupying part of the left ventricular cavity (fig. 1). Surgery was performed on 10/15/2001 via median sternotomy with extracorporeal circulation through cannulation of the aorta and venae cava, with hypothermia at 30 degrees and cardioplegia at 4 degrees. The ventricular cavity was approached through the left ventricular anterior wall, close to the apex (fig. 2), and the tumor, which looked like a lipoma (fig. 3) with a mild adherence to the left ventricular free wall and papillary muscle, was resected. The operation was uneventful. The patient was discharged from the anesthetic recovery room on the 2nd postoperative day. The esophageal echocardiogram in the immediate postoperative period showed preserved cavity and function, mild to moderate mitral insufficiency, mild tricuspid insufficiency, and no intracardiac lesion. The patient has been followed up on an outpatient care basis, with no complaint of dyspnea, fatigue, dizziness, or any other cardiovascular symptom.



Fig. 1 - Nuclear magnetic resonance - sagittal view - showing the tumor.



Fig. 2 - Surgical picture showing the open left ventricle and the lipoma being dissected.



Fig. 3 - Lipoma resected.

Discussion

Cardiac lipomas occur at any age and with the same frequency in both sexes. Most of them range from 1 to 15 cm in diameter, although tumors weighing more than 2 kg have been reported. Most tumors are sessile or polypoid and located in the subendocardium or subepicardium, although approximately 25% are completely intramuscular. The subendocardial tumors with intracavitary extension cause symptoms characteristic of their location, while the subepicardial tumors may cause compression of the heart and pericardial effusion. The most commonly affected sites are the left ventricle, the right atrium, and the interatrial septum. Intramural tumors may be asymptomatic or cause arrhythmias⁷, intraventricular or atrioventricular conduction disorders, or mechanical interference. Many tumors are clinically silent, being found only during necropsy or on routine chest X-rays². In our case, the imaging media were very helpful in the diagnosis of lipoma, as they were for Izumi et al⁸, whose infiltrative lipomatous tumor was suggested by the results of the echocardiogram, computed tomography,

thallium scintigraphy, and right ventriculography. Morikami et al⁹ reported the presence of a cardiac lipoma based on the electrocardiographic alterations in the ST-T segment, suggestive of left ventricular hypertrophy. Silveira et al¹⁰ diagnosed a right atrial lipoma through computed tomography, which has a high specificity in identifying the tumor. Lipomas usually have low density ranging from -80 to 115 Hounsfield units¹⁰.

Microscopically, the lesions are usually well encapsulated, composed of typical mature fat cells, and may occasionally have fibrous connective tissue (fibrolipoma), muscle tissue (myolipoma), or brown vacuolated fat similar to a hibernoma.

Intraventricular lipoma was first described and successfully removed by Bradford et al¹¹. Surgical excision, whenever possible, is the treatment of choice for all primary cardiac tumors¹². Most patients with benign tumors are cured with resection and the tumors do not recur. Palliative treatment may be used for malignant tumors, but adjuvant therapies are required to improve the patient's prognosis¹². The great problem of the benign cardiac tumor does not reside in its histological characteristic, but in its intracavitary component, when the tumor invades cardiac cavities. The tumor becomes potentially lethal when it occupies the left ventricular cavity, as in our patient's case, because it may alter cardiac output, which is clinically indicated by syncope⁷, or may

simulate left ventricular insufficiency, peripheral embolism, and rhythm and conduction disorders. Therefore, surgery is mandatory after the determination of a diagnosis.

Although some epicardial tumors may be removed without the aid of extracorporeal circulation, most intramural and intracavitary tumors should be excised under direct visualization with the use of artificial circulation, because, technically, it reduces cardiac manipulation and maneuvers, which may lead to release of parts of the tumor, causing embolisms. Kaza et al¹³ excised a left ventricular lipoma with the aid of a video-assisted cardioscope inserted through the aortic valve through an opening in the aorta.

The major surgical considerations in the excision of ventricular tumors include the preservation of an adequate portion of the ventricular myocardium, maintenance of adequate atrioventricular valvular function, and preservation, as much as possible, of the conduction system.

In our case, we chose to establish an opening through the left ventricular tip, which is a technique similar to the incision to treat left ventricular aneurysm, so that the exposure was the most adequate possible, allowing resection without the risk of embolization of fragments or partial resection of the tumor. The technique proved adequate because it allowed good technical management and good postoperative recovery.

References

1. Miralles A, Bracamonte L, Sounoul H, et al. Cardiac tumors: clinical experience and surgical results in 74 patients. *Ann Thorac Surg* 1991;52:886-95.
2. Colucci WS, Braunwald E. Tumores primários do coração. In: *Tratado de Medicina Cardiovascular*. p. 1551-63.
3. Fernandes F, Soufen HN, Ianni BM, Arteaga E, Ramires FJA, Mady C. Neoplasias primárias do coração: apresentação clínica e histológica de 50 casos. *Arq Bras Cardiol* 2001;76:231-4.
4. Goldberg HP, Glenn F, Dotter CT, Steinberg I. Myxoma of the left atrium: diagnosis made during life with operative and postmortem findings. *Circulation* 1952;6:762-6.
5. Crafoord CL. Case report. In: Lam CR, editor. *Proceedings. International Symposium on Cardiovascular Surgery*. Philadelphia: WB Saunders, 1995: 202.
6. Kosuru SB, Mundayat G, Ramachandran M, Satyaprasad V. Lipoma of left ventricle. *Asian Cardiovasc Thorac Ann* 2002;10:64-5.
7. Hueb WA, Ramires JAF, Bellotti G, et al. Mixomas ventriculares e arritmias cardíacas: relato de 2 casos. *Arq Bras Cardiol* 1986;46:259-62.
8. Izumi T, Matsuoka A, Nagai K, et al. Massive lipomatous infiltration to the left ventricle mimicking a cardiac tumor. *Jpn Heart J* 1986;27:273-7.
9. Morikami Y, Higashi T, Isomura T, et al. Cardiac lipoma with changes of ST segment and T wave on electrocardiogram. *Jpn Circ J* 1994;58:733-6.
10. Silveira WL, Nery MW, Soares ECG et al. Lipoma de átrio direito. *Arq Bras Cardiol* 2001;77:361-4.
11. Bradford JH, Nomier AM, Watts LE. Left ventricular lipoma: echocardiographic and angiographic features. *South Med J* 1980;73:663-5.
12. Centofanti P, Rosa ED, Deorsola L, et al. Primary cardiac tumors: early and late results of surgical treatment in 91 patients. *Ann Thorac Surg* 1991;68:1236-41.
13. Kaza AK, Buchanan SA, Parrino P, Fiser SM, Long SM, Tribble CG. Cardioscope-assisted excision of a left ventricular tumor: a case report. *Heart Surg Forum* 2002;5:75-6.