

# Resection of left ventricular myxoma after embolic stroke

## *Ressecção de mixoma ventricular esquerdo após acidente vascular cerebral embólico*

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### *Abstract*

Cardiac myxoma is the most common primary tumor of the heart. The tumor is located mainly in the left atrium but can arise from any heart chamber. Clinical symptoms are variable but dyspnea and embolism are the most frequent. We report a case of a young man that had embolic ischemic stroke caused by a large left ventricular myxoma. The patient underwent surgery three weeks after the stroke. The tumor was carefully resected without fragmentation. Surgical treatment was effective. We emphasize the rarity of this location together with a review of the current literature.

**Descriptors:** Stroke. Heart Neoplasms. Myxoma. Heart ventricles/pathology. Cardiac surgical procedures. Extracorporeal circulation.

### *Resumo*

Mixoma cardíaco é o tumor primário mais comum do coração. Sua principal localização é no átrio esquerdo, mas pode surgir em qualquer câmara cardíaca. Os sintomas clínicos são variáveis, mas dispnéia e embolia são os mais frequentes. Relatamos o caso de um jovem com acidente vascular cerebral isquêmico embólico causado por um grande mixoma no ventrículo esquerdo. O paciente foi submetido a cirurgia três semanas após o acidente vascular cerebral. O tumor foi ressecado com cuidado, sem fragmentar. O tratamento cirúrgico foi eficaz. Enfatizamos a raridade da presente localização, juntamente com uma revisão da literatura atual.

**Descritores:** Acidente cerebral vascular. Neoplasias cardíacas. Mixoma. Ventrículos do coração/patologia. Procedimentos cirúrgicos cardíacos. Circulação extracorpórea.

## INTRODUCTION

Cardiac tumors represent 0.2% of all tumors found in humans. Among the different cardiac tumors, myxoma is the most common, representing 50% of such tumors [1]. Its location may be diversified, but it most commonly occurs in the left atrium. When this tumor is found in the left ventricle, it can evolve asymptotically, causing peripheral arterial embolism or stroke. Embolic accidents have been reported frequently, which can cause disability or sudden death [2].

In cases of tumors in the left ventricle, surgical treatment should be initiated as soon as the diagnosis is confirmed.

We report a case of a young man with embolic stroke due to a myxoma in the left ventricle. The patient underwent heart surgery for resection of the tumor mass.

## CASE REPORT

D.A.S., 22-year-old male patient from Piracicaba, São Paulo, Brazil was admitted to local Urgent Care on 06/07/05

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This study was carried out at Hospital dos Fornecedores de Cana of Piracicaba.

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with mental confusion and drowsiness. He responded to verbal stimuli with convulsive crisis.

The patient was referred to the Hospital dos Furnecedores de Cana of Piracicaba and was evaluated by a neurologist, who identified a right hemiplegia and aphasia. Skull MRI revealed ischemic stroke (ICVA) in basal ganglia and in the territory of the left middle cerebral artery.

On the second day of hospitalization, cardiac examinations were required. The echocardiogram showed an image compatible with a mass of 3.0cm x 2.7cm, adhered to the left ventricular apical wall and cardiac chambers with normal dimensions.

A chest MRI confirmed the presence of an oval tumor mass measuring 5.0 x 4.0 x 3.0 cm on the left ventricular lateral wall, without any other morphological changes in the heart.

The patient remained hospitalized, and surgery for resection of the mass was scheduled for 3 weeks after the diagnosis, as decided by the neurologist.

The surgery was performed using median sternotomy and aorto-bicaval cardiopulmonary bypass, normothermic antegrade and retrograde blood cardioplegia.

After the heart was stopped, a 4-cm incision in the left ventricular lateral wall was performed, revealing a gelatinous and shapeless tumor measuring 7.0 x 6.5 x 2.5cm.

The tumor was carefully resected, and its fragmentation was prevented with safety margin of 0.5 cm.

Inspection of the cavity and closure of the left ventricle using 3-0 polypropylene suture anchored in bovine pericardium were performed.

Discontinuance of cardiopulmonary bypass, hemostasis review, drainage of the mediastinum, sternum, subcutaneous and skin suture.

The patient was referred to the Cardiac ICU. An anatomopathological analysis confirmed that the mass was a cardiac myxoma.

There were no incidents in the postoperative period, with significant improvement of neurological deficit. New chest resonance for controlling was performed.

The patient was discharged from hospital on the 5th postoperative day.

## DISCUSSION

The myxomas represent approximately 50% of primary cardiac neoplasms. In spite of the benign histological character of these tumors, they can lead to unfavorable consequences for the patient, being responsible for disabling complications and even sudden death. Such tumors also may cause pulmonary and systemic embolic events due to their fragmentation or valve obstruction [2].

In 1954, Crafoord in Stockholm performed the first successful cardiac myxoma surgical resection. [3]. 20%

of patients with ischemic stroke presented cardiac etiology. [4].

In patients with a history of stroke, the on-pump surgery using systemic heparinization should be delayed for four weeks, with a follow-up with a neurologist. [5].

Under supervision of a neurologist, this patient underwent surgery three weeks after his stroke for fear of a new embolization.

Recent studies suggest that the tumor produces and releases interleukin in the circulatory system, which may be responsible for inflammatory or auto-immune problems. [6].

The most frequent intraventricular tumors are sarcomas. The occurrence of myxoma is rare in this location [7].

Generally, 75% to 80% of myxomas are located in the left atrium and 18% are in the right atrium. They are much less frequent in the ventricles or in multicentric location [8].

The classic triad is usually found in patients with cardiac myxoma, characterized by blood flow obstruction and causing intermittent heart failure and with nonspecific symptoms similar to flu, anorexia, weight loss, and embolic phenomena [9].

Myxomas are generally pediculated, but may vary. Regarding the macroscopic aspects, their surface can be smooth or lobulated. Oval, rounded and irregular shapes have been described, and a brownish color seems to be predominant.

The consistency of such tumors is also variable: gelatinous or firm. The weight and size depend on the stage and evolution of the disease [1].

The echocardiogram, CT scan and resonance allow us to diagnose primary cardiac tumors without the use of invasive procedures [2].

Once the diagnosis of cardiac myxoma is performed, surgical excision should be performed as soon as possible, due to the constant risk of embolic episodes [6].

The careful handling of the cardiac structures and tumor during its removal reduces the possibility of fragmentation, as well as the occurrence of embolic phenomenon during the surgery.

The resection of the basis of the tumor implantation should be performed with good safety margin in order to avoid recurrence [2].

The incidence of recurrent myxomas is very low. It is usually related to incomplete excision of the tumor or when a mesenchymal sarcoma was histologically misdiagnosed [10].

As a preventive measure of these recurrences, continuous patient follow-up is recommended. It should include echocardiographic evaluation, which allows for the detection of an early recurrence. This can result in better management and planning of surgical treatment [10].

The patient of this case report is in outpatient follow-up and, so far, has shown no clinical signs of tumor recurrence.

#### REFERENCES

1. Lima PRL, Crotti PLR. Tumores cardíacos malignos. Rev Bras Cir Cardiovascular. 2004;19(1):64-73.
2. Motta AAR, Colen Filho E, Colen EA, Vieira JAS, Alves MAP, Borges MF, et al. Mixoma do átrio esquerdo: relato de 3 casos. Rev Bras Cir Cardiovascular. 1997;12(4):377-83.
3. Grebenc ML, Rosado-de-Christenson ML, Green CE, Burke AP, Galvin JR. Cardiac myxoma: imaging features in 83 patients. Radiographics. 2002;22(3):673-89.
4. Almeida LA, Hueb JC, Moraes Silva MA, Bazan R, Estrozi B, Raffin CN. Cerebral ischemia as initial neurological manifestation of atrial myxoma: case report. Arq Neuropsiquiatr. 2006;64(3A):660-3.
5. Brick AV, Souza DSR, Braile DM, Buffolo E, Lucchese FA, Silva FPV, et al. Diretrizes da cirurgia de revascularização miocárdica, valvopatias e doenças da aorta. Arq Bras Cardiol. 2004;82(supl. 5):1-20.
6. Sá MI, Abreu A, Cabral S, Reis AH, Torres S, de Oliveira F, et al. Myxoma in the right ventricular outflow tract. Rev Port Cardiol. 2007;26(4):377-81.
7. Ipek G, Erentug V, Bozbuga N, Polat A, Guler M, Kirali K, et al. Surgical management of cardiac myxoma. J Card Surg. 2005;20(3):300-4.
8. Escobar FS, Attié F, Barrón JV, Marroquín SR, del Abadiano JA. Left ventricular myxoma. Arch Cardiol Mex. 2004;74(4):290-4.
9. Takakura IT, Godoy MF, Soares MJ, Moscardini AC, Braile DM. Mixoma atrial esquerdo com acidente vascular cerebral isquêmico em criança. Arq Bras Cardiol. 1998;71(2):135-7.
10. Manfroi W, Vieira SRR, Saadi EK, Saadi J, Alboim C. Múltiplas recorrências de mixomas cardíacos com embolia pulmonar aguda. Arq Bras Cardiol. 2001;77(2):161-3.