

## Atrial Myxoma in Male Young Adult Patient: A Case Report and Literature Review

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### Introduction

Cardiac tumors are found in 0.001% to 0.3% of autopsies, where myxoma is the most common cardiac neoplasia. Approximately 70% appear in the left atrium next to the foramen ovale and are pedunculated. Its pedunculus can be short, limiting its movement, or can be long, allowing tumor movement inside and outside the atrium during the cardiac cycle.<sup>1,2</sup>

Clinical conditions depend on the size, mobility, and location of the tumor. Classic symptoms are related to Goodwin's triad, which includes unspecific systemic symptoms, embolism and intracardiac obstruction. Among systemic symptoms are dyspnea, orthopnea, paroxysmal nocturnal dyspnea, pulmonary edema, cough, hemoptysis, edema, and fatigue due to obstructive features of neoplasia.<sup>1,3</sup>

Despite being benign, myxomas are associated with potentially fatal complications, such as systemic and cerebral embolisms. Risk factors for disease progression include polypody presentation, tumor irregular surfaces, atrium fibrillation, and an increase in atrium diameter. Polypodies tumors can even project inside the ventricle through the mitral or tricuspid valve, resulting in valve annulus and leaflets destruction, leading to a guarded prognosis.<sup>2</sup>

The wide range of differential diagnosis, the potential for complications, and the need for early diagnosis to plan surgical management, aiming for the best prognosis, make atrial myxoma a challenge in clinical practice.<sup>4,5</sup>

### Case Report

We reported the case of a male patient, 37 years old, with no relevant previous histories, who attended Santa Casa de Misericórdia Hospital of Aracatuba, São Paulo, Brazil.

The patient presented dyspnea to minimal effort, thoracic pain (5/10 in intensity), lower members edema and dry cough.

### Keywords

Atrial Myxoma; Heart Atriums; Cardiovascular Surgical Procedures.

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On physical examination, well perfused, peripheral pulses were present and afebrile. On cardiovascular examination, heart sounds 1 and 2 were present in regular rhythm, with sound 1 splitting. Lung and abdominal examination without changes. Lower members edema was noted (+1).

An electrocardiogram showed left chamber enlargement. Posterior echocardiogram showed a left atrium pedunculated mass attached to the interatrial septum in foramen ovale (Figure 1-A), with protrusion to left ventricle during ventricular diastole (Figure 1-B) and returning during systole (Figure 1-C). It measured 61 mm x 36 mm, with hemodynamic repercussion due to left ventricle obstruction. Posterior manometry showed pressure elevation of the pulmonary artery and right chambers. Pulmonary arteriography presented important left atrium filling failure, with protrusion to the left ventricle and normal ventricular emptying in diastole.

According to clinical conditions and complementary exams, an atrial myxoma hypothesis was made, and the patient was referred for cardiac surgery for tumor resection.

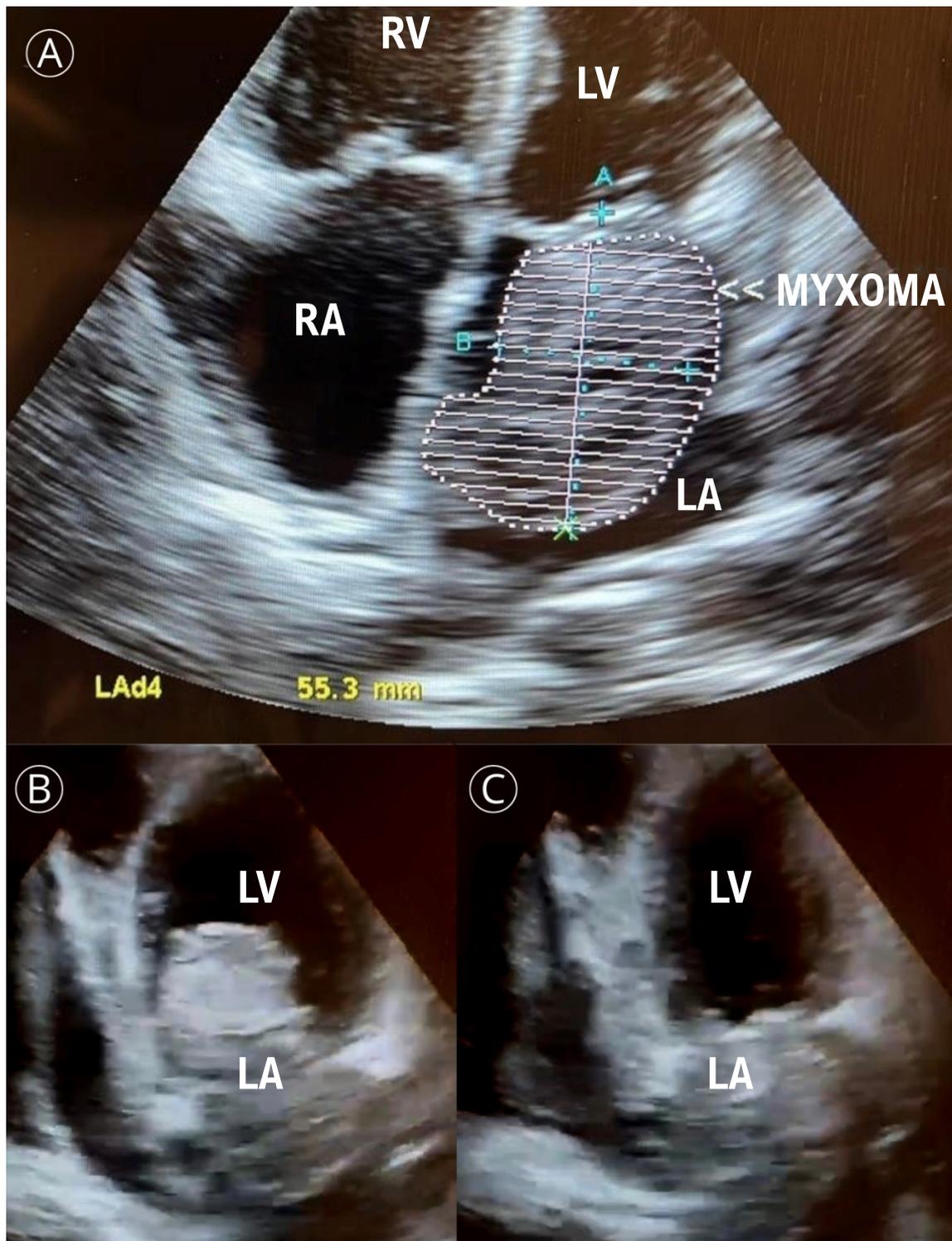
During tumor resection surgery, macroscopic analysis showed a pedunculated mass, showing a lobulated external surface, brownish-white color, and gelatinous aspect, measuring approximately 8 cm in diameter and occupying almost all left ventricle size (Figure 2). Histopathologic analysis confirmed the diagnosis.

In immediate postoperative, the patient was stable without complications. On the 11th postoperative day, the patient presented purulent drainage in the external incision when antibiotic therapy was initiated. On the 20<sup>th</sup> post-operative day, the patient presented oropharynx drainage, with cough, lower members, hands, and abdominal edema, besides serous drainage in the external incision. Computed Tomography scan showed lower left lobe consolidation and echocardiogram showed new left chambers enlargement. Thus, diuretic, antibiotic and corticosteroid therapy were initiated, with a posterior solution and ambulatorial following.

### Discussion

Considered the most common cardiac tumors, myxomas still offer challenges in diagnosis and therapeutic follow-up. Studies showed inherent difficulties in pathology management, mainly due to its clinical similarity to thromboembolic processes, which makes its diagnosis and definitive treatment difficult.<sup>6</sup>

In this case report, the patient had an atrial myxoma in the left atrium. According to the literature, the majority of myxomas appear in the left atrium. It occurs predominantly



**Figure 1** – Panel A – Echocardiogram with an apical four-chamber transthoracic view showing a left atrial mass. Panel B – Echocardiogram with apical four-chamber transthoracic view showing left atrial mass protrusion to left ventricle during ventricular diastole. Panel C – Echocardiogram with an apical four-chamber transthoracic view showing a mass return to the left atrium during ventricular systole. RA: Right Atrium; LA: Left Atrium; RV: Right Ventricle; LV: Left Ventricle.

## Case Report



**Figure 2** – Macroscopic view of left atrium myxoma.

in women, mainly between the fourth and sixth decades of life, which diverges from the patient case report profile.<sup>7</sup> So, diagnostic challenges inherent in these patients who are not in an epidemiologic context are justified.

The most common symptom is dyspnea, due to an obstructive condition similar to that presented in the case report patient. Usually, it is followed by constitutional symptoms, such as fever and myalgia, due to disease molecular background interleukin-6 (IL-6) mediated, major responsible for tumor cellularity proliferation and acute inflammatory mediator. Studies are in accordance with the primary symptoms of the case report, justified by the majority participation of IL-6 as a tumoral marker in the diagnosis and follow-up of myxomas once its index is related to recurrence and aggressiveness.<sup>6</sup>

It was not possible to determine the IL-6 index in our study, but it can become an important tumoral marker in the future.

The patient's tumor presented a gelatinous aspect, which increases cerebral and coronary artery embolism risk. Studies showed that the majority of myxomas usually have a polypoid solid aspect, guaranteeing fewer chances of fragmentation and embolization.<sup>8</sup> Only one-third of myxomas have this gelatinous aspect.

The electrocardiogram showed a sinus rhythm and left chamber enlargement. In comparative studies, myxomas courses with irregular rhythms. Nevertheless, an electrocardiogram must be preceded by an echocardiogram, which has an accuracy of 90% to 96% in myxomas diagnosis. The recommendation is to realize tomography scans in patients

under 40 years old and with cardiovascular risk,<sup>9</sup> such as in the case report.

An echocardiogram showed in the left atrium a pedunculated mass attached to the interatrial septum in the foramen ovale, with protrusion to the left ventricle during ventricular diastole, returning to the atrium during systole. The literature agrees with these findings, showing that the majority follows this ventricular prolapse via mitral valve feature.<sup>10</sup> This tumoral behavior can mimic congestion symptoms, such as the case report patient symptoms.

## Conclusion

Atrial myxomas are potential causes of fatal complications, mainly in late diagnosis. The role of differential diagnosis suppresses its hypothesis due to its infrequency. However, it is necessary to disseminate its clinical presence and the importance of adequate management upon a compatible hypothesis. Further studies are needed to promote adequate tools to facilitate early diagnosis and avoid myxoma-related complications.

## Author Contributions

Conception and design of the research: Nascimento MAG, Magalhães GKL, Rodrigues LMC, Barreto AEA, Caravante RPG, Batista LA; acquisition of data: Pereira EHB; analysis and

interpretation of the data: Pereira EHB, Mariano LS, Rodrigues LMC; writing of the manuscript: Magalhães GKL, Mariano LS, Barreto AEA, Batista LA; critical revision of the manuscript for intellectual content: Nascimento MAG, Caravante RPG, Batista LA.

## Potential Conflict of Interest

No potential conflict of interest relevant to this article was reported.

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## Study Association

This study is not associated with any thesis or dissertation work.

## Ethics Approval and Consent to Participate

This study was approved by the Ethics Committee of the Centro Universitário Católica Salesiano Auxilium under the protocol number 69700423.7.0000.5379. All the procedures in this study were in accordance with the 1975 Helsinki Declaration, updated in 2013. Informed consent was obtained from all participants included in the study.

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