Content available at: https://www.ipinnovative.com/open-access-journals

Yemen Journal of Medicine

Journal homepage: https://www.yjomonline.com/

Case Report

Right atrial myxoma diagnosed through differential analysis with right atrial thrombus

Meriam Amri[1]*, El Mehdi Tamir[1], Badr Abdalani[1], Rachida Habbal[1]

[1] *CHU IBN ROCHD, Casablanca, Morocco*

ARTICLE INFO

Article history:
Received 15-09-2024
Accepted 18-10-2024
Available online 13-12-2024

Keywords:
Right atrial myxoma
Cardiac tumor
Right atrial thrombus

ABSTRACT

Right atrial myxomas are rare, accounting for only 10% of all cardiac myxomas, with the majority being left atrial. Despite their rarity, they can mimic conditions like a right atrial thrombus, complicating the diagnosis. This case report presents the diagnostic journey of a right atrial myxoma in a 54-year-old female patient, focusing on the importance of differentiating it from a thrombus. The report includes detailed diagnostic workup and emphasizes the role of advanced imaging modalities and histopathological examination.

1. Introduction

Primary cardiac tumors are rare, with cardiac myxomas being the most common among them. However, right atrial myxomas are particularly uncommon, with only 10-15% of myxomas occurring in the right atrium. The clinical presentation is often nonspecific, ranging from symptoms related to obstructive or embolic phenomena to asymptomatic findings during routine echocardiography. Right atrial myxomas can be misdiagnosed as thrombi, especially in patients with underlying cardiovascular risk factors such as atrial fibrillation or hypercoagulable states. Given the potential for complications such as embolization, obstruction, or sudden cardiac death, prompt diagnosis and treatment are crucial. Recent literature has highlighted the utility of multimodal imaging in distinguishing myxomas from thrombi, with echocardiography, cardiac MRI, and histopathology playing key roles in diagnosis. [1]

2. Case Presentation

A 54-year-old female presented to the emergency department with complaints of dyspnea on exertion and intermittent chest pain over the past few weeks. Her medical history was significant for long-standing hypertension, but she had no known cardiovascular disease or hypercoagulable disorders. On physical examination, there were no significant findings; heart sounds were normal with no murmurs, and there were no signs of heart failure. Initial blood tests, including full blood count, coagulation profile, and inflammatory markers, were unremarkable.

A transthoracic echocardiogram (TTE) was performed, revealing a mobile mass in the right atrium attached to the interatrial septum (Figure 1). Given the patient's clinical presentation, a differential diagnosis of right atrial myxoma versus thrombus was considered. To further evaluate the nature of the mass, advanced imaging and laboratory investigations were carried out.

3. Diagnostic Workup

The TTE showed a heterogeneous mass in the right atrium with a broad base attached to the interatrial

* *Corresponding author.*
E-mail address: meriam.amri@usmba.ac.ma (M. Amri).

https://doi.org/10.18231/j.yjom.2024.030

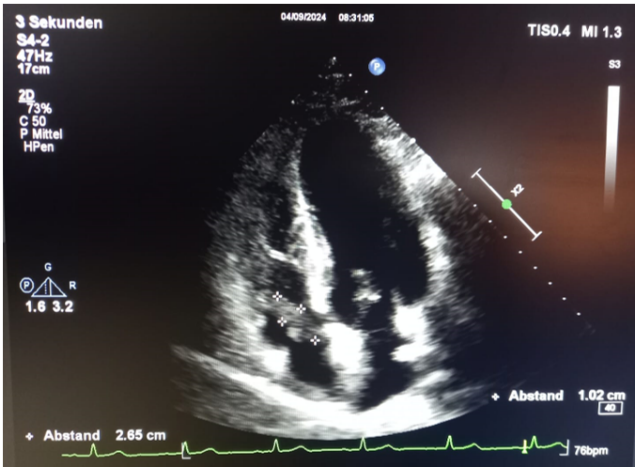

Figure 1: TTE showing right atrial mass

septum, measuring approximately 2.65 cm by 1.02 cm. The mass appeared mobile, with intermittent prolapse into the tricuspid valve during diastole. This raised the suspicion of a myxoma, though the possibility of a thrombus remained due to the patient's clinical risk factors.

A transesophageal echocardiogram (TEE) was then performed to obtain better visualization. The TEE confirmed the mass's attachment to the interatrial septum, and its lobulated surface with variable echogenicity suggested a myxoma rather than a thrombus. (Figure 2)

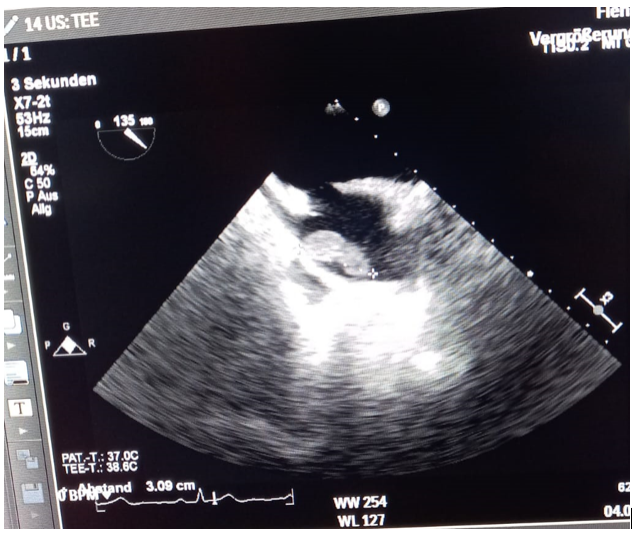

Figure 2: : TEE image showing the myoma

Further evaluation using cardiac magnetic resonance imaging (MRI) showed a well-defined mass with intermediate signal intensity on T1-weighted images and high signal intensity on T2-weighted images, consistent with myxoma. Contrast-enhanced sequences demonstrated homogenous enhancement of the mass, further supporting this diagnosis.

In addition, serological tests were conducted to rule out hypercoagulable states. Tests for antiphospholipid antibodies, protein C and S deficiencies, and factor V Leiden mutation were all negative. The patient's D-dimer levels were within the normal range, further lowering the likelihood of thrombus formation.

4. Discussion

Distinguishing between a right atrial myxoma and a right atrial thrombus is a diagnostic challenge, especially given the nonspecific nature of clinical presentations. In this case, the patient presented with symptoms of dyspnea and chest pain, which could be attributed to obstructive effects of the mass or embolization, both of which are characteristic of myxomas. Thrombi, on the other hand, are typically associated with risk factors such as atrial fibrillation, hypercoagulable states, or prolonged immobilization[2] However, in this patient, the absence of these risk factors and negative serological tests made thrombus formation less likely.

Echocardiography, particularly TEE, is the cornerstone for initial evaluation of intracardiac masses. Myxomas often appear as lobulated, mobile masses attached to the interatrial septum, whereas thrombi tend to be more homogeneous and often lack such defined attachment.[3] Cardiac MRI further aids in differentiation by providing detailed tissue characterization. Myxomas typically show intermediate signal intensity on T1-weighted images and high signal intensity on T2-weighted images, as seen in this patient.[4] In contrast, thrombi may vary in signal intensity depending on their age and degree of organization.[5]

Histopathology remains the gold standard for definitive diagnosis. In this case, following surgical resection, histopathological examination revealed the classic features of a myxoma: a gelatinous mass composed of a myxoid matrix with scattered spindle cells.[6] Thrombi, on the other hand, show organized layers of fibrin and platelets, which were absent in this case.[7]

Recent studies emphasize the importance of early diagnosis and treatment of cardiac myxomas due to their potential for severe complications, including embolization, arrhythmias, and sudden cardiac death.[8] A review[9] noted that early surgical intervention offers excellent long-term outcomes, as seen in this patient, who underwent successful resection of the tumor with no postoperative complications. Other studies corroborate these findings, highlighting a low recurrence rate and favorable prognosis after surgical resection.[10]

Furthermore, the role of advanced imaging techniques in enhancing diagnostic accuracy has been widely documented. The combination of echocardiography and cardiac MRI significantly improves the diagnostic yield in differentiating between myxomas and thrombi. Similarly,

other studies emphasized the importance of multimodal imaging in improving patient outcomes by enabling timely and accurate diagnoses.[11]

In summary, while the differentiation between right atrial myxomas and thrombi can be complex, advancements in imaging and pathology provide crucial insights. This case reinforces the necessity for vigilance in clinical evaluation, as early diagnosis and intervention are key to minimizing complications associated with these cardiac masses.

5. Conclusion

Right atrial myxomas, although rare, must be considered in the differential diagnosis of right atrial masses. This case highlights the importance of multimodal imaging, including TTE, TEE, and cardiac MRI, in the diagnostic process. Serological testing and careful consideration of the patient's clinical history are also crucial in ruling out thrombi. Ultimately, histopathology confirms the diagnosis. Early diagnosis and surgical resection are paramount in preventing potentially life-threatening complications such as embolization or obstruction. The excellent outcome in this case underscores the importance of prompt intervention in cases of suspected myxoma.

Patient consent was obtained prior to the study.

The authors declare no conflict of interest.

6. Source of Funding

None.

7. Conflict of Interest

None.

References

1. Qian WL, Jiang Y, Liu X, Guo YK, Li Y, Tang X. Distinguishing cardiac myxomas from cardiac thrombi by a radiomics signature based on cardiovascular contrast-enhanced computed tomography images. *BMC Cardiovasc Disord*. 2021;21(1):152.
2. Agarwal S, Abdelghani E, Stanek JR, Sankar A, Cua CL, Kerlin BA. Intracardiac thrombi in pediatrics: anticoagulation approach and treatment outcomes. *Res Pract Thromb Haemost*. 2023;7(8):102266.
3. Kurmann R, El-Am E, Abbasi AA, Mazur MA, Akiki P, Anand E, et al. Cardiac Masses Discovered by Echocardiogram; What to Do Next? *Struct Heart*. 2023;7(4):100154.
4. Nasser SB, Doeblin P, Doltra A, Schnackenburg B, Wassilew K, Berger A, et al. Cardiac Myxomas Show Elevated Native T1, T2 Relaxation Time and ECV on Parametric CMR. Front Cardiovasc Med. *Front Cardiovasc Med*. 2020;7:602137.
5. Weisel JW, Litvinov RI. Visualizing thrombosis to improve thrombus resolution. *Res Pract Thromb Haemost*. 2021;5(1):38–50.
6. Islam A. Cardiac myxomas: A narrative review. *World J Cardiol*. 2022;14(4):206–19.
7. Alkarithi G, Duval C, Shi Y, Macrae FL, Ariëns R. Thrombus Structural Composition in Cardiovascular Disease. *Arterioscler Thromb Vasc Biol*. 2021;41(9):2370–83.
8. Meng XH, Xie LS, Xie XP, Liu YC, Huang CP, Wang LJ, et al. Cardiac myxoma shedding leads to lower extremity arterial embolism: A case report. *World J Clin Cases*. 2022;10(29):10606–13.
9. Jiang CX, Wang JG, Qi RD, Wang W, Gao LJ, Zhao JH, et al. Long-term outcome of patients with atrial myxoma after surgical intervention: analysis of 403 cases. *J Geriatr Cardiol*. 2019;16(4):338–43.
10. Ulin R, Geana RC, Robu M, Iliescu VA, Stiru O, Nayyerani R, et al. Predictors of Late Mortality in Patients With Surgically Resected Cardiac Myxomas: A Single-Center Experience. *Cureus*. 2022;14(1):20866.
11. Paar MH, Muršić M, Josipović TB, Dilber D, Bulj N. Multimodality Imaging of Cardiac Myxomas. *Rev Cardiovasc Med*. 2024;25(6):204.

Author's biography

Meriam Amri, M.D, Cardiology Resident

El Mehdi Tamir, M.D, Cardiology Resident

Badr Abdalani, M.D, Cardiology Resident

Rachida Habbal, Ph.D. Scholar

Cite this article: Amri M, Tamir EM, Abdalani B, Habbal R. Right atrial myxoma diagnosed through differential analysis with right atrial thrombus. *Yemen J Med* 2024;3(3):262-264.