Scholars Journal of Medical Case Reports
Abbreviated Key Title: Sch J Med Case Rep
ISSN 2347-9507 (Print) | ISSN 2347-6559 (Online)
Journal homepage: https://saspublishers.com

OPEN ACCESS

Radiology

Right Atrial Mass Revealed by Recurrent Pericardial Effusion: A Case of Suspected Angiosarcoma or Atypical Myxoma

Bhalil Siham MD[1*], Maazouz Lamiae MD[1], Ziani Hamid MD[1], Nasri Siham[1], Skiker Imane[1]

[1]Department of Radiology, University Hospital Mohammed VI Oujda, Morocco

DOI: https://doi.org/10.36347/sjmcr.2026.v14i06.023 | **Received:** 25.04.2026 | **Accepted:** 01.06.2026 | **Published:** 08.06.2026

***Corresponding author:** Bhalil Siham MD
Department of Radiology, University Hospital Mohammed VI Oujda, Morocco

Abstract **Case Report**

Primary cardiac tumors are extremely rare and often present with non-specific symptoms. Among them, cardiac angiosarcomas are the most common malignant subtype, typically arising from the right atrium and frequently associated with pericardial effusion. Differentiating them from atypical myxomas can be challenging, particularly on imaging. We report the case of a 58-year-old male with recurrent pericardial effusions, progressive chest pain, dyspnea, and cough. Contrast-enhanced chest CT demonstrated a large pericardial effusion associated with a thickened, irregular right atrial wall. Cardiac MRI revealed a poorly defined, irregular tissue mass centered on the posterior and lateral walls of the right atrium, protruding into the atrial lumen. Cardiac MRI findings were highly suggestive of a right atrial angiosarcoma, although an atypical myxoma could not be excluded. This case underscores the pivotal role of MRI in characterizing cardiac masses and assessing their extension, which is essential for diagnosis and management planning.

Keywords: Cardiac angiosarcoma, Atypical myxoma, Primary cardiac tumor, Pericardial effusion, right atrial mass, Cardiac MRI, Differential diagnosis.

INTRODUCTION

Primary cardiac tumors are exceptionally rare, with an incidence of less than 0.03% in autopsy series. Among malignant cardiac neoplasms, angiosarcomas are the most frequent, typically originating from the right atrium and demonstrating aggressive local invasion and early metastasis [1]. Clinical manifestations are often nonspecific, which may delay diagnosis [2] [3].

Imaging plays a central role in the assessment of cardiac masses. Transthoracic echocardiography can detect the presence of a mass or pericardial effusion, while computed tomography (CT) and magnetic resonance imaging (MRI) provide comprehensive evaluation of tumor size, morphology, tissue composition, vascularity, and local extension [4] [5].

Here, we present the case of a 58-year-old male with recurrent pericardial effusion in whom chest CT initially revealed a right atrial mass associated with a large pericardial effusion. Cardiac MRI provided detailed characterization, suggesting angiosarcoma while raising consideration of an atypical myxoma, illustrating the pivotal role of advanced imaging in diagnosis and management of cardiac tumors.

Clinical Presentation and Imaging Findings:

A 58-year-old male chronic smoker with no known comorbidities was admitted with a one-month history of progressive chest pain, dyspnea, and cough. Laboratory findings, including complete blood count and biochemistry, were within normal limits.

Contrast-enhanced chest CT demonstrated a large pericardial effusion with diffuse enhancement of the pericardial layers. In addition, a soft-tissue mass was identified, centered on the right atrial wall, raising suspicion for a primary cardiac tumor.

Pericardial fluid analysis revealed a sero-hemorrhagic effusion without malignant cells or infectious organisms. Surgical drainage of the effusion was performed with creation of a pleuro-pericardial window and pericardial biopsy, which was negative for malignancy.

Cardiac MRI was subsequently performed for further characterization. The protocol included axial T1-weighted, T1 fat-suppressed, T2-weighted, axial STIR, T2 Dixon, diffusion-weighted imaging (b1000), cine sequences, TIRM, T1 and T2 mapping, first-pass

perfusion (REST), and delayed enhancement (DE) sequences.

MRI revealed an ill-defined, irregular tissue mass centered on the posterior and lateral walls of the right atrium, protruding endoluminally. The lesion was isointense on T1-weighted images and heterogeneously intermediate on T2-weighted images, with diffusion hyperintensity but no ADC restriction. It showed heterogeneous enhancement after contrast administration and measured approximately 83 × 41 mm in axial dimensions.

Topographically, the mass infiltrated the adjacent pericardium with associated pericardial effusion, extended to the posterior insertion of the interventricular septum, and encased the atrial ostium of the superior vena cava, which remained patent. The lesion was in intimate contact with the right coronary artery without a clear separation plane, while remaining distant from the coronary sinus and tricuspid valve. Cine MRI demonstrated hypokinesia of the lateral and posterior right atrial walls, with preserved myocardial contractility in the remaining cardiac chambers and a left ventricular ejection fraction of 59%. No ischemic or fibrotic changes were observed.

Based on the imaging features, a primary cardiac angiosarcoma was considered the most likely diagnosis, although an atypical right atrial myxoma could not be completely excluded.

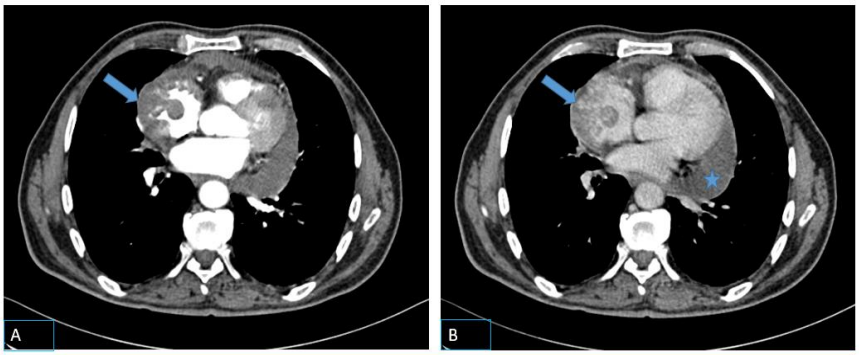

Figure 1. Contrast-enhanced chest CT.
Axial image demonstrating a pericardial effusion (asterisk) associated with a soft-tissue mass (arrow) centered on the right atrial wall. The lesion shows irregular contours and heterogeneous attenuation. No calcification is noted.

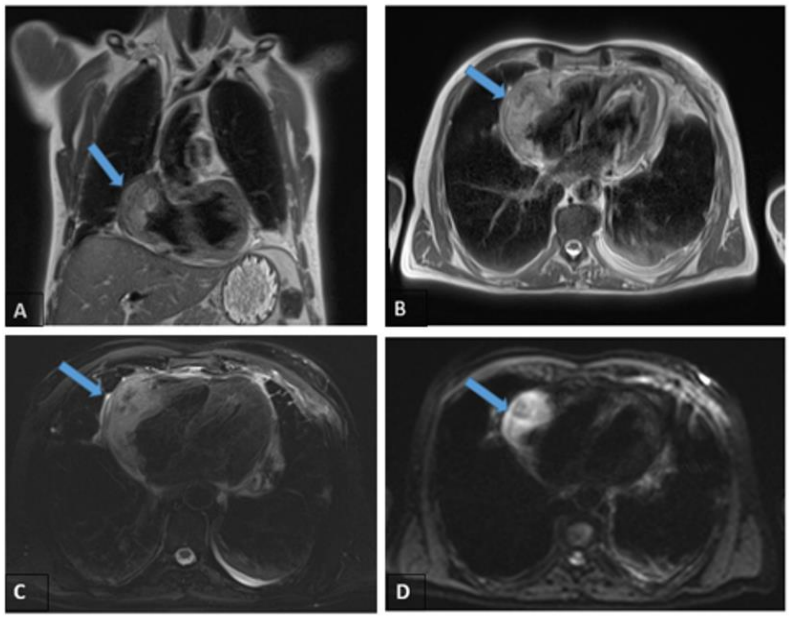

Figure 2. Cardiac MRI
(A) Coronal T2-weighted image demonstrating a heterogeneous right atrial mass (arrow) protruding into the atrial lumen, with intermediate signal intensity.
(B) Axial T2-weighted image showing the irregular, poorly defined contours of the lesion (arrow) involving the posterior and lateral walls of the right atrium.
(C) Axial STIR image highlighting hyperintense signal of the mass (arrow), reflecting edema and vascularized tumor tissue.
(D) Diffusion-weighted imaging (b1000) showing hyperintensity of the mass (arrow) without corresponding ADC restriction

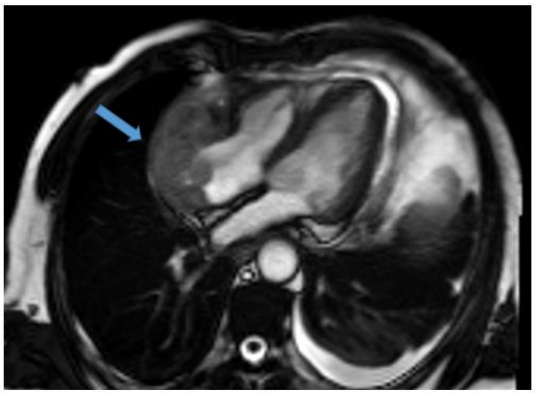

Figure 3. Cardiac MRI
Cine image in the 4-chamber view demonstrating an irregular mass (arrow) in the right atrium protruding into the atrial lumen.

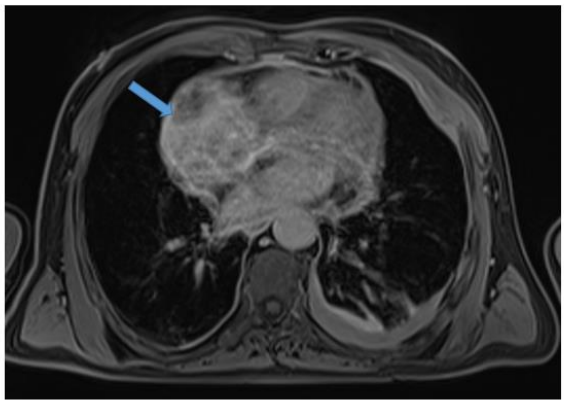

Figure 4. Cardiac MRI
Axial T1-weighted fat-suppressed image acquired in the delayed phase after gadolinium administration demonstrating heterogeneous enhancement of the right atrial mass (arrow).

DISCUSSION

Primary cardiac tumors are exceedingly rare, with an incidence estimated at 0.001–0.03% in autopsy series, and approximately 25% of these are malignant, the majority being angiosarcomas [4]. Cardiac angiosarcomas most frequently arise from the right atrium, where they tend to infiltrate the atrial wall and pericardium, often resulting in hemopericardium or recurrent pericardial effusion [1].

In the present case, the patient's initial presentation with chest pain, dyspnea, and a large pericardial effusion was consistent with the typical clinical profile of cardiac angiosarcoma, which is frequently nonspecific and may mimic pericarditis or cardiac tamponade [2].

CT and MRI play a pivotal role in characterizing cardiac masses and defining their extent. On CT, cardiac angiosarcomas typically appear as irregular, lobulated soft-tissue masses arising from the right atrial wall, with heterogeneous enhancement due to necrosis or hemorrhage [3]. In our case, CT demonstrated both a large pericardial effusion and a right atrial mass, raising suspicion of a primary malignant tumor and prompting further evaluation with cardiac MRI.

MRI provides superior tissue characterization and multiplanar evaluation. Typical features of cardiac angiosarcoma include intermediate to high T2 signal, isointense or slightly hypointense T1 signal, restricted diffusion, and intense heterogeneous enhancement after contrast administration, reflecting necrotic and vascularized tumor components [5]. In our case, MRI revealed an ill-defined infiltrative mass of the right atrium, in heterogeneous intermediate T2 signal and isointense T1 signal, with heterogeneous post-contrast enhancement and pericardial infiltration—findings in keeping with angiosarcoma.

The differential diagnosis also includes atypical right atrial myxoma, which can present with unusual location, morphology, or imaging characteristics. Unlike typical myxomas that are usually pedunculated and attached to the interatrial septum, atypical myxomas may arise from the free atrial wall, exhibit irregular or lobulated contours, and occasionally extend toward adjacent structures. On MRI, these lesions often

demonstrate heterogeneous T2 signal intensity due to varying proportions of myxoid stroma, hemorrhage, or fibrosis, and variable contrast enhancement patterns. While they may mimic malignancy, atypical myxomas usually show more discrete margins and limited infiltration compared to angiosarcomas, which helps in the differential diagnosis [6]. The irregular margins, infiltrative pattern, and pericardial invasion seen in our patient were more suggestive of a malignant process, particularly angiosarcoma.

Despite advances in imaging, histopathological confirmation remains mandatory for diagnosis. However, in some cases, pericardial biopsy may be non-contributory due to sampling limitations, as observed here. PET-CT is often recommended to evaluate metabolic activity and detect distant metastases, which are common at presentation [4] [5].

In summary, cardiac MRI provides crucial information for the non-invasive characterization of right atrial masses. The combination of an infiltrative right atrial lesion with heterogeneous enhancement and pericardial involvement should raise strong suspicion for angiosarcoma. Nevertheless, atypical myxoma remains a diagnostic consideration, emphasizing the importance of multimodality imaging correlation and tissue sampling whenever possible.

CONCLUSION

Primary cardiac tumors are rare and often present with nonspecific clinical symptoms. This case demonstrates that multimodality imaging, particularly CT and cardiac MRI, is essential for accurate detection, tissue characterization, and assessment of local invasion in right atrial masses. Imaging findings strongly suggested angiosarcoma, while an atypical myxoma remained a differential consideration. Early and precise imaging evaluation is crucial for guiding biopsy, surgical planning, and optimizing patient management.

REFERENCES

1. Cottini M, Pergolini A, Gentile P, Musumeci F. “Primary Cardiac Angiosarcoma.” *J Card Surg.* 2016 Jan;31(1):63-64.
2. Ohtahara A, Hattori K, Fukuki M, Hirata S, Ahmmed GU, Kato M, Fujimoto Y, Shigemasa C, Mashiba H. “Cardiac angiosarcoma.” *Intern Med.* 1996 Oct;35(10):795-798.
3. Crenitte MRF, Galvão MD, Bernardi FDC, da Fonseca LG. “Cardiac angiosarcoma: an unexpected diagnosis.” *Autops Case Rep.* 2014 Sep 30;4(3):53-58.
4. Guo S, Guo Q. “Primary Cardiac Angiosarcoma.” *Int Heart J.* 2021 Mar 30;62(2):458-462.
5. Li X, Lan L, Hu H. “Case report: Primary cardiac angiosarcoma with multiple metastases.” *Front Cardiovasc Med.* 2022 Jul 28; 9:941967.
6. Zély P, Douard H, Roudaut R, Roques X, de Mascarel A, Broustet JP. A propos d'un myxome de révélation et de morphologie atypique [Myxoma of atypical manifestation and morphology]. Ann Cardiol Angeiol (Paris). 1995 Mar;44(3):131-4.