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Stepwise multimodality imaging assists in atrial myxoma diagnosis and management

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IMAGING VIGNETTE

BEGINNER

CLINICAL VIGNETTE

Stepwise Multimodality Imaging Assists in Atrial Myxoma Diagnosis and Management



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ABSTRACT

The case of a 67-year-old man who presented for elective gastroenterology procedures and was in atrial fibrillation is discussed. Transthoracic echocardiography revealed a large atrial mass. Preoperative coronary angiography revealed a heavily vascularized mass. Use of cardiac magnetic resonance identified the cardiac mass as likely an atrial myxoma. (Level of Difficulty: Beginner.) (J Am Coll Cardiol Case Rep 2023;10:101757) © 2023 The Authors. Published by Elsevier on behalf of the American College of Cardiology Foundation. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

A 67-year-old man with past medical history of hypertension, obstructive sleep apnea, and Parkinson disease presented for elective bidirectional endoscopy for evaluation of abdominal pain. He was in his usual state of health, and review of systems was positive for only abdominal pain. In the preoperative holding area, he was found to be hemodynamically stable with heart rates in the 120s. Electrocardiogram confirmed a diagnosis of atrial fibrillation with rapid ventricular response. On physical examination, heart sounds were irregularly irregular without murmurs, rubs, gallops, or “plops.”

Cardiology was consulted. Transthoracic echocardiogram revealed left ventricular systolic dysfunction (ejection fraction 35%-40%), left atrial (LA) enlargement, and a large LA mass. He underwent bidirectional endoscopy without complication as initially planned on the same day. Subsequent transesophageal echocardiogram revealed a large 8 × 5 × 4.5 cm mobile heterogenous structure in the left atrium that was attached to the atrial septum and moved closely to the mitral valve (Figure 1A, Video 1).

Patient underwent preoperative coronary angiography, which demonstrated a heavily vascularized mass in the left atrium (Figure 1B, Video 2). The increased vascularity seen on angiography raised concern for malignant etiology for this cardiac mass, and cardiac magnetic resonance was obtained. This showed a 4.9 × 7.8 cm pedunculated mass attached via stalk to the interatrial septum at the fossa ovale in the left atrium (Figure 1C). The mass was avidly enhanced and was encased by nonenhancing thrombus or myxomatous tissue. Overall, cardiac magnetic resonance results were consistent with an atrial myxoma, rather than a malignant tumor.

Patient underwent cardiac surgery for tumor resection, closure of iatrogenic atrial septal defect from mass excision, and biatrial maze procedure for his atrial fibrillation. Pathology confirmed the diagnosis of 76 g, 6.4 × 6.0 × 5.5 cm atrial myxoma with patchy myxoid and hemorrhagic appearance (Figure 1D). Patient recovered

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**ABBREVIATIONS
AND ACRONYMS**

LA = left atrium

without major complications and was discharged home with outpatient follow-up. His postoperative atypical atrial fibrillation was successfully cardioverted as outpatient without recurrence.

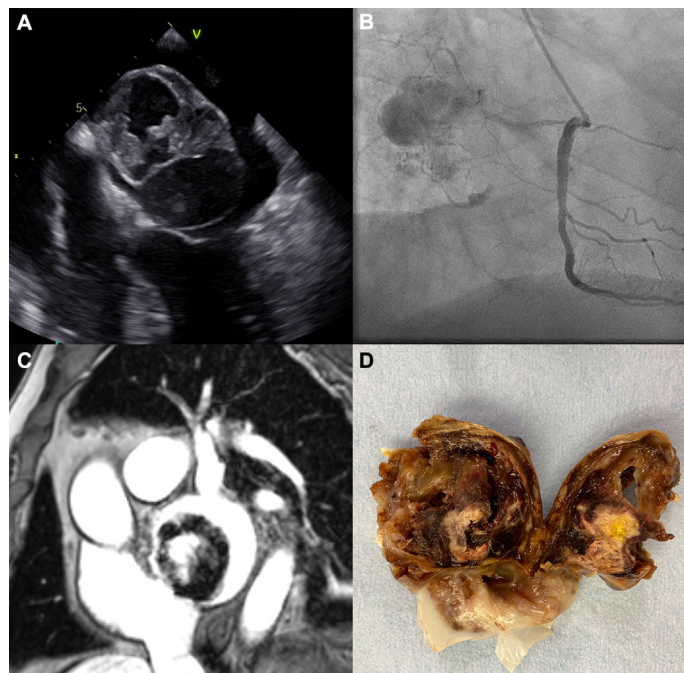
DISCUSSION

This case highlights the utility and importance of stepwise multimodality imaging in diagnosing and managing cardiac masses. Initial diagnosis is usually via echocardiography.^{1,2} Although prompt surgical resection because of the risks of tumor embolization is recommended, the necessity of preoperative coronary assessment remains under debate.² Atrial myxomas are the most common cardiac mass and have a reported neovascularization prevalence in several studies of 37%-56%;³ coronary artery catheterization and, more recently, computed tomography angiography have been used for preoperative assessment.¹⁻³ Coronary catheterization was elected over computed tomography angiography because it provides precise information about tumor blood supply, which can affect perioperative management of bleeding. As in our case, use of cardiac magnetic resonance can help further characterize the mass; computed tomography scans are not as favored for atrial mass evaluation.¹ Our patient's mass had characteristics that were most consistent with a benign etiology, such as atrial myxoma. In the case of malignant cardiac masses with significant neovascularization and shunting, surgical strategy may be affected,² and arterial embolization by interventional radiology could be considered prior to operative surgical resection.

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The authors have reported that they have no relationships relevant to the contents of this paper to disclose.

FIGURE 1 Multimodality Imaging Used for Diagnosis of Left Atrial Myxoma


(A) Large atrial mass seen on transesophageal echocardiography. (B) Coronary angiography demonstrated heavy vascularization from the right coronary artery. (C) Cardiac magnetic resonance demonstrated atrial mass consistent with myxoma. (D) Pathology specimen after surgical resection.

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KEY WORDS atrial fibrillation, cardiac magnetic resonance, coronary angiography, echocardiography

 **APPENDIX** For supplemental videos, please see the online version of this paper.