

CASE REPORTS—AGOSTINO MEDURI AND RONALD RAZMI, EDITORS

Simultaneous occurrence of two different primary cardiac tumors in an 84-year-old woman characterized by cardiovascular magnetic resonance imaging

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1. Introduction

Primary cardiac tumors are rare. The commonest cardiac tumor is a metastatic deposit from primary malignancy elsewhere. Benign primary tumors constitute only a small proportion of all cardiac tumors.

Depending on their location, cardiac tumors may interfere with cardiac contraction or cause obstruction to valvular flow. Others, located within the myocardium or attached to the atrial or ventricular wall, may remain undetected for many years and be discovered only postmortem.

Cardiac MRI is unique in its ability to assess intra-cardiac pathology, not only because of the large field of view but also due to the ability to characterize tissue components through the application of specific pulse sequences.

We present the unusual case of an 84-year-old woman whose cardiac MRI examination identified two synchronous cardiac tumors that were both anatomically and pathologically distinct.

2. Case report

An 84-year-old woman was referred for cardiac MRI following presentation to her physician with episodes suggestive of transient cerebral ischemia. Two discrete cardiac masses had been identified by echocardiography and it was felt that these were likely to represent metastases from an unknown primary neoplasm.

Cardiac MRI was performed and intravenous gadolinium contrast agent was administered. Cine gradient echo imaging

revealed a mobile mass within the right ventricular outflow tract (RVOT), causing subtotal obstruction during systole (Fig. 1). A second smaller mass could be seen within the right lateral aspect of the left atrium, apparently adherent to the inter-atrial septum (Fig. 1).

The RVOT mass demonstrated high signal intensity on T1 weighted spin echo sequences but intermediate signal with T2 weighting. It remained of intermediate signal intensity on gadolinium-enhanced fat-suppressed T1 weighted images (Figs. 2–4).

The left atrial mass displayed quite distinct imaging characteristics. It was of low signal intensity with T1 weighting, higher signal intensity with T2 weighting, and showed moderate enhancement with intravenous gadolinium (Figs. 2–4).

3. Discussion

The imaging features described above are consistent with two distinct tumor types being present in this individual. The larger mass appeared to be composed predominantly of fat (high signal intensity on T1, much lower signal with fat suppression, no enhancement after contrast). This permitted a confident diagnosis of RVOT lipoma. This is a benign neoplasm, which, as in this case, may grow quite large before causing symptoms secondary to valvular or outflow tract obstruction (1). Cardiac lipomas have also been associated with a variety of cardiac arrhythmias (2), although this was not a feature in our patient.

The second mass had quite different radiological characteristics. The attachment to the inter-atrial septum, the higher signal intensity with a longer echo time, and the heterogenous enhancement with gadolinium injection were all consistent with a diagnosis of left atrial myxoma. These tumors represent approximately 50% of all benign cardiac neoplasms. They may present with evidence of peripheral embolization or

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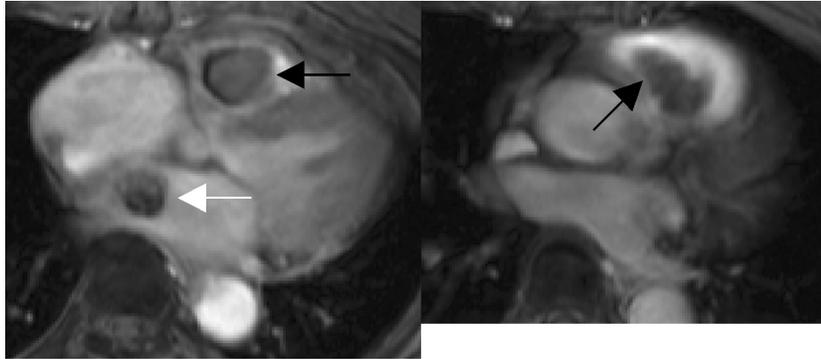


Figure 1. Gradient echo axial images showing a large low signal mass that occupies a significant proportion of the right ventricular outflow tract (dark arrows). A second mass is seen within the left atrium (light arrow).

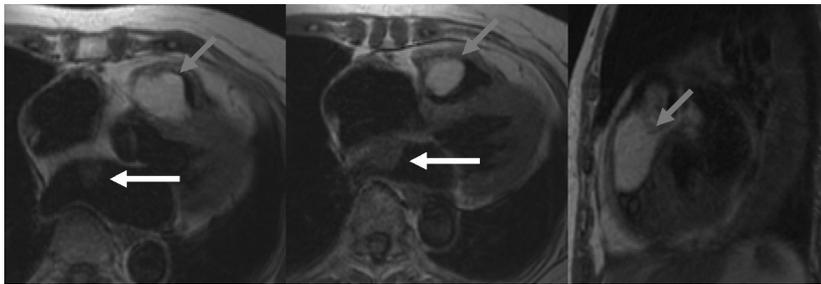


Figure 2. Axial (a,b) and sagittal (c) T1-weighted spin echo images precontrast. The larger mass (dark arrow) causes incomplete obstruction of the RVOT. Note how the smaller mass (light arrow) appears attached to the inter-atrial septum.

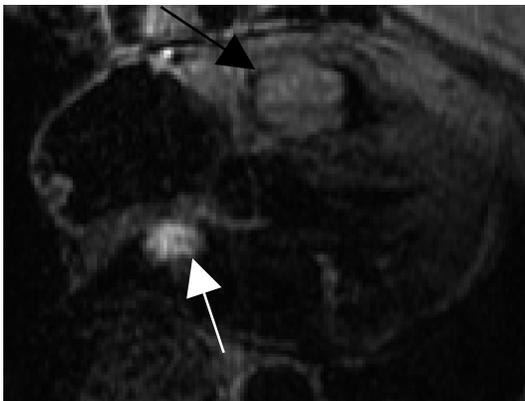


Figure 3. Axial T2-weighted spin echo image. The RVOT mass (dark arrow) shows a significant decrease in signal compared to the T1-weighted images. The left atrial mass (light arrow) conversely is of higher signal than previously.

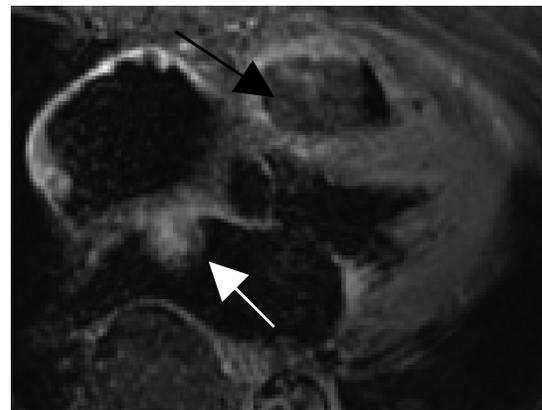


Figure 4. Axial T1-weighted fat-saturated spin echo image post contrast. The RVOT mass (dark arrow) remains of low signal while the left atrial mass (light arrow) clearly enhances.

systemic symptoms of fever, weight loss, and anemia (3). Their radiological characteristics have been described exhaustively elsewhere (4).

The patient declined surgical excision on the grounds of age.

4. Conclusion

Cardiovascular MRI is a powerful tool in the assessment of cardiac tumors. Superior tissue characterization establishes a more exact diagnosis than is possible on the basis of

echocardiography alone. In this case the preliminary diagnosis had to be substantially revised following MR examination.

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