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Case Report

Intense 18F-FDG uptake in an organizing right atrial thrombus mimicking malignancy

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ABSTRACT

We present a case of an intensely hypermetabolic intracavitary cardiac mass, standardized uptake values max 44.4, that was pathologically proved to be organizing and organized thrombus, negative for tumor. Our patient had previous right atrial mass resection 2 years prior that was pathologically described as either thrombus or infarcted atrial myxoma. She had since been on lifelong controlled anticoagulation; and on routine follow-up imaging, she had recurrent slow growth of a new right atrial mass. During a later hospital admission for chest pain, the mass was evaluated on both transthoracic and transesophageal echo cardiogram, which could not differentiate thrombus vs neoplasm. Cardiac magnetic resonance imaging was equivocal for mass enhancement. The patient underwent fluorodeoxyglucose positron emission tomography/computed tomography (18F-FDG PET/CT) evaluation, which revealed intensely hypermetabolic activity within the mass concerning for malignancy, potentially an aggressive tumor. Subsequently, the mass was surgically excised for pathological diagnosis.

Introduction

A 31-year-old female presents to the emergency department complaining of chest pain. She has a medical history significant for prior right atrial mass resected 2 years prior, which was pathologically diagnosed as a thrombus vs infarcted atrial myxoma. Over the 2 years since then the mass has been noted as recurring and slowly growing. Current admission computed tomography (CT) pulmonary angiography was initially performed and demonstrated chronic appearing pulmonary emboli, but no acute findings. Given the patient's history, transthoracic and subsequent transesophageal echocardiograms were obtained to evaluate her known intracavitary mass and demonstrated the right atrial mass along the atrial free wall with frond-like extension into the tricuspid valve (Fig. 1). Given that the differential diagnosis for atrial masses includes thrombus or neoplasm, the finding was further evaluated with enhanced cardiac magnetic resonance (CMR) imaging.

CMR imaging demonstrated a hypointense mass occupying the basal posterolateral third of the right atrium on T2

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Fig. 1 – Transesophageal echocardiogram: echogenic mass within the right atrium with protruding "frond-like" extension toward the tricuspid valve.

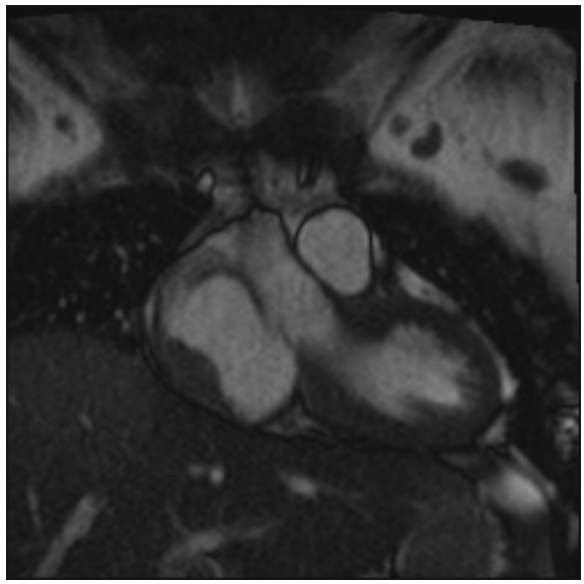

Fig. 3 – Single coronal image from T2-steady state free precession cine images set shows the hypointense right atrial mass.

sequences (Figs. 2 and 3), but not well visualized on noncontrast T1 sequence (Fig. 4). Postgadolinium imaging was equivocal for enhancement during perfusion phase (Figs. 5 and 6), and 12-min delayed images were degraded by respiratory motion (Fig. 7). The noncontrast enhanced CMR examination from 2 years earlier demonstrated the resected right atrial mass as mildly hyperintense on T1 images and heterogeneous on T2 (Figs. 8 and 9, respectively). A precise diagnosis could not be reached by the current CMR, and the differential remained thrombus vs neoplasm.

Fluorodeoxyglucose positron emission tomography/computed tomography (18F-FDG PET/CT) was performed, revealing extremely intense metabolic activity in the mass, with standardized uptake values (SUV) max of 44.4 (Fig. 10). Such intense metabolic activity was felt to be atypical for thrombus, and neoplasm could not be excluded.

Surgical excision of the cardiac mass was performed. Pathologic analysis determined that the mass to be an organizing and organized thrombus, negative for tumor (Fig. 11).

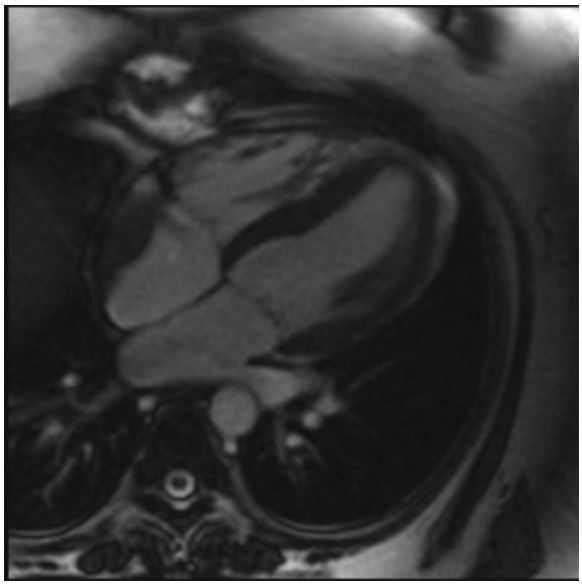

Fig. 2 – Single axial image from T2-steady state free precession cine images shows the hypointense right atrial mass.

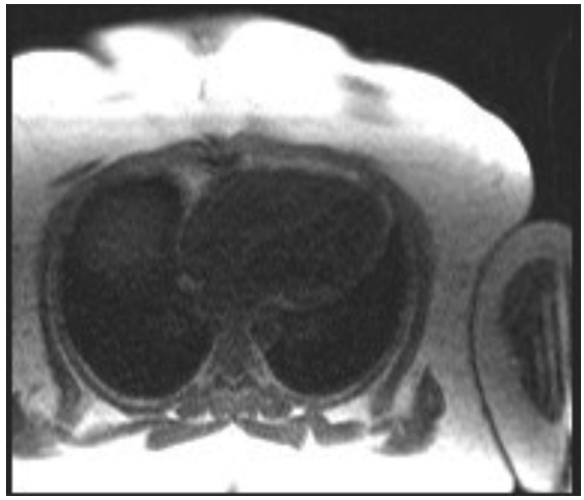

Fig. 4 – Single axial T1 noncontrast gradient image at the level of the right atrial mass demonstrates poor visualization of the mass from background blood pool.