Case report - Thoracic oncologic

Extensive cardiac lipoma with aneurysmal right ventricle

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Abstract

A 56-year-old female with history of mitral valve replacement and automated implantable cardioverter-defibrillator placement presented with dyspnea on exertion for two years and recurrent ascites. Imaging studies, including transthoracic and transesophageal echocardiograms as well as 64-slice computed tomography (CT) angiogram revealed a large mass encasing the entire heart consistent with lipoma. In addition, a right ventricular free wall aneurysm was found. The patient subsequently underwent surgical repair of the tricuspid valve and resection of the right ventricular anterior wall aneurysm. The anterior portion of the cardiac lipoma was also resected. Gross specimen revealed an 11.5 x 6.5 x 5 cm mass of adipose tissue without malignancy. In this case, the patient presented with symptoms of congestive heart failure due to the aneurysm in the right ventricle.

Keywords: Cardiac lipoma; Right ventricular aneurysm; Congestive heart failure

1. Introduction

Cardiac lipomas are very rare tumors [1]. Due to the indolent nature of these tumors they are often asymptomatic and diagnosed incidentally. When symptomatic, patients could present with congestive heart failure or arrhythmia [2].

2. Case report

A 56-year-old female with history of mitral valve replacement and automated implantable cardioverter-defibrillator (AICD) placement presented with a two years’ history of dyspnea on exertion and recurrent ascites. Physical examination was remarkable for jugular venous distension of 10 cm, a 3/6 holosystolic murmur in the base and a mildly distended abdomen with positive fluid thrill. Chest X-ray revealed cardiomegaly (Fig. 1). Transthoracic and transesophageal echocardiograms revealed an echogenic mass in the pericardial space around the inferior and posterolateral walls of the left ventricle. Furthermore, severe tricuspid regurgitation was found. A 64-slice multidetector computed tomography (MDCT) angiogram revealed a large low-density mass that encased the entire heart. The tissue density measured by Hounsfield Units was –84 to –116 on average consistent with lipomatous tissue. The heart was displaced to the left. In addition, an anterior cavity surrounded by the mass and filled with contrast was seen with communication to the right ventricle consistent with a right ventricular free wall aneurysm (Fig. 2). No significant coronary stenosis was detected on CT coronary angiogram. The patient underwent surgery, which included repair of the tricuspid valve and resection of the right ventricular anterior wall aneurysm with primary closure. Resection of the anterior portion of the cardiac lipoma was also performed. Gross specimens revealed an 11.5 x 6.5 x 5 cm mass of adipose tissue (Fig. 2a). On cross-sectional, no discrete lesion was present. Microscopic sections of the cardiac lipoma showed mature adipocytes with intervening fibrovascular tissue. Focal areas of cardiac myocytes were present with hypertrophy. No atypical features or malignancy were identified (Fig. 2b).

3. Discussion

Cardiac lipomas represent about 10% of cardiac tumors and are thought to originate either from the subendocardium, subpericardium or the myocardium [1]. In this case, the lipoma most likely originated from subpericardium and infiltrated the right ventricular free wall. Subsequent weakening of the wall led to right ventricular aneurysm, which was contained within the lipoma [3]. Most lipomas are asymptomatic; however, their subpericardial location allows some to reach an enormous size causing symptoms, such as angina and congestive heart failure as was the case in our patient. Echocardiography is useful in initial evaluation, but it is unable to differentiate distinct tissue characteristics. Tissue characterization with CT and mag-

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Fig. 1. Axial (a) and coronal (b) images of MDCT angiogram showing a large mass that encase the entire heart with a very low Hounsfield Unit consistent with lipomatous tissue (L). The heart is displaced to the left. An anterior cavity (A) filled with contrast was seen with communication to the right ventricle (RV) consistent with aneurysm. (LV, left ventricle; LA, left atrium; RA, right atrium).

Fig. 2. (a) Gross specimens included an 11.5 × 6.5 × 5 cm of adipose tissue with a 5.5 × 1.5 cm pinkish material showing the serosa. (b) Microscopic sections showed mature adipocytes (arrowhead) with intervening fibrovascular tissue. Focal areas of cardiac myocytes (arrow) were present with hypertrophy. No atypical features or malignancy was identified.

Magnetic resonance imaging is needed for confirming the diagnosis. Very low CT attenuation factor (negative HU), typical of fat tissue, allows accurate diagnosis of the lipomatous nature of the tumor [4]. An additional advantage of MDCT is its ability to delineate the dimension and spatial extension of the tumor, as well as assessment of the coronary artery for preoperative planning.

4. Conclusion

In conclusion, we report a case of a very large cardiac lipoma encasing the whole heart and involving the right ventricular wall, with consequent disruption of myocardial wall and the formation of aneurysm in the right ventricle leading the symptom of congestive heart failure.

References


