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Inter-ventricular septal cardiac fibroma in an adult: MR and MDCT features with pathologic correlation

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Abstract

We report a case of inter-ventricular septal cardiac fibroma in an adult with electrocardiogram gated multi detector computed tomography (MDCT), cardiac magnetic resonance imaging characteristics, and pathologic correlation. MDCT and multiplanar reformat views provide specific informations as exact location and presence of calcifications within the tumor to establish the specific diagnosis of cardiac fibroma. This technique might be helpful for cardiac surgeon.

Keywords: Cardiac fibroma; Multi detector computed tomography; Magnetic resonance imaging

1. Introduction

Excluding myxoma, primary cardiac neoplasia is rare in adults. Cardiac fibroma typically affects children and infants, with only 15% occurring in adults [1]. Inter-ventricular septum (IVS) involvement with projection into the right heart is rare with this disease [2,3] and may be difficult to evaluate on echocardiography. We present a case of a giant inter-ventricular septal fibroma with pathologic correlation. We report a novel approach using multi detector computed tomography (MDCT) with electrocardiogram-gating (ECG) technique, complementary to ECG gated MRI in order to obtain a specific diagnosis.

2. Case report

A 39-year-old woman with no significant past history was referred to our hospital for cardiac MRI imaging. Four months previously, she had an episode of syncope in her car. Physical examination revealed normal blood pressure and regular pulse (65/min). ECG showed normal sinus rhythm with negative T waves in lead V5-V6 (considered to be normal by her cardiologist as was her first echo also). The patient saw a neurologist who made a diagnosis of narcolepsy. Because of a second loss of consciousness and the finding of a salvo of five premature ventricular complexes on 24-h Holter ECG monitoring, she underwent a second echo which suggested a mass in the right ventricle.

A cardiac MRI was then performed with steady-state free precession (SSFP) cine sequences along two chamber long and short axis, true sagittal (for right ventricular outflow tract) and four chamber long axis. It revealed a very large right intracavitary mass, iso-intense to the myocardial wall, involving and pushing out the right ventricular free-wall and the inter-ventricular septum (Fig. 1). Because of its size, it was difficult to determine if the mass arose from the right ventricular lumen or from the myocardial wall. After intravenous gadolinium injection, the early enhancement was poor compared to the myocardial wall. As the patient could not tolerate further MRI examination, late post contrast sequences could not be performed. An ECG gated MDCT (40 slices—Phillips Brillance) was performed subsequently, suggesting that the tumor was mural in origin and calcified (Fig. 2). The calcification was strongly suggestive of fibroma [1]. There was no pericardial effusion. There were no pulmonary metastasis, and in the absence of necrosis, cystic changes or heterogeneous enhancement, the diagnosis of sarcoma was excluded [4]. Biopsy was performed via right ventriculography and showed normal myocites (Fig. 3). Because

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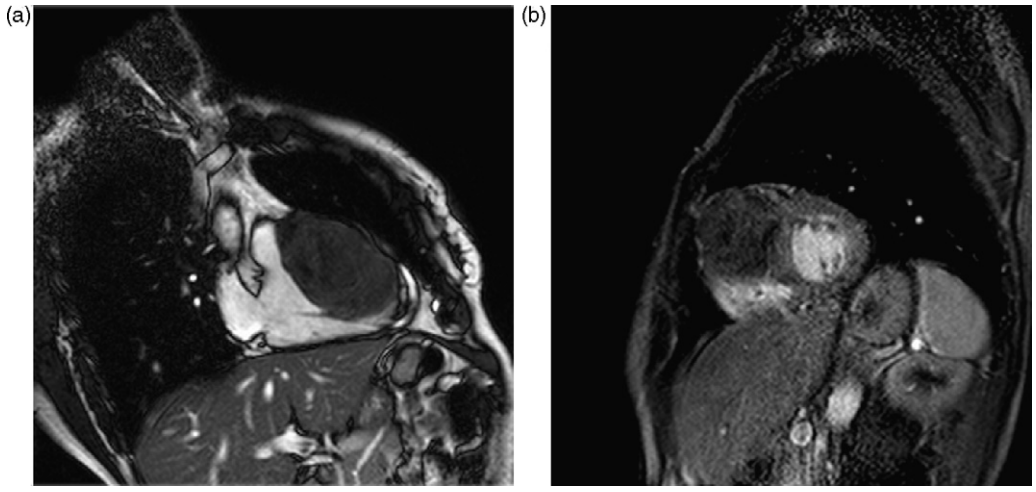

Fig. 1. (a) MRI SSFP sequence. Right ventricular outflow tract. Homogeneous and iso-intense to myocardial wall soft tissue mass, without any calcification detected. (b) First pass perfusion MRI. Poor enhancement of the mass.

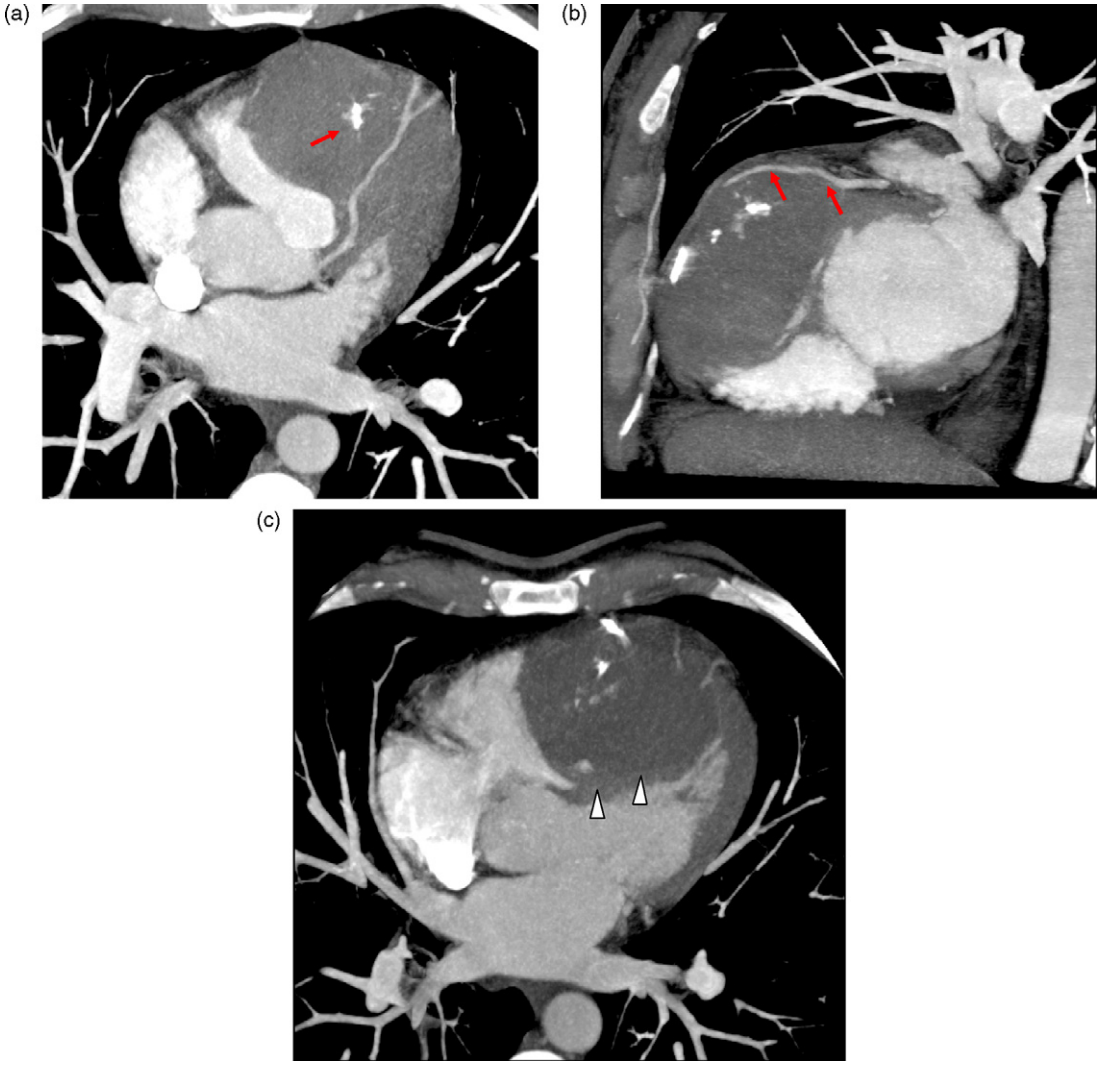

Fig. 2. (a) MDCT axial transverse view. Right ventricular mass occupying the ventricle and bulging out. The mass is pushing out the right ventricular free-wall. Note calcifications in the mass (red arrows). (b) MDCT right oblique short axis view. Left anterior descending artery in contact with fibrous mass tissue (arrows). (c) MDCT with MPR reconstruction and Maximum Intensity Pixel on four chamber view. Absence of pericardial effusion. The mass is arising from the inter-ventricular septum (white arrowheads); large sessile adherence on inter-ventricular septum. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of the article.)