

Cavernous hemangioma of the heart in a 37-year-old male visualized by multislice computed tomography (MSCT) (RCD code: VI-1B.4)

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Abstract

A 37-year-old male with a 6-month history of atypical nonexertional chest pain and markedly limited exercise capacity was referred for evaluation to our department. He had no previous medical history. There were no pathology in physical examination and laboratory tests. Standard ECG revealed inverse T-waves in leads I and aVL, and 1st degree atrio-ventricular block. Chest X-ray demonstrated a tumor-like structure on the left cardiac contour. Echocardiography revealed a large echolucent tumor adjacent to the lateral wall of the left ventricle. CT chest topogram was consistent with a large oval tumor on the left demarcation of the heart. Contrast-enhanced coronary study showed a cystic tumor (75x80x80mm) located in the epicardium of the left ventricle and separated from the myocardium. The mid portion of the left anterior descending coronary artery (LAD) was located well within the tumor. Coronary angiography showed no coronary artery disease but significant modeling of a large portion of LAD on the tumor mass. Surgical resection of the mass was performed. Histopathologic examination revealed cavernous hemangioma, a rare primary heart tumor. The patient was discharged in good condition and was found symptom-free 6 months later. JRC D 2013; 1 (5): 14–16

Key words: cardiac tumor, hemangioma, multislice computed tomography

Background

Cardiac hemangiomas are extremely rare forms of tumor and account for only 2.8–5% of all benign cardiac tumors [1,2]. Cardiac hemangiomas are nonmalignant vascular tumors consisting of blood vessels and are identical to hemangiomas located elsewhere in the body. They can be histologically classified as cavernous hemangioma, capillary hemangioma, and arteriovenous hemangioma or cirroid aneurysm. Among them, cavernous and capillary types are encountered more frequently. The epicardium is the most common location for cardiac hemangiomas, but they may also be found in myocardium and endocardium. A cavernous hemangioma is a spongy mass of wide blood-filled spaces which are pleomorphic in shape and dimension [3]. The clinical presentation (dyspnea, palpitations, atypical chest pain, arrhythmia) varies according to the tumor's location, size and its relationship to the surrounding structures. In some patients, cardiac hemangiomas may lead to conduction disturbances, pericardial

effusions, congestive heart failure, right ventricular outflow obstruction, coronary insufficiency or embolization, and even sudden death. However, most cardiac masses (including hemangiomas) are asymptomatic and are discovered incidentally by imaging techniques, such as chest X-ray, echocardiography, computed tomography (CT) or cardiac magnetic resonance imaging (MRI) [4,5]. As a result, non-invasive cardiac imaging plays a crucial role in the diagnosis and subsequent management of patients with cardiac tumors.

Case presentation

A 37-year-old male with a 6-month history of atypical nonexertional chest pain and markedly limited exercise capacity was referred for evaluation to our department. He had no previous medical history. His mother and sister were healthy, his father had myocardial infarction at the age 62. He worked hard as a carpenter.

Conflict of interest: none declared.

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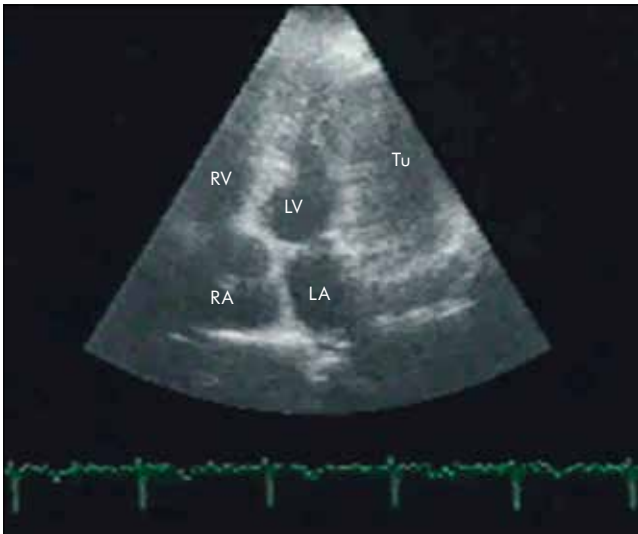


Figure 1. Echocardiography – apical 4 chamber view. Tumor adjacent to the lateral wall of the left ventricle. LA – left atrium, LV – left ventricle, RA – right atrium, RV – right ventricle, TU – tumor



Figure 2. Multisliced computed tomography. Chest topogram revealed left contour of the heart irregularly enlarged (arrows)

ter. Of risk factors only hypercholesterolemia was present. There were no pathology in physical examination and laboratory tests.

Standard ECG revealed inverse T-waves in leads I and aVL, and 1st degree atrio-ventricular block. Chest X-ray demonstrated a tumor-like structure on the left cardiac contour.

Echocardiography revealed a large echolucent tumor adjacent to the lateral wall of the left ventricle (Figure 1). We decided to perform at the beginning multislice computed tomography (MSCT) rather than magnetic resonance (MRI). Both modalities can help to confirm diagnoses but coronary CT angiography is superior to coronary MR angiography in terms of spatial resolution and study success rate. MSCT was done using Somatom Plus 4 Volume Zoom Siemens (Heart View Software) with 3-mm collimation. CT chest topogram was consistent with a large oval tumor on the left demarcation of the heart (Figure 2). Contrast-enhanced coronary study showed a cystic tumor (75x80x-80mm) located in the epicardium of the left ventricle and separated from the myocardium. The mid portion of the left anterior descend-

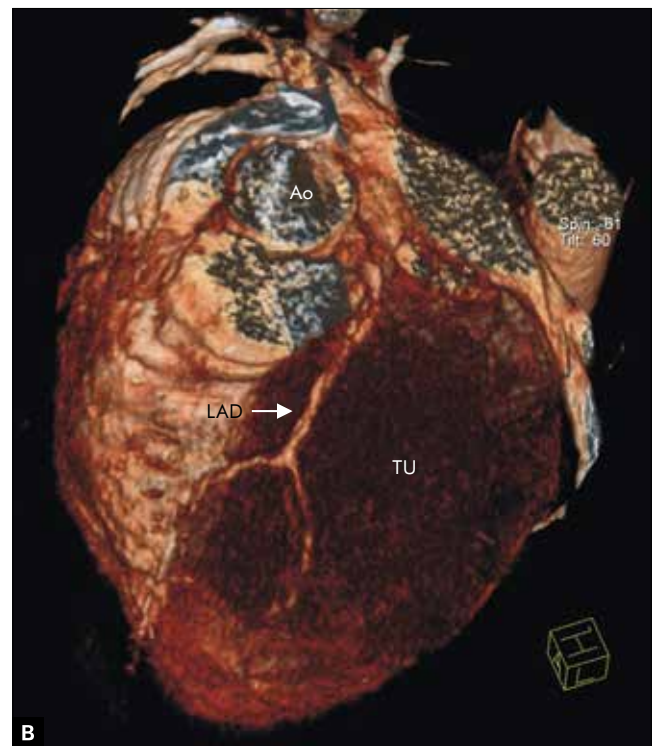
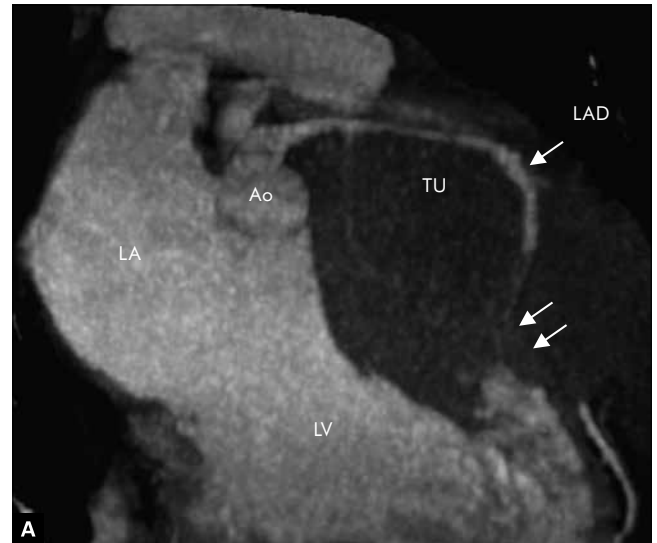


Figure 3. A. Three dimensional multisliced computed tomography reconstruction. Image of the left anterior descending artery. Its medial part is located within the tumor mass itself (arrows). LA – left atrium, Ao – aorta, LV – left ventricle, TU – tumor, LAD – left anterior descending artery. B. Three dimensional Volume Rendering reconstruction image. Left anterior descending coronary artery is located within the tumor mass itself. Ao – aorta, LAD – left anterior descending artery, TU – tumor

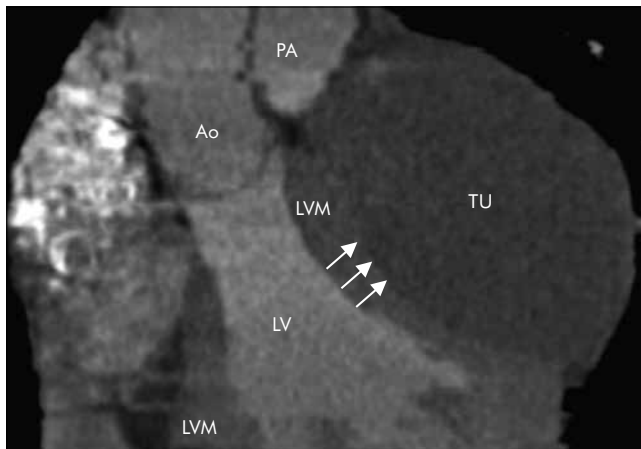


Figure 4. Two dimensional reconstructed image of the tumor located on the wall of the left ventricle, obtained from multisliced computed tomography scans. Border line between the left ventricle wall and tumor mass is well visible (arrows). LVM – left ventricle myocardium, LV – left ventricle, A – aorta, PA – pulmonary artery, T – tumor

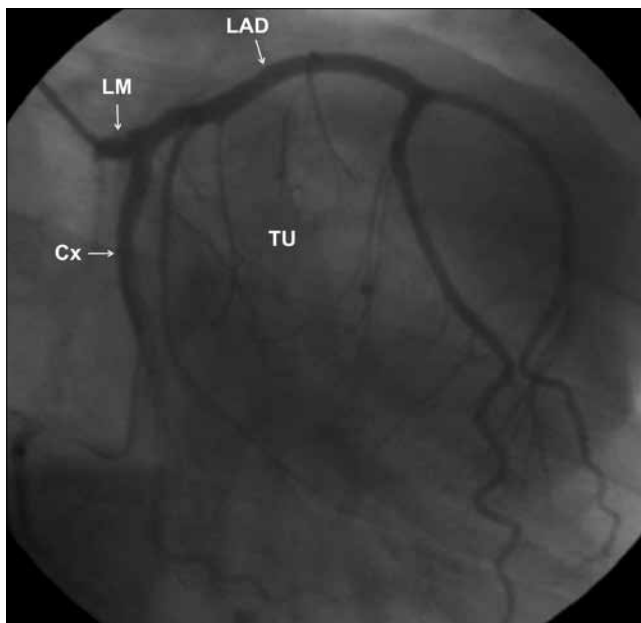


Figure 5. Coronary angiography shows no coronary artery disease but significant modeling of a large portion of LAD on the tumor mass. TU – tumor, LM – left main, LAD – left anterior descending coronary artery, CX – circumflex artery

ing coronary artery (LAD) was located well within the tumor (Figure 3 A, B; 4). Coronary angiography showed no coronary artery disease but significant modeling of a large portion of LAD on the tumor mass (Figure 5). The patient was presented at the cardiovascular surgery meeting and eligible for operation. Surgical resection of the mass was performed. LAD was found to be firmly embedded in the tumor mass. During the preparation LAD was damaged and as a consequence artery was grafted. Histopathologic examination revealed cavernous hemangioma, a rare primary heart tumor. The patient was discharged

in good condition, with normal ECG, and was found symptom-free 6 months later. Of a family, only sister visited cardiologist, no abnormalities were found in her echocardiogram.

Management

The diagnosis of cardiac tumors is aided by imaging techniques. Periodic examinations and echocardiography are recommended [6]. Echocardiography is a sensitive and noninvasive modality for detecting hemangiomas [6,7]. The MSCT may be useful when more precise evaluation of the tumour extent is required. It allows specifying the relationship of the mass with the coronary vessels. MRI is superior in the qualitative diagnosis of the cardiac tumor as it can demonstrate the extent of intramural development more accurately and confirm hypervascular nature of the hemangioma. Heart catheterization does not contribute to tumor diagnosis but should be performed to verify the presence of coronary atherosclerosis and to detect possible compression of coronary vessels by the tumor as in aforesaid case[2].

The management of such rare patients is rather empirical and therefore largely depends on the center expertise. No guidelines have been established so far due to lack of evidence based data. Successful treatment usually requires timely surgery. In most cases, prognosis is reportedly satisfactory following simple resection, if multiple lesions do not recur. On the other hand, spontaneous tumor resolution during a 2-year follow-up has been reported [8,9].

There was at least one case of recurrence and subsequent progression of the neoplasm. In another paper benign lesion treated surgically was described which 7 years after surgery transformed into malignant neoplasm – angiosarcoma [10].

However, since this tumor may cause sudden death, surgical treatment seems to be indicated in cases with clinical symptoms.

To prevent potential sequelae of a cardiac hemangioma, surgical resection should be advocated when possible although no evidence based data supporting this approach exist. Postoperative follow-up is mandatory for recurrence monitoring [5].

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