Case reports

Lipoma of the heart: a case report

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Lipomas of the heart are rare (only 0.5% according to the Armed Forces Institute of Pathology series) and their diagnosis is often difficult because they are asymptomatic; in fact, in contrast to lipomatous hypertrophy, lipomas are usually found on the epicardial surfaces of the atria or ventricles. In our case, the lipoma was located in both atria and was attached to the interatrial septum involving also the right pulmonary veins, the inferior vena cava and the right phrenic nerve. At histology, the tumor was composed only of mature adipose tissue with entrapped myocytes and vessels. The combination of computed tomography and transesophageal echocardiography allowed a precise diagnosis in terms of the localization and tissue characterization of the tumor.

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Introduction

Primary tumors of the heart are rare, two thirds are benign, and one third malignant[1]. Myxoma is the most frequent benign tumor and according to the Armed Forces Institute of Pathology (AFIP) series[1], and even our series occurs in 50% of cases; cardiac lipomas are rare (3% of primary cardiac tumors); from 1976 through 1993, the AFIP reported only 2 cases among 242 primary cardiac tumors (0.5%)[1].

They can occur anywhere in the heart[2]; most of them are found incidentally, but sometimes they can be symptomatic, depending on their size and location[3].

In contrast to lipomatous hypertrophy, lipomas are usually found on the epicardial surfaces of the atria or ventricles and do not generally cause symptoms. Several large epicardial lipomas, however, have been reported to cause preoperative left ventricular dysfunction[4], and one tumor infiltrated the soft tissue surrounding an epicardial coronary artery, necessitating complex surgery[5].

Usually lipomas are single lesions but 2 cases of multiple lesions are reported in the literature[1,4,6].

Case report

A case of a heart lipoma located in the right and left atrium is reported. A 54-year-old woman was admitted to the hospital with respiratory distress and palpitations. A faint systolic murmur, grade 2/6 was best heard at the upper right sternal border.

The electrocardiogram showed sinus rhythm, P-wave abnormalities (P-pulmonary) and supraventricular ectopic beats.

The chest roentgenogram was normal whereas two-dimensional transthoracic echocardiography (Hewlett Packard Sonos 2000, Palo Alto, CA, USA, 3.5, 2.5 MHz probe) revealed a large right atrial mass with partial extension to the left atrium. The right ventricular inflow pattern was normal (Fig. 1).

Transesophageal echocardiographic evaluation (biplane 5 MHz probe) confirmed the presence of a right atrial mass that was attached to the interatrial septum. The left atrium was also partially involved. The venae cavae were free from tumor (Fig. 2).

Contrast-enhanced computed tomography showed a large tumor with an attenuation value similar to that of subcutaneous fat, but failed to clarify the precise site of the mass; in fact, we suspected that the mass involved the pericardium and not the right and left atrium (Fig. 3).

Surgery was performed by cardiopulmonary bypass; a large mass was found and involved the right atrial wall, the interatrial sulcus, the right pulmonary veins, the inferior vena cava, the interatrial septum, the

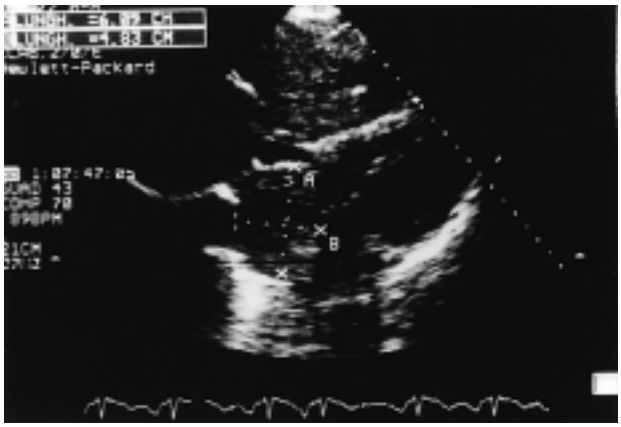

Figure 1. *Two-dimensional transthoracic echocardiogram: subcostal view.*

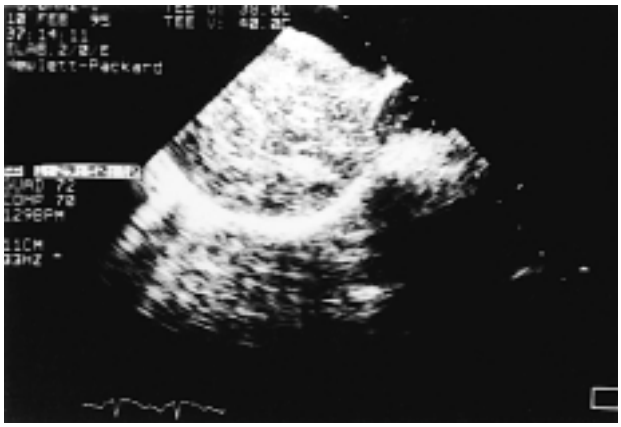

Figure 2. *Transesophageal echocardiogram: long-axis view for the atria. Esophageal position of the transducer.*

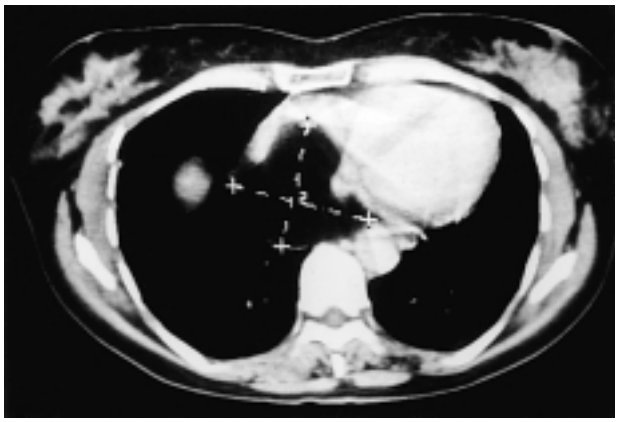

Figure 3. *Contrast-enhanced computed tomographic scan.*

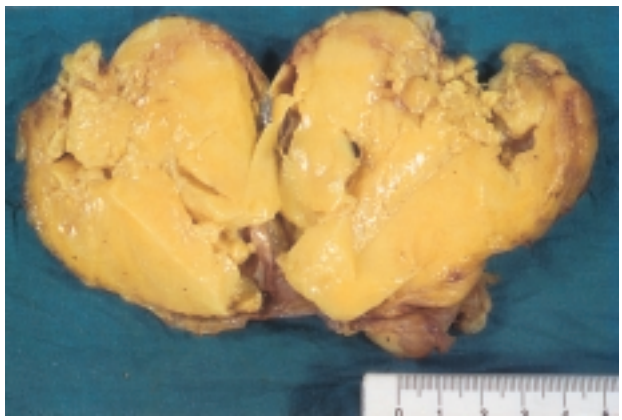

Figure 4. *A circumscribed homogeneous fatty mass.*

right phrenic nerve, and the posterior-superior wall of the left atrium. The mass was removed by demolition of the right atrial wall, the interatrial septum, the right and left superior pulmonary veins and the posterior-superior wall of the left atrium. The reconstruction of the left atrial wall was performed using a patch of dacron-sauvage, while the interatrial septum and the right atrial wall were reconstructed using a patch of autologous pericardium and by anastomosing the pulmonary veins to the atrial wall.

Grossly, a 7 × 3 × 3 cm, firm, yellow, well demarcated and lobulated mass was excised (Fig. 4); at microscopy, the tumor was composed only of mature adipose tissue with entrapped myocytes and vessels (Fig. 5).

At 1-year follow-up, the patient was alive, well and free from respiratory distress and palpitations. The electrocardiogram did not exhibit P-pulmonary waves and/or supraventricular ectopic beats. Two-dimensional transthoracic echocardiography revealed that the atria were free from any residual masses. For this reason the patient was not submitted to transesophageal echocardiography and to computed tomographic scanning.

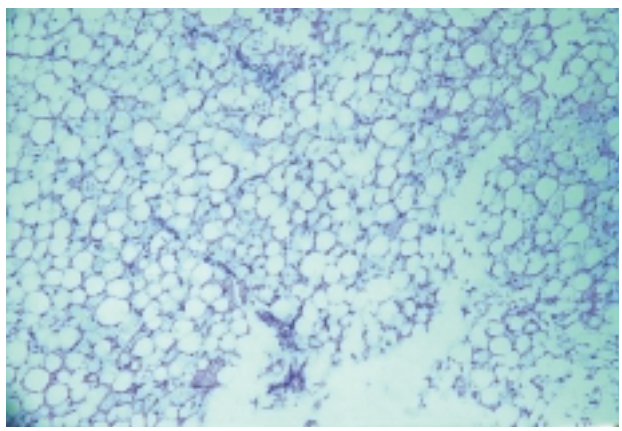

Figure 5. *Muscle cells dispersed among fat cells. Two epicardial coronary arteries are evident (EE, 100×).*

Discussion

To the best of our knowledge, the case reported is the first example of a lipoma involving both atria and the interatrial septum, obviously excluding lipomatous hypertrophy of the atrial septum[7].

Whereas extracavitary lipomas rarely lead to symptoms and are usually incidentally diagnosed at necropsy, the symptomatology of intracardiac tumors depends on their location, mobility and size: congestive heart failure, supraventricular and ventricular arrhythmias, valve obstruction, syncope and sudden death have been reported[1].

Generally, before the widespread use of echocardiography, computed tomography and nuclear magnetic resonance imaging, these cardiac tumors were exclusively discovered at *post-mortem* examination. These techniques have improved the diagnosis and surgical therapy: the location, size, attachment and mobility of the tumor can be visualized; computed tomographic scanning has often been used as a confirmatory modality for echocardiography with the patient's own subcutaneous fat and myocardium serving as internal radiodensity controls; the characteristic low radiodensity of fat distinguishes it from the higher density of other tissues.

In this case, the lipomatous nature of the mass was suspected by the very low radiodensity (-55 or fewer Hounsfield units). Generally, the value of radiodensity is negative in lipomas while it is positive in myxomas.

Magnetic resonance imaging also allows one to specify the nature of the tissue[8,9].

In our case, computed tomography failed to demonstrate the tumor site but it did reveal the fatty nature of the tumor whenever the echocardiogram, particularly the transesophageal study, permitted the exact diagnosis of the site of the tumor and of its relations with the other structures thus providing hemodynamic information about potential tricuspid valve stenosis and/or obstruction of the right ventricular inlet. Magnetic resonance was not necessary for the diagnosis. The additional imaging planes and superior resolution of transesophageal echocardiography allowed more complete characterization of the site and extent of the infiltrative process.

In conclusion, both computed tomography and transesophageal echocardiography allowed a precise diagnosis, specifying the exact site and nature of the tumor.

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