Left atrial myxoma after radiofrequency ablation with rapid growth

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Abstract

Atrial myxoma is the most common benign tumor of the heart, but its appearance after radiofrequency ablation (RFA) is very rare. We report a case in which an asymptomatic, rapidly growing cardiac myxoma arose in the left atrium after RFA. The diagnosis was made when cardiovascular magnetic resonance imaging was performed to evaluate right ventricular anatomy.

Keywords: myxoma, radiofrequency catheter ablation, tumor growth.
Radiofrequency ablation (RFA) is an effective therapy for symptomatic patients with atrial fibrillation. The reported complication rate after RFA is 3.9% to 22% including thromboembolism in 2% and an early mortality of 2 to 4% among all patients. Atrial myxoma is the most common cardiac tumor, but its appearance after RFA is very rare. We report a case in which an asymptomatic, rapidly growing cardiac myxoma arose in the left atrium after RFA.

Case Report
A 60-year-old man was admitted to our hospital with a history of hypertension and atrial fibrillation. On admission, the patient’s heart rhythm was irregular and his blood pressure was 160/95 mmHg. Twelve lead electrocardiogram demonstrated atrial fibrillation. Transthoracic echocardiography showed normal valves and right ventricular dilatation with diverticulums, no atrial mass was identified.

On September 6, 2009 a RFA was performed via the trans-septal technique; mapping of pulmonary veins was performed with a circumferential mapping catheter guided by a carto dimensional mapping system. RFA was performed until complete isolation of the pulmonary veins from the left atrium was achieved. The procedure was completed without clinically relevant complications. On November 4, 2009 a cardiovascular magnetic resonance imaging was performed to evaluate right ventricular anatomy. Analysis showed small diverticulums, and a small 10x10 mm mass attached to the left atrial septum (Fig 1). On November 6, 2009, transesophageal echocardiography revealed a homogeneous, small, rounded mass arising from the left interatrial septum (Fig 2). Because thrombus formation at the
site of RFA is a potential complication, we presumed the cardiac mass to be a thrombus attached to the atrial septum; oral anticoagulation therapy was initiated. On January 25, 2010, transthoracic echocardiography was performed. A larger mass was confirmed, and the patient was diagnosed with myxoma. The patient was referred for surgical excision of the mass. Two days later, surgery was performed with the aid of standard cardiopulmonary bypass. When the left atrium was exposed, a tumor was seen with a broad based attachment to the interatrial septum. It was removed along with its septal attachment and the septal defect was closed with a pericardial patch. Histopathologic examination revealed a 20x20 mm myxoma weighing 37 gr (Fig 3 A); on microscopy, there was abundant myxoid stroma with stellate cells, inflammatory cells, proliferation of blood vessels and areas of old hemorrhages (Fig 3 B). The co-excised septal tissue did not show any inflammatory change. The patient was discharged on the sixth day following surgery after an uneventful postoperative period. Two years after surgery, the patient is in atrial fibrillation and he has remained asymptomatic. Transthoracic echocardiography did not reveal an intracardiac mass.

Discussion

Radiofrequency catheter ablation has emerged as an effective therapy for symptomatic patients with atrial fibrillation, but complications after RFA, including thromboembolism, reportedly occur in 2.9 to 22%.

After discovering a left atrial mass in a patient following RFA, the differential diagnosis includes, in order of likelihood, thrombus and myxoma. Thrombi are overall the most frequent cardiac masses; the incidence of intracardiac thrombus after RFA is approximately 2%.

Myxomas are the most common cardiac tumor.
When we identified a left atrial mass by magnetic resonance imaging in our patient after RFA, thrombus was considered most likely, but left atrial myxoma could not be ruled out. Two months later, when a larger mass was detected after oral anticoagulation therapy, the diagnosis of myxoma was made.

RFA necessarily produces an area of myocardial necrosis. Several biochemical markers have been used for the diagnosis of RFA-induced myocardial damage, but the appearance of an atrial myxoma after RFA was reported only once before and it is uncertain if tumor development is related to RFA or merely a coincidence. But myxomas have developed after cardiac trauma including repair of atrial septal defects and trans-septal puncture for paracutaneous dilatation of the mitral valve. On the other hand, myxomas are thought to be slow growing, benign tumors. Our patient developed a rapidly growing left atrial myxoma, with two-dimensional echocardiography study obtained three months prior to surgery showing no masses. This implies a growth of 20 mm over a period of three months, thus an estimated growth rate of 6.6 mm/month. Roskell reported cases of rapidly growing myxomas due to changes in intercellular matrix rather than cellular proliferation. It is unknown if RFA may cause these changes. Very little is known about the growth rate of myxomas, but this case demonstrates that the initial period of growth may be quite rapid.
References


Figure legends

Figure 1. Magnetic resonance imaging shows a mass attached to the left atrium septum.

Figure 2. Echocardiographic imaging shows a round mass in the left atrium.

Figure 3. Tumor’s comparison with a towel clamp (A) and Photomicrograph showing abundant myxoid stroma and proliferation of blood vessels and areas of old hemorrhages (B).