

Left Atrial Fibroelastoma

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We describe a 67-year-old man with a history of stroke who was found to have a mass at the left atrial ridge, at the free wall of the left atrium between the left atrial appendage and the pulmonary vein. The mass was removed surgically and pathological analysis showed fibroelastoma. A literature search showed that fibroelastoma in the left atrial ridge frequently causes embolic stroke. (Ann Thorac Cardiovasc Surg 2009; 15: 412–414)

Key words: cardiac tumor, fibroelastoma, stroke, left atrium

Introduction

Fibroelastoma is the second most common benign cardiac tumor, following myxoma. Fibroelastoma usually originates from the cardiac valve and rarely from the left atrium. We describe a patient in whom a stroke that was originally attributed to a left atrial thrombus was later proved to be due to a left atrial tumor. Pathological examination showed a fibroelastoma. A literature review showed that only 15 cases of left atrial fibroelastoma have been reported in the English-language literature.^{1–15} Sixty percent of the patients in whom left atrial fibroelastoma regardless its location has been reported experienced a stroke. All of those in whom fibroelastoma occurred at the left atrial ridge, at the free wall of the left atrium between the left atrial appendage and the pulmonary vein, presented with acute stroke or had a history of stroke.

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Case Report

A 67-year-old man who had had coronary artery bypass grafting 7 years earlier presented to a private cardiology office prior to knee surgery. Three years before his office visit, he had a stroke that caused left hemiplegia. An echocardiogram at that time showed “left atrial thrombus.” He was treated with anticoagulation therapy. He recovered fully from the stroke and has remained symptom-free. An echocardiogram done in the cardiology office again showed a left atrial mass, which required a cardiologist’s attention. Retrospective examination of the echocardiograms showed that the left atrial mass had not changed in size or characteristics for 3 years despite anticoagulation therapy. Thus a left atrial tumor was diagnosed, and the patient was referred to us for its surgical excision.

Preoperative catheterization showed that all the grafts were patent (a graft of the left internal mammary artery to the left anterior descending artery, a saphenous vein graft to the obtuse marginal artery, and another saphenous vein graft to the posterior descending artery). A transesophageal echocardiogram showed a “hand waving” 10 × 10 mm left atrial mass originating from the left atrial ridge, which is the bridging zone of the left atrial free wall between the left atrial appendage and the left superior pulmonary vein (Fig. 1).

The patient was taken to the operating room for resection of the left atrial mass. Under cardiopulmonary bypass, the left atrium was explored via a right-sided left atrial approach. A tumor was located at the posterior free wall

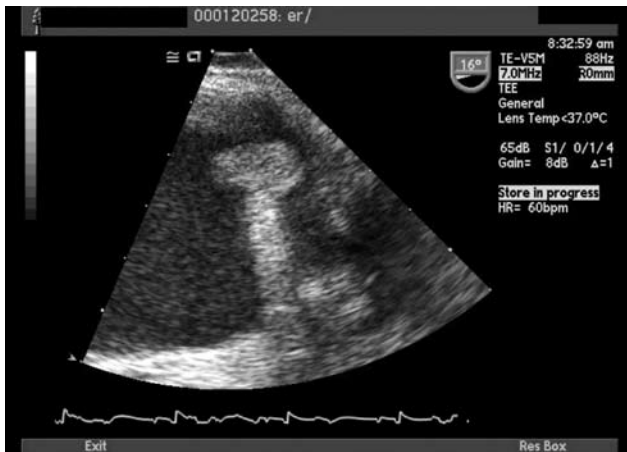


Fig. 1. Transesophageal echocardiogram showed a left atrial mass located between the left pulmonary vein and the atrial appendage.



Fig. 2. Gross inspection of the specimen yielded a tentative diagnosis of myxoma.

of the left atrium between the left atrial appendage and the left superior pulmonary vein. The mass was resected from the atrial wall without causing any defect. The surgical specimen was coated with gelatinous structure, and its tentative gross diagnosis was myxoma (Fig. 2). The post-operative course was uneventful, and the patient was discharged 10 days after surgery. A pathological examination of the specimen showed fibroelastoma (Fig. 3).

Discussion

Fibroelastoma is a benign cardiac tumor, most commonly found at the endocardium at the cardiac valves.³⁾ A sea-anemone-like structure consisting of collagenous papillary fronds covered by endothelial cells is a specific pathological feature of this tumor. Although a fibroelastoma is benign, because it is friable and frequently presents at the cardiac valves, it has been known to cause embolization of the coronary or cerebral arteries and can result in devastating complications, such as myocardial infarction or stroke.⁸⁾ Most fibroelastomas are found incidentally during routine echocardiography, catheterization, cardiac surgery, or autopsy.⁸⁾ More than 50% of patients with symptomatic fibroelastomas, however, eventually have a cerebral vascular accident.³⁾ Stroke secondary to fibroelastoma may occur from the fragile tumor itself or from a thrombus formed over the tumor.

The most common tumor in the left atrium is a myxoma; it is rare for fibroelastoma to occur at the left atrium without relation to the mitral valve. The thrombus covering the fibroelastoma can cause it to be confused with myxoma, as previous reports have shown.^{6,14,15)} Thrombus over the

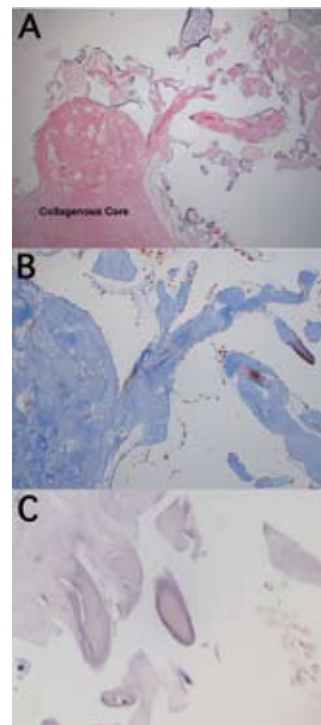


Fig. 3. Histological analysis of the lesion showed a collagenous core with multiple, radiating, frondlike structures.

A: Hematoxylin and eosin stain, original magnification: ×4.

B: Fronds composed mostly of collagen, which is stained blue, and lined by endothelial cells. (Masson trichrome stain, original magnification: ×10)

C: Fronds showing a rim of elastic tissue, which is darkly stained. (Verhoeff-van Gieson stain, original magnification: ×40)

fibroelastoma can be easily washed off, however, by immersing the tumor in normal saline. Once this is accomplished, the sea-anemone-like structure specific to fibroelastoma usually becomes obvious.⁹⁾

A survey showed that only 15 cases of left atrial fibroelastoma have been reported in the English-language literature (Table 1). Patient age varied from 47 to 84 years, and sex distribution was equal. Cerebral vascular accident was the presenting symptom in 8 cases; another 6 cases

Table 1. Cases of left atrial fibroelastoma reported in the English-language literature

Case Number	Year	Authors	Age (y)	Sex	Symptom	Size	Origin
1	1994	Nakao et al.	60	F	Incidental	8 mm	Septum
2	1997	Klarich et al.	NA	NA	NA	NA	Free wall
3	1999	Howard et al.	61	M	TIA	20 mm	Ridge
4	2000	Tsukube et al.	47	M	Incidental	15 × 70 mm	Appendage
5	2001	Wolber et al.	63	F	TIA	27 × 25 × 22 mm	Ridge
6	2001	Friedman et al.	84	F	Spinal stroke	10 mm	Ridge
7	2001	Sidhu et al.	59	F	Stroke	15 mm	Appendage
8	2002	Gowda et al.	74	M	Stroke	10 × 15 mm	Ridge
9	2004	Butany et al.	63	F	Incidental	24 × 20 mm	Septum
10	2005	Perzanowski et al.	63	F	Incidental	NA	Appendage
11	2007	Idahosa et al.	79	M	TIA	15 × 15 mm	Ridge
12	2007	Mohammadi et al.	59	M	Stroke	15 × 15 mm	Ridge
13	2007	Shimode et al.	76	M	Incidental	10 × 7 mm	Appendage
14	2008	Barcena et al.	76	M	Stroke	5 × 5 mm	Appendage
15	2008	Jablonski-Cohen et al.	51	F	Incidental	20 × 20 mm	Appendage
16	Current	Hirose et al.	67	M	Stroke	10 × 10 mm	Ridge

F, female; NA, not available; M, male; TIA, transient ischemic attack.

were diagnosed incidentally from echocardiograms. Seven of 15 left atrial fibroelastomas (47%) were found at the atrial ridge; 6 (40%) were in the appendage; 1 (6.7%) was in the free wall; and 2 (13%) were in the septum. Tumor size varied from 8 to 20 mm. All of the patients in whom fibroelastomas were found in the left atrial ridge had a history of cerebral vascular accident.

Fibroelastomas originating from the left atrial ridge have a high tendency to cause stroke. Surgical removal is indicated as soon as the tumor is found.

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