BRIEF COMMUNICATIONS

EXTRACARDIAC MYXOMA: AN UNUSUAL RIGHT VENTRICULAR EPICARDIAL LOCATION

Rita Spirito, MD,^a Luca Dainese, MD,^a GianLuca Polvani, MD,^a Marco Zanobini, MD,^a Massimo Porqueddu, MD,^a Chiara Varesi, MD,^b and Paolo Biglioli, MD,^a *Milan, Italy*

Cardiac myxoma is the most common heart neoplasm in adults, comprising about 50% of all primary cardiac tumors.¹ This neoplasm is most prevalent between the third and the sixth decades of life,² with women predominating. It can be associated with skin myxoma, mucocutaneous pigmentation, myxoid mammary fibroadenomatous neoplasms, and endocrine neoplasms.¹ Farah³ reported that this tumor seemed to be frequent in family members, suggesting an autosomal dominant mode of inheritance. Cardiac myxoma may be found in all cardiac chambers and on any of the heart valves. It is usually single but may be multiple. Myxomas occur three times more often in the left atrium than in the right and much less frequently in the ventricle.¹⁻⁶ Of those rare ventricular myxomas, fewer than 5% develop in the right ventricle.^{1,6} In general, myxomas are round, polypoid, sessile, or pedunculated, and they vary in size from 1 to 15 cm in diameter. Histologically, the neoplasms consist of a basophilic mucoid matrix populated by groups of elongated spindle cells. Syncytial multinucleate giant cells are often present.¹ Myxomas seem to be similar to embryonic endocardial cushion tissue, which may be multipotential endocardial tissue.

Clinical summary. A 56-year-old woman was admitted in October 1995 with a diagnosis of an anterior mediastinal mass, which had been detected on a routine chest x-ray film. An echocardiogram and computed tomographic scan suggested that the mass arose from the thymus. A thoracoscopic examination revealed that the mass was in an epicardial location, appearing to be connected to the anterior wall of the right ventricle. Subsequently the patient was admitted for surgical treatment. She was free of symptoms and her physical examination showed no abnormalities.

Results of electrocardiographic, biochemical, and hematologic studies were within normal limits. A transesophageal echocardiogram confirmed the presence of an intrapericardial anterior mediastinal mass compressing

the right ventricular outflow tract, as detected by high transpulmonary flow. A computed tomogram revealed a spheroidal lesion, 6 to 7 cm in diameter, located in the anterior mediastinal space with left paramedian extension. The mass had the characteristics of solid tissue (Fig. 1).

Through a median sternotomy and pericardiotomy a large round mass, roughly 6 cm in diameter, was found. It was reddish brown, smooth, and elastic, arising from the right ventricular wall and attached by a thin pedicle to the wall next to the pulmonary artery (Fig. 2). Using cardiopulmonary bypass, we clamped the right ventricular wall tangentially, excised the pedunculated mass, and closed the ventricular wall defect with a pericardial patch.

Microbiologic examination of the mass showed no abnormalities. Histologic findings revealed the myxomatous nature of the mass, which had glandlike spaces with mucoid content and mucopolysaccharide coated with monostriated polygonal cells and cytoplasmic eosinophilic clusters. Thin-walled blood vessels were found in the mucoid matrix with foci of cavernous angiomatous proliferation. Old and recent hemorrhage was evident from the presence of hemosiderin-laden macrophages. The endothelial cells in the intramyxomatous vascular channels were positive for endothelial markers QB and factor VII-related antigen and vimentin. In addition, the tumor was positive for smooth muscle actin cells. The tumor appeared to be covered by epicardial cells.

The postoperative echocardiogram showed normalization of transpulmonary flow. The patient was discharged on the seventh postoperative day receiving no medications. One year later she was free of symptoms and an echocardiogram showed no recurrence.

Discussion. Myxomas usually arise from multipotential reserve cells in or around the fossa ovalis of the interatrial septum.¹⁻⁶ They are more common in women than in men.¹ This tumor appears to be a multilobulated polypoid mass, pedunculated, but with a wide base attachment. Chromosomal aberrations have been observed in normal hearts, confirming the neoplastic origin of myxomas. The familial role in the genesis of these tumors has been described.^{3,5} They may appear as peripheral tumors (cutaneous myxomas, mucocutaneous pigmentation, myxoid mammary fibroadenomas) and endocrine neoplasms.

The genetic transmission of cardiac myxomas seems to be an autosomal dominant mode of inheritance. The rate of recurrence of myxomas is less than 5%. Usually, recurrence is due to embolization, inadequate resection, intraoperative implantation, or transformation from benign to malignant lesions. To our knowledge, no cardiac

From the Department of Cardiac Surgery^a and the Department of Pathology and Anatomy, University of Milan, Milan, Italy.
Received for publication Jan. 6, 1997; accepted for publication Feb. 18, 1997.

Address for reprints: Rita Spirito, MD, Department of Cardiac Surgery, University of Milan, Centro Cardiologico, fondazione I Monzino IRCCS, Via Parea, 4, 20138, Milano, Italy.

J Thorac Cardiovasc Surg 1997;114:672-4

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0022-5223/97 \$5.00 + 0 12/54/81251

Fig. 1. Computed tomographic scan demonstrating the anterior mediastinal mass. 1, Myxoma; 2, right ventricle; 3, aorta.

Fig. 2. Intraoperative view showing the large size of the epicardial myxoma arising from the right ventricular anterior wall. 1, Myxoma; 2, right ventricle; 3, pulmonary artery conus.

myxoma arising by a pedicle from the anterior wall of the right ventricle, located inside the pericardium, has previously been reported.

After total excision of the mass, microscopic examination revealed that the tumor had the characteristics of a myxoma covered by epicardial cells. The histogenesis of cardiac myxoma is uncertain.⁶ The immunohistochemical profile of this mass revealed endothelial antigens, vimentin, and smooth muscle-actin positive cells, suggesting a neoplastic origin of the myxoma from endothelial and mesenchymal cells. These multipotential cells in a subepicardial location could differentiate into several cell types, including endothelial cells, fibrocytes, and smooth muscle cells.

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CARDIAC TAMPONADE CAUSED BY PENETRATION OF AN ACUPUNCTURE NEEDLE INTO THE RIGHT VENTRICLE

Hajime Kataoka, MD, *Oita, Japan*

Acupuncture therapy, an ancient Chinese art, has been acknowledged throughout the world as a valid clinical procedure. In Japan, acupuncture needles are sometimes left embedded permanently in the musculature to relieve myalgia or neuralgia.¹ In the case described here, traumatic cardiac tamponade was caused by an acupuncture needle, which had presumably migrated from a distant part of the body via the venous route and eventually penetrated the right ventricular free wall. X-ray computed tomographic imaging confirmed that cardiac tamponade had been caused by the needle.

Clinical summary. A 69-year-old woman was admitted to Nishida Hospital with chest oppression, dyspnea, and cold sweating. At another clinic, she had been receiving acupuncture therapy (embedding of needles in the musculature) about one to three times per month for 10 years because of chronic upper and lower back pain. The latest acupuncture session had been conducted 2 months before the present admission to our hospital. The number of acupuncture needles (made of silver or stainless steel, each about 3 cm long and 0.05 cm in diameter) embedded in the musculature around the back of the neck to the shoulder and the lower back in each session ranged from one to five.

From the Department of Internal Medicine, Nishida Hospital, Oita, Japan.

Received for publication March 17, 1997; accepted for publication March 27, 1997.

Address for reprints: Hajime Kataoka, MD, Internal Medicine, Nishida Hospital, 3-3-24 Ohte machi, Saiki city, Oita 876, Japan.

J Thorac Cardiovasc Surg 1997;114:674-6

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0022-5223/97 \$5.00 + 0 12/54/82353

On physical examination the patient had no fever and had pulsus paradoxus with a maximal systolic blood pressure of 80 mm Hg. Jugular venous distention and mild peripheral edema were present. The heart sounds were distant, but a friction rub was not audible. Chest and abdominal roentgenograms showed many embedded needles around the cervical and lumbar vertebrae. Several needles were superimposed on the lung field and the cardiac silhouette. The exact relationship between the needles and cardiac structures was not apparent on plain x-ray films and fluoroscopic examination of the chest. Transthoracic echocardiography revealed massive pericardial effusion with early diastolic collapse of the right ventricle. Because of the patient's hemodynamic deterioration, a drainage tube was introduced into the pericardial space on an emergency basis, resulting in efflux of bloody effusion and prompt clinical improvement. The nature of the pericardial fluid suggested traumatic injury to the heart, and an acupuncture needle was considered to be the cause. Close echocardiographic reexamination including the transesophageal mode in addition to the transthoracic method failed to find any acupuncture needle in or around the cardiac structures. However, x-ray computed tomographic imaging with contrast medium disclosed the metal-density material in the right ventricle, which stuck into the liver through the right ventricular free wall (Fig. 1, C to F). There were three needles in the pulmonary vasculature (one needle in the proximal right pulmonary artery is shown in Fig. 1, A).

One week after admission to my hospital, the patient was transferred to Oita Medical University and underwent cardiac surgery to remove the penetrating acupuncture needle. With cardiopulmonary bypass equipment available, the heart was exposed by a midsternal incision and the parietal pericardium was opened at the anterior