Sarcomatous mesothelioma in the left ventricle: A rare entity

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Mesotheliomas are malignant tumors of the pleural and peritoneal surfaces. They occur occasionally in the pericardium and atrioventricular node in the heart. To our knowledge, mesotheliomas originating from the left ventricle are rare. A case of a large malignant mesothelioma arising from the ventricular septum in the left ventricle is presented, which was treated by surgical resection.

Clinical Summary

A 51-year-old man was admitted to the hospital because of exertional dyspnea and palpitations that had increased for the past 6 months. He had no history of exposure to asbestos. On auscultation, a grade 3/6 systolic murmur was found at the apex of the heart. Electrocardiography indicated normal sinus rhythm, and x-ray findings of the thorax were nonspecific. Two-dimensional transthoracic echocardiography revealed a 9.0- × 3.0-cm mobile heterogeneous discrete mass within the left ventricle. The mass was attached to the ventricular septum and appeared to be moving between the left atrium and the left ventricle. Significant mitral regurgitation was observed. Other cardiac structures were normal.

For excision of the mass, cardiopulmonary bypass was instituted with moderate hypothermia, topical cooling, and antegrade cold cardioplegia for myocardial protection. Through a left ventriculotomy, a large wide pedunculated mass was found firmly attached to the membranous part of the ventricular septum. The tumor was solid and encapsulated, yellowish white, and measured 10 × 3 × 4 cm. It reached the orifice of the mitral valve, but the valve was not damaged. The stalk of the tumor was excised from the bottom, and care was taken not to damage the region of the ventricular septum. On inspection of the pericardium and left atrium, no abnormality was seen.

Figure 1. Sarcomatous mesothelioma (fibrous mesothelioma) spindle cells that grow in fascicles with a relatively scant amount of fibrous stroma. (Hematoxylin and eosin stain; original magnification ×350.)

Micrographic (Figure 1) and immunohistochemical examination (Figure 2) of the resected specimen confirmed a sarcomatous mesothelioma (fibrous mesothelioma). The patient made an uneventful postoperative recovery and maintained normal sinus rhythm. He was discharged on the ninth postoperative day. Three months after the operation, an echocardiogram revealed a thickened ventricular septum and a normal mitral valve with no residual mass. The patient was doing well 4 months after the operation.

Comment

Primary cardiac tumors of the heart are rare. A total of 2.7% of primary cardiac tumors are pericardial mesotheliomas, which usually occur independently of intracardiac lesions and infiltrate adjacent tissues superficially.¹ Rare cases of mesotheliomas of the atrioventricular node have been reported.² Primary sarcomatous mesothelioma arising from the left ventricle is extremely uncommon.

The most useful diagnostic tool is the transthoracic and transesophageal 2- and 3-dimensional echocardiogram, which may accurately identify the shape, dimensions, location, origin, surface, and 3-dimensional movement of the tumor and involvement of valves. The echocardiogram also allows preoperative planning for the optimal therapeutic approach, such as valve repair or valve replacement.³ Computed tomography and magnetic resonance imaging are the second most important tests, because the density of the images may allow tumor cell type to be identified.⁴ So that obstruction of the valve orifice, dilation of the anulus, embolization, and rhythm disturbances can be avoided, the tumor should be

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Received for publication Dec 7, 2000; accepted for publication Dec 18, 2000.

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J Thorac Cardiovasc Surg 2001;122:394-5

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0022-5223/2001 \$35.00 + 0 12/54/113926

doi:10.1067/mtc.2001.113926

Figure 2. Immunohistochemistry showing a positive reaction to HBME-1. (LSAB $\times 350$.)

surgically excised, but complete resection may not be possible, either because of the extent of local spread and invasion or because of the frequent distant metastases. Transplantation may also be an option for those with extensive local disease. The long-term results for malignant mesotheliomas are very poor, with few patients surviving. For the perioperative patient or the patient with unre-

sectable mesothelioma, radiation and chemotherapy may be used, but without great expectation of success.⁵

During the operation, it is important to prevent perioperative embolism by thoroughly cleaning the left ventricle. Because the base of the tumor is attached to the membranous part of the ventricular septum, caution must be taken not to damage the conduction systems. If the mitral valve is invaded by the tumor, it is not possible to excise the tumor completely without sacrificing the valve, and the valve should be replaced with a bioprosthesis. Intensive myocardial protection should be provided during the ventriculotomy.

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