BRIEF COMMUNICATIONS

PULMONARY LEIOMYOSARCOMA EXTENDING INTO LEFT ATRIUM OR PULMONARY TRUNK: COMPLETE RESECTION WITH CARDIOPULMONARY BYPASS

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Primary pulmonary leiomyosarcoma is a rare tumor. Few cases have been treated surgically because of its rapid invasion into the pulmonary trunk or heart and tendency toward massive intrapulmonary metastases. We report the cases of two patients with leiomyosarcoma originating in a pulmonary artery or vein that involved the pulmonary trunk or left atrium, both of whom underwent complete surgical resection with cardiopulmonary bypass (CPB). Since their operations, these patients have shown no evidence of recurrent tumor.

PATIENT 1. A 72-year-old woman with persistent cough, chest pain, and hemoptysis was referred to our hospital for evaluation and treatment of presumed pulmonary

thromboembolism. An angiogram revealed filling defects in the pulmonary trunk, absence of filling of the left main pulmonary artery, and decreased arterial filling in the left lung. A biopsy specimen was obtained from a tumor in the left main pulmonary artery by means of a suction catheter, and the pathologic diagnosis of sarcoma was made. Computed tomography disclosed a mass occluding the left main pulmonary artery and densely filling pulmonary artery branches.

Median sternotomy was performed and CPB was applied. The left pulmonary veins were ligated and the left main pulmonary artery was incised. A large tumor completely filled the left main pulmonary artery. Extension of the incision into the pulmonary trunk disclosed that the tumor invaded its wall laterally on the left. The portion of tumor located in the left main pulmonary artery and pulmonary trunk, including the left main pulmonary artery and the left lateral wall of the trunk, was excised. Direct suture closure of the pulmonary trunk was carried out and CPB was terminated. The left main bronchus was transected and left pneumonectomy was completed.

Fig. 1 shows the resected left lung and pulmonary artery. Tumor in the main pulmonary artery extended intraluminally into its branches. The tumor was diagnosed histologically with the aid of immunohistochemical stain-

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Received for publication April 30, 1997; accepted for publication June 6, 1997.

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J Thorac Cardiovasc Surg 1998;115:460-1

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0022-5223/98 \$5.00 + 0 12/54/83793

Fig. 1. Left pneumonectomy specimen, with the pulmonary arteries occluded by a rubbery tumor mass.

ing as a leiomyosarcoma. The patient had an uncomplicated postoperative course and was discharged without additional therapy. She is doing well 17 months after the operation, with no evidence of recurrence.

PATIENT 2. A 37-year-old man was referred for dyspnea on exertion and hemoptysis. A chest radiograph showed a left hilar mass and echocardiography revealed a left atrial tumor. Computed tomography demonstrated a noncystic pericardial mass filling the left atrium and also involving the left inferior pulmonary vein (Fig. 2). An angiogram revealed a large filling defect in the left atrium and absence of filling of left pulmonary veins. The patient had massive hemoptysis, necessitating emergency operation.

A left posterolateral skin incision and thoracotomy through the sixth rib bed were performed. CPB was applied and cardiac arrest was obtained with crossclamping of the ascending aorta and administration of crystalloid cardioplegic solution. The left atrium was incised, and the tumor completely filled the left atrium. The left main pulmonary artery and left main bronchus were transected and pneumonectomy was completed. The tumor, the left lung, and about half of the left atrial wall were excised en bloc. The left atrial wall was repaired with bovine pericardium and CPB was terminated.

On pathologic examination, the tumor was found to arise in the left inferior pulmonary vein. As in the case of patient 1, it was determined by histologic and immunohistochemical methods to be a leiomyosarcoma. The patient had left hemiplegia after the operation. He was discharged without additional antineoplastic therapy and is alive, without evidence of recurrence, 7 months after the operation.

Discussion. Primary pulmonary leiomyosarcoma is rare tumor that is difficult to diagnose in its early stages. Miller and Allen¹ reported only three such cases among 10,134 patients treated for various primary lung cancers. Redmond and colleagues² suggested that the possibility of pulmonary artery neoplasm should be seriously entertained in unilateral pulmonary artery occlusion, especially with evidence of progression. Weinreb and coworkers³ found that magnetic resonance imaging can differentiate between pulmonary artery sarcoma and embolus by contrast enhancement of the tumor with gadolinium-labeled diethylenetriaminepentaacetic acid. Most reports describe radical surgical resection as the only effective therapy, with no benefit from adjuvant therapy or nonradical resection. However, these tumors usually invade the pulmonary trunk, pulmonary valve, or right ventricular outflow tract, necessitating aggressive resection that may include the use of a homograft.^{4,5}

The second patient described here represents the second report of left atrial wall resection combined with pneumonectomy for a pulmonary vein leiomyosarcoma, and the first report of the resection by thoracotomy through the rib bed. Leiomyosarcoma of pulmonary vein origin is extremely rare; we have found only three cases previously reported worldwide.⁶⁻⁸ To our knowledge, this is also the first reported case of pulmonary vein leiomyosarcoma in a patient younger than 40 years.

Unlike less radical operations, complete resection with CPB appears to offer a good prognosis in the treatment of

Fig. 2. Preoperative computed tomography shows a solid mass (arrows) involving pericardium and filling the left atrium.

primary leiomyosarcoma of the lung involving the heart or great arteries.

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