performed in the selected patients, and the long-term graft patency rates have been encouraging at more than 70% [1, 3]. However, cross-clamping of a patent SVC may produce cerebral venous hypertension and edema, as well as hemodynamic instability [4]. To avoid such complications, temporary shunting or a permanent graft bypass between the left brachiocephalic vein and right appendage is generally used.

In most cases, temporary shunting is performed by inserting a polytetrafluoroethylene graft with retention rings, which enable a simple procedure to secure the graft, similar to a tourniquet technique. This procedure required only a short cross-clamp time, such as with a temporary bypass method. In case 1, the right brachiocephalic vein was obstructed by the tumor; thus the cross-clamp time of the left brachiocephalic vein should be reduced as much as possible. We could restore venous return within 5 minutes using the insert and secure procedure as described above. In case 2, after the venous return through the left brachiocephalic vein was established as in case 1, we applied an intraluminal shunting procedure to repair the SVC instead of an end-to-end anastomosis. We wrapped the ringed graft with the remnant wall of the SVC and fixed it with a single continuous suture. Therefore, approximately 20 minutes were needed to reconstruct the SVC in this patient. In both cases, all three grafts were patent at more than 1 year after the operation.

We conducted a literature search for reports of SVC reconstruction after these operations and noted an outline for a similar method presented in 1991 [6]. However, no precise report of the procedure could be found. In the present two cases, the reinforced expandability of the ringed polytetrafluoroethylene grafts safely enabled reductions in clamping time for the SVC and brachiocephalic vein, with long-term graft patency.

References


Metastatic Meningioma Extending Into the Left Atrium Through the Pulmonary Vein

Pey-Jen Yu, MD, Kevin M. Hyman, MD, Hugh A. Cassiere, MD, Brian Fallon, MD, Sheel K. Vatsia, MD, Michael J. Esposito, MD, and Lawrence R. Glassman, MD

Departments of Cardiovascular and Thoracic Surgery and Pathology, North Shore University Hospital, Manhasset, New York

Left atrial extension of pulmonary tumors through the pulmonary vein is most often associated with primary malignancies and is rarely associated with metastatic disease. We present the first, to our knowledge, reported case of a patient with a history of intracranial meningioma resections presenting with metastatic meningioma to the right lower lobe with extension into the left atrium through the pulmonary vein.

Accepted for publication Aug 8, 2013.

Address correspondence to Dr Yu, Department of Cardiovascular and Thoracic Surgery, North Shore University Hospital, 300 Community Dr, 1DSU, Manhasset, NY 11030; e-mail: pyu2@nshs.edu.

Although tumor invasion of the pulmonary vein with extension into the left atrium is well described with primary pulmonary malignancies, it is rarely seen in metastatic pulmonary tumors. We describe a rare case of a metastatic meningioma presenting as a right lower lobe mass with extension into the left atrium through the pulmonary vein.

A 60-year-old nonsmoking woman presented with a 3.1-cm right lower lobe pulmonary mass invading the right inferior pulmonary vein with a contiguous 4.0-cm extension into the left atrium as seen on computed tomography (Fig 1). This was found incidentally on workup for an umbilical hernia. Her medical history was significant for recurrent right frontal atypical meningiomas that required 3 craniotomies with radical excisions and adjuvant radiotherapy. The last resection of her atypical meningioma was 5 years before the current presentation.

Computed tomography of the chest and abdomen revealed no associated adenopathy or other masses. Thoracic magnetic resonance imaging demonstrated no invasion of the left atrial wall by the mass. Transthoracic
echocardiography showed a large mobile left atrial mass extending up to but not prolapsing through the mitral valve annulus, no aortic insufficiency, and normal left ventricular function. Cardiac catheterization produced negative results for coronary artery disease. Positron emission tomography revealed increased 18F-fluorodeoxyglucose activity with a peak standardized uptake value of 2.7 and 9.9 in the right lower lobe mass and its intracardiac extension, respectively. There were no other hypermetabolic foci. Brain magnetic resonance imaging did not show any evidence of intracranial recurrence of her atypical meningioma or other pathologic condition. Given these findings, the decision was made to proceed with surgical resection of the pulmonary and intraatrial mass. The patient underwent a right posterolateral thoracotomy through the fifth interspace. After mobilization of the right lower lobe with division of the lower lobe segmental pulmonary arteries and right lower lobe bronchus, the patient underwent central cannulation and was placed on cardiopulmonary bypass. Using full bypass with fibrillatory arrest under moderate hypothermia, a cuff of left atrium at the insertion of the right inferior pulmonary vein was excised circumferentially and the atrium was primarily repaired. The right lower lobe with the intraatrial extension of the mass was then removed en bloc.

The patient had an uneventful postoperative course with no neurologic complications. Histologic analysis of the tumor was consistent with metastatic meningioma (Fig 2). Immunostaining of the mass was positive for epithelial membrane antigen and phosphohistone H3, further confirming the diagnosis. Surgical margins were negative and all lymph nodes were negative for metastatic disease.

Comment

Left atrial extension through the pulmonary veins is most often associated with primary pulmonary malignancies. In contrast, cases of intraatrial extension of metastatic pulmonary malignancies are extremely rare and limited to less than 15 case reports. The pathologic conditions in these case reports include chondrosarcoma [1], osteosarcoma [2], leiomyosarcoma [3], malignant fibrous histiocytoma [4], synovial sarcoma [5], and Ewing’s sarcoma [6]. There is 1 case report of intraatrial extension of a pulmonary metastasis from carcinoma of the cervix [7]. The patient presented here is, therefore, the second reported case of left atrial extension of a metastatic pulmonary malignancy not of sarcomatous origin. Furthermore, left atrial extension from metastatic meningioma has never been described, making this the first reported case.

Meningiomas account for up to one-third of all central nervous system tumors. The majority of meningiomas are classified as World Health Organization (WHO) grade I and are therefore considered benign and curable by surgical resection. Twenty percent to 35% of meningiomas are classified as WHO grade II and have an increased propensity to recur and metastasize. Despite this, extracranial meningioma metastases remain extremely rare, with an overall incidence as low as 0.1% [8]. The most common site of metastasis is the lung (60%), followed by liver, mediastinum, bone, and pleura. This patient’s previous intracranial meningiomas had increased cellularity and high mitotic activity (8 per 10 high-powered fields), making it an atypical meningioma—WHO grade II. Although this patient was at increased risk for recurrent and metastatic meningioma, given the rarity of such cases, the top conditions in the differential diagnosis for this
patient’s pulmonary mass remained non–small-cell lung cancer, small cell lung cancer, carcinoid, and pulmonary sarcoma.

This patient’s tumor was amenable to complete surgical resection because (1) the preoperative workup, including magnetic resonance imaging of the brain, computed tomography of the chest and abdomen, and positron emission tomography, did not reveal other sites of neoplastic disease and (2) the mass was extending into but not invading the left atrium as seen by cardiac magnetic resonance imaging. The decision was therefore made to proceed with surgical resection regardless of the tumor pathologic features to minimize the patient’s risk of sudden cardiac death from left ventricular inflow obstruction caused by tumor growth and systemic tumor embolization [1, 2]. Although this patient was asymptomatic, the majority of patients with extension of pulmonary metastasis into the left atrium present with or experience symptoms secondary to the intraatrial component of the tumor [6]. Symptoms include palpitation, stroke, syncope, and chest pain [6].

Given its rarity, there are no established adjuvant treatment protocols for extracranial metastatic meningiomas. Although there are reports of curative pulmonary metastasectomies for meningiomas, the long-term prognosis in this rare patient population is not well defined.

This is the first reported case of metastatic meningioma extending into the left atrium through the pulmonary vein. This case highlights the aggressive potential of meningiomas, which are typically considered benign tumors, and emphasizes the need to consider metastatic meningioma in the workup of pulmonary masses in patients with a history of meningiomas.

Intravenous Immunoglobulin-Induced Hemolytic Anemia After Thoracoscopic Thymectomy for Myasthenia Gravis

Hisashi Tsukada, MD, Rajitha Sunkara, MD, Dorcas Doja Chi, MD, Deirdre Keogh, NP, and Henning Gaisser, MD

Department of Surgery, Division of General Thoracic Surgery, Department of Hematology and Oncology, St. Elizabeth’s Medical Center, Tufts University School of Medicine, and Harvard Medical School, Boston, Massachusetts

A 24-year-old woman underwent video-assisted thoracoscopic thymectomy for Osserman IIB myasthenia gravis (MG). In preparation for thymectomy, high-dose intravenous immunoglobulin (IVIG) was administered 1 week before the surgical procedure. After uneventful thoracoscopic thymectomy, the postoperative hemoglobin value decreased from 12.1 mg/dL to 8.2 mg/dL. A diagnosis of IVIG-associated hemolytic anemia was made based on a peripheral smear with numerous spherocytes, a positive direct antiglobulin test result, and increased reticulocyte count. Hemoglobin levels after IVIG administration should be monitored closely before and after elective surgical procedures to identify severe anemia. Transfusion of type-matched blood should be avoided and risk factors understood.