Massive Thoracic Lipoma: A Case Report

Lee M. Morris, MD; and R. Scott Thurston, MD

A 60-year-old woman with a massive left intra-thoracic lipoma presented with worsening dyspnea. A computed tomographic scan revealed an 18 x 10 x 24 cm intra-thoracic mass, which was compressing the left lung and shifting the mediastinum to the right. At operative resection, a large, well-encapsulated, intra-thoracic lipoma was discovered that weighed 2,556 grams. Histologic evaluation confirmed that the mass consisted of benign adipose tissue.

CASE PRESENTATION

A 60-year-old woman with chronic atrial fibrillation presented to her primary care physician with complaints of dyspnea that had started about 10 years ago and worsened for the past three to four months. The symptoms progressed to the point that walking 50 feet was not possible. The patient also noted three pillow orthopnea that continued to worsen and required occasional upright positioning in a recliner to sleep. The patient took digoxin, warfarin and cardizem for her atrial fibrillation and glipizide and metformin for diabetes mellitus. She is a lifelong non-smoker, denies ever abusing alcohol, and stays at home as a housewife. The patient reported knowledge of a small, fatty tumor in her left lung that was discovered approximately five years ago during work-up for her atrial fibrillation. She was told at that time that the mass was not problematic. A chest radiograph obtained five years ago showing a shadow in her left lower thorax confirmed the reported history.

On physical examination, the patient was an obese female in no acute distress (height, 162.5 cm; weight, 90.8 kg). Breath sounds were significantly diminished in the left hemithorax and her cardiac rhythm was irregular. No jugular venous distension was observed and she had palpable pulses in all four extremities. An erect chest radiograph was initially obtained (Figure 1a), which was interpreted as a large left pleural effusion seen occupying most of the left hemithorax with the mediastinum shifted to the right. A follow-up echocardiogram showed normal left ventricular size and function, and a computed tomographic (CT) scan of the thorax with contrast (Figures 1b and 1c) demonstrated a massive space occupying lesion in the left chest measuring 18 x 10 x 24 cm with a density similar to adipose tissue (-109 Hounsfield units (HU)). The lesion was producing a significant mass effect in the thorax, as both the left lower lobe and a significant portion of the left upper lobe of the lung were completely atelectatic. Mediastinal shift and depression of the left hemidiaphragm were also observed.

The patient elected for surgical resection and was subsequently explored through a left posterolateral thoracotomy. Upon entry into the chest, we encountered a large, well-circumscribed lipomatous mass (Figure 1d). During exploration, the mass was easily dissected from the lateral structures with clear encapsulation and a non-invasive behavior, however, medially some attachments were encountered including blood supply from the mediastinum. The adipose tissue was morcellated to enable complete removal of the large mass through the thoracotomy incision. Following removal of the mass, the lower lobe of the left lung failed to re-expand despite attempts using increased ventilation pressures and intraoperative bronchoscopy so a lobectomy was performed. The resected mass weighed 2,556 grams and had the appearance of benign adipose tissue (Figure 1e). Post-operatively, the patient required bilevel positive airway pressure (BiPAP) and supplemental oxygen. Thereafter, she improved steadily and was discharged home on post-operative day eight without oxygen requirements. At one month follow-up, her exercise tolerance was within normal limits and at three months post-operatively, her chest radiograph had markedly improved (Figure 2). The final histological diagnosis of the adipose tissue was that of a benign thoracic lipoma without any evidence of thymic tissue or malignancy, including the absence of any hyperchromasia, stromal atypia, or lipoblasts. The pathologic evaluation of the left pulmonary lobe demonstrated mild pulmonary edema and intra-alveolar hemorrhage without any presence of lipomatous tissue involvement.
Figure 1A-1F. A. Conventional chest X-ray showing a homogeneous shadowing in left hemithorax with mediastinal shift to the right. B. and C. Axial and coronal images, respectively, of computed tomographic scan revealing a large soft tissue mass in left chest with well defined borders and density consistent with adipose tissue. D. Intra-operative view of the left chest upon thoracotomy, showing the encapsulated lipoma. E. Image of resected specimen at gross pathologic evaluation. F. Hematoxylin-eosin stain of resected specimen at 100x showing benign appearing adipose tissue consistent with lipoma.

**DISCUSSION**

Lipomas are well-circumscribed mesenchymal tumors that originate from adipose tissue. Various subtypes have been described based on histologic characteristics. These tumors are the most common benign neoplasm and are most commonly found within subcutaneous tissues. Lipomas in deep tissues are comparatively rare with only a small number of case reports identifying lipomas within the thoracic cavity.

The slow growth and soft consistency of thoracic lipomas allow for many to be asymptomatic and go unnoticed for years. The insidious nature of these benign thoracic lipomas also allows for rather large tumors to form. Thoracic lipomas reaching 4,320 grams have been reported at surgery with sizes reaching 17.5 lbs (7,938 grams) found at necropsy. Rare tumors that continue to enlarge often produce symptoms resulting from mass effect on surrounding structures, which may cause lung collapse and mediastinal shift. Commonly reported symptoms include dyspnea, dysphagia, cough, orthopnea, chest pain, or arrhythmia. As described above, the long term effects of lung compression by these tumors may result in an unexpandable portion of the lung requiring resection.

Because these lesions cause few symptoms until large volumes are reached, they are often identified incidentally during diagnostic

Figure 2. Chest radiograph three months following excision of thoracic lipoma and left lower lobectomy.
workup for other medical problems. Thoracic lipomas are often seen initially as an abnormal non-specific shadow on a chest X-ray, which may be confused with other more common diagnoses. Uncommonly, calcifications also may be visualized within the lipoma. CT scans or magnetic resonance imaging (MRI) are adequate to allow for diagnosis. On a CT scan, lipomas appear as homogeneous lesions with a low grade density (-70 to -120 HU) consistent with adipose tissue. Additional CT or MRI findings include sharp borders with no evidence of invasion into surrounding structures.

Thoracic lipomas have been described originating from the mediastinum, thymus, lung parenchyma, heart, and pleura. Although the lipoma in this case appeared to have originated from the mediastinum, there was no evidence for thymic origin as histological analysis revealed only benign adipose tissue. Ideal treatment of thoracic lipomas consists of complete surgical excision. Prognosis is generally excellent following resection, but fatal courses have been reported without surgical intervention.

REFERENCES


Dr. Morris is a general surgery resident at Louisiana State University Health Science Center, Department of Surgery, New Orleans. Dr. Thurston is a cardiothoracic surgeon whose practice is at Our Lady of the Lake Regional Medical Center and the CVT Surgical Center in Baton Rouge. He serves as adjunct faculty for Louisiana State University Medical Center.