Promises to provide improved definition of mediastinal anatomic features and should be a valuable noninvasive diagnostic method in selected cases.

Mediastinal bronchogenic cysts are no longer considered to be rare. Although usually asymptomatic in adults, such cysts can compress adjacent vital structures. When local anatomic considerations preclude total excision of the cyst, partial excision with or without surgical destruction of the remaining cystic mucosa has been accepted as an alternative technique. This case shows that cysts may recur and become symptomatic when treated in this manner.

CASE REPORT

A 55-year-old woman was referred for evaluation of a possible aneurysm of the ascending aorta. Her past history was germane in that she had undergone surgery for a mediastinal mass with acute superior vena cava syndrome in 1958. At that time the superior vena cava and azygos vein were found to be displaced and compressed by a large mediastinal cyst, which was partially excised. The entire cyst could not be removed due to its extension across the midline. Histopathologic examination of the wall of the cyst revealed bronchial epithelium. The patient’s obstruction of the superior vena cava resolved, and she convalesced without incident.

During the summer of 1977, the patient noticed increasing fatigability, a vague sensation of orthostatic substernal pressure, a new persistent nonproductive cough associated with moderate orthopnea, and one episode of minor hemoptysis. She denied fever, infection of the upper respiratory tract, paroxysmal nocturnal dyspnea, dependent edema, and angina pectoris. A chest x-ray film taken in August 1977 revealed a new 6 × 8 cm mass occupying the right anterior and middle regions of the mediastinum (Fig 1).

![Figure 1. Posteroanterior chest x-ray film taken August, 1977, demonstrating marked increase in size of mass in middle region of mediastinum. Aortic arch has been displaced laterally. There is no evidence of hyperinflation, atelectasis, or infiltrate in right pulmonary field.](image-url)
Physical examination and laboratory evaluation upon admission failed to reveal the etiology of this mass; however, the patient did become very uncomfortable and started to cough when supine. These symptoms were relieved when the head of the bed was elevated.

A pulmonary arteriogram was obtained, which included levophasic filming (Fig 2). The pulmonary arteriographic findings were consistent with those previously reported. The right superior pulmonary vein was displaced laterally and inferiorly. The ascending aorta and arch were minimally displaced to the left and anteriorly. To define further the extent of this avascular mass, a computerized axial tomographic scan with contrast material was obtained (Varian CT scanner). Pertinent serial scans are shown in Figure 3, depicting the spatial anatomic relationships of this inhomogeneous mass.

Bronchoscopic examination revealed significant obstruction of the right main-stem bronchus. Median sternotomy revealed a large thick-walled cystic mediastinal structure surrounded by dense adhesions which intimately involved the superior vena cava, right and main pulmonary arteries, ascending aorta, aortic arch, carina, both main-stem bronchi, and esophagus. The superior vena cava and azygos vein were splayed out over the cyst and were compressed. A total resection of the cyst en bloc, including the pericardium, was performed. No bronchial communication was found. The cyst was filled with a viscous opalescent fluid and a few septa.

The patient's postoperative course was entirely uncomplicated. Nine months after surgery, she was asymptomatic and was working full time without limitations.

Pathologic examination of the cyst revealed a dense fibrous wall lined by ciliated columnar epithelium with chronic inflammation consistent with a bronchogenic cyst. Cultures of

![Figure 2. Frontal projection of pulmonary arteriogram. Small circle is located near center of mediastinal mass. Right pulmonary artery is intact but displaced inferiorly and externally and compressed over long segment (arrows). Main pulmonary artery is displaced towards left and rotated slightly clockwise.](image)

![Figure 3. Computerized axial tomographic scans serially spaced at 2-cm intervals taken after injection of contrast material (scan A is most cephalad, and this level is just above carina). Cyst (1) is contiguous superior-laterally with ascending aorta (4), transverse aortic arch (5), and descending aorta (6); posteriorly with trachea (2), left main-stem bronchus (7), and lower descending aorta; inferiorly with right pulmonary artery (10) and left atrium; and rightwardly with superior vena cava (3). Displacement of these intimately related mediastinal structures is depicted. Scan B shows to best advantage the marked compression of superior vena cava. Left main bronchus is clearly defined, but patent right main bronchus could not be identified. Absorption coefficient of cyst was precisely half that of dilutely opacified blood (50 units; with water being zero units). Absorption of cystic contents was not uniform. No contrast enhancement of the mass was seen. 8. Left pulmonary artery; and 9, right ventricular outflow tract.](image)
the contents of the cyst for anaerobic and aerobic bacteria, acid-fast bacteria, and fungi were sterile.

DISCUSSION

This case illustrates several unusual features of the natural history of bronchogenic cysts. The fact that this was a recurrent mediastinal bronchogenic cyst argues for an aggressive approach, with total resection of these lesions whenever possible. Although unreported, we suspect that recurrent cysts have occurred previously, since Adams and Thornton8 first recommended partial excision and mucosal scarification in 1943. The exposure provided by median sternotomy in this case was excellent, as has been reported by others.7,8 We have used this approach for other complicated mediastinal and pulmonary problems (including completion pneumonectomy and closure of a bronchopleural fistula), with good success. Whenever a mass is predominantly anterior to the pulmonary hilum, we believe that the exposure provided by sternotomy is superior to lateral thoracotomy. If unilateral exposure posterior to the hilum were to become necessary, a double-lumen Roberts' or Carlsen endotracheal tube can be utilized to deflate the respective lung. During surgery, if exigencies arise that mandate cardiac decompression or simultaneous bilateral pulmonary deflation (or both), total cardiopulmonary bypass can readily be instituted.

Mediastinal bronchogenic cyst is a rare cause of the superior vena cava syndrome;4,8 this patient had incidental obstruction of the superior vena cava for a second time due to a recurrent cyst. Other benign processes that can cause superior vena cava syndrome are sclerosing mediastinal fibrosis, teratoma, thymoma, aneurysm of the ascending aorta, and vena caval thrombosis.6 It is, therefore, important that the etiology of obstruction of the superior vena cava be carefully defined prior to treating a potentially benign condition with radiotherapy or chemotherapy.

Mediastinal bronchogenic cysts usually do not communicate with the tracheobronchial tree and, therefore, rarely become infected.1,4 Such was the case in this patient; however, in 1972, Schmidt and Drapanas* reported one adult patient who died of respiratory failure within 24 hours of admission to the hospital after an unrecognized subcarinal bronchogenic cyst became infected and compressed the right main-stem bronchus. We attribute our patient’s cough, orthostatic substernal pressure, and dyspnea to her bronchial compression; but she had not exhibited hyperinflation, atelectasis, or pneumonia in the right lung. Similarly, hemoptysis, as seen in this case, is only rarely associated with mediastinal bronchogenic cysts; such is not the case with bronchogenic cysts located within the pulmonary parenchyma.

Another rare complication of bronchogenic cysts is pulmonary arterial stenosis.4 No hemodynamic tracings were obtained in this case, but a gradient may have been present across the right pulmonary artery where it was compressed. The clinical significance of this is unknown, but larger cysts can cause obstruction of the main pulmonary artery or right ventricular outflow tract.7

Exquisitely detailed definition of the anatomic extent of this lesion was revealed by the computerized axial tomographic scans.10 The displacement and compression of the superior vena cava and right pulmonary artery, as well as the right main-stem bronchial obstruction, were well demonstrated. Further experience with this new diagnostic method will clarify its applicability in the diagnosis of intrathoracic masses.

REFERENCES


Legionnaires' Disease*

Clinical and Pulmonary Histopathologic Features of a Sporadic Case

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The pulmonary histopathologic features in a sporadic case of Legionnaires' disease are shown. The changes include acute bronchitis with focal ulceration and diffuse acute interstitial pneumonitis. These changes are not those seen with typical bacterial pneumonia but are similar to changes seen when viruses, rickettsiae, chlamydial, or Mycoplasma pneumoniae organisms are the infecting agents.

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