Diagnosis of Mediastinal Tumors*

X-ray Manifestations of Redundant Pericardial Fat

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An unusual finding of a patient with a large pad of pericardial fat, developed over a brief period, masquerading as a large aneurysm of the ascending aorta or carcinoma of the lung with mediastinal extension is presented. Extensive investigative steps to arrive at a specific diagnosis were carried out to avoid thoracotomy. Thoracotomy was mandatory for correct diagnosis and management of this patient.

Nonoperative diagnosis of relatively innocuous mediastinal lesions is one of the most challenging roentgenographic problems. Despite the availability of a large number of simple and sophisticated investigative means, as well as surgical procedures of lesser magnitude than formal thoracotomy, specific tissue diagnosis is not obtained in occasional cases. However, some of the available investigative methods have been instrumental in aborting an unnecessary thoracotomy, particularly on the poor risk patients. 6,9 Roentgenograms with and without the use of contrast material, sputum studies, skin tests, bronchoscopy, needle biopsy, scalene fat pad biopsy, and mediastinoscopy are some of the frequently employed procedures.

Specific clinical and roentgenographic evidences, such as paralyzed vocal cord, phrenic nerve involvement, extension to adjacent bony structures, compression of the superior vena cava or azygos system, and encroachment on the sympathetic chain, are often accepted as sufficient evidences of malignant neoplastic processes with unresectability and to advocate other modes of therapy such as supervoltage radiation and use of chemotherapeutic agents. Occasionally inflammatory, vascular, and benign lesions, however, may present with one or more of the above findings.1-5 The following is a report of an unusual case where the patient, over a period of months, developed what appeared to be a large tumor mass involving the right mediastinum. Despite exhaustive investigations, the diagnosis of a large sheet of redundant pericardial fat could be made only at the time of a formal thoracotomy.

Case Report

A 54-year-old Negro man was transferred to the Veterans Administration Hospital in Kansas City, Missouri, with the diagnosis of an aneurysm of the ascending aorta and collapse of the right middle lobe. The patient had several hospitalizations since 1944 for the treatment of rheumatoid spondylitis of the cervical spine. Chest x-ray films taken on this patient in September, 1956 and September, 1961 were available for comparison (Fig 1 and 2). Roentgenograms of the chest in November, 1969 showed an obvious mediastinal mass on the right side (Fig 3). Fluoroscopy showed that the mediastinal tumor was pulsatile. Bronchoscopy, sputum examination, and biopsy of scalene fat pad were not contributory. A thoracic aortogram showed that the tumor was probably not due to an

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Figure 3. X-ray film taken in November, 1969 shows what appeared to be widened mediastinum and collapsed middle lobe on the right.

On November 17, 1969 exploratory thoracotomy was performed through a fourth intercostal space anterolateral incision, prior to resumption of radiotherapy for what was interpreted as carcinoma of the right lung with extensive mediastinal involvement. Upon thorough exploration of the hilum and mediastinum, the only abnormality found was the presence of 2-3 cm thick redundant pericardial fat, approximately five inches wide on the diaphragmatic surface. The sheet of fatty tissue was easily removed, and gross and microscopic examination showed a few small anthracotic lymph nodes.

Figure 4. Retrograde aortogram to opacify the thoracic aorta shows the mediastinal shadow to be unrelated to the major vascular structures.

An aneurysm (Fig 4).

The pitfalls in the clinical and roentgenographic diagnosis of mediastinal tumors are well known. Unusual lesions of the mediastinum have been the basis for various reports, but with an increasing awareness of bronchogenic carcinoma and the greater number of chest x-ray films being made, such clinical curiosities are likely to become abundant. The necessity of exploratory procedures is well recognized in otherwise healthy patients in order to reach the correct diagnosis imperative for administration of specific treatment when the nonoperative methods have been unrewarding.

Angiocardiography, pulmonary angiogram, thoracic aortogram, and combined lung and cardiac photoscan may be very valuable in delineating or excluding nonsurgical pathologic processes and anomalies. Occasionally there are fallacies associated with the interpretation of such studies, which various reports have already indicated. In a report of 100 consecutive mediastinal tumors, Kalter et al have shown that atypical lesions are not infrequent in the mediastinum; there were four patients with lipomatous lesions in their review.

At the time of thoracotomy in the case reported here, the diaphragm appeared to respond promptly upon phrenic nerve stimulation. The large pad of adipose tissue obliterated the diaphragmatic contractions during fluoroscopy. Procedures of lesser magnitude than a formal thoracotomy would not have yielded complete information and excluded an aneurysm or tumor with certainty.

REFERENCES

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