Case Presentation:
An Atypical Mediastinal Mass

Robert Yeh, Harvard Medical School Year III
Gillian Lieberman, MD
History

20 year old asymptomatic African-American female seeking left breast reconstruction.

History includes:

• Left chest wall cyst removed as an infant
• Left arm “oozing sac” removed at age 10
• Sickle cell trait
Our Patient:
Pre-Op Workup Chest X-Ray
Our Patient

Trachea deviated to right

Unilateral breast shadow

Mass

Rib

From PACS, BIDMC
Obliteration of retrosternal space

Position in anterior mediastinum narrows differential diagnosis
The Mediastinal Compartments

Anterior Mediastinum

- Anterior to the pericardium and brachiocephalic vessels behind the sternum
- Contains fat, thymic remnants, internal mammary vessels, and lymph nodes

From Moore, EH. Chest Radiology.
Anterior Mediastinal Masses

“The Four Ts”

Thymoma
Teratoma
Terrible Lymphoma
Ectopic Thyroid

Others are rare:
Thymic Carcinoma
Thymic Carcinoid
Thymolipoma
Seminoma
Lymphangioma
Parathyroid Adenoma
Metastatic Disease

One-half of all mediastinal masses are in the anterior mediastinum
Thymoma

**Characteristics**
- Most common anterior mediastinal tumor in adults (20%)
- Usually age > 40
- Associated with myasthenia gravis and pure red cell aplasia

**Plain Film**
- Well-defined, rounded, or lobulated on one side of the midline
- Visible calcifications rare and usually small, curvilinear, or punctate
Teratoma

Characteristics

- 10% of all anterior mediastinal tumors, most common in infants
- May rarely contain malignant foci
- Often cystic within the mediastinum

Plain Film

- Usually protrude to one side of midline and can reach large sizes
- 26% exhibit calcification and may display recognizable bone or teeth
- Often lower in mediastinum
Lymphoma

Characteristics

- 10-20% of anterior mediastinal tumors
- Hodgkin’s Lymphoma is most common
- Nodular sclerosing form favors anterior mediastinum
- May present with fever, night sweats, and/or weight loss

Plain Film

- Discrete lobulated mass
- Often bilateral asymmetric nodal disease with contiguous spread along lymph node chains
- Calcifications rare before therapy

From http://info.med.yale.edu/intmed/cardio/imaging/cases/lymphoma/
Ectopic Thyroid

Characteristics

- 10% of mediastinal masses
- Rarely malignant
- Most commonly in asymptomatic women with a palpable cervical goiter

Plain Film

- Encapsulated, lobulated and heterogeneous
- Continuity between the cervical and mediastinal components
- Punctate or coarse calcifications common

All 4 Ts are often asymptomatic and found incidentally

From www.thyroidimaging.com/rx_gozi.jpg
Utility of Plain Film

Ahn et al. 1996 found 36% accuracy of first diagnosis of anterior mediastinal masses on plain film by two separate radiologists

“I suspect the presence of a superior mediastinal mass in a 20 year old patient. This could in part relate to thymic soft tissue. However, further evaluation with chest CT is recommended to exclude the presence of a mass.”

- Radiologist report

From Ahn, JM, et al. J Thorac Imaging 1996 Fall; 11(4)265-71
Our Patient: Chest CT

Mass
- Soft tissue attenuation
- Well defined border
- Heterogenous
- Envelops great vessels

Aortic Arch
Tracheal bifurcation
Our Patient: Chest CT

- Pulmonary Trunk
- Aorta
- Mass postero-medial
Our Patient: CT in Abdomen

Abdominal sections

- Numerous low attenuation cystic structures in spleen
Our Patient:
Lung Windows

• Significantly reduced left lung volume despite patient being asymptomatic
CT report

“IMPRESSION:
Extensive mediastinal soft tissue mass. The appearance is most suggestive of a neoplastic process. Given the patient's age and associated findings of multiple splenic lesions, the most likely consideration would be that of lymphoma. Other considerations include infection, such as TB and fungal disease.”

Has the differential diagnosis changed?
Our Patient:

**CT-guided Needle Biopsy**

Report:
- “A 19-gauge coaxial core biopsy needle was inserted into the left anterior mediastinal mass under CT guidance and its position within the mass confirmed.”

Cytology:
- “Predominantly blood, scattered stromal cells, lipid-laden histiocytes, mesothelial cells and lymphocytes present.”
Our Patient: MRI

“Multiple small cystic areas with fluid-filled levels….this mass is also intimately associated with the aortic arch and the pulmonary trunk”
“It extends superiorly to the left lower neck, laterally to the left axilla.”
Our Patient

“The spleen also demonstrates multiple cystic areas. There is splenomegaly.”
Our Patient

“The aforementioned mass is consistent with lymphatic malformation, namely cystic lymphangioma”
Our Patient
Lymphangioma

- Histologically benign proliferation of interconnecting lymphatic vessels and sacs that may grow in an infiltrative fashion
- Controversial etiology: hamartoma vs. neoplasm vs. developmental lesion
- Fifty percent are present at birth and 90% are discovered by 2 years of age

Lymphangioma (cont.)

- 0.7-4.5% of mediastinal tumors
- Ninety-five percent involve the neck or axilla
- Rarely, a generalized lymphangiomatosis with extensive multifocal involvement of multiple organ systems can occur

From www.edmondsmd.com/neck_lymphangioma.jpg
Lymphangioma (cont.)

Categorized into three types

1) **simple lymphangioma**: formed by lymphatic capillaries
2) **cavernous lymphangioma**: formed by bigger lymphatic vessels with a fibrous adventitia
3) **cystic lymphangioma**: also called cystic hygroma, formed by multiple cysts ranging from a few millimeters to several centimeters in size.

Complications include chylothorax and compression of airway, great vessels

From www.ijri.org/archives/19990904/case_pg187.htm
Splenic Lymphangiomatosis

- Extremely rare condition, but approximately 100 cases have been reported since 1885
- Associated with consumptive coagulopathy, thrombocytopenia and portal hypertension

From PACS, BIDMC
Patient Follow-Up

- Referred to plastic surgeon for breast reconstruction
- Subsequently referred to thoracic surgeon who deferred surgery due to extensive nature of disease
- No further records
References


• Cohn WE. Anterior mediastinal mass lesions. UpToDate, Inc., 2001


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