Case Presentation

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SUNY Downstate
February 1, 2008
Case Presentation

Chief complaint
enlarging goiter x 8 months

History of present illness
shortness of breath, heaviness in chest

Physical exam
large rubbery symmetric goiter, no dominant nodules, no palpable nodes
Work-up

Imaging
- Chest XR
- CT Neck
- CT Chest

Consultation
- Cardiothoracic Surgery
Neck CT
Work-up

CT Neck & Chest

large goiter, extension of left thyroid lobe into mediastinum measuring 5.2 x 6.5cm in superior compartment, coursing to posterior compartment, tracheal compression and deviation to the right, compression of major bronchi

Cardiothoracic Surgery
available in OR
Intra-op: Cervical Approach

- Collar incision
- Total thyroidectomy
- Unable to mobilize entire left lobe
- Combined approach
Intra-op Views

- Left thyroid lobe
- Right thyroid lobe
- Trachea
Intra-op: Thoracic Approach

- Right posterior lateral thoracotomy
- Division of azygos vein
- Resection of thyroid goiter in posterior mediastinum
- Thoracic and cervical incisions closed
Intra-op Views

superior
posterior
anteri or

azygos vein
thyroid mass
Specimen: Nodular Goiter

- Left thyroid lobe
- Right thyroid lobe
- Thoracic component
Post-op

Discharged on POD 4

2 weeks post-op: General surgery started on synthroid, complained hoarse voice

4 weeks post-op: Cardiothoracic surgery thoracotomy paresthesias, incisions healed
8 weeks post-op: ENT

laryngoscopy- left true vocal cord paresis v. paralysis

consistent with left recurrent laryngeal nerve injury

referred for possible vocal cord augmentation
Anterior Mediastinal Masses
Diagnosis & Treatment

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Components of Anterior Mediastinum

- Thymus
- Lymph nodes
- Ascending aorta
- Transverse aorta
- Great vessels
- Areolar tissue
Diagnosis
Disorders of Anterior Mediastinum

- Thymoma
- Lymphoma
- Teratoma
- Thyroid disorder
- Stem cell tumor
- Parathyroid disorder
- Lipoma
Differential Diagnosis: Anterior Mediastinal Masses

Neoplastic
thyroid, thymus, teratoma, germ cell, lymphoma, ectopic parathyroid

Infectious
acute/subacute mediastinitis

Vascular
aneurysm of aortic arch, superior vena cava, inominate vein, persistent left superior vena cava
# ANTEROSUPERIOR MEDIASTINUM (n=287)

<table>
<thead>
<tr>
<th>Type of Tumor or Cyst</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Thymic neoplasms</td>
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<tr>
<td>Lymphomas</td>
<td>19</td>
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<tr>
<td>Germ cell tumors</td>
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<tr>
<td>Benign</td>
<td>9</td>
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<tr>
<td>Malignant</td>
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<td>Carcinoma</td>
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<tr>
<td>Endocrine</td>
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<tr>
<td>Other</td>
<td>2</td>
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</table>
Preoperative Evaluation

- Provisional diagnosis based on clinical evaluation
- Diagnostic imaging
  - **CXR** PA & lateral
  - **CT Scan**
  - MRI
  - Scintiscan (possible substernal goiter)
  - Fluoroscopy, barium swallow
  - Bronchoscopy, esophagoscopy
Thymoma

- Most common neoplasm of anterior mediastinum
- Incidence 0.15 per 100,000
- Uncommon before fourth decade of life
- Associated with paraneoplastic syndromes
Thymoma

- Measure autoantibodies to acetylcysteine
- Tx: Resection once diagnosed
- Local recurrence once capsule violated
- Chemotherapy or radiation for invasion, local metastasis or if inoperable
Thymic Carcinoma & Carcinoid

- Rare, invasive epithelial malignancies
- Tx: complete resection can be curative, chemotherapy and radiation when unresectable
Thymolipoma & Thymic Cysts

**Lipoma** is slow growing tumor seen on CT & MRI

**Cysts** are rare tumors, may be congenital or acquired

Tx: for both is surgical excision
Primary Mediastinal Lymphoma

- Persons younger than 40 years old
- Presence of group B symptoms
- Palpable remote adenopathy
- Elevated serum LDH
- Dx: biopsy via Chamberlain procedure, mediastinoscopy or VATS
- Tx: chemotherapy, radiation, BMT for patients with lymphoblastic lymphoma
Germ Cell Tumors

- Second or third decade of life
- (> 90%) produce tumor markers, including hCG and AFP
Germ Cell Tumors

Classification

- benign teratoma
- seminoma
- embryonal tumors
  - yolk sac tumors
  - choriocarcinomas
  - embryonal carcinomas
  - teratocarcinomas
Germ Cell Tumors: Benign Teratoma

- Benign teratomas are well-encapsulated
- From at least 2 of 3 primitive germ cell layers
- Tx: surgery, not biopsy
- Adjunctive chemotherapy if not complete surgical resection
Germ Cell Tumors: Seminoma

- Men ages 20-40 years
- Tx: uniquely sensitive to radiation therapy
- Debate as to role of chemotherapy and surgical resection, but residual masses should probably be resected
- Over 90% 5-year survival is typical for seminomatous cancer
Germ Cell Tumors: Nonseminomatous

- Often symptomatic and malignant
- More common (>90%) in men
- Need to look for primary gonadal malignancy
- Dx: hCG, AFP tumor markers; percutaneous biopsy first when suspected
- Tx: Primary chemotherapy or radiotherapy; surgery for residual tumor only after all elevated tumor markers have normalized.
- Over 50% 5-year survival is achievable
Mediastinal Goiter

- Incidence 1–15% in patients undergoing thyroidectomy
- On CT scan, see continuity of cervical and mediastinal components of the thyroid
- Scintigraphy can be diagnostic if functional
- Tx: nearly all can be removed through cervical incision
Mediastinal Parathyroid Adenoma

- A common location of ectopic parathyroid tumor
- Tumors are round, encapsulated, small
- Dx: MRI or nuclear sestamibi scans
- Tx: surgical resection
Treatment Techniques
Minimally invasive

- FNA
- Core needle biopsy
- Excisional biopsy
Mediastinoscopy
Mediastinoscopy

Daniel TM, Jones DR. CTSNET.ORG:2004
Chamberlain procedure

- Anterior parasternal mediastinoscopy
- Incision over second costal cartilage
- Resect in a subperichondrial plane
- Blunt dissection
- Wedge resection
Transcervical approach

- Elevate the sternum
- Exposure of anterior mediastinum
- Alternative to anterior mediastinotomy
- Can convert to sternotomy if exposure is needed
Median Sternotomy

- Standard approach for primary invasive masses of the anterior mediastinum
- Optimum exposure

Thoracotomy

- Exposure to all three compartments
Video-Assisted Thoracic Surgery

- Has been applied for diagnostic biopsy
- Helpful to evaluate other compartments
- Intercostal incisions more painful
Summary

- Clinical evaluation will usually give you the diagnosis.

- If after initial work-up, the mass appears to be benign, proceed with surgery.

- Otherwise, proceed with diagnostic biopsy by any variety of ways to access the mediastinum.
References