SPR 2017 Categorical Course
Things I Learned The Hard Way in Chest Imaging

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NO DISCLOSURES
3 Mo M with cough

Lt Superior Ectopic Thymus
Normal infant thymus
Unnecessary CT
Thymic sail sign

Angels Wings or Spinnaker Sail sign - Pneumomediastinum
Normal thymus
Hypoplastic right lung with ipsilateral shift

6mo with cough
3 week old M
?mediastinal mass

Normal Thymus

Thymic US “signature”: hypoechoic, uniform, punctate & thin linear echogenicities
12 yo girl - irregular lobular mediastinal contour
Benign Teratoma
?originating in thymus
Normal thymus vs mass

• Smooth and homogeneous
• Shape: quadrilateral infants, triangular older
• Typical location: anterior; can extend contiguously superiorly (left), posteriorly (Rt) and inferiorly; Wave/sail
• Characteristic morphology US (uniform hypoechoic with thin punctate and linear echogenicities); CT, uniform hypo to isodense to muscle; MR, uniform T1 intermediate/bright and T2 bright signal c/w muscle
• No mass effect on adjacent structures
Summary

• Many Suspected Mediastinal Masses Are Due To Normal Thymic Variations

• Important to recognize these on Radiographs and Use Ultrasound (if necessary) as the Primary Problem Solving Tool in Children

• Usually Not an Emergency
16 mo with recurrent “croup”?
mediastinal mass or vascular lesion
Chronic Esophageal FB
Esophagram after FB removal (balloon clip)
Chronic Esophageal FB

- **Who:** Young preschool children, semi solid diet
- **What:** Erodes or perforates esophageal wall, surrounding edema, inflammation and granulation
- **Result:** Compresses airway and presents with respiratory symptoms rather than dysphagia
1.5yo with asthma
Widened Mediastinum
Anterior Tracheal Bowing

Chronic Esophageal Fb (Toy)
Summary

• Think of esophagus as cause of mediastinal widening or airway symptoms/displacement
• Helps if positive history but often ingestion not witnessed
• Fluoroscopic esophagram probably next best study
17yo M Chest Pain

Marfan syndrome & aortic dissection
14yo with acute chest pain

Ehler Danlos syndrome

- Can be extensive vascular involvement
- Aneurysm, dissection, rupture - complex morphology
- Surgical and catheter interventions high risk
13yo with chest pain after skiing accident

Aortic injury at level of ductal ligament with pseudoaneurysm
12yo M with hypertension

- Severe juxtaductal aortic coarctation with 3 sign
- Intercostal collaterals with rib notching
• Look at Aorta on plain films
• Know patient history
• Ductal ligament site common location for aortic pathology
1 week old with respiratory distress
Scimitar syndrome

- Hypoplastic right lung (ipsilateral shift)
- Small RPA
- Ipsilateral PAPVR to IVC
- Systemic artery to RLL
8 yo Scimitar syndrome

- Small RPA
- Scimitar vein to IVC
- Absent RUL, bronchus
  Bilobed Rt lung

Courtesy of Monica Epelman
1 do Scimitar syndrome

- Left PTX
  - Hypoplastic opacified right lung (PV obstruction)
- Hypoplastic RPA
- Rt PAPVR to IVC

Also: IAA PDA LCAPA
CONGENITAL ANOMALIES - Similar appearance different etiology

1wk Scimitar s

6mos LPA sling

2.5y Interrupted RPA
Summary

• Pay attention to asymmetry
• Hypoplastic lung- think of Scimitar syndrome and other PA anomalies
• CTA
hx prenatal lung lesion on US
Asymptomatic NB

RML Bronchial atresia - central mucoid impaction
RML BRONCHIAL ATRESIA

- Secondary lobar overinflation
- Central mucoid impaction (distal to atresia)
- Compression/displacement
  RUL, RLL
- Hx of lung abnormality on prenatal sonogram
- Asymptomatic at birth
- Normal CXR

F/U CT/MR at 6yrs

Segmental Bronchial Atresia Superior RLL
22 weeks

Multisegmental Bronchial Atresia

32 weeks
Prenatal US & MR - 34 weeks

Asymptomatic NB US day 1

CT 3mos

BPM - Extralobar sequestration with bronchial atresia
Summary

• Don’t ignore prenatal lung abnormality even if postnatal CXR normal and baby asymptomatic
• Mucoid impaction distal to the point of atresia is a distinct and diagnostic feature of bronchial atresia
• Bronchial atresia can occur alone but frequently in association with other lung malformations
LESSONS LEARNED

1. Think thymus with abnormal mediastinal contour
2. Think of esophagus in differential of mediastinal/airway abnormality
3. Aorta should be part of plain film survey
4. Pay attention to asymmetry of the chest
5. Do not ignore prenatal lung abnormality, look for specific features like mucoid impaction
Thank You