Bronchogenic cysts
Radiological findings with different modalities

M. Mearadji
International Foundation for Pediatric Imaging Aid
Rotterdam, The Netherlands
Introduction

- Bronchogenic cyst (BC) originates from the primary ventral foregut.
- The location of BC is usually mediastinal along the tracheobronchial tree up to the peripheral part of the lung.
- Other locations of BC are incidentally extrapleural or extrathoracic.
- 40-50% of all congenital intrathoracic cysts are BC.
- The cyst contains mucoid material and is lined by bilated columnar epithelium.
Introduction

- BC primarily does not communicate with the tracheobronchial tree.
- Infection may lead to air-filled cysts or an air-fluid level.
- Clinical symptoms are caused by compression of the trachea or bronchi which leads to cough, wheezing, stridor, cyanotic spells or pneumonia.
- Frequently they are asymptomatic or incidentally found with prenatal sonography or by routine chest examination up to adult life.
Introduction

Review of patients with bronchogenic cyst from 1980 to 2006 (n=19)
Clinical symptoms and signs  
$n=19$

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persistent tachypnea</td>
<td>5</td>
</tr>
<tr>
<td>Recurrent upper airway infection</td>
<td>7</td>
</tr>
<tr>
<td>Pneumonia and pulmonary abcess</td>
<td>3</td>
</tr>
<tr>
<td>Asymptomatic BC</td>
<td>3</td>
</tr>
<tr>
<td>Antenatal detected by sonography</td>
<td>1</td>
</tr>
</tbody>
</table>
Diagnostic procedures

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chest X-ray film</td>
<td>18</td>
</tr>
<tr>
<td>Sonography of mediastinum</td>
<td>7</td>
</tr>
<tr>
<td>CT</td>
<td>8</td>
</tr>
<tr>
<td>MRI</td>
<td>5</td>
</tr>
<tr>
<td>Angiography</td>
<td>2</td>
</tr>
<tr>
<td>Bronchography</td>
<td>4</td>
</tr>
<tr>
<td>Esophagogram</td>
<td>6</td>
</tr>
<tr>
<td>Location</td>
<td>Count</td>
</tr>
<tr>
<td>-----------------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>Mediastinal</td>
<td>11</td>
</tr>
<tr>
<td>Periferal pulmonary location</td>
<td>4</td>
</tr>
<tr>
<td>Extrapulmonary</td>
<td>2</td>
</tr>
<tr>
<td>Paratracheal as diverticle</td>
<td>1</td>
</tr>
<tr>
<td>Tracheal duplication</td>
<td>1</td>
</tr>
</tbody>
</table>
7-day-old neonate with stridor. Difficulty with intubation.
The tracheobronchogram demonstrates a communicated cyst above the carina in the trachea.
Interpretated as atypical bronchogenic cyst.
Neonate with an uncommunicated duplication of trachea.

Interpretated as bronchogenic cyst with a large extralobar lung sequestration on the right side.
2-year-old girl with fever and respiratory infection. 
The mediastinal sonogram shows a large anechoic cyst beneath the thymus.
Infant with stridor.

Chest films show hyperinflated left lung with a mediastinal mass.

Bronchogram in in- and expiration shows narrowing of trachea and left bronchus following tracheomalacia.

Note the masses between trachea and esophagus.

Bronchogenic cyst visible on chest film and sonogram in mediastinum.
Evaluation after chemotherapy.

Chest film shows a right-sided mediastinal mass with hyperinflation of upper lobe.

The bronchogenic cyst is clearly visible on MRI and CT.
CT and MRI findings

- Well defined, thin-walled
- Homogeneous aspect
- No enhancement after iv contrast (except for thin wall)
- Density (on CT) and signal intensity (on MRI) is variable due to variable water, mucus and protein content of cyst
  - MRI: typically isointense or hyperintense to CSF with all pulse sequences
14-year old boy with respiratory complaints.

Note: the huge peripheral bronchogenic cyst with fluid level in upper left lung visible
4-month-old boy with a pulmonary abscess in left lower lobe because of an infected peripheral bronchogenic cyst.

Confirmed histologically.
Conclusion I

- Bronchogenic cysts in infancy and early childhood are mostly symptomatic following airway obstruction.
- Asymptomatic cases are found in older children.
- Persistent hyperinflation or atelectasis are indirect signs of bronchogenic cysts on plain chest film.
Conclusion II

- Mediastinal sonography is a noninvasive modality and can be used in infants for the detection of bronchogenic cyst.
- CT contributes largely in diagnosis of symptomatic bronchogenic cyst.
- MR imaging is the modality of choice in characterization of asymptomatic bronchogenic cyst.