Case 12700
Right Lung aplasia

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Section: Chest Imaging
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Patient: 3 month(s), male

Clinical History

A three months old male child with respiratory distress and fever was sent to radiology department to undergo chest CT.

Imaging Findings

Right lung, right main bronchus, right pulmonary artery and right pulmonary veins are not seen. The heart and mediastinum are shifted toward the right hemi thorax.

Figure 1: MINIP reconstruction image shows blind ended small rudimentary right main bronchus.
Figure 2: 3D airway rendering image of the lung shows herniation of left lung parenchyme toward the right hemithorax and absence right main bronchus.
Figure 3: Post contrast axial image at the level of pulmonary trunk: Displaced heart toward right
hemithorax, normal pulmonary truck with single left pulmonary artery.

Apart from right side heart shift, No significant cardiac pathology was detected by CT.

**Discussion**

**Background**

Pulmonary agenesis is a rare congenital anomaly [1] with very different figures about its incidence in the literature from 1/10,000-12,000, [2] 1/100,000, [3] and 34/million live births. [4] Evidence are also different about its occurrence in males and females and affecting the right or left lung. Nowotny T. (in 1988) has mentioned approximately equal occurrence in males and females as well as right and left equality, [5] but Partha P. Roy (in 2012) has described that left lung is affected more frequently than the right and males predominate over females. [4] Half of the patients have associated congenital defects [6] involving cardiovascular, skeletal, gastrointestinal and genitourinary systems. [7] The etiology is unclear although genetic factors, viral agents and maternal dietary Vitamin A deficiency have been implicated. [6] Lung agenesis is divided into three types: Type 1 with complete absence of lung, bronchus and vessels. Type 2 (Aplasia) has a rudimentary bronchus with complete absence of lung parenchyma and type 3 (Hypoplasia) is manifested as presence of variable amounts of bronchial tree, pulmonary parenchyma and supporting vasculature.

**Clinical perspective**

Bilateral lung agenesis is incompatible with life but unilateral agenesis may present with varying degrees of severity. [4] Patients with aplastic lung are usually asymptomatic. [1] Clinical findings change with the presence of comorbid anomalies and their severity. [1] Many cases are detected during infancy because of recurrent chest infections, cardiopulmonary insufficiency or due to associated congenital anomalies, however, individuals with single lung may survive well up to adulthood without significant complaints of which few case reports are published. [4, 7, 8, 9]

**Imaging perspective**


**Outcome**
No treatment is required in asymptomatic cases. The prognosis depends upon the functional integrity of the remaining lung as well as the presence of associated anomalies. [7]

**Final Diagnosis**

Right lung aplasia

**Differential Diagnosis List**

Lung hypoplasia, lung agenesis

**Figures**

**Figure 1 Rudimentary right bronchus**

<table>
<thead>
<tr>
<th>MINIP Reconstructed image showing rudimentary right main bronchus</th>
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<tbody>
<tr>
<td>© FMIC, Kabul Radiology Department</td>
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<tr>
<td><strong>Area of Interest:</strong> Lung;</td>
</tr>
<tr>
<td><strong>Imaging Technique:</strong> CT;</td>
</tr>
<tr>
<td><strong>Procedure:</strong> Computer Applications-3D;</td>
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<tr>
<td><strong>Special Focus:</strong> Congenital;</td>
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</tbody>
</table>

**Figure 2 Lung Reconstructed image**
3-D airway rendering image of the lung shows: Right side herniation of left lung, absence of right main bronchus as well as normal positioned gastric air bubble

Area of Interest: Lung;  
Imaging Technique: CT;  
Procedure: Computer Applications-3D;  
Special Focus: Congenital;

Figure 3 Pul Artery and veins

Axial CT section after IV contrast injection in arterial phase, through the level of Pulmonary trunk: Single left side pulmonary artery arising from pulmonary trunk

Area of Interest: Lung;  
Imaging Technique: CT-Angiography;  
Procedure: Contrast agent-intravenous;  
Special Focus: Congenital;

Figure 4 Lung window
Coronal CT image in lung window shows herniation of left lung to the right hemithorax with some areas of over inflated. (black areas)

Area of Interest: Lung;
Imaging Technique: CT;
Procedure: Contrast agent-intravenous;
Special Focus: Congenital;

References


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Right Lung aplasia {Online}
URL: http://www.eurorad.org/case.php?id=12700