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**HYDATID MASQUERADING AS ALLERGIC BRONCHOPULMONARY  
ASPERGILLOSIS (ABPA) CAUSING DIAGNOSTIC DILEMMA**

**Dr Mukul Agarwal<sup>1</sup>**

Pg Resident 2nd Year, MD Radiodiagnosis,

Pacific Institute of Medical Science Umarda, Udaipur

**Co-Author**

**Dr Sambhav Lodha<sup>2</sup>**

Professor, MD Radiodiagnosis,

Pacific Institute of Medical Science Umarda, Udaipur



## INTRODUCTION-

Hydatid cyst is a parasitic disease caused by the larval stage of the tapeworm, *Echinococcus granulosus*. This condition is prevalent in regions where close human-animal contact is common, especially in areas with sheep and cattle farming. While the liver is the most frequently affected organ, the lungs are the second most common site for hydatid cyst development.

Pulmonary hydatid cysts can remain asymptomatic for extended periods, often leading to delayed diagnosis. However, as the cyst grows, it can cause respiratory symptoms such as cough, chest pain, and shortness of breath. In severe cases, the cyst may rupture, leading to complications such as hemoptysis (coughing up blood) or infection.

Pulmonary hydatid cysts, though often silent, can cause serious problems if untreated or if they burst. These problems include:

- **Bleeding:** If the cyst breaks into a breathing tube, it can cause coughing up blood.
- **Collapsed lung:** If the cyst ruptures into the chest cavity, air can leak into the lungs, causing them to collapse.
- **Fluid buildup:** Fluid can gather in the chest cavity, leading to pain and breathing difficulties.
- **Infection:** If the cyst becomes infected, it can form an abscess and spread throughout the body.
- **Breathing problems:** A large cyst can press on the windpipe or breathing tubes, making it hard to breathe.
- **Swelling:** A very large cyst can press on a major blood vessel, causing swelling of the face, neck, and arms.
- **Allergic reaction:** In some cases, the cyst bursting can trigger a severe allergic reaction that can be life-threatening.
- **Calcification:** Over time, the cyst may harden, reducing the risk of rupture but making surgery harder.



- **Spread:** Rarely, the cyst can break and release smaller cysts that spread to other organs.

## CASE PRESENTATION

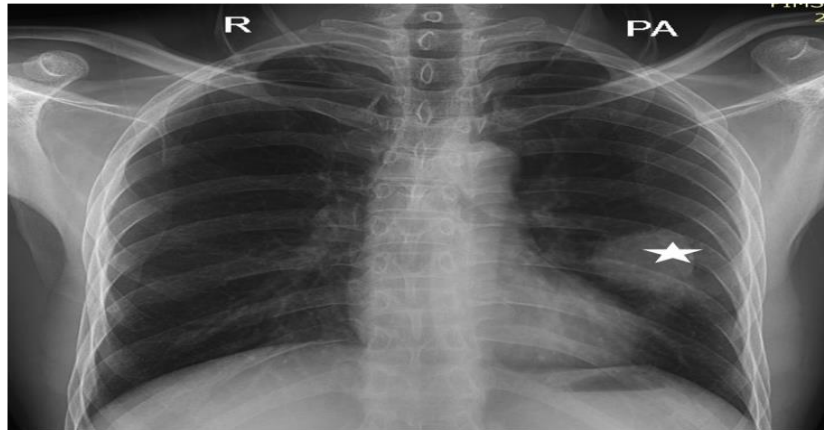
A 40-year-old male presented with a five-month history of generalized weakness, hemoptysis (coughing up blood), shortness of breath, and occasional hematemesis (vomiting blood). The patient denied any prior history of tuberculosis. He had a 20-year history of smoking and worked in stone mining quarries.

### Clinical Examination

On physical examination, the patient appeared pale and dyspneic. Auscultation of the lungs revealed decreased breath sounds in the right lower lobe. There was no palpable mass or hepatosplenomegaly.

### Diagnostic Workup

- **Laboratory Investigations:** Complete blood count showed anemia with a normal platelet count. Liver and kidney function tests were within normal limits.
- **Imaging Studies:** The chest X-ray revealed a notable finding: a well-defined ovoid radio opaque shadow located in the left mid-zone (figure1). This observation indicates a dense or opaque structure that could be attributed to various factors such as infective cyst / congenital cystic lesions. Following the identification of a radio opaque round to oval-shaped shadow on X-ray, a CT scan is recommended for a more detailed and comprehensive evaluation.



**FIGURE-1: Xray chest PA view image shows well defined radio-opaque shadow in left mid zone (star) .**

## **ON CECT THORAX**

The CECT findings revealed a mildly enhancing, low-density cystic lesion with air foci measuring approximately 3.2 x 4.5 x 3.0 cm in the lingular segment of the left lung. Surrounding areas of atelectasis and mild pleural thickening were also observed. These findings suggest a possible infectious etiology. The differential diagnoses included a large bronchocele with associated inflammatory changes of allergic bronchopulmonary aspergillosis (ABPA) and hydatid cyst.

**Given the uncertainty between these two possibilities, an MRI was undertaken as the next step of investigation.** MRI is particularly useful in differentiating hydatid cysts from other cystic lung lesions due to its superior soft tissue contrast resolution. It can help identify the characteristic layered structure (laminated membrane) of hydatid cysts and may also reveal daughter cysts within the main cyst.

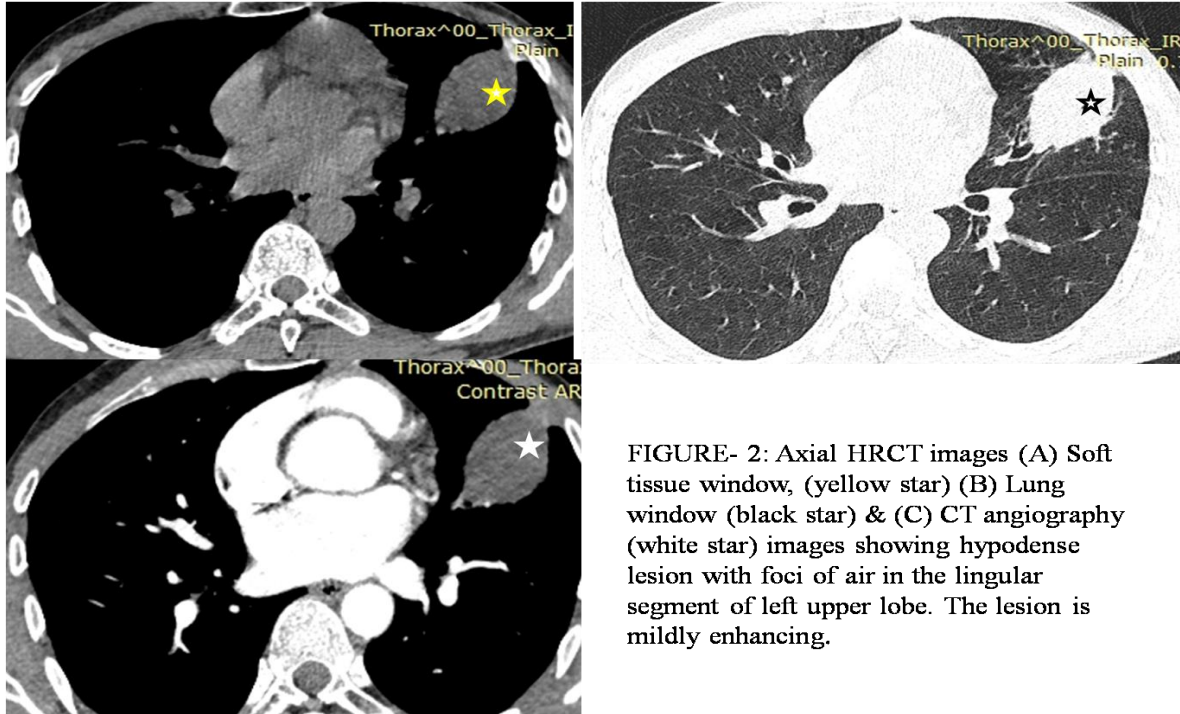


FIGURE- 2: Axial HRCT images (A) Soft tissue window, (yellow star) (B) Lung window (black star) & (C) CT angiography (white star) images showing hypodense lesion with foci of air in the lingular segment of left upper lobe. The lesion is mildly enhancing.

## ON MRI SCAN

The MRI findings unveil a lesion with distinctive cystic presentation. The cyst's capsule appears hypointense on T2 imaging with folded membranes in it. The intricate details captured by MRI, such as the hypointense capsule and internal membrane structures makes the diagnosis of hydatid cyst more likely than ABPA.

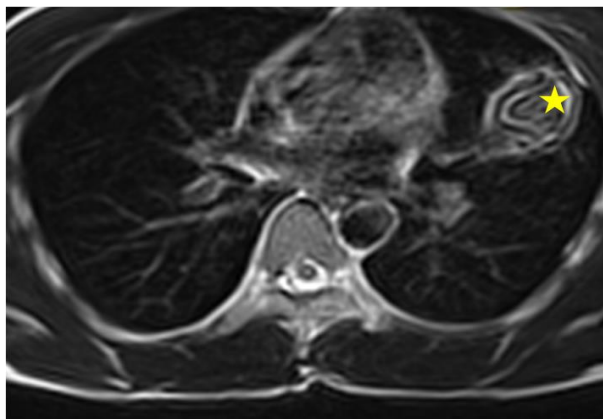


FIGURE-3: MRI image (star) show the cyst capsule which is hypointense on T2 weighted image (hypointense rim sign). The folded membranes within cysts are T2 hypointense.

## Additional Considerations:

- **Serum IgE levels:** Elevated serum IgE levels are often seen in patients with ABPA and can help support this diagnosis.



- **Sputum examination:** Microscopic examination of sputum may reveal Aspergillus hyphae in patients with ABPA.
- **Galactomannan test:** A galactomannan test can be performed on serum or bronchoalveolar lavage fluid to detect Aspergillus antigens.

By combining the CECT findings with MRI results and other relevant tests, a definitive diagnosis can be established and appropriate treatment can be initiated.

## OUTCOME

The outcome of the imaging assessments reveals a discrepancy in the interpretation of the cystic lesion. While CT scans initially suggested potential confusion between a hydatid cyst and Allergic Bronchopulmonary Aspergillosis (ABPA), further evaluation with MRI distinctly confirms the diagnosis of a hydatid cyst which was proved by Bronchoalveolar lavage. This underscores the importance of employing multiple imaging modalities for comprehensive diagnostic accuracy, highlighting how MRI can provide crucial insights to refine the understanding of cystic lesions and differentiate between similar presentations identified by CT scans.



## LEARNING POINTS: -

1. Lung hydatid cysts can be asymptomatic, making early detection challenging. A high index of suspicion is crucial, especially in regions where the parasite is endemic.
2. Rupture of the cyst can lead to unique complications, such as the formation of a bronchial communication, pneumothorax, or the dissemination of daughter cysts within the lung or other organs.
3. Radiological imaging, including ultrasound and CT scans, typically shows a well-defined cystic lesion with characteristic features such as a “water lily sign” or “cyst within a cyst.”
4. Public health measures, including deworming of dogs (definitive hosts for the parasite), and health education about proper hygiene and food handling, play a key role in preventing the spread of Echinococcus infections.
5. **Hydatid cyst:** Typically appears as a well-defined, cystic lesion with internal septations (daughter cysts). MRI may reveal a characteristic laminated membrane.

**Whereas ABPA,** Often presents as a peripheral lung mass with surrounding areas of atelectasis and consolidation. CT may show bronchial wall thickening and mucus plugging.



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