Turk Thorac J 2021; 22(5): 418-421 DOI: 10.5152/TurkThoracJ.2021.0027

Case Report

# Isolated Pulmonary Cysticercosis Presenting as Mass Lesion

Parul Mrigpuri, Vatsal Bhushan Gupta, Balakrishnan Menon, Sonam Spalgais, Raj Kumar
[1]Department of Pulmonary Medicine, Vallabhbhai Patel Chest Institute, University of Delhi, New Delhi, India

**Cite this article as:** Mrigpuri P, Gupta V, Menon B, Spalgais S, Kumar R. Isolated pulmonary cysticercosis presenting as mass lesion. *Turk Thorac J.* 2021; 22(5): 418-421.

Abstract

We report a case of pulmonary cysticercosis manifesting as a mass lesion. Cysticercosis confined to lungs is a rare manifestation of human cysticercosis. The disease mainly affects the central nervous system, skeletal muscles, and eyes. Pulmonary involvement is rare and usually presents as bilateral pulmonary nodules. The diagnosis was made based on positive enzyme-linked immunosorbent assay (ELISA) for anticysticercal antibodies, and the patient was started on antiparasitic therapy along with steroids. Symptomatic and radiological improvement was seen. There is no previous case report of isolated pulmonary cysticercosis presenting as mass lesion.

**KEYWORDS:** Cysticercosis, malignancy, parasitic lung disease
***Received:*** *February 10, 2021* ***Accepted:*** *April 10, 2021*

## INTRODUCTION

Cysticercosis is a parasitic disease caused by the larval stage (cysticercus) of *Taenia solium*. Ingestion of food or water contaminated with *T. solium* eggs causes cysticercosis. The infection is found worldwide, with prevalence varying from 2.56 to 8.30 million.[1] The disease can affect various organs, such as the brain, eyes, spinal cord, muscle, etc. Clinical presentation depends on the site, number, and size of cysticerci. Pulmonary involvement is rarely seen, with a limited number of cases reporting pulmonary manifestations in disseminated cysticercosis.[2-4] Moreover, cysticercosis confined only to the lungs is very unusual. The conventional manifestation of cysticercosis in the lung is the presence of pulmonary nodules.[2] We report a case of isolated pulmonary cysticercosis masquerading as mass lesion. To the best of our knowledge, this is the first case of isolated pulmonary cysticercosis presenting as mass lesion.

## CASE REPORT

A 60-year-old nonsmoker male, farmer by occupation, presented to our institute with chief complaints of cough, breathlessness, and mild intermittent hemoptysis for the past 2 years, and left-sided chest pain with loss of appetite and weight for the past 2 months. There were no complaints pertaining to any other system. At the time of presentation, he already had a chest X-ray showing a homogenous opacity in the left upper zone (Figure 1), a contrast-enhanced computed tomography (CECT) of the chest showing a left upper lobe irregularly marginated centrally necrotic mass with minimal consolidation, and multiple tiny nodular lesions close to the mass, obtained 18 months earlier (Figure 2a and b), and a biopsy report showing bits of mucosa lined by pseudostratified columnar epithelium and submucosa infiltrated by chronic inflammatory cells. No tumor tissue was seen. He also gave history of antitubercular drug intake with no symptomatic improvement. There was no significant past medical or surgical history. His general physical and systematic examinations were unremarkable. A repeat chest X-ray showed a significant increase in the size of the lesion and the appearance of new rounded opacities on the contralateral side (Figure 3). Complete blood count, and liver and renal function tests were within normal limits. Absolute eosinophil count (AEC) was 480 cells/mm.$^3$ Sputum for acid-fast bacilli was negative and sputum for Gene X-pert did not detect *Mycobacterium tuberculosis*. A repeat CECT-chest revealed heterogeneously enhancing solid soft tissue tumor with multiple areas of necrosis and involvement of pleura and upper lobe bronchus with multiple nodular soft tissue density lesions in the bilateral lung fields (Figure 4a and b). CT-guided Tru-Cut biopsy showed distorted lung architecture with few fragments showing marked fibrosis, with heavy inflammation consisting of lymphocytes and plasma cells, and others showing distorted alveoli filled with hemosiderin-laden macrophages. No neoplastic tissue or granulomas were seen. The patient was advised whole-body positron emission tomography-CT, which showed metabolically active consolidation adjacent to a well-defined cystic lesion in the upper lobe of the left lung, with a non-fluorodeoxyglucose-avid cystic lesion in the right lung, with mediastinal lymphadenopathy and nodular lesions in bilateral lung fields, suggestive of an infective etiology. Sputum for pyogenic and fungal culture was negative. Serum precipitins and specific IgG against *Aspergillus fumigatus* was negative. Serology was done to rule out parasitic causes. The antibody was negative for Echinococcus but came out to be positive against *T. solium*. IgG values were 2.61 IU/L as measured by enzyme-linked immunosorbent assay (ELISA). MRI brain and ultrasound abdomen were within normal limits. Ophthalmology and dermatology consultations were done to rule out ocular and skin manifestations of

**Corresponding author:** Parul Mrigpuri, e-mail: parul57_mrigpuri@yahoo.com

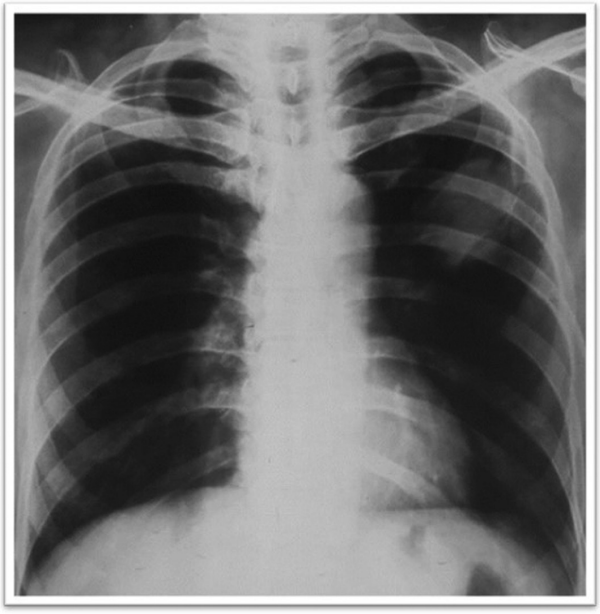

**Figure 1.** Chest X-ray showing a homogenous opacity in the left upper zone.

cysticercosis. Stool was negative for ova and cysts. On enquiring actively, the patient confirmed history of frequent travel to Bihar (North India) which is a disease-endemic area. Isolated pulmonary cysticercosis was provisionally diagnosed. The patient was given the option of surgical resection, which he denied. Subsequently, he was started on tab albendazole (15 mg/kg) along with oral prednisolone. The patients' symptoms resolved after 2 weeks of therapy, after which corticosteroids were stopped. Radiological resolution was seen within a month, and complete clearing occurred within 3 months on chest X-ray (Figure 5), after which albendazole was stopped. Written informed consent was obtained from the patient for publication of this case report and accompanying images.

## DISCUSSION

Cysticercosis occurs in humans by consumption of contaminated food and water or autoinfection. The normal life cycle of *T. solium* involves the ingestion of *T. solium* eggs present in human feces by pigs, which results in formation of cysticerci in pork muscles. When infected pork is ingested by humans, cysticerci evaginate and develop into adult worm in the small intestine, releasing and thus completing the life cycle. Sometimes, humans may ingest the eggs, resulting in development of cysticercosis. The most commonly affected organs are muscles, brain, eyes, and subcutaneous tissues.[5] Clinical symptoms depend on the site of development of cysticerci,

**MAIN POINTS**

- Rare causes of mass lesion should be evaluated before initiation of ATT.
- Cysticercosis confined to lungs is a rare manifestation of human cysticercosis.
- Pulmonary cysticercosis may present as a mass lesion mimicking malignancy.

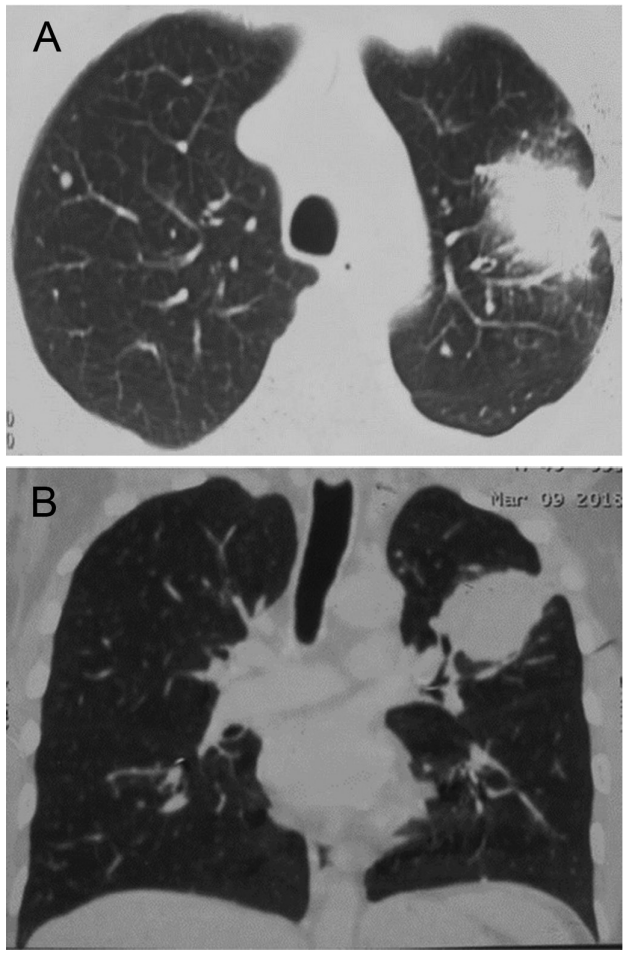


**Figure 2. a,b.** (a) CECT showing left upper lobe mass with multiple nodular lesions in close proximity to the mass (axial section). (b) CECT showing left upper lobe mass with multiple nodular lesions in close proximity to the mass (coronal section).

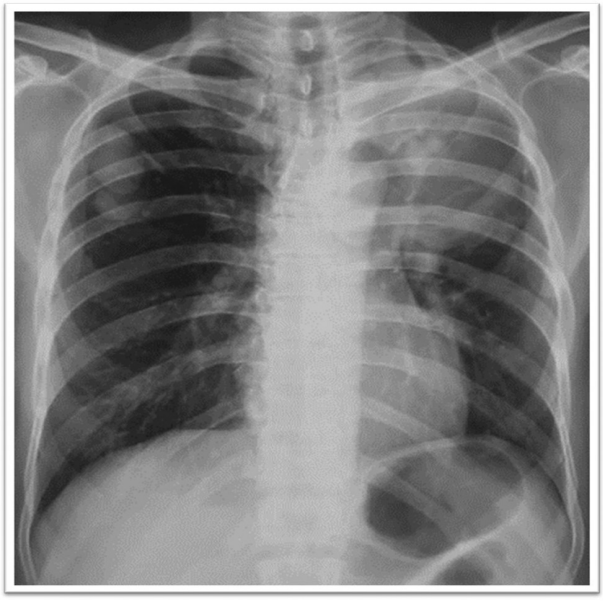

**Figure 3.** Chest X-ray showing the homogenous opacity in the left upper zone significantly increased in size, with appearance of new rounded opacities on the contralateral side.

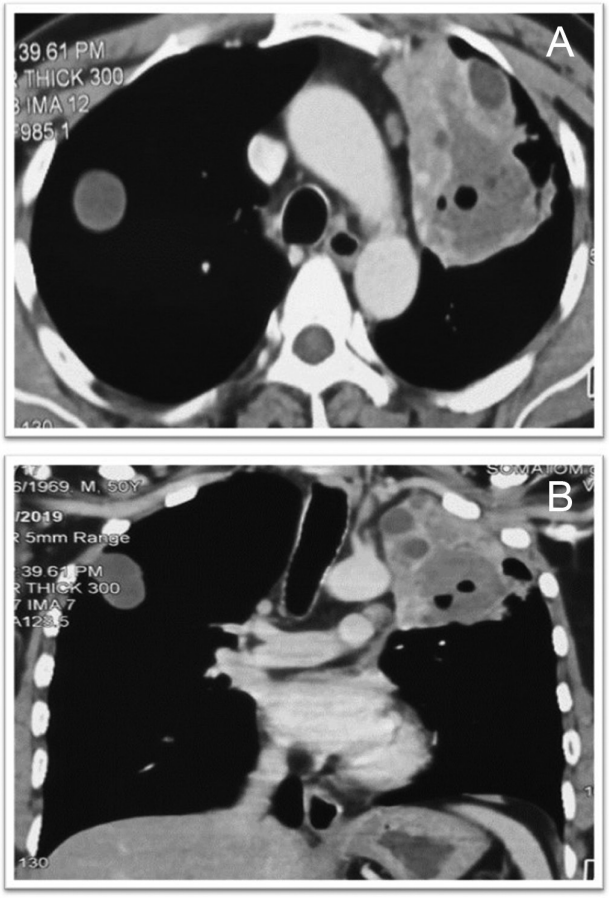


**Figure 4. a,b.** (a) CECT-chest showing heterogeneously enhancing solid soft tissue tumor involving pleura and upper lobe bronchus, with multiple nodular soft tissue density lesions in the bilateral lung fields (axial section). (b) CECT-chest showing heterogeneously enhancing solid soft tissue tumor involving pleura and upper lobe bronchus, with multiple nodular soft tissue density lesions in the bilateral lung fields (coronal section).

their number and size, and also on host immune reaction. Multiple cases of pulmonary involvement in disseminated cysticercosis have been reported. However, cysticercosis confined to the lung is relatively rare.

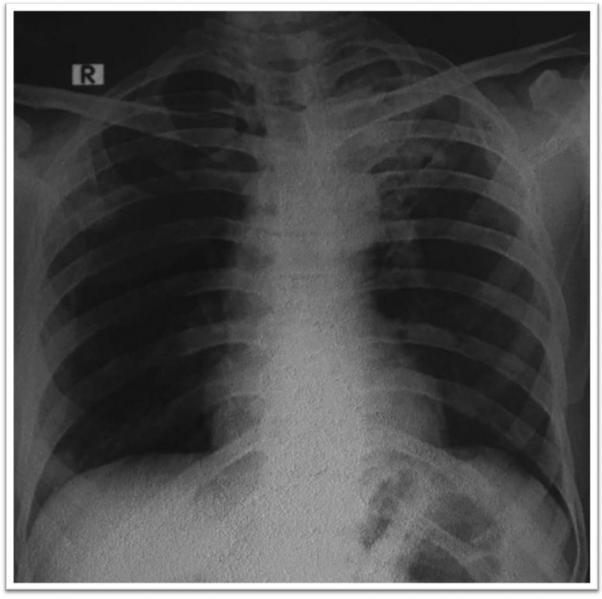


**Figure 5.** Chest X-ray showing resolution of opacities after treatment.

In our case, the diagnosis was based on positive serum ELISA for cysticercal antibodies (major criterion), resolution of cysts after antiparasitic therapy (major criterion), and history of frequent travel to a disease-endemic area (epidemiological criterion).[5]

The radiological appearance in pulmonary cysticercosis is nonspecific, and it usually consists of multiple pulmonary nodules.[3,6-7] In our case, radiological appearance was suggestive of a mass lesion.

**Informed Consent:** Written informed consent was obtained from the patients who agreed to take part in the study.

**Peer Review:** Externally peer-reviewed.

**Author Contributions:** Concept - P.M., V.B.G., B.M.; Design - P.M., V.B.G., B.M.; Supervision - P.M., B.M., S.S., R.K.; Resources - P.M., B.M.; Materials - P.M., B.M.; Data Collection and/or Processing - P.M.,

**Table 1.** Reported Cases of Isolated Pulmonary Cysticercosis

| Author/Year | | Age/Sex | Symptoms | Radiology and Absolute Eosinophil Count (AEC)/mm³ | Diagnosis | Treatment |
|---|---|---|---|---|---|---|
| Gupta et al.[6], 2015 | | 56/Male | Fever<br>Chest pain | Cavity with surrounding consolidation<br>AEC = 650 | Cytopathology showed scolices and chitinous cell wall<br>IgG-positive against *Taenia solium* | Albendazole for 1 month, Steroids |
| Chen et al.[7], 2017 | Case 1 | 47/Male | Chest pain | Effusion with nodules<br>Eosinophils = 11.8% | IgG-positive against *T. solium* | Praziquantel(60 mg/kg/day) for 3 days<br>Dexamethasone tablets 1.5 mg for 3 days |
| | Case 2 | 57/Male | Chest pain | Multiple patchy infiltrates with mediastinal lymphadenopathy and bilateral effusion<br>AEC = 940 | IgG-positive against *T. solium* | Praziquantel(60 mg/kg/day) for 3 days<br>Dexamethasone 5 mg injection for 3 days |

V.B.G., S.S.; Analysis and/or Interpretation - P.M., V.B.G., B.M.; Literature Review - P.M., V.B.G., S.S.; Writing - P.M., V.B.G., S.S.; Critical Review - P.M., B.M., S.S., R.K.

**Acknowledgments:** The authors extend their thanks to the patient for allowing the publication of the case report.

**Conflict of Interest:** The authors have no conflict of interest to declare.

**Financial Disclosure:** The authors declared that this study has received no financial support.

## REFERENCES

1. Taeniasis/cysticercosis. 2020.
2. Jain BK, Sankhe SS, Agrawal MD, Naphade PS. Disseminated cysticercosis with pulmonary and cardiac involvement. *Indian J Radiol Imaging*. 2010;20:310-313. [CrossRef]
3. Choi JH, Chung SI, Whang YS, et al. A case of pulmonary cysticercosis. *Korean J Intern Med*. 1991;6:38-43. [CrossRef]
4. Mamere AE, Muglia VF, Simão GN, et al. Disseminated cysticercosis With pulmonary involvement. *J Thorac Imaging*. 2004;19(2):109-111. [CrossRef]
5. Del Brutto OH. Human cysticercosis (Taenia solium). *Trop Parasitol*. 2013;3:100-103. [CrossRef]
6. Bastos AL, Marchiori E, Gasparetto EL, et al. Pulmonary and cardiac cysticercosis: helical CT findings. *Br J Radiol*. 2007;80:e58-e60. [CrossRef]