

Case Report

PULMONARY HYDATID CYST – A RADIOLOGICAL CHALLENGE !

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ABSTRACT

Hydatid disease is a parasitic infestation caused by *Echinococcus granulosus*. The resulting large cysts in the lung, a special clinical entity called giant hydatid cysts, is rare. Our case involves a middle-aged man who presented to us with vague chest complaints. Chest X-ray revealed a large cavity with an air-fluid level in the right hemithorax, which brought to the mind a constellation of differential diagnoses. A diagnosis of hydatid cyst was made intraoperatively. This case report provides evidence that radiological findings may be misleading and cause a diagnostic delay in such cases.

Key words: Hydatid cyst, *Echinococcus*, Air-fluid level

INTRODUCTION

Hydatid disease is one of the major health problems in endemic countries like India.^{1,2} It is a parasitic infestation caused by *Echinococcus granulosus*, characterized by the formation of cysts in the liver (commonest site in adults) and lungs (2nd commonest site, in 10-30% cases),^{3,4} and rarely in other parts of the body.^{5,6} Uncomplicated pulmonary hydatid cysts are usually seen as round radio-opaque lesions on chest x-ray, more frequently in the right lower lobe.^{7,8} Superimposed infection and rupture may alter the radiological appearance, causing incorrect diagnosis and delayed treatment.^{9,10} Here we present the case of a pulmonary hydatid cyst appearing as an air-fluid level on chest X-ray.

CASE REPORT

We report the case of a 45 year old male patient admitted with chief complaints of *dry cough for two months duration which increased over five days*. There was also right sided dull, diffuse anterior chest pain for last five days, more on coughing. There was no history of fever, breathlessness and hemoptysis. He had no past history of anti-tubercular treatment, coronary artery disease, diabetes mellitus, hypertension, or *contact with* pets. He had a smoking history of 12 pack years, was non-alcoholic and vegetarian. General examination was unremarkable but chest auscultation revealed *reduced breath sounds* on right side, no succussion splash or other added sounds. Investigations revealed hemoglobin= 12.8 gm%, TLC=11,100/mm³, DLC=P₇₈₋₁₈L₂E₂M₂, sputum for AFB stain negative, urine r/m normal, RBS=149mg%, blood urea=30.9mg%, serum creatinine=0.6mg%, PFT (*Pulmonary Function Tests*) normal. Ultrasound-abdomen did not reveal any cystic lesions in liver or kidney. The pre-operative *chest radiograph* (figure 1) showed a cavity with air fluid level on the right side. CECT (*Contrast-Enhanced CT Scan*) chest (figure 2) showed approximately 500cc volume thick-walled cystic lesion with air-fluid level seen anteriorly in the right hemithorax causing compression of the

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underlying right upper lobe and mild displacement of the heart towards left side, with significant right pleural effusion, patchy consolidation and nodule seen in right upper lobe, with mediastinal lymphadenopathy. The queried differential diagnosis included encysted hydropneumothorax/infected giant bulla. ELISA for Echinococcal antigen was positive. Right sided thoracotomy was done under general anesthesia – a large cyst was seen which ruptured during surgery, and daughter cysts were noted. Histopathological report of the surgical specimen was consistent with infected parasitic cyst of lung with daughter cysts. An intercostal tube was placed to achieve adequate drainage. The patient was put on intravenous ceftriaxone (1gram b.d.) during the post-operative period for one week, and subsequently discharged on oral faropenem (200mg t.d.s.) for ten days, plus oral albendazole 400mg b.d. Post-operative course was stable, and Chest X-ray (figure 3) showed expanded underlying lung and ICD (Intercostal Drainage Tube) was removed.

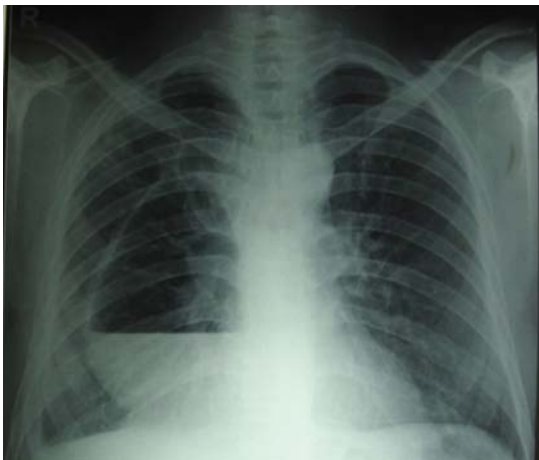


Figure 1. Pre-operative Chest X-Ray

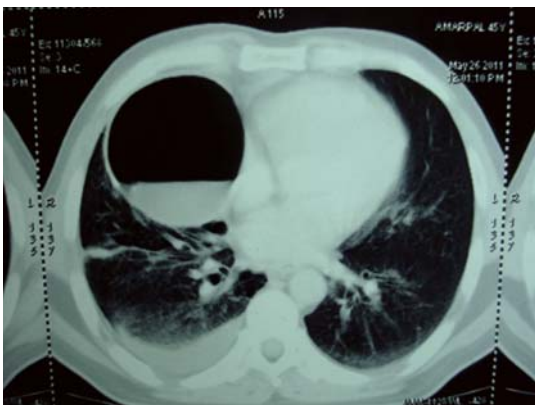


Figure 2. CECT- Chest



Figure 3. Post-operative Chest X Ray

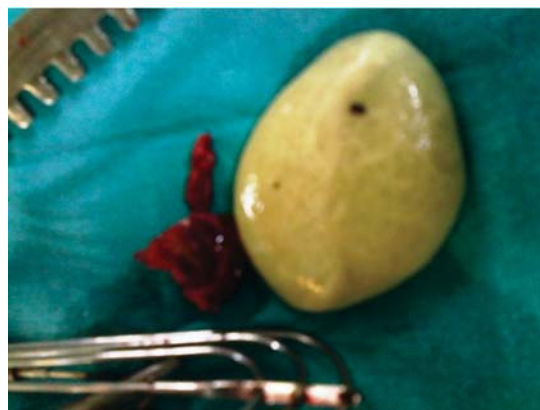


Figure 4. Intraoperative picture of daughter cyst

DISCUSSION

The purpose of reporting this case is to share a confusing radiological presentation of pulmonary hydatidosis which often causes diagnostic dilemma and delay. Our case was unusual in terms of radiological picture, absence of cysts in any other parts of the body except the lung, and no history of contact with pets.

Echinococcus granulosus occurs more frequently in rural grazing areas. Its *life cycle* involves two hosts. Sheep (ungulates-intermediate host) acquire infection during grazing by ingesting eggs in dog's feces. These eggs hatch into larvae in sheep intestines and later on migrate to other parts of the body (liver, lungs, brain) and form hydatid cysts. Dogs (canids-definitive host) acquire infection by ingesting meat of infected ungulates. Larvae mature into adults in small intestine of dogs and subsequently form eggs which are excreted in dog's feces. Humans are not natural hosts. They usually get infected by close contact with food,

water or fomites contaminated with dog's feces carrying Echinococcus eggs. These eggs migrate from human gut to other parts of the body and form hydatid cysts. Site of involvement in our patient was only the lung.

Radiologically, uncomplicated pulmonary hydatid cysts usually present as homogenous, round, radio-opaque lesions on chest x-ray. Infected cysts may appear as a solid mass lesion.¹² A number of different CT signs to indicate ruptured membranes of hydatid cyst have been described e.g. inverse crescent, water lily, signet ring, mass within a cavity or Monod's sign.^{10,13} However, if air-bubbles are seen within the cyst together with ring enhancement, it is a strong indicator for infected hydatid cysts.¹⁴ None of these radiological signs were evident in our case, and the CT scan did not demonstrate details of cyst wall or daughter cysts (figure 4).

The diagnostic efficacy of ELISA is around 92.3%.¹¹ In this case, the ELISA was positive. Nearly 10% patients with hepatic cysts and 40% patients with lung cysts exhibit false negative results. Hepatic cysts are more likely to elicit antibody response than cysts in the lung, brain or spleen. *Antibody detection tests* are least sensitive in patients with intact hyaline cysts. Rupture of a cyst is associated with abrupt stimulation of antibodies. Senescent, calcified or dead cysts usually confer seronegativity.

Complications of cyst rupture include fever, urticaria, eosinophilia, anaphylactic shock, cyst dissemination, obstruction of biliary/bronchial tree, pneumonitis, pleural effusion, pneumothorax.

Surgical removal of parasite mass is not usually 100% effective. Post-operative *recurrence rate* is 2-25%, and medication may be necessary to prevent recurrence. Albendazole is the drug of choice and is given as per body weight:

>60kg – 400mg P.O. BID;

<60kg – 15mg/kg/day P.O. in divided doses (maximum 800mg/day)

Above regimen is given for four weeks followed by a gap of two weeks, and repeated for three cycles. Usual duration of treatment is 3-6 months.

Antibody responses have been monitored as a way of evaluating the results of treatment and *follow-*

up, but with mixed results. Following successful surgery, antibody titers decline and sometimes disappear. Titers rise again if secondary cysts develop. Chemotherapy has not been followed by consistent decline in antibody titers. Consequently, the usefulness of serology to monitor disease is limited.

The uniqueness of this case report is that isolated pulmonary hydatid cyst is uncommon in adults. Lungs are the commonest site in children.¹⁵ Additionally, none of the classically described radiological signs were found in our case except an air-fluid level shadow compressing the underlying lung. The diagnosis was finally confirmed by histopathological examination of right thoracotomy specimen.

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