Case Report ISSN (O):2395-2822; ISSN (P):2395-2814

A Case of Pulmonary Hydatid Cyst Misdiagnosed as Encysted Effusion

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Received: March 2019
Accepted: March 2019

ABSTRACT

Echinococcosis or hydatid disease is caused by larvae of the tapeworm Echinococcus. In cystic echinococcosis, humans are an accidental host and are usually infected by handling an infected dog. The liver and lungs are the most frequently involved organs. Pulmonary disease appears to be more common in younger individuals. Although most patients are asymptomatic, some may occasionally expectorate the contents of the cystor develop symptoms related to compression of the surrounding structures. Other symptoms of hydatid disease can result from the release of antigenic material andsecondary immunological reactions that develop from cyst rupture.

Keywords: Pulmonary Hydatid cyst, Misdiagnosed, Encysted effusion.

INTRODUCTION

Hydatid disease, also known as Echinococcosis or Hydatidosis, is caused by infection with the larva of the tapeworm of the genus, Echinococcosus. In its adult stage, the parasite lives in the intestinal tract of carnivores such as dogs and cats, as well as in herbivores such as sheep. After being eliminated with faeces, the eggs contaminate fields, irrigated lands and wells. The E. granulosus cysts, following a primary infection, may inhabit any anatomic site. Humans contract the disease from water or food or by direct contact with dogs. Once the eggs reach the stomach, the hexacanth embryo is released. These pass through the intestinal wall and reach the tributary veins of the liver, where they undergoa vesicular transformation and develop into hydatids. If they overcome the hepatic obstacle, they become lodged in the lung, where they also transform into hydatids. If they advance beyond the lung, they may remain in any organ to which they are carried by the blood stream. It has been shown that the embryos can reach the lung via the lymphatic vessels, by passing the liver, and there is also evidence that the disease can be contracted through the bronchi. The two most common organs which are involved arethe liver (75%) and the lung (25%). The other less common sites which are affected by these cysts include the muscles (5%), bones(3%), kidneys (2%), spleen (1%), heart (1%), pancreas (1%) and the central nervous system (1%).[1-3]

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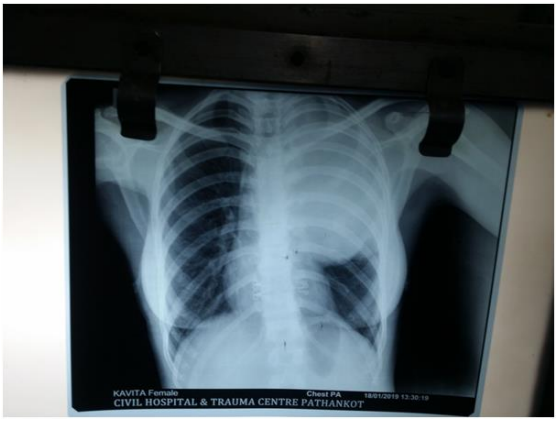
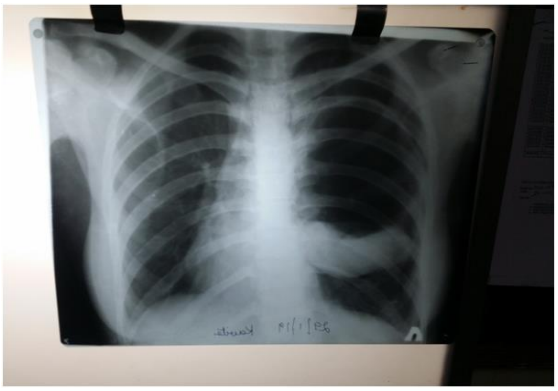
CASE REPORT

A 30 yr old female presented with complains of fever and cough since 3 months, fever was low grade in nature and on and off since last 3 months, the cough was not getting relived with any medication and was associated with minimal expectoration, no history of breathlessness. On examination patient comfortable with respiratory rate 16/min, PR 74/min, BP 110/70 mm hg, spo2 98% on air. General examination was normal and respiratory system examination revealed decreased intensity of breath sounds over left suprascapular, infrascapular, mammary and inframammary area and no added sounds present .Laboratory findings showed hb 11.6 gm/dl, TLC 8000 ,ESR 105 mm/hr, RBS 112, LFT and RFT were normal, viral markers non reactive. Her sputum examination for AFB and CBNAAT were negative, sputum for gram stain and culture and sensitivity and fungus showed no organisms. Chest

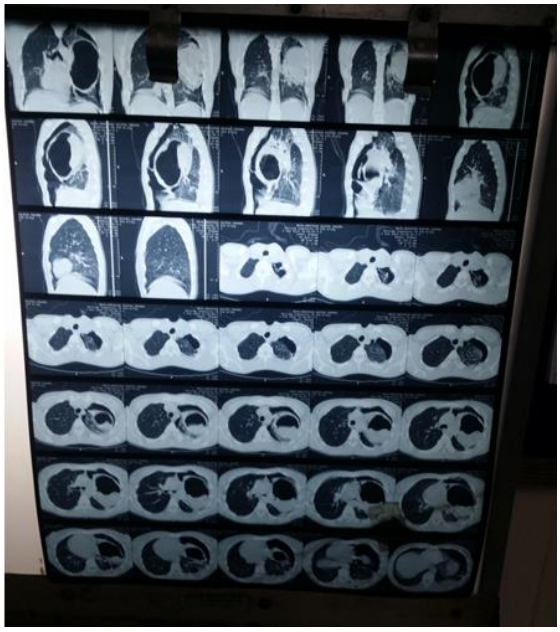
xray showed homogenous rounded opacity involving entire left upper and middle zone.



USG chest revealed left side loculated effusion? empyema
USG guided aspiration done and 600 cc of thin pus aspirated and investigations revealed
Glucose: 89, protein : 3.4 , cytology showed smears of low cellularity ,culture and sensitivity showed growth of s.aureus
Cbnaat :Mtb not detected , ADA : 25



CECT Chest



CECT Chest Showed:
Large air filled cystic lesion with mass at dependant part with appearance of crumpled laminated membrane suggestive of left lung hydatid cyst showing water lilly sign.

DISCUSSION

Although larvae can enter the lungs through the lymphatic system or bronchial system, it is thought that cysts settling down in the lungs are usually larvae that have passed through the hepatic sinusoids.[4,6] Pulmonary cysts typically increase in diameter at a rate of 1–5 cm yr−120.
The initial phase of primary infection is asymptomatic and may remain so for many years. Hydatid disease is seen in subjects of any age and sex, although it is more common in those aged 20–40 yrs.[14,21] Most intact lung cysts are discovered incidentally on chest radiographs. Occasionally, an unruptured cyst results in cough, haemoptysis or chest pain.[16] Subsequent clinical features of E. granulosus infection depend upon the cyst site and size. Small cysts may remain asymptomatic indefinitely, but cysts may enlarge to >20 cm in diameter and cause symptoms by compressing adjacent structures. Mediastinal cysts may erode into adjacent structures causing bone pain, haemorrhage or airflow limitation. Symptomatic hydatid disease of the lung, however, more often follows rupture of the cyst. The cyst may rupture spontaneously or as a result of trauma or secondary infection. In a contained rupture, only the endocyst is torn and the contents of the cyst are contained by the pericyst. In a communicating rupture, the contents of the cyst escape into the tracheobronchial tree through bronchioles that have been incorporated into the pericyst. Direct rupture into the pleura follows tearing of both the endocyst and the pericyst, with

discharge of the contents of the cyst directly into the pleural cavity.[22] Rupture may be associated with the sudden onset of cough and fever. If the contents of the cyst are expelled into the airway, expectoration of a clear salty or peppery tasting fluid containing fragments of hydatid membrane and scolices may occur.

Symptoms of hydatid disease can result from the release of antigenic material and secondary immunological reactions that develop following cyst rupture. Fever and acute hypersensitivity reactions ranging from urticaria and wheezing to life-threatening anaphylaxis may be the principal manifestations. Although allergic episodes may develop after cyst rupture, fatal anaphylaxis is uncommon.[23,24]

Other potential clinical effects of hydatid infection include immune complex-mediated disease, glomerulonephritis leading to nephrotic syndrome, and secondary amyloidosis.[25,26] Ruptured cysts may become infected with bacteria or saprophytic or invasive fungi, which are serious complications.[27,28]

Hydatid disease is a rare cause of recurrent acute pulmonary embolism. This complication may develop after invasion of the cardiovascular system or direct invasion of the inferior vena cava.[29]

Calcification, which usually requires 5–10 yrs for development, occurs quite commonly with hepatic cysts but rarely with pulmonary cysts. Bone cysts also do not undergo calcification. Total calcification of the cyst wall suggests that the cyst may be nonviable.[6,30]

Involvement of the diaphragm and thoracic cavity occurs in ~1–16% of cases of hepatic hydatid disease.[13] Transdiaphragmatic migration of hydatid disease from the posterior segments of the right hepatic lobe has been reported to be a common complication and is probably related to their proximity to the diaphragm.

Diagnosis

In the majority of cases, a combination of imaging and serological methods usually yields the diagnosis of cystic echinococcosis. A patient who has lung cysts should be investigated for associated liver cysts.

Imaging

The most valuable diagnostic method in pulmonary hydatid disease is the plain chest radiograph.[14,30-34] Typical chest radiographic appearances of uncomplicated pulmonary hydatid disease are one or more homogeneous round or oval masses with smooth borders surrounded by normal lung tissue.[34] Pulmonary cysts may range between 1 and 20 cm in diameter.[35] Large cysts can shift the mediastinum, induce a pleural reaction or cause atelectasis ofadjacent parenchyma. Impingement on relatively rigid anatomical structures can lead to irregularity, indentation or lobulation of the cyst. The fluid contents of the cyst may be identified by the finding of a change in the shape of the cyst on serial radiographs obtained during inspiration and expiration or with the patient erect and then supine. Calcification of pulmonary cysts is rare. On chest radiography, calcification of hepatic cysts may be evident.[34]

Cyst growth produces erosions in the bronchioles that are included in the pericyst, and, as a result, air is introduced between the pericyst and exocyst, producing the crescent or meniscus sign.[34,35] Some consider this to be a sign of impending rupture.[34] Air penetrating the interior of the cyst may outline the inner surface of the exocyst, producing parallel arches of air that are referred to as Cumbo's sign with an “onion peel” appearance.[35] Although these radiographic features can be diagnostic of pulmonary hydatid disease, they are uncommon34. If the ruptured cyst communicates with the tracheobronchial tree, evacuation of the contents of the cyst results in an air/fluid level. After partial expectoration of the cyst fluid and scolices, the cyst empties and the collapsed membranes can be seen inside the cyst (serpent sign). When it has completely collapsed, the crumpled endocyst floats freely in the cyst fluid (water-lily sign or Camelotte sign). When the fluid is completely evacuated by expectoration, the remaining solid components fall to the dependent part of the cavity giving the “mass within a cavity” or Monod's sign. Like the crescent sign, the water-lily sign, which is pathognomonic of a collapsed endocyst, is seen in the minority of cases. For pulmonary ecchinococcosis, ultrasonography is unhelpful in most cases unless the cysts are close to the pleural surface.[34,35]

Computerised tomography (CT) scan with contrast may demonstrate a thin enhancing rim if the cyst is intact. The contents of closed simple cysts are homogeneous, with a density close to that of water.[36] Unruptured cysts are often indistinguishable from a variety of other pulmonary lesions, but the diagnosis may be established by finding daughter cysts attached to the endocyst or lying free within the main cyst or rupture of the main cyst. CT scanning can elucidate the cystic nature of the lung mass and provide accurate localisation for planning of surgical treatment of complicated cysts. The inverse crescent sign results from air dissection-induced separation of the membranes from the posterior aspect of the cyst without any anterior extension and bleb of air dissecting into the wall of the cyst, giving it the shape of a ring termed the signet ring sign. In addition, an increase in the CT density of the lung mass and/or a thick wall should not negate a diagnosis of hydatid disease.[37]

The magnetic resonance signal characteristics of a hydatid cyst may differ depending on the developmental phase, i.e. whether it is uni- or multilocular and whether the cyst is viable, infected or dead. Information regarding reactive changes in

the host tissue, capsule and signal intensity of parent and daughter cysts is also obtained. On magnetic resonance imaging (MRI), cysts show low signal intensity on T1-weighted images and high signal intensity on T2-weighted images.[38]

Immunoscintigraphy utilises radiolabelled antibodies raised to parasite antigens. Although not yet widely available clinically, this may be a specific imaging modality in the future.[39]

CONCLUSION

Non complicated hydatid cyst has got good prognosis regardless of its size and can be treated by parenchyma preserving surgery and In inoperable alveolar echinococcosis, long-term chemotherapy is advocated. The ultimate aim is to have proper control measures and prevent these cestode infestations. A better understanding of hydatid immunoregulation may pave the way to rational immunotherapy and future vaccine development.

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How to cite this article: Mathew L, Kajal NC, Sharma G, Sharma S, Neki NS, Kumar M, Sharma M. A Case of Pulmonary Hydatid Cyst Misdiagnosed as Encysted Effusion. Ann. Int. Med. Den. Res. 2019; 5(3):TB04-TB08.

Source of Support: Nil, **Conflict of Interest:** None declared