

(CASE REPORT)



## Report a rare case of pulmonary hydatid cyst which present as massive pleural effusion

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### Abstract

Common cause of massive pleural effusions (MPE) are malignancy, tuberculosis and parapneumonic effusion,. Parasitic infections are very rare causes of (MPE). Echinococcosis or hydatid disease is a major public health problem in poor hygienic country in the world. The liver is most common organ involved and lungs are the second most frequently involved organs. Pulmonary hydatid cyst appears to be more common in younger individuals. Echinococcus granulosus is most common type and *Echinococcus multilocularis* hydatid cyst causes alveolar hydatid cyst, which accounts for <5%of all cases of hydatid disease of liver and less frequently cause of lung cyst. Here, we present an unusual and very rare case of echinococcosis pulmonary hydatid cysts mimicking and present as (MPE) with delay diagnosis. After antero-lateral thoracotomy. Diagnosis of hydatid cyst confirmed, patient was discharged with good condition.

**Keywords:** *Echinococcus multilocularis*; Hydatid cyst; Massive pleural effusion; Pulmonary hydatid cyst

### 1. Introduction

Common cause of massive pleural effusions (MPE) is malignancy and with incidence of 11.2%-12% of all the pleural effusions [1;2;3]. It is generally thought that malignancy is the most common cause of a pleural effusion which occupying the entire hemithorax; especially in older patients (3;4;5) However; the etiology and prognostic significance of (MPE)remains largely unknown.The etiology and occurrence (MPE) in most patients remained largely not known an undetermined (1;2;5). Hydatid disease with presentation and mimicking as (MPE) is very rare and uncommon (5;6;7). Here; we report an unusual and very rare case of pulmonary hydatid cyst present as (MPE) with shifting of mediastinum.and compression of heart and diaphragm. In review of literature a few case was reported.

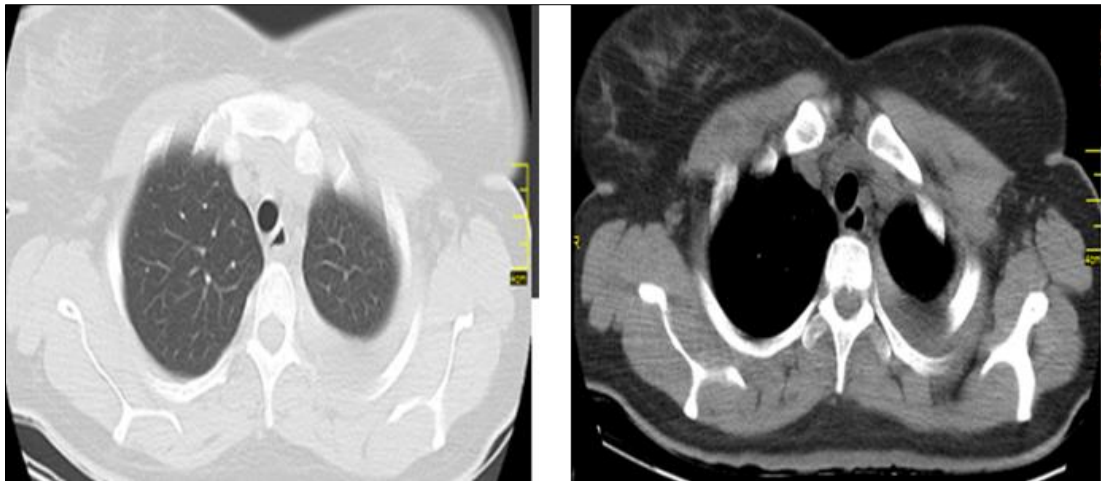
### 2. Case presentation

A 34-years-old female teacher live in a big city in north of IRAN (Rasht) chief complaint was cough; exertion dyspnea; abdominal and left-sided chest wall pain for the last 3 months. Cough in past two month ago was expectoration with bright brackish fluid test (Fig 1).The left-sided chest wall pain was localized and responded favorably to analgesics. In her past medical history there was not any illness or surgery. She was no smoker In general physical examination; the patient was hemodynamically moderately stable; with a pulse rate of 92 beats/minute; a blood pressure of 110/70 mmHg;breath rate was 22 per minutes and an oral temperature of 37C.O2 saturation with air room was 90% .But

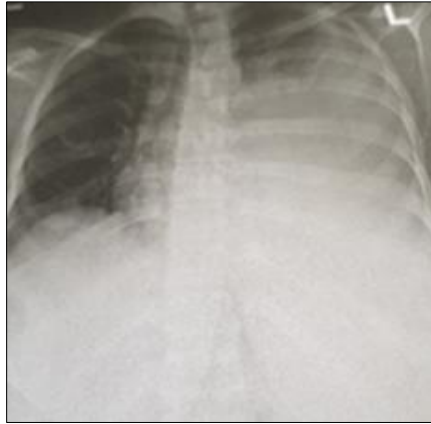
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patient have dyspnea and orthopnea In percussion dullness was noted in the left side of the chest; with normal percussion in the right side. On auscultation; the breathing sounds were found to be absent in the left side of the chest and trachea was deviate to right side Head; neck; Abdominal and extremity on examination was normal. CT-scan of three month ago show mild left side pleural effusion (1,2) Chest X-ray on admission revealed a homogeneous opacity in the left side of hemi thorax with shifting of the mediastinum to contralateral (Figure 2) and suggestive of massive pleural effusion. Differential diagnosis were consisted of malignant pleural effusion; mesothelium (because of chest pain) or pleural tuberculosis in our endemic country for hydatid disease. Chest ultrasound was then performed and showed massive effusion. Decision was made to perform an thoracentesis that revealed a clear aspirate which on microscopic examination revealed 50% eosinophilia. We completed our diagnosis process with a chest computed tomography (CT) which showed a significant deviation or shifting of mediastinum towards the right side and the entire of left hemithoracic field and pleural space occupying with effusion (Figure 3 and 4). Abdominal ultrasound was normal.

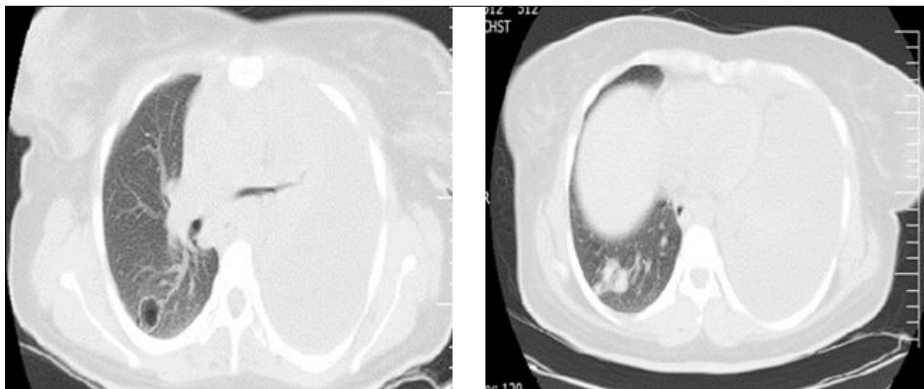
Cardiac echo grapy revealed extrinsic compression of the left atrium and ventricle by massive effusion formation with no decreased on cardiac output flow. With diagnosis of left-sided ruptured pulmonary hydatid cysts in the left pleural space; with expectoration with bright brackish fluid test three months ago suspicious of hydatid cyst rupture was made. Diagnosis process was further confirmed by the demonstration of raised serum IgG for Echinococcus. The patient was referred to a thoracic surgeon ward for treatment of cysts and thoracotomy. During induction of general anesthesia; Rigid Bronchoscopy showed normal appearance; no white membrane of hydatid cyst; was seen in bronchial suction fluid (BAL) and scolex was negative. A Left anterolateral thoracotomy was performed through the 5th intercostal space. During operation and exploration; left lung was totally collapsed. During exploration process in the pleural space laminated membrane and debris of cyst was removed (Figure 5 and 6). Irrigation of pleural cavity with four liter of normal saline and providing idon .After removing all debris and using normal saline and positive intrapulmonary pressure; a cavity present in posterior segment of lower lobe and two bronchial orifices became visible. The bronchial opening was sutured interruptedly with 2-0 Vicryl. After irrigation of pleural cavity; then we preformed capitonnage of the residual cavity by using purse-string sutures from the deepest of cavity to the surface. The fibrotic tissue of pricyst was resect. Chest tube put in pleural space and chest wall was closed. Recovery from thoracotomy and surgery in postoperative period was very good that chest tube was removed on forth day post-surgery and patient was discharged on the sixth postoperative with Albendazole (800 mg) daily was prescript for three cycle of 28 day with 14 day interval and with good condition .Histopathological examination confirm of hydatid cyst of lung . In six month follow-up there was no problem one month postoperative CXR show full expansion of left lung (Figure 7).



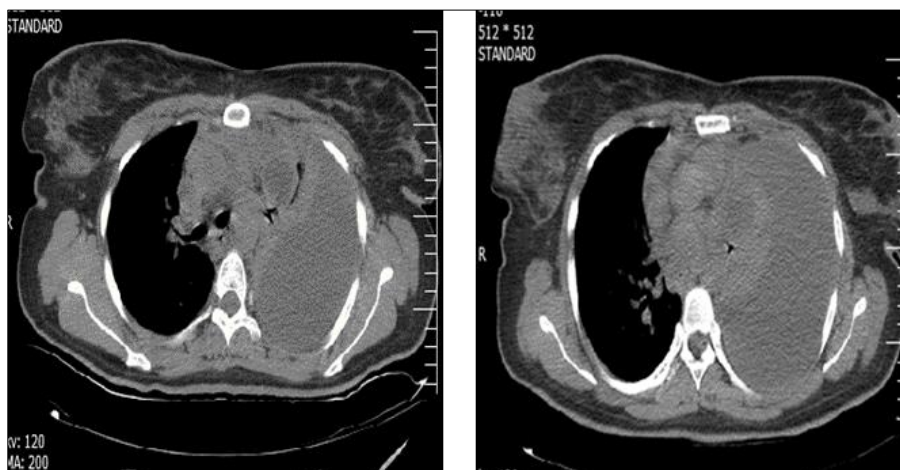
**Figure 1** CT-scan of patient three month before admission with mild left side pleural effusion



**Figure 2** CXR of patient with massive pleural effusion during admission



**Figure 3** CT-scan of patient with massive pleural effusion during admission



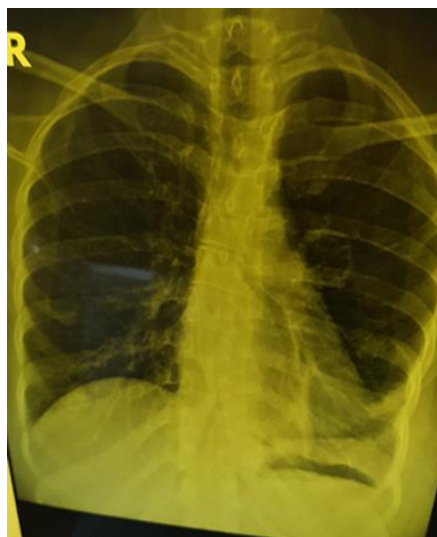
**Figure 4** CT-scan of patient with massive pleural effusion and shift of mediastinum to right side during admission



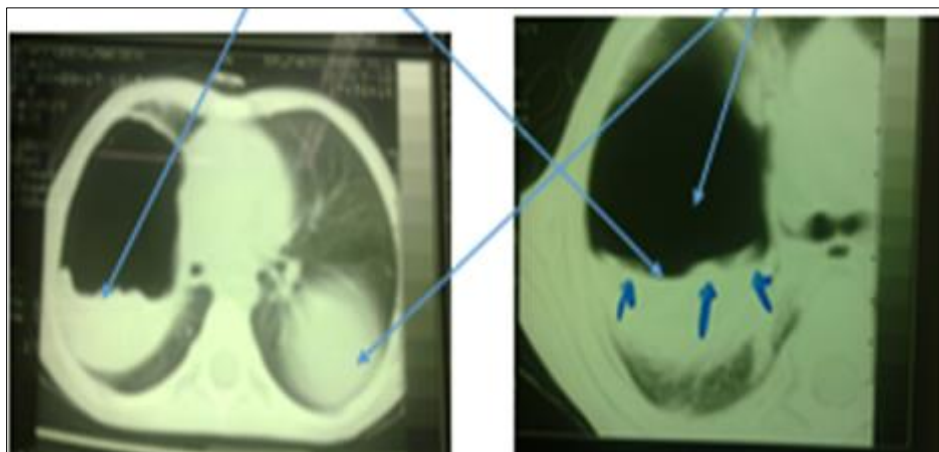
**Figure 5** element of cyst after evacuation (membrane and debris)



**Figure 6** element of cyst after evacuation (membrane; pricyst and debris)



**Figure 7** CXR of patient one month postoperatively



**Figure 8** CT-scan of a patient with water lily sign but not of this patient

### 3. Discussion

Pleural effusions are a common complex in pulmonology with multiple causes. Pleural disease or lung disease; systemic conditions; organ dysfunction; and drugs complications are the most common causes of pleural effusion (6). Effusions that occupying the total hemithorax or at least full two-thirds of pleural space are call as massive pleural effusion (6). Massive pleural fluid effusion can be classified into malignant and nonmalignant [10]. Pleural effusion due to parasitic disease is very uncommon (6). Hydatid cyst in humans occurs by infection with the larval stage of the tapeworm as *Echinococcus granulosus* or *Echinococcus multilocularis* (8;9). Humans infected with hydatid cyst by ingesting the eggs due contaminated foods which contact with ground and water [11]. Echinococcus disease is most commonly reported in South America; Australia; Asia; Africa and the Mediterranean. IRAN is a highly endemic country for hydatid cyst (8;9;20;21). The cyst most often involves the liver (55-70%) lungs is second organ which involved (20- 35%) (6;8;9;20;21). Liver and lung can be affected simultaneously in about 5-13% of cases [6;12;13]. However; any organ may be involved [6;9;14]. Pleura or chest wall involvement occur in 0.9-7.4% of patients [15;20]. Diagnosis tooles mainly on the imaging procedures; serology and often histopathology and intraoperative by surgery (6;20;21). CT-scan is probably the best technique to nature and location of the cyst and relation of cysts with surrounding organs (17;18;19.21;22). Cyst content may can help to differentiate parasitic cysts from nonparasitic cysts [6;17;18;19]. On the basis of content on imaging and clinical symptoms; hydatid cysts of the lungs can be classified as intact simple cysts; complicated cysts; and ruptured cysts as infection; intrapleural and intrabronchial rupture (cysto-bronchial and pleural communication) (4;5;6;7;8;21;22). Pathognomonic features in ruptured or complicated hydatid cysts on CT include detached or collapsed endocyst membrane; water lily sign; abscess shape or air-fluid level [6;16;17;18;21;22] (Figure 8). In pulmonary or mediastinal hydatid cysts calcification is very rare but hydatid cysts of the liver commonly undergo calcification (6;8;17;18;22). Magnetic resonance imaging (MRI) is probably better than CT scanning in the Follow of postsurgical cavitary lesions and recurrences of hydatid cyst [17; 18]. But we don't use MRI routinely. CT scanning is our choice for diagnosis and follow-up (8;9;21). The treatment of choice in the pulmonary hydatid cyst is surgical resection as our treatment method with albendazol prophylaxis (6.8.9.19;20;21). Although the percutaneous aspiration with using radiographic guidance (PAIR) method is being routinely used in cases with hydatid cyst of liver but the WHO currently recommends that PAIR should not be used in case of pulmonary cysts [6;14;19.22]. Thoracoscopy (VATS) is another method for surgery of pulmonary hydatid cysts (6;9;14;21;22) Surgery should be perform with albendazole (10-15 mg/kg/day) administration in two doses from 4 days for prophylaxis before surgery. Albendazol for prophylaxis shown to reduce the risk of recurrence [6.11.14;20]. But we use albendazole (10-15 mg/kg/day one week before surgery. In our patient after surgery; when oral feeding started; albendazole with (800mg/daly) prescribe for 28 days with 14 day interval in three periods.. In our patient follow up perform for three; six and twelve months post-surgery for recurrences .On follow-up; no recurrence was observed.

### 4. Conclusion

Pulmonary hydatid cyst may very rarely present as massive pleural effusion; and diagnosis of hydatid cyst can be kept on differential diagnosis in endemic areas. Chest CT is a useful adjunctive diagnostic maneuver and helps to show and diagnosis the underlying etiology of hydatid cyst of lung causes the pleural effusion. Surgery is the method of choice for diagnosis and treatment.

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## Compliance with ethical standards

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### *Disclosure of conflict of interest*

The authors have no conflict of interest to declare.

### *Statement of informed consent*

Informed consent was obtained from all individual participants included in this case report.

### *Statement of ethical approval*

This case report was approved by ethic comity of arya hospital and Inflammatory Lung Diseases Research Center; Guilan University of Medical Sciences; Iran.

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