Case Report

Ruptured Hydatid Cyst of Lung
GH Basavana*, G Siddesh**, BS Jayaraj ***, MG Krishnan****

Abstract
We report a case of 26 year old woman who had ruptured hydatid cyst of the right lung. The chest radiograph and CT features were suggestive of a ruptured hydatid cyst with detached and collapsed endocyst within the exocyst. Intraoperatively communication between cyst and bronchus could be demonstrated. Interesting CT appearance and demonstrable communication of cyst with bronchus is the reason for this case report. ©

INTRODUCTION
Echinococcosis or hydatid disease is caused by larvae of the tapeworm Echinococcus. Four species are recognised and the vast majority of infestations in humans are caused by E. granulosus. E. granulosus causes cystic echinococcosis, which has a worldwide distribution. Humans are exposed less frequently to E. multilocularis, which causes alveolar echinococcosis. E. vogeli and E. oligarthrus are rare species and cause polycystic echinococcosis. The clinical presentation of hydatid disease is often non-specific and many patients may be asymptomatic. The symptoms depend on the size and site of the lesion and the accessibility of the organ involved for clinical examination. Infestation by hydatid disease in humans most commonly occurs in the liver (55-70%) followed by the lung (18-35%); the two organs can be affected simultaneously in about 5-13% of cases.1

CASE REPORT
A 26-year-old woman presented to the medical emergency of J.S.S. Hospital, Mysore with acute breathlessness and cough since morning since the day of admission. She had right sided chest pain which increased with inspiration and cough. 12 days before admission the patient had an episode of coughing out of about 150ml of yellowish material which was salty and sour in taste. No history of fever or wheeze or itching was associated with it. There was no history suggestive of bronchial asthma, drug intake, allergy, or chest trauma.

Physical examination revealed tachypnoea with respiratory rate of 48/min. Tachycardia with heart rate of 110/min, and blood pressure was 100/70 mm of Hg. There was no cyanosis and temperature was 37 C.

Chest examination revealed diminished movements over right hemithorax with decreased breath sounds in right infra scapular, infra axillary and mammary area. Cardiovascular examination was unremarkable except for tachycardia.

Per abdominal examination revealed no organomegaly.

Investigations revealed haemoglobin of 12.1gm%, Total leucocytes count of 18,300 cells/cumm, (P70, L19, M2, E9, B0). ESR : 110mm/hr, Urine routine: normal, Urea : 26mg%, S. Creatinine : 0. 8mg% Na-134meq, K-3.3meq, Cl-98meq, RBS-101mg%, Bleeding time-3mins, Clotting time-4min30sec, HIV-Nonreactive, HbSAg-negative. Electrocardiogram showed sinus tachycardia.

Emergency chest radiograph (Fig. 1) showed a round partially filled cystic opacity of >8cm diameter in right lower zone. Lateral view showed same changes with evidence of partial collapse of middle lobe (Fig. 2).

Ultrasound abdomen was normal
CT Thorax showed cavitary lesion measuring 7.5x 7 cm with, involving right lower lobe. Folded membrane like structure was seen with in the cavity with demonstrable shift with the position of the patient. The rest of lung fields and mediastinum were normal.

CT features suggested ruptured hydatid cyst with detached endocyst (Fig. 3).

Her clinical presentation was most likely due to complete evacuation of cyst, which was partially ruptured few days before admission. She improved with inhaled salbutamol and intravenous hydrocortisone therapy. Patient was started on oral albendazole at dose of 15 mg/kg/day. With these measures patient was stable and was referred to surgeon for consideration of surgical intervention.
Surgical intervention: Figs. 4 and 5

As the cyst was large and was communicating with the bronchus on the right side, the right lower lobe was resected. Repeat chest X-ray showed volume compromise (Fig. 6.)

Patient was discharged on 7th day after surgery. Albendazole was continued in the dose of 15 mg /kg as a postoperative prophylactic measure to prevent recurrence.

**DISCUSSION**

Hydatid cyst disease is a zoonotic disease caused by the larval stage of Echinococcus granulosus (dog tapeworm), *E. multilocularis*, or *E. vogeli*. This disease occurs when humans ingest the hexacanth egg of the dog tapeworm. Hydatid disease is prevalent in the Northern part of our country especially in sheep rearing areas. *E. granulosus* being the most common parasite in our settings. The symptoms depend on the size and site of the lesion. Slowly enlarging echinococcal cysts generally remain asymptomatic until their expanding size or their space occupying effect in an involved organ elicits symptoms as in our case. Liver and lung are the most common sites. Five to twenty years may elapse before cysts enlarge sufficiently to cause symptoms. They may be discovered incidentally on a routine x-ray or ultrasound study. Patients with hepatic echinococcosis, who are symptomatic, most often present with abdominal pain or a palpable mass in the right upper quadrant. Compression of a bile duct or leakage of cyst fluid into the biliary tree may mimic recurrent cholelithiasis, and biliary obstruction can result in jaundice (seen in 15% cases). Rupture or
episodic leakage from a hydatid cyst may produce fever, pruritis, urticaria, eosinophilia, or fatal anaphylaxis. Pulmonary hydatid cyst may rupture into the bronchial tree as in our case and produce cough, chest pain, or haemoptysis. Cysts may involve any organ, may involve bone (invasion of the medullary cavity with slow bone erosion producing pathologic fractures), the central nervous system (space occupying lesions) and the heart (conduction defects, pericarditis).

A hydatid takes about half a year from larvae’s

lodging into human body to the formation of a 1 to 2 cm cyst. A hydatid cyst is composed of a parasite, the endocyst, surrounded by a pericystic layer, the exocyst, which is a fibrous layer due to host reaction. The endocyst is fluid filled, white, elastic hyaline, cyst and is easily dissectible from the pericyst with slight adhesion between them. The exocyst, which is functionally a protective layer against the cyst, consists of compressed lung tissue with its associated inflammatory reaction and fibrosis. In this case, the detached endocyst was seen

Fig. 4 : Illustration of surgical procedure.
Rupture of the hydatid cyst into an adjacent bronchus may occur due to vigorous coughing and expectoration of a large amount of salty sputum consisting of mucus, hydatid fluid and occasionally fragments of the cystic membrane. The scolices can be found in sputum microscopy. When rupture of the hydatid cyst occurs into the pleural space, hydropneumothorax develops, followed by empyema. Our case reported classically the rupture of hydatid cyst into the bronchus.

Radiological studies play a very important role in detecting and evaluating echinococcal cysts. Plain films will define pulmonary cysts, usually as rounded, irregular masses of uniform density, but may miss cysts in other organs unless there is cyst wall calcification, as occurs in the liver. Ultrasonography, CT, echocardiography and magnetic resonance imaging (MRI) are of great value in diagnosing and determining the anatomic extent and relationship of the cyst. Less than 15% of cases exhibit eosinophilia, which generally occurs only if there is leakage of antigenic material. Specific diagnosis could be made histologically by demonstration of parasite in excised tissue, by fundoscopic visualization of parasite or by neuro-imaging studies by demonstrating a cystic lesion with scolex. A Clinical diagnosis can be made by combination of clinical presentation radiographic studies serological tests and exposure. Different serological tests are being carried out for the diagnosis, screening and post-operative follow up for recurrence. These include, enzyme-linked immunosorbent assay (ELISA), latex agglutination and indirect haemagglutination (IHA) test and an immunoblot assay using lentil-lectin purified glycol proteins and it has >99% specificity and the test is highly sensitive.

**Treatment of hydatid cysts:** Medical treatment (e.g., with albendazole) can result in reduction of the cyst size. As medical therapy, albendazole (cidal to germinal membrane), given at 400 mg twice a day for 28 days and repeated from 1 to 8 times, separated by the drug free interval of 2 to 3 weeks, is most efficacious for those with hepatic and/or pulmonary cysts. The usual dose of Mebendazole is 40–50 mg/kg bodyweight /day, given in three divided doses after meals (maximum daily dose 6 g). Albendazole is preferred because it has better bioavailability. Both drugs are also contraindicated in pregnancy (especially during the first trimester) because of possible teratogenicity. Medical treatment alone has been suggested by some to be sufficient for small pulmonary hydatid cysts.

A newer benzimidazole compound, oxfendazole, has been studied in a mouse model and preliminary results suggest it may be a more effective compound. Scolicidal agents such as hypertonic saline, cetrimide, povidone-iodine, formalin, ethanol or hydrogen peroxide may be used. If a protoscolidal agent is used, it must remain in contact with the cyst for ≥15 min. Medical therapy with benzimidazoles is valuable in disseminated disease, including secondary lung or pleural hydatidosis, poor surgical risk patients and when there is intraoperative spillage of hydatid fluid.

Adjunctive chemotherapy before and after surgery appears to reduce the risk of recurrence by inactivating protoscolices and reduces the tension of the cysts for easier cyst removal.

For uncomplicated lesion percutaneous aspiration, infusion of scolicidal agents and reaspiration (PAIR) is
now indicated instead of surgery. PAIR is contraindicated for superficially located cyst (because of risk of rupture), for cyst with multiple thick internal divisions.2

The principles of mandatory surgical intervention are evacuation of the cyst with removal of the endocyst, avoidance of contamination and management of the residual cavity. Normal lung tissue must be preserved as much as possible in the operation.4 The most commonly used surgical techniques are:

1) Needle aspiration of the cyst in situ, which can be applied to central and ruptured or infected cysts. In patients with a central cyst less than 3 cm in diameter, after sucking out the cystic content, cystectomy and removal of cyst membrane must be performed under needle guidance, otherwise, the complete removal of endocyst would be more difficult.

2) Excision of entire peripheral cysts larger than 3 cm in diameter by enucleation.5 However, pre- and post-operative 1-month courses of albendazole or 2 weeks of praziquantel should be considered in order to sterilize the cyst, decrease the chance of anaphylaxis, and decrease the tension in the cyst wall (thus reducing the risk of spillage during surgery) and to reduce the recurrence rate post-operative. Intra-operatively, the use of hypertonic saline or 0.5% silver nitrate solutions before opening the cavities tends to kill the daughter cysts and therefore prevent further spread or anaphylactic reaction.6

Preventive measures are important and include washing of hands with soap and warm water, washing of fruits and vegetables before consumption, and de-worming of pet dogs. In endemic areas infected dogs can be treated by praziquantel treatment, by denying dogs access to infected animals or by vaccinating sheep. Limitation of the number of stray dogs is helpful in reducing the prevalence of human infection.2

**Conclusion**

Hydatid cysts in lung are common. Hence we have reported an uncommon situation of a common problem of rupture of the cyst into bronchus with intra-operative demonstration of communication to the bronchus and classical CT appearance.

**References**


---

**Announcing....**

**DOCTOR 2007 Medical Software**

**CONVENIENT, IDEAL, MOST ECONOMICAL MEDICAL SOFTWARE JUST FOR YOU**

**CLINICAL:** Case sheets, speciality sheets, Inpatient, ICU, Lab, PDR, Auto Casesummary, Certificates, letters, USS, X-ray, Pathology, Endoscopy, Echo, Proc. reports, very little typing needed. Prescription Autodose, Allergy, disease-contraindication, interaction alert, Fonts option (Hindi Tamil etc) Overdose treatment, Ther. level, dose in organ failures Store Recall at a single click.

**ADMINISTRATIVE:** Appointment schedular; OP Card, Pt. List, Statistics, Finance billing; salary, room, manpower management; Drugstore, Inventory. Secure, NETWORK ready. Auto backup Store/Link photos, X-ray, ECG, Videos; Change Header/Footer; Diet advisor-autocalory calculator

**EDUCATIVE:** Disease guidelines Medical graphs; Patient education videos and printouts. Reliable. Saves Life, Time and Money. Hospital pack, and excl. medicine, surgery, OBG, clinic packs available.

Address: **MEDI SOFT**, Achutha Warrier Lane, Cochin-682035. **BUY NOTHING BUT THE BEST**

Details at: http://www.medisoftindia.com Ph 09847294414 medisoft@doctor.com