



Case report

Pulmonary hydatid cyst mimicking lung tumor in a heavy smoker patient—Uniportal VATS management

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ABSTRACT

Introduction and importance: Human infection with *E. granulosus* leads to the development of one or more hydatid cysts located most often in the liver and lungs. However, radiologically and clinically, analysis of atypical or complicated pulmonary hydatid cysts may resemble other types of malignancies.

Case presentation: Here, we present a 65-year-old man presented with chest pain, loss of appetite, and weight loss for 6 months' duration. The patient was surgically treated for a pulmonary hydatid cyst that mimicked a lung tumor clinically and radiologically. The patient underwent surgery using a uniportal video-assisted thoracoscopic surgery (UVATS) approach. The patient was put on an anti-helminthic drug (Albendazole table 400 mg twice daily for 21 days and 14 days off). He will continue for 3 cycles on this schedule.

Discussion: The diagnosis of pulmonary hydatid cyst depends mainly on the imaging procedures supported by appropriate serology and often histopathology. The treatment of choice for the pulmonary hydatid cyst is surgical resection. The uniportal video-assisted thoracoscopic surgery (UVATS) method has been proven to be safe and effective around globally. This includes a shorter surgery time, less pain, less chest tube drainage, and less need for painkillers after the surgery.

Conclusion: In this report, we present a case of a radiologically and clinically pulmonary hydatid cyst mimicking a lung tumor. In the differential diagnosis of a lung tumor, a pulmonary hydatid cyst should be considered particularly in endemic regions.

1. Introduction

Hydatid disease is caused by *Echinococcus granulosus* (EG) and *Echinococcus multilocularis* (EM) parasites. It is found all over the world, but is most common in sheep and cattle-raising areas. While humans can act as intermediate hosts by chance, hydatid cysts primarily develop in the liver and lungs [1]. However, atypical or complicated pulmonary hydatid cysts may resemble other types of malignancies radiologically and clinically [2–10]. There are reports claiming that serologic tests that identify large cell lung cancer can give false-positive results, even though the serologic test for *Echinococcus granulosus* is positive [11]. The complicated echinococcal cysts and other lung tumors look a lot alike, which makes it hard to diagnose and plan surgery [9].

Here, we present a case of a surgically treated pulmonary hydatid cyst that mimicked a lung tumor both clinically and radiologically. The patient underwent a uniportal video-assisted thoracoscopic surgery

(UVATS) approach. This study has been written in line with the SCARE 2020 criteria [12].

2. Case report

A 65-year-old man presented with chest pain, loss of appetite, and weight loss for 6 months' duration. His body mass index (BMI) was 22.5 kg/m². He was a heavy smoker, with 40 cigarettes per day. The patient had no chronic diseases or history of drug use. There were no significant features in the patient's family history. Upon arrival, the patient's temperature was 38.3 °C, blood pressure (BP) was 129/86 mmHg, respiratory rate was 16/min, pulse rate was 95 bpm, and the patient's oxygen saturation (SPO₂) was 94% on room air. On December 20, 2021, a chest CT scan was performed and showed a tumor with a 3 cm lesion in the right lower lobe (RLL) (Figs. 1 & 2). Moreover, laboratory test results were within normal limits. In addition, the echinococcus serology test

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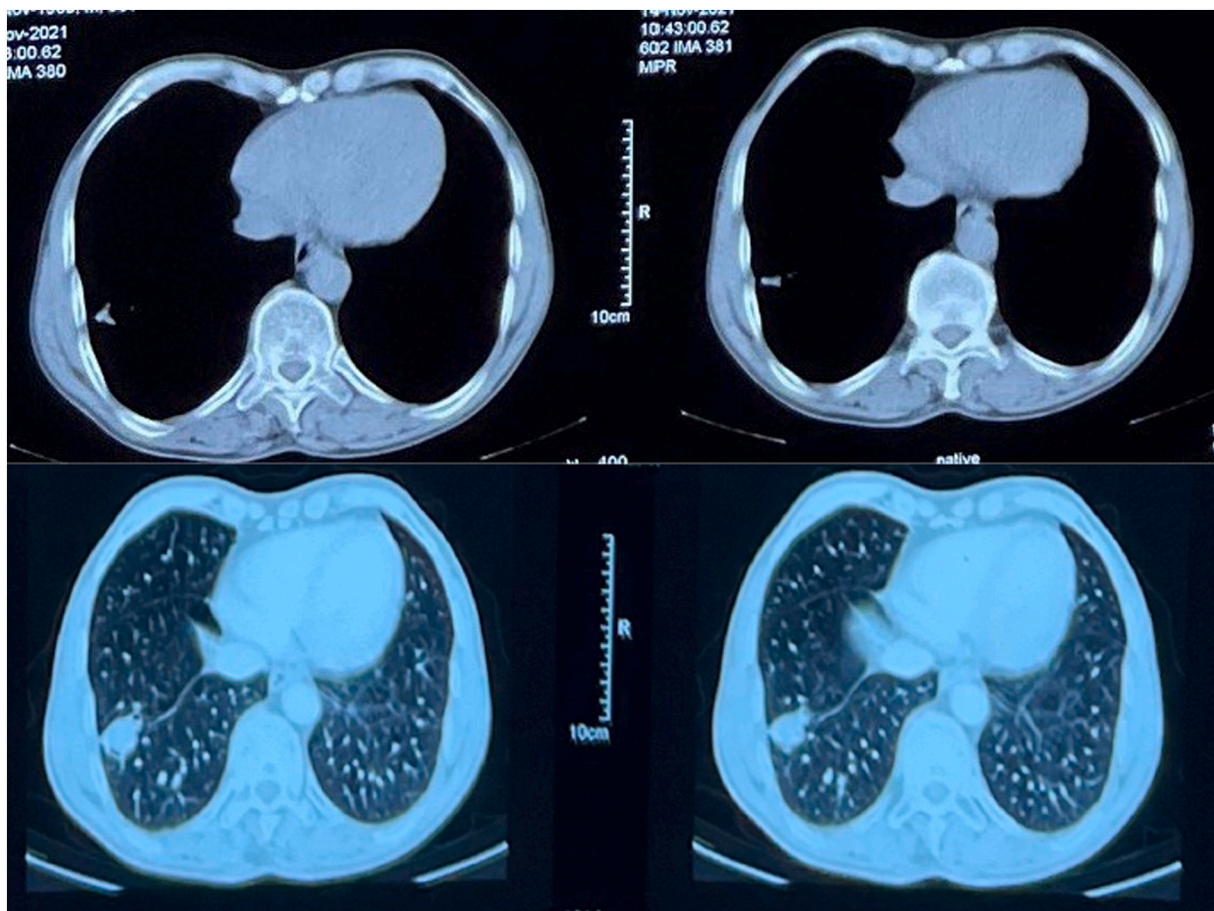


Fig. 1. Axial view of the CT-scan shows a lesion in the right lower lobe.



Fig. 2. Coronal view shows a spider shape lesion in the right lower lobe.

was also negative.

On December 26, 2021, in the supine position, under general anesthesia, a double lumen tube was inserted. Then the patient is positioned in the lateral decubitus, which is the standard position. Then the elbow should be positioned at 90 degrees. A rolled sheet is placed below the axilla to increase the intercostal space. We use a thoracoscope with a 10 mm diameter at 30° as a standard for adults. After the entrance of the scope, we found a cystic-like lesion in the upper part of the right lower lobe. In these conditions, the pleural space should be explored carefully so as not to rupture the cyst or free pleural membranes. While

identifying the pericyst of the hydatid cyst, we placed several pads soaked with povidone iodine around the cyst to prevent contamination at any risk of rupture. Then a 21-gauge needle is used to puncture the cyst wall and to aspirate the fluid contents carefully until the cyst collapses. The pericyst is opened about 2 cm and is caught with graspers. The cystic membrane is carefully removed, being careful not to contact the body. We use gauze soaked in povidone iodine through the cavity. Ventilation is done to check for air leaks from cyst-bronchial connections. The bronchial openings are closed one by one using 3-0 Vicryl sutures, and captonnage is done by plicating the cyst walls. The pleural cavity is

washed again with normal saline. The intercostal nerve block is done, and after good hemostasis, a chest tube is placed through the same incision before closing the wound.

3. Follow up

We have put the patient on anti-helminthic drugs (Albendazole table 400 mg twice daily for 21 days with 14 days off). He will continue for 3 cycles on this schedule. Apart from the monthly repeat of the CXR, we did both renal and liver function tests. His liver enzymes were moderately elevated. We decided to decrease the dose; his enzymes decreased. The patient is being followed up on.

4. Discussion

Human infection with *E. granulosus* leads to the development of one or more hydatid cysts located most often in the liver and lungs, and less frequently in the bones, kidneys, spleen, muscles, and central nervous system. The asymptomatic incubation period of the disease can last many years until hydatid cysts grow to an extent that triggers clinical signs. Approximately half of all patients that receive medical treatment for infections do so within a few years of their initial infection with the parasite [13].

Alveolar echinococcosis is characterized by an asymptomatic incubation period of 5–15 years and the slow development of a primary tumor-like lesion that is usually located in the liver. Clinical signs include weight loss, abdominal pain, general malaise, and signs of hepatic failure [14].

Larval metastases may spread either to organs adjacent to the liver (for example, the spleen) or distant locations (such as the lungs, or the brain) following dissemination of the parasite via the blood and lymphatic system. If left untreated, alveolar echinococcosis is progressive and fatal [15].

The larvae most often involve the liver (55–70%) followed by the lungs (18–35%); the two organs can be affected simultaneously in about 5–13% of cases. However, any organ may be involved. Echinococcal infestation of the pleura or chest wall has been reported to occur in 0.9–7.4% of patients with hydatid disease [16].

Diagnosis depends mainly on the imaging procedures supported by appropriate serology and often histopathology. Therefore, CT is most likely the best technique for elucidating the nature and location of the cyst, as well as their precise relationships with surrounding organs, and thus evaluating the cyst preoperatively. Cyst density may help distinguish parasitic from non-parasitic cysts [17].

The treatment of choice for the pulmonary hydatid cyst is surgical resection. Although the percutaneous aspiration, injection of cysticidal agent, and re-aspiration using radiographic guidance (PAIR) methods are routinely used in cases of hydatid liver disease, the WHO currently recommends that PAIR should not be used in cases of pulmonary cysts. In addition, the video-assisted thoracoscopic surgery (VATS) method has been proven to be safe and effective around the world. This includes a shorter surgery time, less pain, less chest tube drainage, and less need for painkillers after the surgery [18]. Surgery should be coupled with albendazole (10–15 mg/kg/day) administration in two doses, from 4 days before to at least 1 month after surgery. It has been found that anti-helminthic therapy before surgery reduce the risk of recurrence by 3.5 times [19].

5. Conclusion

In this report, we present a case of a radiologically and clinically pulmonary hydatid cyst mimicking a lung tumor. The patient underwent minimally invasive surgery using a uniportal video-assisted thoracoscopic surgery (UVATS) approach. In the differential diagnosis of a lung tumor, a pulmonary hydatid cyst should be considered particularly in endemic regions.

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Ethical approval

Ethical approval has been given by the ethics committee of our faculty.

Consent

Written informed consent was obtained from the patients for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Registration of research studies

Name of the registry: NA

Unique Identifying number or registration ID: NA.

Hyperlink to your specific registration (must be publicly accessible and will be checked): NA.

Author agreement statement

We declare that this manuscript is original, has not been published before and is not currently being considered for publication elsewhere. We confirm that the manuscript has been read and approved by all named authors and that there are no other persons who satisfied the criteria for authorship but are not listed. We confirm that the order of authors listed in the manuscript has been approved by all of us. We understand that the Corresponding Author is the sole contact for the Editorial process. He is responsible for communicating with the other authors about progress, submissions of revisions and final approval of proofs.

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Declaration of competing interest

There is no conflict to be declared.

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