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Case Report

Pulmonary hydatid cyst emergence post laparoscopic ovarian drilling in a clear preoperative chest: A novel case report ☆,☆☆

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ABSTRACT

Echinococcus granulosus is the parasite that causes hydatid disease. The liver is the most often affected organ, followed by the lungs and other organs. We present the case of a 24-year-old woman who had no notable medical history prior to the presentation of a persistent cough and mild chest discomfort 3 weeks after laparoscopic ovarian drilling surgery. There were upper lobe opacities on the right side of the chest X-ray. Serology was used to confirm the diagnosis of a hydatid cyst, with computed tomography (CT) providing additional supporting evidence. This case demonstrated that, especially in endemic areas, patients presenting with atypical respiratory symptoms should have rare infectious etiologies taken into consideration during the postoperative period. After the cyst was successfully surgically removed, the patient received albendazole for antiparasitic treatment. She experienced an uneventful recovery and exhibited no clinical symptoms at follow-up.

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Introduction

Echinococcus granulosus, a parasitic tapeworm, is the main cause of hydatid disease. Although the liver is the organ most frequently impacted, the lungs and other organs may also be affected [1]. The frequency of pulmonary hydatid cysts is lower, occurring in only 10%-30% of cases [2]. This disease is endemic in the areas where common practices are used in livestock husbandry. Dog excrement that has been infected with the parasite is the primary means of transmission [3]. We highlight the significance of maintaining a high index of clinical suspicion for atypical presentations in postoperative patients. in this report, which describes a rare case of a pulmonary hydatid cyst discovered in the postoperative period of unrelated surgery, which is laparoscopic ovarian drilling surgery.

Case presentation

A 24-year-old female, works as an employee from an urban area with no significant past medical history. She underwent laparoscopic ovarian drilling for fertility purposes due to polycystic ovary syndrome (PCOS). The preoperative evaluation was entirely normal, with a temperature of 36.7°C, blood pressure of 125/70 mmHg, pulse rate of 79 beats per minute, and a respiratory rate of 15 breaths per minute. The cardiopulmonary examination revealed no abnormalities. Additionally, all preoperative investigations, including standard blood tests, ECG, and chest X-ray as seen in (Fig. 1), were normal, showing no signs of any underlying issues.

Three weeks after her surgery, the patient returned to the clinic with complaints of a dry cough and mild chest pain. She did not have any other symptoms, such as hemoptysis, fever, or weight loss. On physical examination, her vital signs were within normal limits. Chest auscultation revealed bronchial breath sounds and increased vocal resonance over the right chest, consistent with pulmonary consolidation.

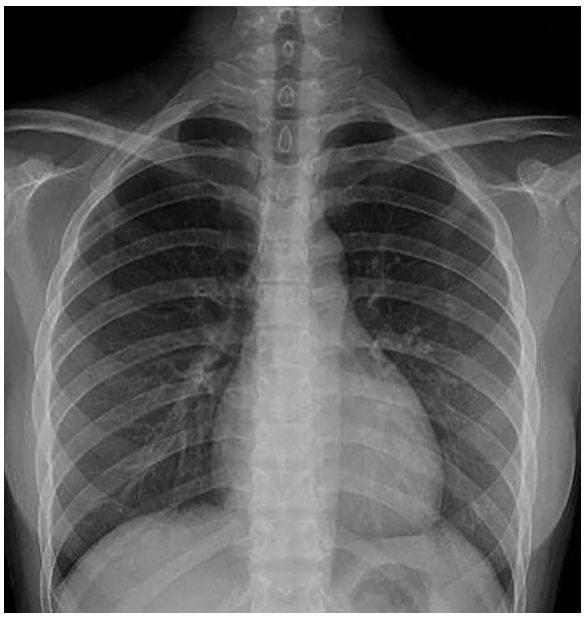

Fig. 1 – Normal preoperative chest X-ray images.

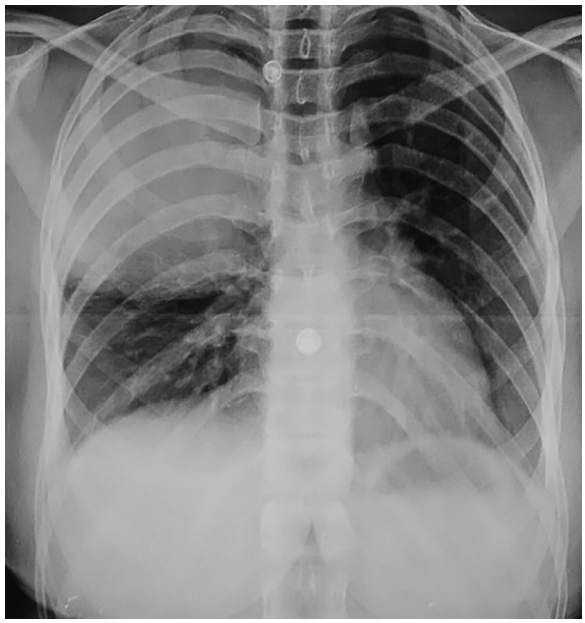

Fig. 2 – Chest X-ray 3 weeks postoperatively showing opacities in the upper lobe of the right lung.

A chest X-ray was obtained to evaluate for any pulmonary abnormalities, revealing consolidation in the right upper lobe, as demonstrated in (Fig. 2). Following this initial finding, a computed tomography (CT)scan of the thorax was conducted, which showed a well-defined cystic lesion in the right upper lobe, as seen in (Fig. 3), along with other signs that are typical of a hydatid cyst.

Blood tests were conducted using enzyme-linked immunosorbent assay (ELISA) for *Echinococcus multilocularis* and indirect hemagglutination (IHA) for *E granulosus* antibodies, both of which returned positive, confirming the diagnosis of a pulmonary hydatid cyst. Furthermore, given the high prevalence of tuberculosis TB in our region and the potential for overlapping presentations with TB, we performed an IGRA test to rule out TB, which returned negative. Other routine blood tests, including a complete blood count and liver and renal function tests, were all within normal limits.

The patient was scheduled for surgery to remove the cyst. To reduce the risk of cyst rupture during the procedure, she was prescribed 400 mg of albendazole twice daily for 4 weeks. The cyst was then successfully removed via video-assisted thoracoscopic surgery (VATS). With no postoperative complications, she was discharged from the hospital and instructed to continue her albendazole regimen, which should last for 2 years, to prevent recurrence.

Following cyst removal surgery, the patient remained in stable condition. For the first 3 months, she had monthly follow-ups with clinical exams and ultrasounds. All results showed she was doing well, with no signs of recurrence.

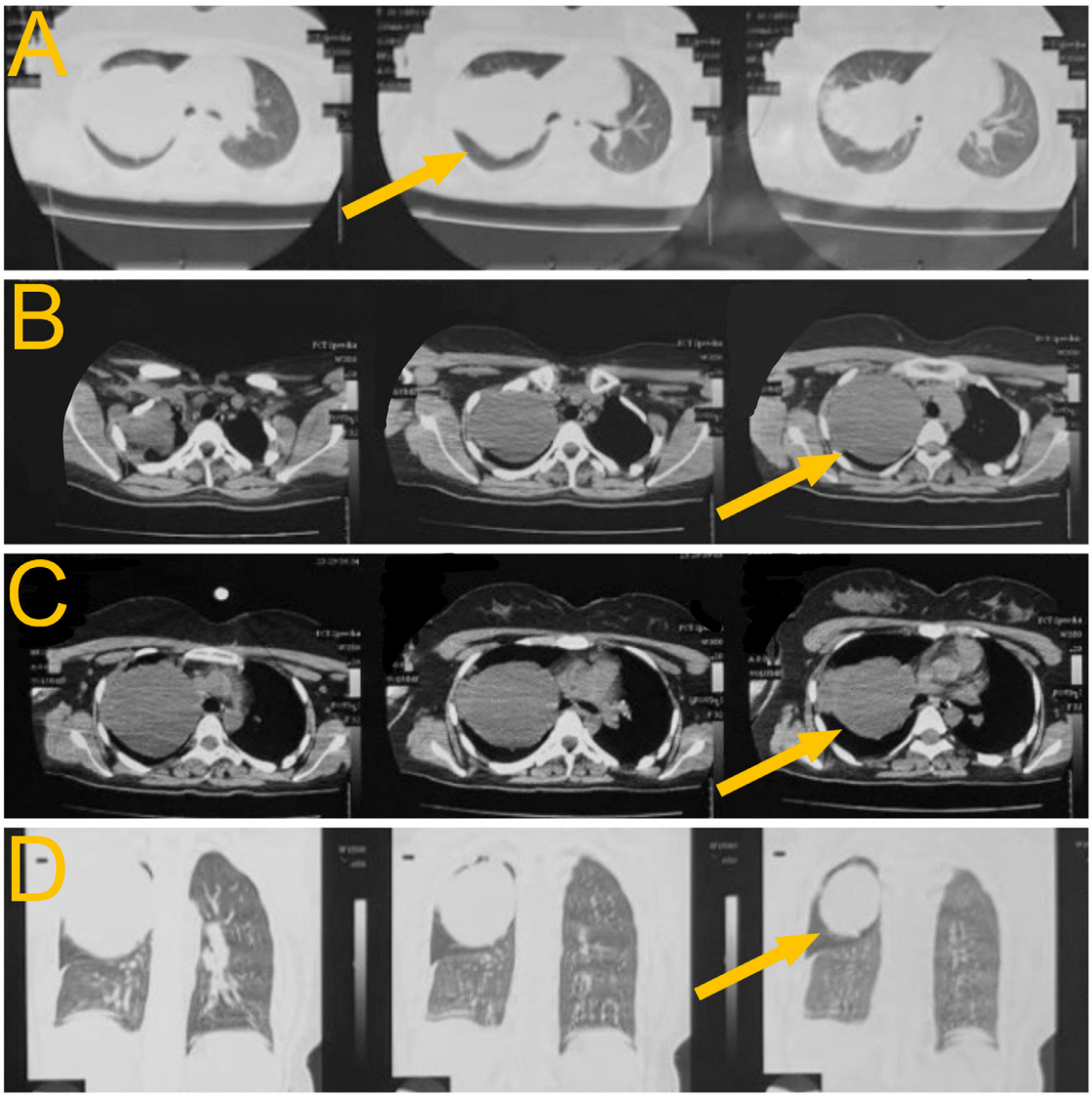

Fig. 3 – Noncontrast chest CT in axial (A-C) and coronal (D) planes, performed 3 weeks postoperatively. The images reveal a well-defined cystic lesion in the right upper lobe (indicated by yellow arrows). Axial images illustrate the precise location of the lesion, while the coronal view offers a comprehensive depiction of its size and anatomical relationship to surrounding structures.

Discussion

A hydatid cyst represents a parasitic infection—the larval stage of the Echinococcus tapeworm. Mostly, it is acquired by eating food or water contaminated with feces that contain the infective stage of this parasite. The localization sites are usually in the liver and lungs. The clinical manifestations of *E granulosus* infection vary depending on the location and size of the cysts. Small or calcified cysts may remain asymptomatic for an extended period. However, symptoms can arise due to mass effects on organs, obstruction of blood or lymphatic flow, or complications such as cyst rupture or secondary bacterial infection. Usually, cases of hydatid disease are discovered incidentally from imaging for unrelated conditions. For pulmonary hydatid cysts, the mainstay treatment is surgical resection, though this carries a risk of cyst rupture [4,5,12].

This case presents a very rare occurrence of a 24-year-old female developing a pulmonary hydatid cyst just 3 weeks after undergoing laparoscopic ovarian drilling. Despite being an employee from an urban area with no known risk factors for hydatid cyst development, she experienced this unusual condition. Preoperative tests of laparoscopic ovarian drilling surgery, including a chest X-ray, were all normal and showed no abnormalities.

The diagnosis of cystic echinococcosis (CE) requires an approach that includes clinical history, physical examinations, serological testing, and imaging studies [9]. Hydatid cysts can be visualized and evaluated using imaging modalities such as ultrasound, CT, or magnetic resonance imaging (MRI). Al-

though ultrasonography is commonly the first-line imaging technique for evaluating hepatic hydatid cysts, CT is considered the superior method for assessing extrahepatic cysts. CT is particularly effective in determining the number, size, and anatomical location of the cysts and is generally more accurate than ultrasonography for detecting extrahepatic involvement [14]. Multiple studies suggest that CT has a higher overall sensitivity than ultrasonography, with a reported sensitivity range of 95% to 100% [15]. Furthermore, CT may be more beneficial than ultrasonography in identifying complications, such as cyst infection or intrabiliary rupture [16].

The most common extrahepatic hydatid cysts occur in the lungs, Involvement of organs outside the liver or lungs is rare but can cause significant morbidity and mortality. Heart involvement may lead to mechanical rupture, widespread dissemination, or pericardial tamponade [17]. Central nervous system involvement can result in seizures or signs of increased intracranial pressure, and spinal cord infection can cause spinal cord compression [18]. In the kidneys, cysts may present with hematuria or flank pain, and conditions such as immune complex-mediated disease, glomerulonephritis leading to nephrotic syndrome, and secondary amyloidosis have also been reported [19].

The initial step in diagnosis of pulmonary hydatid cyst often involves a chest X-ray. On the X-ray, an intact hydatid cyst typically appears as a smooth, spherical opacity within otherwise normal lung tissue. [10]. A CT scan should be performed for pulmonary hydatid cysts, as it typically reveals characteristic signs, such as the serpent and spin signs, which indicate a collapsed parasitic membrane [11]. In this case, the patient's chest X-ray initially demonstrated consolidation in the right upper lobe, and a subsequent CT scan was conducted to provide a clearer demonstration of the abnormality. The scan result is strongly suggestive of a hydatid cyst. To confirm the diagnosis, we used serological tests—ELISA for *E multilocularis* and IHA for *E granulosus*—both of which were positive.

The literature available on hydatid cysts is mostly related to intraoperative complications of the surgeries that involve the cyst itself, like spillage of its contents that can lead to secondary cyst formation in other organs [6]. Very few describe postoperative manifestations of unrelated surgery, like laparoscopic ovarian drilling. In this case, the surgery—laparoscopic ovarian drilling—was unrelated to hydatid cysts, with no intra-abdominal cysts seen or reported spillage.

Hydatid disease typically progresses slowly, with cysts often remaining asymptomatic for years [7]. However, in this case, the hydatid cyst developed and was detected rapidly after surgery, about 3 weeks, which is highly unusual. This rapid onset was not explained because the normal preoperative chest X-ray suggests that the cyst either developed or became detectable shortly after the surgery, which is atypical. Although a plain radiograph is not considered a definitive diagnostic tool for a hydatid cyst [13], her preoperative clinical examinations, including chest auscultation, were all normal.

In this case, the use of video-assisted thoracoscopic surgery (VATS) for hydatid cyst excision aligns with best practices for managing pulmonary hydatid cysts, emphasizing minimally invasive approaches to reduce morbidity and improve recovery times [8].

This case highlights the importance of considering hydatid cyst in the differential diagnosis of postoperative respiratory symptoms, even in patients without prior medical history or known risk factors. This case contributes to the limited number of reports on such rare postoperative complications, which are often overlooked.

Conclusion

This case involves a pulmonary hydatid cyst that appeared unusually rapidly after laparoscopic ovarian drilling in a patient who had no prior illnesses or risk factors. The unusual timing and rarity of this case highlight the importance of considering a hydatid cyst when the patient presents with respiratory symptoms after surgery, especially in areas where the disease is common. Additionally, since most postoperative complications related to hydatid cysts are associated with surgical manipulation of the cyst itself, this report adds to the literature on complications occurring at sites unrelated to the primary surgery. It also suggests the need for further research into mechanisms that could trigger rapid cyst development postoperatively.

Ethics approval

Our institution does not require ethical approval to report individual cases or case series.

Patient consent

Written informed consent was obtained from the patient for their anonymized information to be published in this article.

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