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Case report

An ovarian hydatid cyst in a woman with hepatic and pulmonary echinococcosis

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ABSTRACT. Female genital tract is one of the rare places where hydatid cysts can appear. We present the diagnosis of ovarian hydatidosis in a 27-year-old female patient, who presented with nonspecific symptoms and difficult diagnostic results. Abdominal ultrasonography and serological tests were used in the diagnosis. To reduce the risk of recurrence unique to ovarian involvement, surgical management and adjunct chemotherapy were applied. This case emphasizes the need for a thorough approach to diagnosis and treatment, emphasizing the significance of taking hydatid cysts into account when making a differential diagnosis of pelvic masses.

Keywords: *Echinococcus* cysts, ovarian hydatidosis

Introduction

Hydatid cyst cases have been documented all over the world, with varying regional prevalences. *Echinococcus granulosus* is the main parasite that causes it to form in humans, though reports have also mentioned other species like *Echinococcus multilocularis* [1]. One type of tapeworm known as echinococcus is typically carried by carnivores, like dogs, who are thought to be the definitive hosts. These worms lay eggs, which are subsequently transferred and carried by excrement, infecting herbivores as the intermediate host, such as household animals. It is believed that humans are incidental intermediate hosts [2].

It takes roughly ten to twenty years from the time a cyst forms until the disease manifests clinically. Nevertheless, if the main cyst bursts, this period might alter [3]. Normally, larvae undergo metamorphosis in the intestine before migrating to other areas of the body. While the liver (63%) and lungs (15%) are the typical destinations, there have been reports of other strange places. Ovarian cysts are among the most unusual and uncommon types of cysts; primary ovarian cysts are exceedingly uncommon. As a result, secondary cyst formation accounts for the majority of cases [4]. The standard of care is surgical management; however, recurrence rates can reach 22%. Conservative surgery in addition to chemotherapy has been suggested as a way to reduce the risk of future recurrences or unfavorable outcomes [5].

Case presentation

A 27-year-old female patient, known case of asthma for the last 5 years, presented to the outpatient department with complaints of abdominal pain for the last year and recurrent cough for 2 years. The abdominal pain was localized in the epigastrium, gradual in onset but worsened with each passing day, and was dull in character without radiation to any other site. The patient rated it 5 out of 10 on a pain scale. She also reported recurrent productive cough with yellow phlegm over the past 2 years, worsening in the last 2 months with blood-tinged sputum, chest pain, and shortness of breath. The chest pain was more pronounced on the left side, gradual in onset, sharp in character, aggravated by bouts of cough, and relieved spontaneously. The

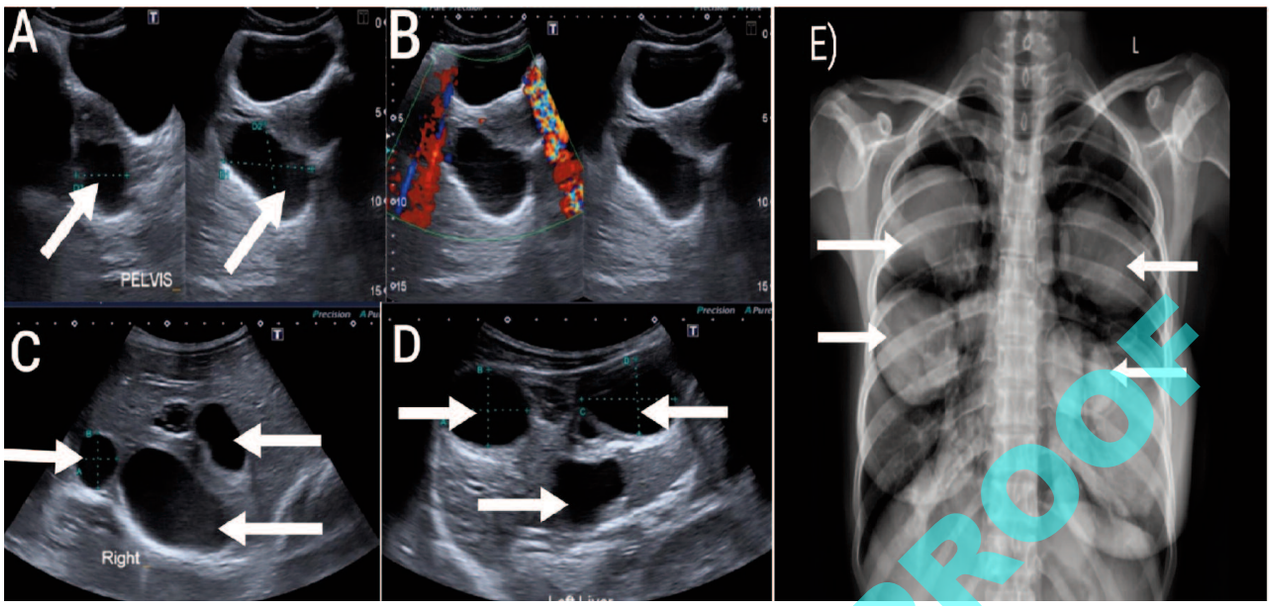

Figure 1. Ultrasound images show a large right adnexal cyst (A) with no flow on color Doppler, abutting the right ovary, measuring approximately 63×53×36 mm with a fluid volume of 65 ml (B). Multiple variably sized cysts are observed in both hepatic lobes: right (C) and left (D) lobes, characterized by internal heterogeneous solid echo patterns with thick membranes and internal cystic areas. Chest X-ray (E) reveals rounded opacities in bilateral lungs consistent with hydatid cysts

patient rated it 6 out of 10 on a pain scale. Furthermore, shortness of breath was exacerbated by walking and contact with pet dogs.

Her past medical and surgical history was unremarkable, while her family history included diabetes and asthma. On examination, she had a normal breathing pattern with bilaterally decreased air entry on inspiration, auscultation revealed bilateral coarse crepitations more pronounced in the left lung. Abdominal examination showed a non-distended abdomen with no tenderness and normal bowel sounds in all four quadrants.

Various investigations were conducted, including Complete Blood Count (CBC), liver and renal function tests, Gamma GT, CA 125, serum electrolytes, hepatitis B and C serology, urine routine examination, abdominal ultrasound, and chest X-rays. Abnormal results included hemoglobin 11.3 g/dL, white blood cell count 12,180/µL, platelet count 895,000/µL, eosinophils 18%, alkaline phosphatase 148 U/L (normal range: 40-130 U/L), Gamma GT 59 U/L (normal up to 40 U/L), and CA-125 57 U/mL (normal up to 35 U/mL). Ultrasound revealed a large right adnexal cyst (Figs. 1A, 1B). It also showed bilateral hydatid cysts in the liver (Figs. 1C, 1D), and chest X-ray showed bilateral lung cysts (Fig. 1E).

Echinococcus IgG serology was done, showing positive results for both anti-echinococcus IgG and *Echinococcus* IgG, with the latter measuring 3.97 (positive: greater than 1.1).

A multidisciplinary team was consulted to proceed with cystectomy via Video-Assisted Thoracoscopic Surgery (VATS) partial cystectomy rather than intact removal for bilateral lung cyst excision and Puncture-Aspiration-Injection-Re-aspiration (PAIR) with cyst excision for hepatic cysts and right ovarian cystectomy in 1 surgery. Postoperative, patient was moved to Intensive Care Unit where she remained stable and shifted to floor after 2 days with good and uneventful postoperative recovery without any complication.

Management Timeline: February 2024: Diagnosis confirmed; March 2024: VATS performed for pulmonary cysts by thoracic surgery team, PAIR performed by General surgery team. Ovarian cystectomy performed by gynecological team

Biopsy results confirmed hydatid cysts, with the cyst walls composed of acellular laminated membrane lined by a transparent nucleated layer. Protoscolices were observed within the cysts, alongside fibrocollagenous tissue showing acute on chronic inflammation, necrosis, and granulation tissue (Fig. *2*). All cysts tested negative for malignancy and fungus. Tissue culture and gram stain of the liver cyst revealed a few pus cells, with no growth seen after 48 hours of incubation.

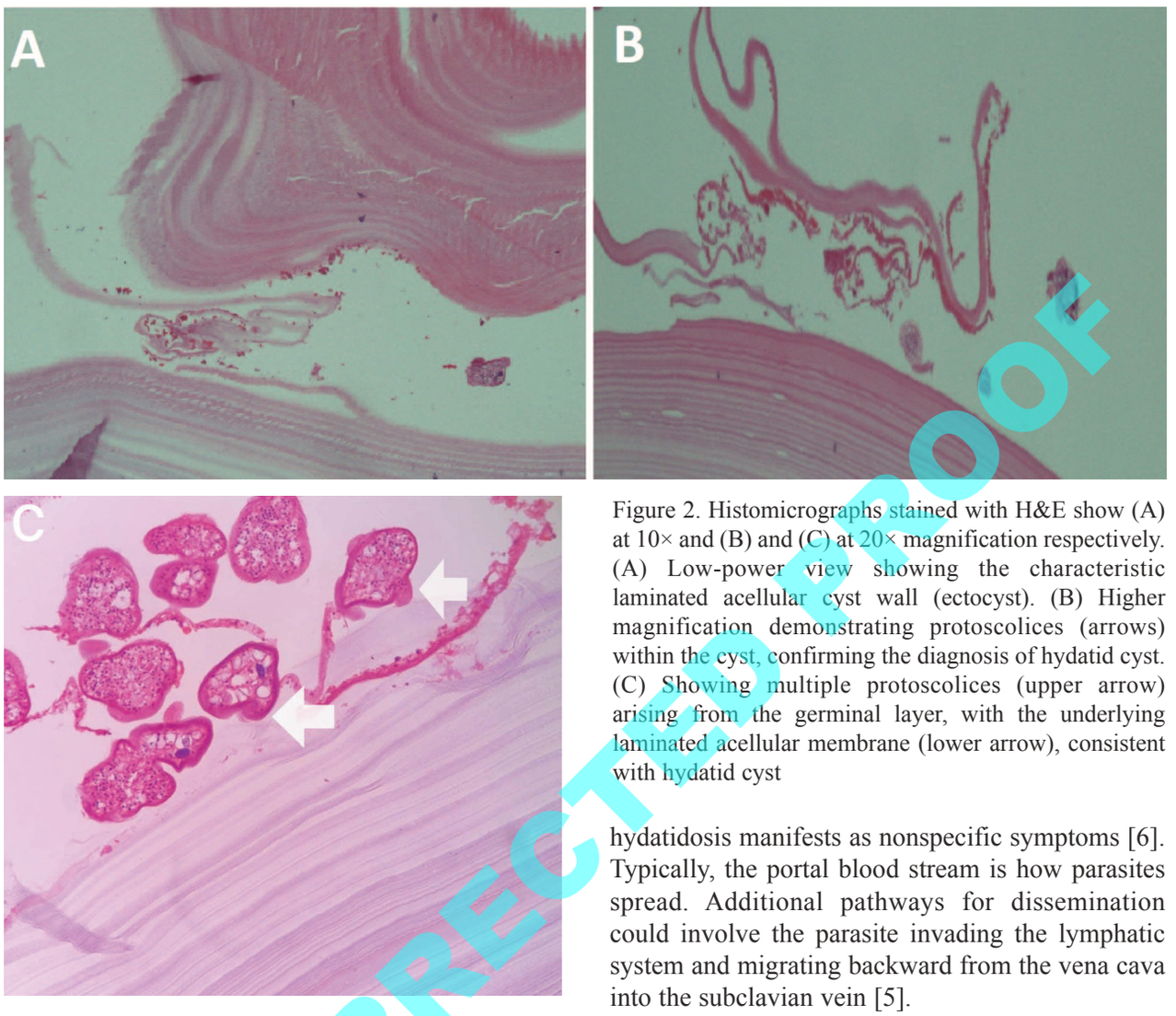

Figure 2. Histomicrographs stained with H&E show (A) at 10× and (B) and (C) at 20× magnification respectively. (A) Low-power view showing the characteristic laminated acellular cyst wall (ectocyst). (B) Higher magnification demonstrating protoscolices (arrows) within the cyst, confirming the diagnosis of hydatid cyst. (C) Showing multiple protoscolices (upper arrow) arising from the germinal layer, with the underlying laminated acellular membrane (lower arrow), consistent with hydatid cyst

On discharge, she was prescribed albendazole 300 mg, omeprazole 20 mg twice daily for 10 days, and montelukast 10 mg once daily for one month. She was advised to follow a high-protein diet and scheduled for a follow-up in 1 week with CBC and chest X-ray reports. The patient was educated about red flags and instructed to seek emergency care in case of uncontrolled pain, persistent fever, uncontrolled vomiting, or changes in alertness level. Patient was kept on follow-up and no reoccurrence was observed.

Discussion

Hydatid cysts in the female genital tract could manifest at any age between 8 and 72 years old. The ovary, uterus, broad ligament, and fallopian tubes are the most frequently occurring sites in the female genital tract in the different cases that have been documented in the literature. Typically, ovarian hydatidosis manifests as nonspecific symptoms [6]. Typically, the portal blood stream is how parasites spread. Additional pathways for dissemination could involve the parasite invading the lymphatic system and migrating backward from the vena cava into the subclavian vein [5].

They can present clinically in a variety of ways; they can be asymptomatic for years or, in the event of a rupture, cause systemic immunological reactions. The size, location, organ, and relationship of the cyst to surrounding tissues all affect when symptoms first appear [7]. Echinococcal cysts are differentially diagnosed with multi-locular cystic adnexal masses and malignancies because of their similar appearances. In highly prevalent areas, consideration should be given to a diagnosis of hydatid cyst. Non-specific clinical symptoms and unusual radiologic findings make the diagnosis challenging [8].

With a sensitivity of 93%, abdominal ultrasonography is considered the gold standard method. Moreover, computed tomography may be employed. Additional diagnostic techniques include serological tests like the indirect hemagglutination test and IgG against the parasite antigen with ELISA which has sensitivity of 95% [9].

Nevertheless, the recently created PAIR technique and chemotherapy using benzimidazole compounds (such as albendazole or mebendazole) both destroy the cyst's germinal layer. It is important to note that only about 30% of patients can expect a cure from chemotherapy, and another 30 to 50% can expect improvement after a 12-month follow-up [10]. Certain cysts exhibit viable protoscolices, making them fertile, while others do not, making them infertile and the latter ones are managed conservatively [11].

In conclusion, this case report describes a young female with asthma who presented with a rare form of hydatid disease affecting the liver, lungs, and ovaries. The nonspecific symptoms made the diagnosis difficult, highlighting the significance of taking parasitic infections into account. Chemotherapy and surgery were used as treatments to control the cysts and patient had good postoperative recovery with no recurrence. In order to effectively manage this complex condition and keep an eye out for complications, long-term follow-up is imperative

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