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The *WJCC* is now abstracted and indexed in Science Citation Index Expanded (SCIE, also known as SciSearch®), Journal Citation Reports/Science Edition, Current Contents®/Clinical Medicine, PubMed, PubMed Central, Scopus, Reference Citation Analysis, China National Knowledge Infrastructure, China Science and Technology Journal Database, and Superstar Journals Database. The 2022 Edition of Journal Citation Reports® cites the 2021 impact factor (IF) for *WJCC* as 1.534; IF without journal self cites: 1.491; 5-year IF: 1.599; Journal Citation Indicator: 0.28; Ranking: 135 among 172 journals in medicine, general and internal; and Quartile category: Q4. The *WJCC*'s CiteScore for 2021 is 1.2 and Scopus CiteScore rank 2021: General Medicine is 443/826.

RESPONSIBLE EDITORS FOR THIS ISSUE

Production Editor: *Si Zhao*; Production Department Director: *Xu Guo*; Editorial Office Director: *Jin-Lai Wang*.

NAME OF JOURNAL

World Journal of Clinical Cases

ISSN

ISSN 2307-8960 (online)

LAUNCH DATE

April 16, 2013

FREQUENCY

Thrice Monthly

EDITORS-IN-CHIEF

Bao-Gan Peng, Jerzy Tadeusz Chudek, George Kontogeorgos, Maurizio Serati, Ja Hyeon Ku

EDITORIAL BOARD MEMBERS

<https://www.wjgnet.com/2307-8960/editorialboard.htm>

PUBLICATION DATE

June 6, 2023

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INSTRUCTIONS TO AUTHORS

<https://www.wjgnet.com/bpg/gerinfo/204>

GUIDELINES FOR ETHICS DOCUMENTS

<https://www.wjgnet.com/bpg/GerInfo/287>

GUIDELINES FOR NON-NATIVE SPEAKERS OF ENGLISH

<https://www.wjgnet.com/bpg/gerinfo/240>

PUBLICATION ETHICS

<https://www.wjgnet.com/bpg/GerInfo/288>

PUBLICATION MISCONDUCT

<https://www.wjgnet.com/bpg/gerinfo/208>

ARTICLE PROCESSING CHARGE

<https://www.wjgnet.com/bpg/gerinfo/242>

STEPS FOR SUBMITTING MANUSCRIPTS

<https://www.wjgnet.com/bpg/GerInfo/239>

ONLINE SUBMISSION

<https://www.f6publishing.com>

Ruptured teratoma mimicking a pelvic inflammatory disease and ovarian malignancy: A case report

Pei-Hsuan Lai, Dah-Ching Ding

Specialty type: Medicine, research and experimental

Provenance and peer review: Unsolicited article; Externally peer reviewed.

Peer-review model: Single blind

Peer-review report's scientific quality classification

Grade A (Excellent): 0
Grade B (Very good): B
Grade C (Good): C
Grade D (Fair): 0
Grade E (Poor): 0

P-Reviewer: Exbrayat JM, France;
Martín Del Olmo JC, Spain

Received: February 16, 2023

Peer-review started: February 16, 2023

First decision: April 19, 2023

Revised: April 20, 2023

Accepted: May 6, 2023

Article in press: May 6, 2023

Published online: June 6, 2023



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Abstract

BACKGROUND

We report a case of ruptured ovarian teratoma mimicking pelvic inflammatory disease (PID) and ovarian malignancy. The case indicates the need for reviewing the information on ovarian teratomas, as the symptoms are vague, and, therefore, diagnosis and treatment had to be structured accordingly.

CASE SUMMARY

A 60-year-old woman was admitted to the emergency department with acute lower abdominal pain. She experienced weight loss and increased abdominal girth. Pelvic ultrasound and computed tomography revealed a 14-cm pelvic tumor. Laboratory examination revealed leukocytosis (white blood cell count: 12620/ μ L, segment: 87.7%) and high levels of C-reactive protein (18.2 mg/dL). Elevated levels of the tumor marker cancer antigen 19-9 (367.8 U/mL, normal value < 35 U/mL) were also noted. Due to the impression of a ruptured tubo-ovarian abscess or a tumor with malignancy, she immediately underwent an exploratory laparotomy. A ruptured ovarian tumor with fat balls, hair strands, cartilage, and yellowish fluid was observed on the right side. Right salpingo-oophorectomy was performed. A pathological examination revealed a mature cystic teratoma. The patient recovered after surgery and was discharged on post-operative day three. No antibiotics were administered.

CONCLUSION

This case illustrates the differential diagnosis of an ovarian tumor. Therefore, surgery is the mainstay for treating a ruptured teratoma.

Key Words: Teratoma; Ovarian cancer; Pelvic inflammatory disease; Ruptured; Peritonitis; Case report

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Core Tip: We report a case of a ruptured ovarian teratoma mimicking pelvic inflammatory disease and malignancy. We updated the information on ovarian teratomas regarding symptoms, signs, diagnosis, and treatment. Because of the vague symptoms of ovarian teratoma, we provided a strategy to diagnose and treat this ovarian teratoma.

Citation: Lai PH, Ding DC. Ruptured teratoma mimicking a pelvic inflammatory disease and ovarian malignancy: A case report. *World J Clin Cases* 2023; 11(16): 3852-3857

URL: <https://www.wjgnet.com/2307-8960/full/v11/i16/3852.htm>

DOI: <https://dx.doi.org/10.12998/wjcc.v11.i16.3852>

INTRODUCTION

Mature cystic teratoma of the ovary constitutes 10%–20% of ovarian tumors[1]. Another report in Taiwan showed that the incidence of teratomas was 33%[2]. The most common symptom of teratomas is abdominal pain, which was observed in 48% of cases[2]. Other complications included torsion (9.2%), concurrent pregnancy (3.5%), and malignant transformation (0.7%)[2]. Abdominal pain is also a possible symptom following a ruptured teratoma[3].

We report a case of a 60-year-old woman with ruptured teratoma mimicking pelvic inflammatory disease (PID) and ovarian malignancy that was managed *via* an emergent right salpingo-oophorectomy (RSO).

CASE PRESENTATION

Chief complaints

A 60-year-old woman presented with aggravated abdominal pain and was admitted to the emergency department.

History of present illness

According to the patient's statement, she had suffered from general abdominal bloating and distension since August 2022. Since October 2022, the discomfort had developed into non-remitting dull pain, accompanied by occasional stabbing pain in the right lower quadrant. The pain, initially eased by over-the-counter analgesics, progressed to become intolerable, and she could barely walk and sleep for days. She also suffered from lower urinary tract symptoms characterized by obstructive etiology, including intermittent urinary flow, hesitancy, need for straining, incomplete emptying, and frequency. Her body weight had decreased substantially from 59 kg in August to 54 kg at the time of recording, while the abdominal circumference increased. No fever or unstable vital signs were noted.

History of past illness

Her body mass index was 22.2 kg/m² without remarkable gynecologic disorders or chronic illness. Menopause onset was at 54 years. Sexual activity and use of exogenous hormones were both ruled out.

Personal and family history

Personal and family history was unremarkable.

Physical examination

A detailed physical examination revealed diffuse abdominal tenderness and equivocal rebound tenderness. An ovoid enlarged abdominal surface with a protruding mass on the right was observed.

Laboratory examinations

The blood test yielded leukocytosis with left shift (white blood cell count: 12620/μL, segment: 87.7%) and a high C-reactive protein level (CRP 18.2 mg/dL), indicating an active systemic inflammatory status. The levels of tumor markers, including cancer antigen 125 (17.6 U/mL) and carcinoembryonic antigen (0.8 ng/mL), were within the normal ranges; however, cancer antigen 19-9 (CA 19-9 367.8 U/mL, normal value < 35 U/mL) was elevated. Post-operative cultures of the abdominal contents collected during surgery showed no microbial growth.

Imaging examinations

Contrast-enhanced computed tomography revealed a 14-cm cystic tumor occupying the pelvic cavity

and lower abdomen (Figure 1A-C). The tumor probably originated from the adnexa, contained a few septations, had a mixed density of fluid and fat components, and lacked an enhancing mural nodule. Bilateral hydronephrosis might be a consequence of the compression effect of the tumor. Notably, a small amount of mildly turbid ascites was observed in the cul-de-sac. Based on the imaging findings, tubo-ovarian abscess was the primary impression, while ovarian torsion, ovarian tumor of either benign or malignant nature, or pyometra required differentiation. The computed tomography (CT) findings were echoed by the transabdominal ultrasound images, revealing a heterogeneous tumor with hyperechoic hair strand-like materials and papillary growth, which mimicked ovarian cancer (Figure 1D and E).

FINAL DIAGNOSIS

Due to absence of any sexual history, a diagnosis of the tubo-ovarian abscess was less likely. Considering the rapid growth of the tumor and the prominent symptoms, an exploratory laparotomy was performed the following day under the suspicion of adnexal malignancy.

TREATMENT

A right ovarian tumor with yellowish fluid accumulation and without a malodorous smell was found in the peritoneal cavity. Aerobic and anaerobic cultures were performed. RSO was performed. Grossly, the tumor contained hair strands, ball-like fat tissues, and cartilage within the tumor (Figure 2). Intraoperative frozen sections showed a teratoma. The histopathological study of paraffin-embedded tissue was found to be a mature cystic teratoma (Figure 3). As was expected, the diagnosis was revised to a mature cystic teratoma complicated with chemical peritonitis, which contributed to severe abdominal pain and inflammatory status.

OUTCOME AND FOLLOW-UP

After surgery, no antibiotics were administered for non-infectious pathogenesis. The surgical drain at the cul-de-sac drained only minimal serosanguinous fluid; therefore, it was removed. The patient recovered soon after the procedure and was discharged on postoperative day three. Follow-up at the outpatient department could have been more uneventful.

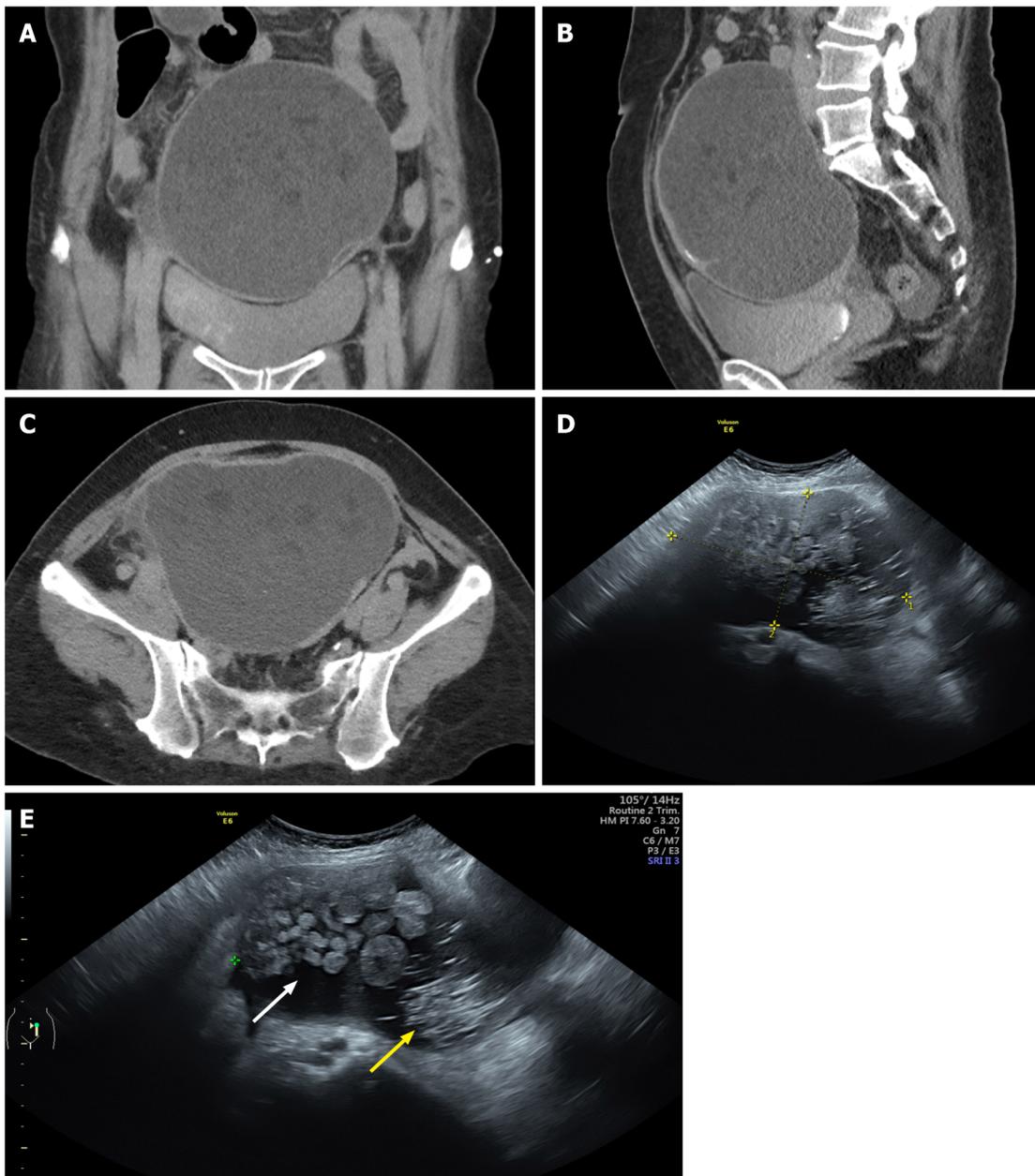
DISCUSSION

We report a case of a ruptured teratoma managed *via* emergent RSO. The presurgical impression of this teratoma mimicked pelvic inflammatory disease and ovarian malignancy. Peritoneal signs, leukocytosis, and left shift showed a high likelihood of PID. A complex tumor ultrasound and high CA 19-9 Levels led to the suspicion of ovarian malignancy. Finally, the teratoma was managed by RSO.

Diffuse abdominal pain, leukocytosis, and elevated CRP levels may be caused by a ruptured ovarian teratoma[3]. Other teratoma complications include torsion, infection, rupture, and malignant transformation[4]. The evaluated case also presented these symptoms and signs.

Spontaneous rupture of teratomas can occur, but are rare, due to thick cystic walls, with the possibility of occurrence ranging between 0.3%-0.7%. The cause of teratoma rupture is unknown. Torsion with infarction, direct trauma, prolonged pressure during pregnancy, malignant transformation, and increased internal pressure from rapid growth may be rupture factors[5]. After the teratoma ruptures, leakage or spillage of contents may cause chemical peritonitis (aseptic inflammatory peritoneal reaction). During surgery, the incidence of chemical peritonitis caused by tumor content has been reported to be less than 1%[6]. In the presented case, abdominal pain caused by a teratoma rupture was suspected and confirmed during laparotomy.

Ultrasonography is an easy and effective tool for diagnosing ovarian teratomas[7]. The characteristics of ultrasound findings include dermoid mesh, tip of the iceberg sign, and Rokitansky nodule. Dermoid mesh indicates hyperechogenic lines reflecting that of hair[8]. Rokitansky nodule is a cystic lesion with echogenic tubercles projecting into the cystic lumen. To differentiate between benign and malignant tumors, the typical morphology for ovarian malignancy includes intratumor separation, papillary projection, vascular support to the lesion, heterogeneous echogenicity, and an ovarian volume of more than 20 cm³[9]. In the presented case, ultrasound showed a heterogeneous tumor with hyperechoic hair strand-like materials and papillary growth.



DOI: 10.12998/wjcc.v11.i16.3852 Copyright ©The Author(s) 2023.

Figure 1 Image studies of the tumor. A computer tomography scan showing a large tumor with septa in the abdominal cavity. A: Coronal view; B: Sagittal view; C: Axial view; D and E: Pelvic ultrasound showing a tumor with a size of 14.5 cm × 8.6 cm. Hair-strand-like materials (yellow arrow) and papillary-like growth (white arrow) were noted in the tumor.

A teratoma, a heterogeneous adnexal mass with calcification and fatty components, can be noted on a CT scan[3]. Ruptured teratoma can be suspected when a CT scan shows a fatty nodule on the lesion and ascites with a peritoneal thickening layer[3]. The CT scan of ovarian cancer may show the size, location, and extent of primary ovarian carcinoma[10]. Ovarian cancer can show a cystic lesion with a portion of a solid tumor within it and may have a papillary projection[11]. The CT scan of the presented case showed a heterogeneous tumor with hyperechoic hair strand-like materials and papillary growth. Papillary growth may be similar to ovarian malignancy.

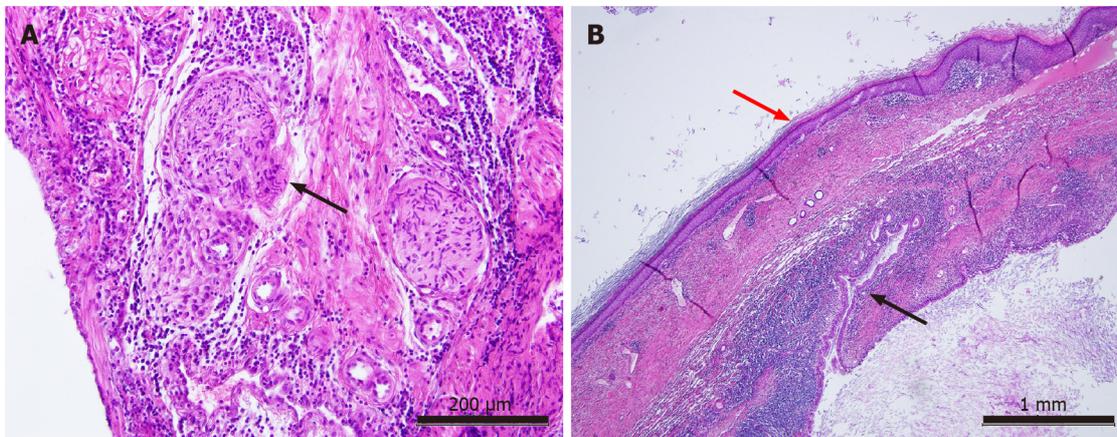
Teratomas are usually located in the ovaries. However, teratomas can occur anywhere in the body. Eight to fifteen percent of teratomas can occur bilaterally[12]. Multiple teratomas on the same side can also occur[13]. The most commonly observed side of teratoma occurrence varies in different studies[14].

Surgical treatment for ovarian teratomas includes cystectomy and oophorectomy[15]. Laparoscopic management is the gold standard. For young adults, cystectomy can be performed[16]. Ovarian teratoma can occur in pregnant women. For suspected malignancy or postmenopausal women, an oophorectomy could be performed[15]. When doing cystectomy, content spillage and possible chemical peritonitis may be encountered. However, this event can decrease complications through rigorous fluid flushing[16]. The presented case underwent an oophorectomy due to the suspicion of malignancy and to



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Figure 2 Surgical image of the tumor. A: Gross picture of the tumor; B: After incising the tumor, the content showed hair-like small ball-like adipose tissues, and cartilage.



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Figure 3 Histopathological study of the tumor (hematoxylin-eosin staining). A: Nerve fiber (black arrow), scale bar = 200 µm; B: Squamous epithelium (red arrow) and columnar epithelium (intestine, black arrow), scale bar = 1 mm.

avoid content spillage. The choice of surgical method can be considered individually.

This report illustrates one case. The results of this report may not be applicable to another case of ruptured teratoma. Therefore, these results should be interpreted with caution.

CONCLUSION

We report a rare case of a ruptured teratoma causing symptoms, such as pelvic inflammatory disease and ovarian malignancy. Ultrasound and CT scan images cannot differentiate the actual tumor characteristics. After surgical exploration, a ruptured teratoma was diagnosed. This case illustrates the differential diagnosis of an ovarian tumor. Surgery is the mainstay for treating a ruptured teratoma.

ACKNOWLEDGEMENTS

We thank Dr. Ming-Hsun Li for his assistance with the pathological pictures.

FOOTNOTES

Author contributions: Ding DC and Lai PH contributed to conceptualization; Lai PH contributed to data curation;

Ding DC and Lai PH wrote—original draft preparation; Ding DC and Lai PH wrote—review and editing.

Informed consent statement: Written informed consent was obtained from the patient (s) to publish this paper.

Conflict-of-interest statement: All the authors report no relevant conflicts of interest for this article.

CARE Checklist (2016) statement: The authors have read CARE Checklist (2016), and the manuscript was prepared and revised according to CARE Checklist (2016).

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Country/Territory of origin: Taiwan

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S-Editor: Li L

L-Editor: A

P-Editor: Li L

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