

CASE REPORT

Gynecologic Oncology

Peritoneal tuberculosis as a differential diagnosis for ovarian cancer: A case report

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Abstract

Background: Peritoneal tuberculosis can closely mimic ovarian cancer in its clinical and radiologic presentation, particularly in high-tuberculosis-burden regions, including Kenya. Early recognition is key to avoid misdiagnosis and inappropriate management.

Case presentation: A 17-year-old presented with abdominal distension, pain, and unintentional weight loss. Imaging demonstrated bilateral complex ovarian masses, ascites, and peritoneal nodularity, with an elevated cancer antigen 125 (CA-125) level of 221 U/mL. Diagnostic laparoscopy revealed diffuse peritoneal tubercles, and biopsy confirmed granulomatous inflammation of peritoneal

tissue with acid-fast bacilli consistent with peritoneal tuberculosis. The patient showed marked clinical and radiological improvement after six months of standard antituberculosis therapy.

Conclusion: Peritoneal tuberculosis is an important differential diagnosis for ovarian cancer. In high-prevalence settings such as Kenya, clinicians must maintain a high index of suspicion when evaluating patients with features suggestive of ovarian cancer to facilitate timely diagnosis and appropriate referral.

Keywords: CA-125, ovarian cancer, peritoneal tuberculosis.

Introduction

Kenya is among the top 30 high-burden tuberculosis countries, with an estimated prevalence of 558 per 100,000 adult population (1-2). Approximately 17% of tuberculosis patients in Kenya have

extrapulmonary disease, which carries a mortality rate of about 10% (3). Peritoneal tuberculosis represents nearly 5% of all extrapulmonary cases (3). Unlike pulmonary tuberculosis, peritoneal tuberculosis presents with nonspecific symptoms, often

delaying diagnosis (4). This is a case of a 17-year-old who presented with suspected ovarian cancer, based on radiographic evidence of bilateral ovarian masses and elevated cancer antigen 125 (CA-125).

Case presentation

A 17-year-old nulliparous female presented to the Gynecological Oncology clinic at the Kenyatta National Hospital as a referral from a peripheral facility with suspected ovarian cancer. Pelvic magnetic resonance imaging (MRI) demonstrated bilateral complex ovarian masses measuring 4.65 x 3.40cm (right ovary) and 3.80 x 4.90cm (left ovary), ascites, peritoneal thickening, and anterior perirectal fascia-enhancing nodules suggestive of metastasis, and elevated CA-125 levels were elevated at 221.5 U/mL (reference <35 U/mL). She reported progressive abdominal swelling for 3 months associated with abdominal pain and unintentional weight loss of 25 kg. On further enquiry, she admitted to night sweats and contact with her mother, who was receiving treatment for pulmonary tuberculosis. She denied cough, fever, or a family history of gynecologic cancer. Menstrual history was unremarkable with a regular 28-day cycle, and she had not attained coitarche.

On clinical examination, she was vitally stable with gross abdominal distension, positive fluid thrill, and multiple ill-defined masses not well delineated due to ascites and guarding. Pelvic examination revealed normal external genitalia with an intact hymen. Rectovaginal examination revealed rectovaginal septal nodularity and fullness of the Pouch of Douglas; the rectal mucosa was smooth, and there was no blood noted on the examining finger. General laboratory investigations are summarized in **Tables 1** and **2**. The HIV test was negative. Her chest radiograph, renal, and liver function tests were unremarkable.

With an impression of peritoneal tuberculosis, diagnostic laparoscopy was performed, revealing thickened

peritoneum, diffuse peritoneal tubercles, turbid ascites, a matted pelvis with multiple areas of loculated fluid collections, and visceral adhesions (**Figure 1**). Peritoneal biopsies for histology and Ziehl-Neelsen (ZN) staining, and peritoneal fluid for cytology were obtained. Histopathology showed necrotizing granulomatous inflammation of peritoneal tissue with attendant Langerhans-type giant cells, and ZN staining was positive for acid-alcohol-fast bacilli (AAFB), consistent with peritoneal tuberculosis. No evidence of malignant tissue was identified. Cytology of the ascitic fluid demonstrated abundant mature lymphocytes (**Figure 2**).

Table 1: General laboratory investigations

Test	Result	Reference range	Interpretation
ESR	130 mm/hr	<20 mm/hr	Elevated (inflammation)
WBC	12 × 10 ⁹ /L	4–10 × 10 ⁹ /L	Leukocytosis
Neutrophils	8.9 × 10 ⁹ /L	2–7 × 10 ⁹ /L	Neutrophilia
Hemoglobin	8.5 g/dL	12–15 g/dL	Anemia
MCV	78 fL	83–101 fL	Microcytosis
MCHC	30.6 g/dL	32–36 g/dL	Hypochromia

ESR: erythrocyte sedimentation rate; WBC: white blood cell count; MCV: mean corpuscular volume; MCHC: mean corpuscular hemoglobin concentration

Table 2: General laboratory investigations

Tumor marker	Result	Reference range	Interpretation
CA-125	221.5 U/mL	<35 U/mL	Elevated
β-hCG	0.38 mIU/mL	2–5 mIU/mL	Normal
CEA	0.52 ng/mL	<3 ng/mL	Normal
AFP	<10 ng/mL	<40 ng/mL	Normal
CA 19-9	7.91 U/mL	<37 U/mL	Normal

CA-125: cancer antigen 125; β-hCG: beta human chorionic gonadotropin; CEA: carcinoembryonic antigen; AFP: alpha-fetoprotein; CA-19-9: cancer antigen 19-9

The patient was initiated anti-tuberculosis therapy, including rifampicin, isoniazid, ethambutol, and pyrazinamide; and hematinics. At 6 months, abdominal swelling and pain had regressed, CA-125 had normalized, and the ovarian masses were no longer evident on pelvic ultrasound. She was counseled on the risks of infertility and ectopic pregnancy associated with peritoneal tuberculosis.

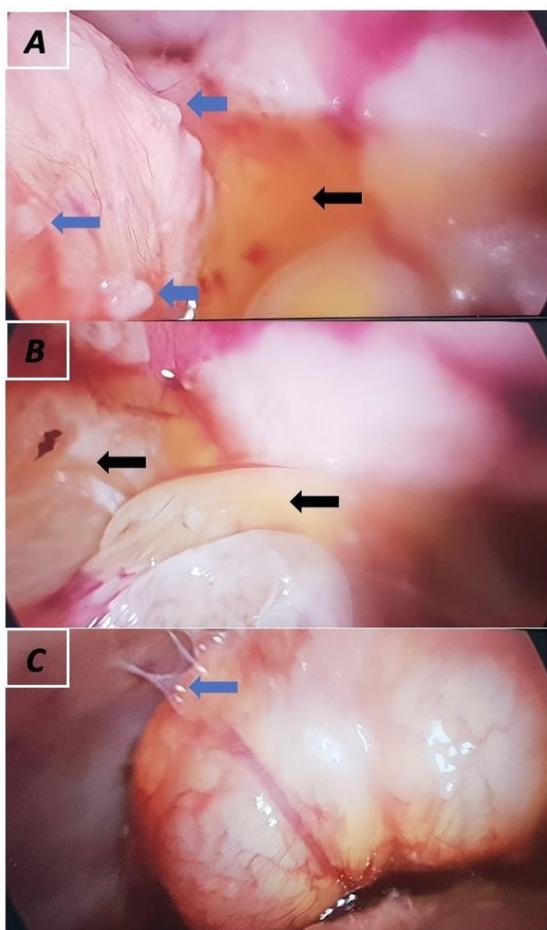


Figure 1: Laparoscopic images showing: (A) diffuse peritoneal tubercles (blue arrows) and turbid ascites (black arrow); (B) matted pelvis with areas of loculated fluid collection; and (C) adhesions involving the gut and the anterior abdominal wall.

Discussion

Peritoneal tuberculosis may arise from reactivation of latent tuberculous foci, hematogenous spread from pulmonary tuberculosis, direct extension from surrounding organs, or dissemination via lymphatics from infected lymph nodes (5). Its symptomatology closely mimics that of ovarian malignancy (4, 6). Patients may present with abdominal pain, progressive abdominal distension, menstrual irregularity, infertility, and constitutional symptoms such as weight loss, night sweats, and fever (7). This clinical polymorphism creates a diagnostic challenge, highlighting the importance of a thorough history to evaluate tuberculosis risk factors. In this case, a history of contact with a family member receiving treatment for pulmonary

tuberculosis was an important diagnostic clue.

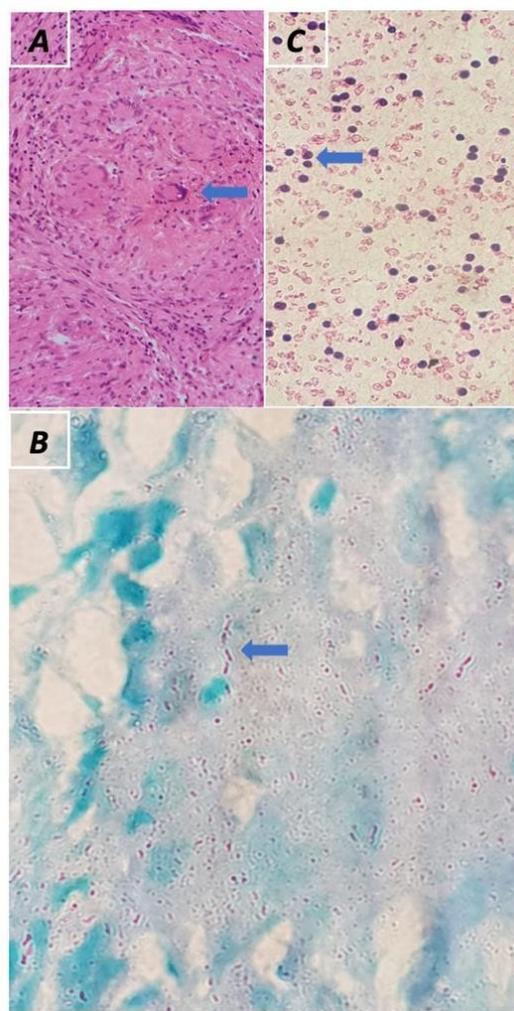


Figure 2: Histopathologic images showing: (A) necrotizing granulomatous inflammation with attendant Langerhans-type giant cells; (B) positive Ziehl-Neelsen staining for acid-alcohol-fast bacilli with a beaded appearance; and (C) cytological preparation of ascitic fluid showing abundant mature lymphocytes.

CA-125 is a cellular membrane-related mucin-type glycoprotein. Elevated levels, particularly in the presence of radiographic evidence of adnexal masses, often suggest ovarian cancer (8). Accordingly, CA-125 level is incorporated into scoring systems such as the Risk of Malignancy Index and the International Ovarian Tumor Analysis (IOTA) Assessment of Different NEoplasias in adnexa (ADNEX) model, both of which are used to preoperatively differentiate between benign and malignant adnexal

lesions (8). However, CA-125 has limited specificity (78%) for ovarian cancer and may be elevated in physiological conditions, such as pregnancy and menstruation, as well as benign inflammatory conditions such as tuberculosis, endometriosis, and leiomyoma (9). In the present case, the patient's elevated CA-125 and erythrocyte sedimentation rate were consistent with an inflammatory process rather than malignancy.

The diagnosis and management of peritoneal tuberculosis require a multidisciplinary approach. The presented case was managed collaboratively by gynecologists, radiologists, physicians, and pathologists. The gold standard for diagnosis of peritoneal tuberculosis is histopathological confirmation of *Mycobacterium tuberculosis* from biopsy specimens obtained via ultrasound- or CT-guided techniques, laparotomy, or laparoscopy (10, 11). In this case, laparoscopic biopsy of peritoneal tubercles revealed granulomatous inflammation and acid-fast bacilli on Ziehl-Neelsen staining, confirming the diagnosis.

Peritoneal tuberculosis also has significant implications for female reproductive health. Approximately 22.9% of women with infertility are reported to have pelvic tuberculosis (12). Chronic inflammation may result in pelvic adhesions, distortion of the fimbrio-ovarian relationship, and impairment of tubal ciliary function, thereby increasing the risk of tubal infertility and ectopic pregnancy (10). These risks were explained to the patient during follow-up.

Conclusion

Peritoneal tuberculosis is an important differential diagnosis for ovarian cancer. In high-prevalence settings such as Kenya, clinicians must maintain a high index of suspicion when evaluating patients with features suggestive of ovarian cancer to facilitate timely diagnosis, appropriate referral, and prevention of morbidity and mortality. Multidisciplinary management, along with the use of laparoscopy for direct

visualization and targeted biopsy, remains central to establishing a definitive diagnosis.

Consent for publication

Informed consent for publication was obtained from the patient's guardian.

Conflict of interest

None

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