

Research Article

# Exploring the Diagnostic Challenges of Pseudotumoral Peritoneal Tuberculosis That Mimics Advanced Ovarian Cancer in Women: The Role of Laparoscopy in a Case Study

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## Abstract

This case involves a 63-year-old multiparous woman with no significant medical history and no known exposure to tuberculosis. She presented with chronic abdominal pain and weight loss, anorexia, and subjective fevers. During the clinical examination, the patient was found to have ascites, bilateral pleural effusion, fever, and a general deterioration in her condition. Blood tests revealed normochromic normocytic anemia. The C-reactive protein was elevated, and the erythrocyte sedimentation rate was accelerated. Ferritin levels were raised. Her blood sugar, hepatic and renal functions were normals. The electrolyte panel showed no abnormalities. Serologies for hepatitis B, C, and HIV were negative, and the immunological profile was normal. The ascitic tap yielded a citrine-yellow fluid, and the cytochemical analysis indicated that the ascites were exudative. Analysis of the ascitic fluid revealed that the DNA test for Mycobacterium tuberculosis was negative, but the adenosine deaminase (ADA) level was elevated. Additionally, the CA125 level was significantly elevated, exceeding 600 UI/ml. A pelvic ultrasound identified a cystic pelvic mass with thick septations but without any solid tissue component, measuring 92x69 mm. The complementary CT (Computed Tomography) scan revealed enlarged ovaries, heterogeneous on the left, associated with a moderately abundant peritoneal effusion. The laparoscopic exploration revealed inflammatory peritoneal nodules, parietal adhesions, and serous ascites. Anatomopathology confirmed peritoneal tuberculosis. The peritoneal form, particularly in its pseudotumoral manifestation, can mimic ovarian cancer. Definitive diagnosis often requires invasive procedures.

## Keywords

Tuberculosis, Laparoscopy, Ovarian, Cancer, CA125

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## 1. Introduction

Tuberculosis is an infectious disease caused by *Mycobacterium tuberculosis*. It primarily affects the lungs, but extrapulmonary locations are common [1, 2]. Peritoneal tuberculosis is uncommon, making it the fourth most frequent type of extrapulmonary tuberculosis. Diagnosing this form of the disease can be particularly difficult due to the non-specific nature of its clinical and radiological signs [2]. In its pseudotumoral pelvic form, it shows many clinical, biological, and radiological similarities with ovarian cancer, which is the main differential diagnosis [3, 4]. This can lead to a delay in diagnosis.

In this study, we report the case of a patient with peritoneal tuberculosis that mimicked advanced ovarian neoplasia to highlight the diagnostic challenges and underscore the value of laparoscopy in such cases.

## 2. Case Study

This case involves a 63-year-old multiparous woman with no significant medical history and no known exposure to tuberculosis. She presented with chronic abdominal pain in the context of weight loss, anorexia, and subjective fevers.

During the clinical examination, the patient was found to have ascites without any signs of portal hypertension, heart failure, or nephropathy. She also had bilateral pleural effusion, fever, and a general deterioration in her condition, classified as stage 2 by the World Health Organization (WHO) guidelines. Her lymph nodes were not enlarged, and no skin abnormalities were observed. Additionally, her joints were flexible, and her neurological examination showed normal results.

Blood tests revealed normochromic normocytic anemia with a hemoglobin level of 10.3 g/dl. The C-reactive protein (CRP) was elevated at 128 mg/l, and the erythrocyte sedimentation rate was accelerated at 93 mm/hr. Ferritin levels were significantly raised at 1363.7 ng/ml. AST levels were measured at 41 UI/l and ALT at 21 UI/L. Her blood sugar and renal function were normal, with a creatinine level of 10 mg/l. The electrolyte panel showed no abnormalities, with sodium at 140 meq/L and potassium at 3 meq/L. Serologies for hepatitis B, C, and HIV (Human immunodeficiency virus) were negative, and the immunological profile was normal.

The ascitic tap yielded a citrine-yellow fluid, and the cytochemical analysis indicated that the ascites were exudative.

Analysis of the ascitic fluid revealed that the DNA test for *Mycobacterium tuberculosis* was negative, but the adenosine deaminase (ADA) level was elevated at 79.34 UI/l. Additionally, the CA125 (cancer antigen125) level was significantly elevated, exceeding 600 UI/ml.

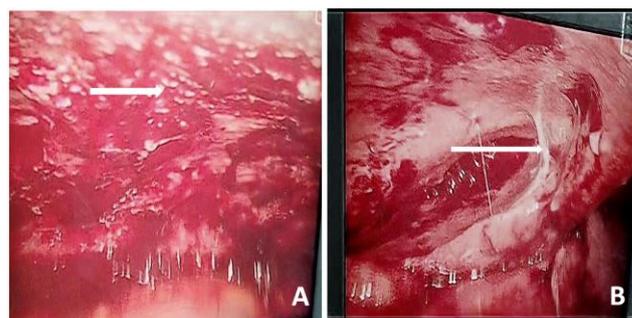
A pelvic ultrasound identified a cystic pelvic mass with thick septations but without any solid tissue component,

measuring 92x69 mm.

The complementary CT (Computed Tomography) scan revealed enlarged ovaries, heterogeneous on the left, associated with a moderately abundant peritoneal effusion, thickening of the peritoneal layers compatible with peritoneal carcinosis lesions, and a bilateral pleural effusion of low abundance with no signs of secondary spread to the liver, lungs, or bones.

The diagnosis strongly suggested advanced ovarian neoplasia with peritoneal carcinomatosis, but tuberculosis was also considered a possibility.

The laparoscopic exploration revealed inflammatory peritoneal nodules, parietal adhesions, and serous ascites. (See figure)



**Figure 1.** Laparoscopic view displaying multiple whitish peritoneal nodules on the peritoneum (A) and adhesions (B).

Biopsy samples were taken, and the histopathological examination revealed a tuberculous granuloma in the peritoneal wall. It consisted of foci of eosinophilic necrosis surrounded by epithelioid histiocytes and Langhans giant cells.

Antituberculosis treatment was initiated following a protocol that combined Isoniazid (H), Rifampicin (R), Pyrazinamide (Z), and Ethambutol (E) for two months, followed by a combination of RH for four months.

Under antituberculosis treatment, the patient showed significant clinical improvement, including the cessation of fever, restored appetite, weight gain, and a notable decrease in both ascites and pleural effusion.

Paraclinical findings showed a return to normal in the biological parameters, including the CA125 levels.

## 3. Discussion

Tuberculosis remains a significant public health issue in Senegal, despite considerable efforts by public authorities to combat this disease, particularly in its pulmonary form, which is responsible for its contagiousness. Extrapulmonary forms of tuberculosis often pose diagnostic challenges due to their

variable clinical presentations. The peritoneal pseudotumoral localization of tuberculosis is a rare clinical form, with an estimated frequency of 1 to 3% according to series [2, 5]. It can affect all age groups, with a preference for women between 20 and 50 years old [5].

Several factors may contribute to its development, such as HIV infection, prolonged corticosteroid therapy, low socio-economic status, treatment with immunosuppressants, and BCG therapy [6, 7]. With our patient, no risk factor was identified.

The clinical signs are non-specific, including abdominal pain, intestinal transit disorders, and menstrual disturbances that may manifest as dysmenorrhea or amenorrhea. Fever, either isolated or associated with chills or profuse night sweats, may be observed. A deterioration in general health can manifest as asthenia, anorexia, or significant weight loss, sometimes very severe. Clinical examination often reveals the presence of isolated, free ascites. An association with other locations, particularly pulmonary or digestive, should be investigated, although it is absent in 30 to 50% of cases [8]. The clinical presentation of our patient included chronic abdominal pain and isolated ascites with fever and weight loss.

Like the clinical signs, the biological findings are non-specific. An inflammatory syndrome of varying intensity is often noted, as observed in this case.

CA125, a high molecular weight glycoprotein, is expressed by a large proportion of epithelial ovarian cancers [10]. Its elevation in peritoneal tuberculosis can mistakenly suggest a diagnosis of ovarian cancer, potentially delaying the correct diagnosis, as was the case with our patient.

The ascitic fluid is usually yellowish in color, exudative, and predominantly lymphocytic [11].

The elevation of ADA (adenosine deaminase) in peritoneal fluid has a sensitivity and specificity of 100% and 97%, respectively, for the diagnosis of peritoneal tuberculosis in the absence of cirrhosis (86). Its positivity in this patient was a presumptive factor.

The Polymerase Chain Reaction (PCR) test and gene amplification reaction using cerebrospinal fluid (CSF) can isolate the *Mycobacterium tuberculosis* (BK) in 24 to 48 hours, but these tests are expensive and have reduced sensitivity [4]. This could explain its negativity in this context.

Imaging techniques like ultrasound and computed tomography (CT) can sometimes aid in diagnosis. Specifically, findings such as ascites with septations, peritoneal thickening with heterogeneous enhancement, the presence of hypodense areas indicating caseous necrosis, and lymphadenopathy can suggest a tuberculous origin. Additionally, the presence of pleuroparenchymal sequelae of pulmonary tuberculosis (as observed in our patient), and less frequently, active lesions, also support this diagnosis [9].

Invasive procedures such as laparoscopy or laparotomy play a crucial role in confirming the diagnosis, as they allow for the collection of biopsies [4]. The exploration of the peritoneal cavity typically reveals whitish granulations,

peritoneal nodules, hyperemia of the peritoneum, filamentous peritoneal adhesions, and agglutination of intestinal loops. A laparoscopy performed on our patient visualized peritoneal nodules.

The histological study of the biopsy samples reveals epithelioid giant cell granulomas, typically with caseous necrosis [7]. This confirms the diagnosis in accordance with the findings of this observation.

The treatment of peritoneal tuberculosis is based on a four-drug anti-tuberculosis regimen: RHZE for 2 months, followed by a two-drug regimen of RH for 4 months. Under this protocol, our patient showed good clinical and biological improvement [9, 11, 12].

## 4. Conclusion

Tuberculosis remains a public health issue in Senegal. Extrapulmonary locations often present a diagnostic challenge due to the non-specific nature of their clinical presentation. The peritoneal form, particularly in its pseudotumoral manifestation, can mimic ovarian cancer. Definitive diagnosis often requires invasive procedures.

## Abbreviations

WHO	World Health Organization
CRP	C Reactive Protein
HIV	Human Immunodeficiency Virus
ADA	Adenosine Deaminase
CT	Computed Tomography
DNA	Desoxyribonucleic Acid
ALT	Aminotransferase Alanine
AST	Aminotransferase Aspartate
CA125	Cancer Antigen 125
R	Rifampicin
H	Isoniazid
Z	Pyrazinamide
E	Ethambutol

## Author Contributions

**Jean Noel Diokel Ndour:** Conceptualization, Investigation, Methodology, Resources, Writing – original draft, Writing – review & editing

**Bachir Mansour Diallo:** Formal Analysis, Investigation

**Yanidou Ndiaye:** Formal Analysis

**Fulgence Abdou Faye:** Formal Analysis

**Mamoudou Baba Nana:** Formal Analysis

**Atoumane Faye:** Data curation, Formal Analysis

**Adama Berth é** Data curation

**Papa Souleymane Tour é** Data curation

**Madoky Magatte Diop:** Data curation

**Mamadou Mourtalla Ka:** Supervision, Validation

## Conflicts of Interest

The authors declare no conflicts of interest.

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