Peritoneal tuberculosis and peritoneal carcinomatosis: differential diagnosis

Tuberculose peritoneal e carcinomatose peritoneal: diagnóstico diferencial

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ABSTRACT Peritoneal tuberculosis accounts for 1-2% of all tuberculosis cases and invariably imposes a difficult diagnosis. The disease presents with a wide spectrum of clinical manifestations of which fever and abdominal pain are the most frequent. Here, we report the clinical case of a 48-year-old woman who had ascites, fever, and weight loss and was initially diagnosed with ovarian cancer and peritoneal carcinomatosis. Further investigation, including laboratory exams and omental biopsy resulted in the diagnosis of peritoneal tuberculosis without lung tuberculosis. The patient presented favorable response to the standard treatment. The objective of this report is to emphasize that, among the myriad of diseases that can affect the peritoneum, tuberculosis peritonitis should be considered as a differential diagnosis, particularly when the patient presents ascites and an unspecific abdominal condition. In addition, we present and in-depth discussion of the main findings and investigative approach for peritoneal tuberculosis.

Keywords: Peritoneal tuberculosis; Ascites; Abdominal pain.

INTRODUCTION

Peritoneal tuberculosis is a disease that often leads to a difficult diagnosis. Because of its unspecific clinical presentation, physicians tend to underestimate its existence. In fact, the peritoneum represents the sixth most common anatomical site of extrapulmonary tuberculosis corresponding to 1-2% of all forms of this infection¹,².

Peritoneal tuberculosis affects predominantly young adults in the 3rd and 4th decades of life; however, it can occur at any moment during the lifetime³. Greatest incidence occurs in patients with severe comorbidities, particularly AIDS patients; in general, this particular group of patients present disseminated tuberculosis associated with the severe immunodeficiency condition.

In this report, we present the case of a 48-year-old woman with ascites, abdominal pain and fever, initially

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diagnosed as ovarian cancer with peritoneal carcinomatosis, with a final diagnosis of tuberculous peritonitis. We present clinical and laboratorial features that key to establish the differential diagnoses; moreover, we discuss the main caveats that should be considered in the investigation of this medical condition.

CASE REPORT

We report the case of a 48-years-old, woman, born in in the town of Almenara in the northeast region of the State of Minas Gerais and currently residing in the town of and Cosmópolis in the central region of the State of Sao Paulo. She was previously healthy, with a report of a left ovarian neoplastic cyst under follow-up for 5 years. In addition, she was a former smoker (4 pack-years) and social drinker. She sought medical attention for an increase in abdominal volume three weeks prior to consultation. The abdominal volume increased mostly in the afternoons and also presented with postprandial worsening. The patient also complained of unmeasured weight loss and episodes of fever of about 38°C at no preferential time. Moreover, she reported daily contact, for a year before the onset of symptoms, with a patient diagnosed with pulmonary tuberculosis. On physical examination, the only changes found were cutaneous-mucous pallor and massive ascites. Serological tests for HIV, syphilis and hepatitis C virus were negative, rheumatoid factor and antinuclear factor (ANA) were not reactive. There was immunological memory to the hepatitis B virus. On admission, the patient presented with 13.2 g/dL hemoglobin, C-reactive protein (CRP) 273 mg/L, 0.64 mg/dL creatinine, glycated hemoglobin 6.4%, total bilirubin 0.61 mg/dL, international standardized ratio (INR) 1.02 and albumin 3.7 g/dL.

A transvagal ultrasound was performed, which revealed a complex left-side ovarian tumor, with a high risk of malignancy, in addition to a diffusely thickened epiploon and implants in the paramesocolic wall on the left. Abdominal tomography showed a nodule in the parietal peritoneum, with densification of omental adipose planes (omentum cake), suggestive of peritoneal carcinomatosis.

![Figure 1](image.png)

Figure 1. Abdominal computed tomography scan showing the omental thickening (omentum cake).

The initial diagnostic hypothesis was advanced ovarian cancer with secondary implant and neoplastic ascites. During hospitalization, the patient had fever of about 38°C, especially in the afternoon, without improvement with broad-spectrum antibiotic therapy. Blood cultures for mycobacteria, fungi and bacteria were negative.

Two diagnostic paracenteses were performed, which revealed a predominance of lymphomononuclear cells (77% and 100%, in each paracentesis, respectively), normal glucose, absence of bacterial structures and epithelial cells on bacterioscopy, absence of neoplastic cells, negative oncotic cytology, negative rapid molecular test for tuberculosis, and increased adenosine deaminase (ADA) 47.6 (reference value up to 33.0 U/L) (Table 1).

<table>
<thead>
<tr>
<th>Ascitic fluid</th>
<th>28/05/2020</th>
<th>04/06/2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lactate dehydrogenase</td>
<td>299 U/L</td>
<td>323 U/L</td>
</tr>
<tr>
<td>Glucose</td>
<td>84 mg/dL</td>
<td>82 mg/dL (serum: 91mg/dL)</td>
</tr>
<tr>
<td>Protein</td>
<td>4.6 mg/dL</td>
<td>NR</td>
</tr>
<tr>
<td>Albumin</td>
<td>2.6 g/dL</td>
<td>2 g/dL (serum: 3.7g/dL)</td>
</tr>
<tr>
<td>White blood cells</td>
<td>380/mm³ (77% lymphomononuclear cells)</td>
<td>145/mm³ (100% lymphomononuclear cells)</td>
</tr>
<tr>
<td>Mesothelial cells</td>
<td>Rare</td>
<td>Rare</td>
</tr>
<tr>
<td>Adenosine Deaminase</td>
<td>47.6 U/dL</td>
<td>46.2 U/dL</td>
</tr>
<tr>
<td>Bacterial culture</td>
<td>Negative</td>
<td>Negative</td>
</tr>
<tr>
<td>Graim stain</td>
<td>Rare white blood cells</td>
<td>Rare white blood cells</td>
</tr>
<tr>
<td><em>M. tuberculosis</em> culture</td>
<td>Negative</td>
<td>NR*</td>
</tr>
<tr>
<td>Direct fungal test</td>
<td>Negative</td>
<td>Negative</td>
</tr>
<tr>
<td>Rapid molecular test for <em>M. tuberculosis</em></td>
<td>NR</td>
<td>Negative</td>
</tr>
<tr>
<td>Oncotic citology</td>
<td>Negative</td>
<td>Negative</td>
</tr>
</tbody>
</table>

Source: UNICAMP Clinical Pathology Laboratory
NR not realized
An omental biopsy was performed, which resulted in the identification of a chronic granulomatous inflammatory process, with focal caseous necrosis, which was not compatible with the main diagnostic hypothesis up to that time.

**Figure 2.** Omental biopsy stained with Hematoxylin-Eosin (HE) showing multiple granulomas.

Taken together, the clinical presentation of the disease, the result of the biopsy, and the presence of increased ADA in the peritoneal fluid corroborated the hypothesis of peritoneal tuberculosis. Thereafter, the treatment with rifampicin, isoniazid, pyrazinamide and ethambutol (RIPE scheme) was then instituted and scheduled for 6 months. Pulmonary tuberculosis was investigated through culture for mycobacteria and rapid molecular test for tuberculosis in tracheal aspirate, and both resulted negative. After approximately 15 days of hospitalization, the patient developed acute respiratory failure, and the diagnosis of SARS-COV-2 pneumonia was made, from which she recovered without sequelae. During her stay in the intensive care unit, the RIPE regimen was maintained, and the patient presented an improvement in the ascites, and no recurrence of fever.

**DISCUSSION**

Tuberculosis is a major public health problem in the world, and Brazil is one of the countries with the largest number of reported cases. It is estimated that one third of the world population is infected with the Mycobacterium tuberculosis bacillus, the etiologic agent of this disease, which is responsible for a chronic granulomatous inflammatory process. The peritoneal form corresponds to a small percentage of the total cases, but upon evaluating the diseases that can affect the peritoneum, tuberculosis should be regarded as a potential diagnosis in patients with nonspecific abdominal abnormalities, especially in the presence of ascites.

Prior to hospital discharge, a new transvaginal ultrasound showed regression of the cyst in the topography of the left ovary, corroborating the hypothesis that it was a tuberculous rather than neoplastic abnormality. After four months using the RIPE regimen, the patient underwent a new computed tomography scan of the total abdomen, which demonstrated resolution of the ascites and signs of peritonitis, as well as a marked reduction in the nodular peritoneal thickening in the topography of the greater omentum; small amount of loculated fluid in the topography of the left ovary, with a smaller volume compared to the previous study. This finding was regarded as below the detection limit of the method; therefore, it was raised the possibility of a diagnosis of a cyst in the ovary or parametrium.

**FIGURE 3.** Omental biopsy stained with Ziehl-Neelsen highlighting area of caseous necrosis (yellow arrow).

**Figure 4.** High-magnification image of a granuloma with giant cell without the presence of bacillus, stained with Ziehl-Neelsen.

**Figure 5.** High-magnification image of a granuloma with giant cell without the presence of bacillus, stained with Ziehl-Neelsen.
Peritoneal tuberculosis is a rare form of disease that requires systematic clinical suspicion and histopathological confirmation for diagnosis; in countries with high incidence of tuberculosis, such as Brazil, the diagnosis should be always considered in face of atypical peritoneal disease. It has high morbidity and mortality if unidentified, but otherwise, good response to the specific treatment, with recovery time in a few weeks and low mortality rate of approximately 5%. Therefore, it should be considered as an important differential diagnosis of peritoneal carcinomatosis.
REFERENCES


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