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Abdominal tuberculosis in pediatrics: A case report

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ABSTRACT

Tuberculosis is an infectious disease which most commonly compromises the respiratory system, whereas abdominal involvement is rare, thus its diagnosis is a challenge. The clinical manifestations of abdominal tuberculosis as well as its physical examination findings are usually non-specific and, frequently, similar to those of other diseases, so it is critical to consider abdominal tuberculosis among the differential diagnoses.

Here we report the clinical case of a 15-year-old male patient hospitalized for a prolonged febrile syndrome associated with abdominal pain, diarrhea, night sweats, and weight loss.

Keywords: Mycobacterium tuberculosis*; pediatrics; abdomen.*

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INTRODUCTION

Tuberculosis continues to be a serious public health problem in the region of the Americas and worldwide and accounts for the leading cause of mortality due to infections. In 2021, 12 569 cases of tuberculosis were reported in Argentina; 16.7% were in children under 20 years of age.[1]

Pulmonary tuberculosis is the most frequent presentation in all age groups, accounting for 81.2% of cases and is responsible for the transmission of tuberculosis, whereas extrapulmonary forms account for 8.8%.[1]

Abdominal tuberculosis, in its different presentations, is a rare disease, even in countries where *Mycobacterium tuberculosis* is endemic.

CASE REPORT

A 15-year-old male patient presented to the Emergency Department with fever, diahrrea and abdominal pain. He referred intermittent fever (2 readings a day, maximum: 39 °C) associated with loss of approximately 6 kg and night sweats for the past 2 months, in addition to diffuse abdominal pain and watery diarrhea, without signs of dysentery, in the past month. He had a history of appendectomy 5 months before the consultation and a recent hospitalization in another facility due to a condition that included edema, pleural and pericardial effusion, and conjunctival injection that was allegedly a drug-induced condition secondary to treatment with trimethoprim-sulfamethoxazole which he recieved due to a urinary tract infection (UTI).

On admission, the patient was in a fair general condition, with generalized mucous membrane pallor, fever, weight loss, and no evidence of associated rash or lymphadenopathy. The following anthropometric data were recorded: weight 49.400 kg (P 10–25); height 172 cm (P 50–75); BMI 16.7 (P 3–10). He had abdominal bloating, diffuse pain, increased bowel sounds, and no visceromegalies.

Laboratory tests included complete blood count, which showed normocytic and hypochromic anemia (hemoglobin: 10.2 g/dL), increased C-reactive protein (85.5 mg/dL), with liver and kidney function and albumin within normal limits.

Infectious causes were considered; peripheral blood cultures and urine cultures were negative, serologies were negative for human immunodeficiency virus, Epstein-Barr virus, cytomegalovirus, parvovirus B19, SARS-CoV-2, hepatitis B virus, and hepatitis C virus. The purified protein derivative skin test was positive (10 mm) and the chest X-ray with no specific findings, which helped ruling out active pulmonary tuberculosis.

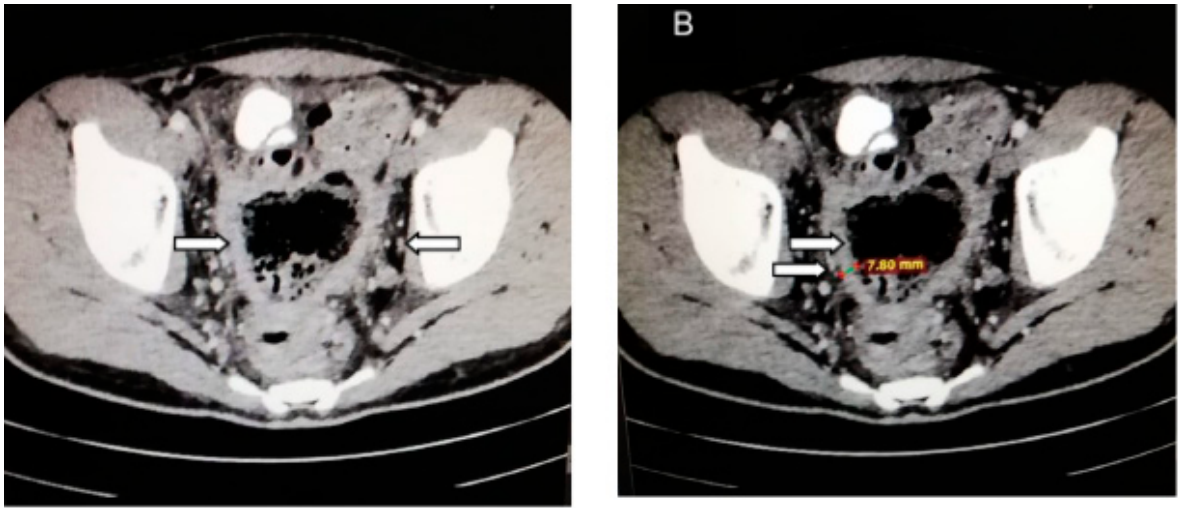
Abdominal and pleural ultrasounds were performed to rule out autoimmune diseases; an echocardiogram showed scarce anterior and posterior pericardial effusion; an immunological profile was done to measure immunoglobulins, antinuclear antibodies, anti-neutrophil cytoplasmic antibodies, and markers for celiac disease (IgA anti-tissue transglutaminase antibodies and IgG antibodies against deamidated gliadin peptides), which were within normal limits, with the presence of high titers of anti-*Saccharomyces cervisiae* IgG and IgA antibodies. (ASCA) (33 U and 66 U, respectively for a normal value of up to 20 U), compatible with probable inflammatory bowel disease or intestinal tuberculosis.

Blood cancer and blood disorders were ruled out by bone marrow aspiration, which did not find neoplastic cells, and a CT scan of the brain, chest, abdomen, and pelvis showed multiple lymphadenopathies in the mesentery and colonic distension with thickening of the wall of the rectum and trabeculation of the adjacent perirectal fat *(Figure 1)*. Based on these findings, an upper endoscopy and a colonoscopy with biopsy were performed; the anatomopathological report revealed that the colon showed a loss of vascular patches, rounded ulcers —some covered with fibrin—, and areas with cobblestone mucosa, and it was not possible to progress beyond 30 cm from the anal margin due to the presence of severe stenosis at that level. Therefore, a contrast study of the colon by enema was requested. It showed an alteration of the wall at 20 cm from the anal margin, with lumen narrowing and no evidence of contrast passage in the proximal sigmoid colon *(Figure 2)*.

To make an etiological diagnosis of the intestinal lesion, in the absence of a clear diagnosis based on the samples collected with the previous studies, an exploratory laparoscopy with biopsy was performed. Macroscopically, a miliary seeding compatible with tuberculosis was observed (*Figure 3*); the subsequent pathological examination reported omental tuberculoid granulomatosis with positive culture for *Mycobacterium tuberculosis* sensitive to isoniazid and rifampicin.

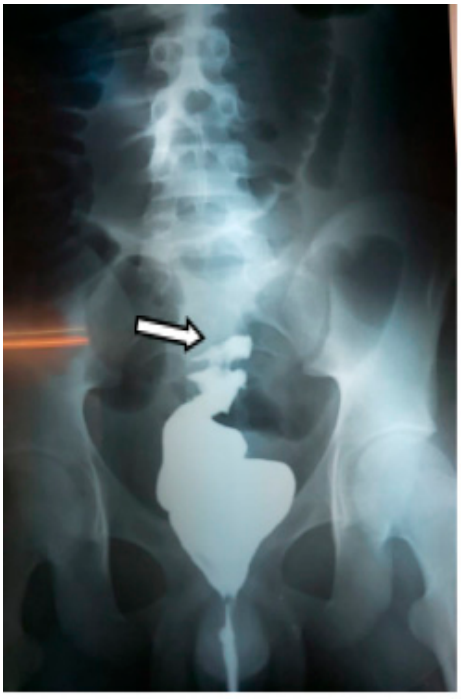
Once the diagnosis of abdominal tuberculosis and secondary rectal stenosis were confirmed, the patient started treatment with isoniazid, rifampicin, pyrazinamide, ethambutol, and meprednisone. Ninety-six hours after initiating

Figure 1. Computed tomography of the abdomen and pelvis; axial sections



The arrows show thickening of the colonic wall and trabeculation of the perirectal fat.

Figure 2. Study of the colon by enema



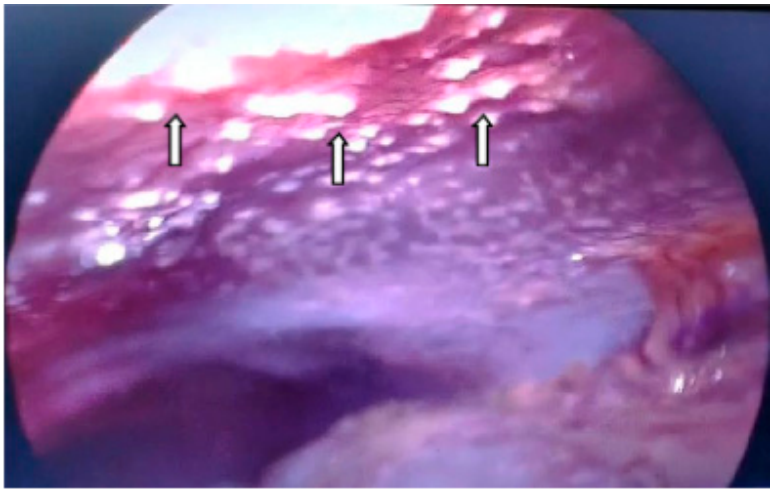
Contrast study of the colon by enema, which shows lumen narrowing 20 cm from the anal margin.

treatment, the patient did not have fever, his abdominal pain improved, and associated lab parameters showed a reduction in acute phase reactants (C-reactive protein: 6.2 mg/L). The patient completed 12 months of treatment; the first 2 months, with 4 drugs and the last 10 months, he received isoniazid and rifampicin, in addition to corticoid therapy during the first month with down-titration. Supplementary tests were normal, and there were no abdominal symptoms.

DISCUSSION

Abdominal tuberculosis may involve the gastrointestinal system, peritoneum, lymph nodes and, less frequently, solid organs. Peritoneal and intestinal involvement are the most

Figure 3. Exploratory laparoscopy



Miliary seeding is observed in the peritoneum.

common presentations.[2] The diagnosis of abdominal tuberculosis is complex and implies direct microorganism detection.[3,4]

Pathophysiological mechanisms include the ingestion of mycobacteria that may reach the gut through infected sputum, or the ingestion of cow's milk infected with *Mycobacterium bovis*, the lymphohematogenous dissemination from an infected source, and the direct dissemination to the peritoneum from adjacent sources.[5]

Abdominal tuberculosis has a non-specific presentation and a chronic course. In the case described here, the history of appendicitis 5 months before the definitive diagnosis may have corresponded to ileocecal tuberculosis. The patient's manifestations were consistent with those described in the bibliography,[6–8] where the most commonly described symptoms are abdominal pain (74%), weight loss (59%), nausea and vomiting (31%), changes in bowel movements (25%), and fever (20%). Differential diagnoses are varied, which leeds to the need of many tests to obtain a definitive diagnosis.

In the presence of high titers of anti-*Saccharomyces cerevisiae* antibodies (ASCA), Crohn's disease was taken into particular consideration. This disease is the main differential diagnosis as it presents similar clinical, radiological, endoscopic, and histopathological features. Use of ASCAs as a marker to differentiate both diseases is controversial because multiple studies have demonstrated increased titers in both conditions equally. A study carried out in Korea, which included patients with suspected Crohn's disease and intestinal tuberculosis, determined that ASCAs are useful as a marker with high specificity (90%) but low sensitivity (40%) for the detection of Crohn's disease; therefore, the diagnostic efficacy of its combination with interferon gamma (QuantiFERON) was assessed. The positive result of this combination has a specificity and a positive predictive value of 90% for the diagnosis of intestinal tuberculosis, so both ASCAs and QuantiFERON should be used to differentiate these diseases.[9] An important limitation of the latter is that it is unavailable in Argentina, so it was not possible to perform on our patient.

The most frequent complication in intestinal tuberculosis is lumen obstruction, which develops in 12–60% of patients, and stenosis, which may be evidenced by contrast studies.[8] This is what happened to our patient, in whom those findings made it necessary to rule out probable cancer and Crohn's disease with stenosis.[10]

High ASCA titers, together with an endoscopic pattern in the intestinal biopsy that may correspond to both diseases, led to consider starting a treatment that encompassed both diagnoses. However, this was ruled out because of the potential morbidity that an immunosuppressive therapy would entail in a patient with uncontrolled acute tuberculosis.[11] Consequently, a laparoscopic surgery was performed to collect a biopsy and sampling for direct testing methods and culture so as to define the therapeutic approach. A direct visualization of the lesions allowed us to finish obtaining the

necessary evidence to initiate treatment.

The development of *M. tuberculosis* in cultures is slow, so a positive result is usually delayed.[1] For this reason, the use of polymerase chain reaction has been proposed in some studies to increase the sensitivity (30–82.6%) and specificity (95–100%) of the diagnosis of abdominal tuberculosis,[8] in addition to the advantage of its rapid results. Its use is recommended taking into account that a negative result does not exclude the diagnosis.[12]

In the initial phase of treatment, pediatric patients with abdominal tuberculosis are indicated to start with four drugs: rifampicin, isoniazid, pyrazinamide, and ethambutol.[1] Concomitant treatment with corticosteroids reduces morbidity and mortality in patients with complications from fibrosis; however, the evidence is insufficient to recommend their routine use in pediatric patients with abdominal tuberculosis.[13]

In summary, although intestinal involvement due to this disease is not common, it is important to consider it in patients with non-specific symptoms associated with gastrointestinal manifestations. Abdominal tuberculosis is a diagnostic challenge, since a wide range of conditions are involved, with Crohn's disease as the main differential diagnosis, which treatment may exacerbate the course of the tuberculous infection. ■

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