



## CASE REPORT

# Acute Appendicitis Associated with Mesenteric Tuberculosis: A Case Report

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## Abstract

Acute appendicitis is the most common surgical abdominal pathology in the world; its highest frequency is in the population between 20 and 30-years-old. Gastrointestinal tuberculosis is a rare extrapulmonary manifestation, corresponding to 3% of cases and mainly involving the ileocecal region; appendicular involvement is rare. We report the case of a 20-year-old male, with a history of HIV diagnosed in the same hospitalization, without previous treatment and with a clinical picture compatible with acute appendicitis, finding data suggestive of gastrointestinal tuberculosis when performing the surgical procedure and subsequently confirmed by histopathological study.

## Keywords

Appendicitis, Gastrointestinal tuberculosis, Acute abdomen, Extrapulmonary tuberculosis

## Introduction

Acute appendicitis is the most common surgical emergency in the world; the risk of suffering from this pathological entity is established at 7-8%, with a slight increase in men compared to women of 1.4:1 [1,2].

Tuberculosis is still considered a public health problem, especially in our country Mexico; it's considered the second cause of death caused by a single infectious agent, with an estimate that 95% of cases occur in developing countries and 5% in industrialized ones [3]. The incidence in Mexico has increased in the last decade, so it is estimated that more than 19,000

new cases are diagnosed each year [3].

Mesenteric tuberculosis is a rare entity that represents 0.5% of new cases of tuberculosis and 11% of extra-pulmonary forms. *Mycobacterium tuberculosis* can be located in any organ of the abdominal cavity, the most frequent location being the ileo-cecal region by up to 75%, while appendicitis secondary to mesenteric tuberculosis ranges between 0.1 to 0.6% with respect to the abdominal location [2,4]. The symptoms and findings on physical examination are nonspecific and indistinguishable from other causes of appendicitis, which delays the diagnosis until histopathological confirmation.

## Clinical Case

A 20-year-old male patient, originally and resident of Queretaro, Mexico, with a non-pathological personal history of tobacco, alcohol and cocaine consumption periodically since he was 17-years-old. Upon admission, he denied any pathological history of importance for the current illness. He reported the onset of a clinical picture lasting one week at the time of admission and evaluation, at the beginning with stabbing pain in the hypogastrium, with an increase in pain with effort, without mentioning mitigating factors, subsequently such pain migrated to the right iliac fossa where it was located. He denied the presence of nausea, vomiting, anorexia. He also reports repeated symptoms of unquantified fever with the presence of chills, the



**Figure 1:** Mass attached to the cecum's medial wall in the mesenteric area.

presence of intermittent diarrheal episodes; self-medicated analgesics and antipyretics by the patient is mentioned; however, because he did not show improvement, he went for evaluation.

On physical examination, the patient was neurologically active and reactive to the external environment with the presence of algal facies, in the cardiovascular area with the presence of tachycardia, 100 beats per minute, normotensive, in the respiratory area with oxygen saturation by pulse oximetry of 97%, respiratory rate of 18 breaths per minute, without reporting dyspnea, on auscultation with adequate entry and exit of air in both lungs, in the abdominal area there is pain on palpation in the right iliac fossa, positive McBurney sign, in addition to palpating an apparent mass in the same area, signs of Bloomberg, Psoas, Obturator and Talopercussion of the right pelvic limb were also positive, extremities with preserved ranges of movement, without compromise.

Among the auxiliary studies requested, a hemoglobin of 15.5 g/dL, hematocrit 46.8%, platelets  $268 \times 10^3/u$ , leukocytes  $5.61 \times 10^3/uL$ , neutrophils 65.2%, total bilirubin 0.82 mg/dl, bilirubin were found. Direct 0.42 mg/dl, indirect bilirubin 0.39 mg/dl, with non-pathological urine examination.

It was decided to admit him to the operating room, approaching it through a McBurney-type incision, with the following surgical findings: upon entering the cavity, reaction fluid of approximately 15 cc with serous characteristics was found, a tumor measuring 4 centimeters long by 4 centimeters wide and thickening of the medial wall of the cecum in the mesenteric area (Figure 1), in addition to presenting multiple lesions adhered to the cecum and adjacent mesentery, such

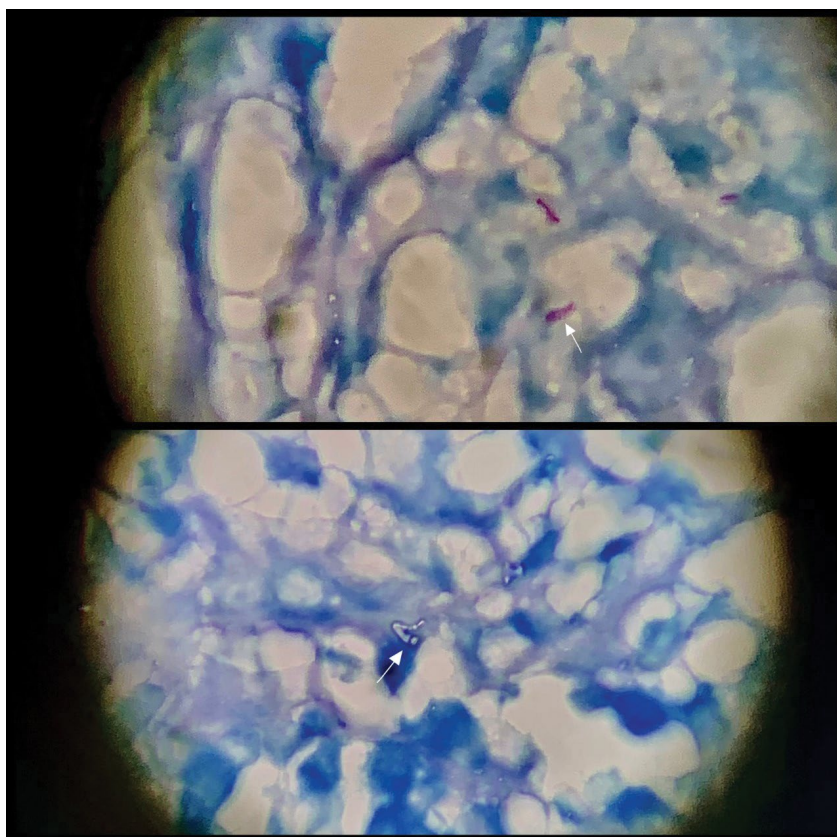
lesions with well-defined edges and whitish color, hard consistency, of multiple dimensions, the largest being 3 centimeters in length and 2 cm wide, a biopsy was taken of such a lesion of the mesentery (Figure 2), it was found adhered to such lesions of the cecum, a retrocecal appendix 5 cm long by 1.5 cm wide, edematous, with few layers of fibrin in the distal third of the appendix, without the presence of macroscopic perforation, an appendectomy was performed and it was managed with a transfixive suture with 2-0 polyglactin 910 and subsequently a pouchet was performed to ligate the base. It was decided to end the surgical after that.

During hospitalization, due to the intraoperative findings, it was decided to take tumor markers, within which no significant increase in any serum marker was observed; it was also decided to request a viral panel, with the only relevant result being a reactive ELISA test for the Human Immunodeficiency Virus. Such diagnosis was subsequently confirmed with Western Blot, and a consultation was carried out with Infectology and Epidemiology.

Subsequently, histopathology results are obtained, where acute suppurative appendicitis (phase 2) with lymphoid hyperplasia and stromal fibrosis at the level of the appendiceal tip is reported; congestive serositis, peritoneal lesion with chronic granulomatous inflammation with caseous necrosis and presence of bacillary microorganisms, compatible with Tuberculosis infection; Ziehl-Neelsen histochemical staining was indicated and was found to be positive for the presence of *Mycobacterium tuberculosis bacilli* (Figure 3). We started after microbiological confirmation of anti-tuberculosis treatment with rifampicin, isoniazid, pyrazinamide and ethambutol.



**Figure 2:** Biopsy of caseous granuloma, found in a mesentery adjacent to the cecum.



**Figure 3:** White arrows indicating alcohol-resistant acid bacilli (BAAR) in a mesenteric lesion cut with Ziehl-Nielsen stain, compatible with Tuberculosis infection.

The patient was discharged with good oral tolerance; however, in the follow-up visit, the presence of a colcutaneous fistula after the previous event was diagnosed.

### Conclusions

Tuberculosis continues to be a public health problem. In our country, most tuberculosis cases arise in isolation

(37.9%), generating nearly two million deaths a year, and 98% of them in developing countries [3,5]. The most frequent causal agent is *Mycobacterium tuberculosis*. In Mexico, where pulmonary TB is considered an endemic public health problem, infection in adults is caused 95% of the time by *M. tuberculosis* and in a lower proportion by *M. bovis* [3].

Among the factors responsible for this increase is

infection by the human immunodeficiency virus (HIV), especially in underdeveloped countries such as those in sub-Saharan Africa; in countries with rapid economic growth it is associated with diabetes mellitus [6].

Extrapulmonary tuberculosis is a disease that can affect any organ of the human body, secondary to a spread of a pulmonary focus and which is facilitated by states of immunosuppression, especially in patients carrying HIV. It is transmitted by direct contact and spreads through the lymphohematogenous route, so the bacillus can reach any site in the body including the digestive tract and the cecal appendix [5,6].

Tuberculosis-associated appendicitis can occur as a primary or secondary process. In the secondary form there is evidence of TB infection in other systems and the appendix becomes infected through hematogenous spread, lymphatic spread, by contiguity or ingestion of infected sputum. The clinical presentation in this type of patient with extrapulmonary expression is completely atypical, which delays accurate diagnosis and management. Patients may present with acute, subacute or chronic symptoms. They present with chronic recurrent abdominal pain, hyporexia, nausea and occasional vomiting, until urgent evaluation is made for acute abdomen, as is the case of our patient [2,7,8].

Occasionally, imaging studies can guide the diagnosis when an inflammatory mass is evident in the ileocecal area, with asymmetric thickening of the valve, lymph nodes with regional enhancement, ascites and mesenteric thickening. The pathognomonic lesion of peritoneal tuberculosis is seeding of the serosa with miliary tubercles, which are thin gray-white lesions [4,7].

In the case in which data suggestive of gastrointestinal tuberculosis is presented, the isolation and microbiological identification of *Mycobacterium tuberculosis* is necessary. The methods with greater sensitivity and specificity are culture, polymerase chain reaction and Ziehl-Neelsen staining (ZN), since it increases the sensitivity and specificity of the histopathological diagnosis of appendiceal tuberculosis; The latter being the most frequently used given its low cost, with timely results for the start of an anti-fimic scheme [1,9]. In our case, as soon as the suspicion of tuberculosis was obtained, staining was performed where the etiological agent of the condition was confirmed.

Tuberculous appendicitis is an extrapulmonary manifestation of active disease, which is usually treated

according to the WHO guidelines of 6 months treatment duration), two months of isoniazid/rifampicin/pyrazinamide/ethambutol, followed by four months of in conjunction with surgical management [7,10].

The main complications are intestinal obstruction, in 15% of cases; enteroenteric fistulas, in 2% to 30%; intestinal perforation, between 1% and 15%, and bleeding between 2% and 24% [4].

This case demonstrates how important it is to be familiar with the multiple etiological factors of appendicitis, where the level of initial suspicion of the pathology is unlikely and to rely on different diagnostic methods to be certain of the cause of the condition and start timely treatment, as is our case.

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