

# Acute Tuberculous Appendicitis, a Rare Entity

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**Abstract:** Tuberculous appendicitis is a rare disease, with an overall incidence of between 1.5-3.0% among tuberculosis patients. It was first described by Corbin et al in 1873 and since then has been rarely recorded in publications and case reports. In the USA, extrapulmonary disease is seen in around 20-30% of tuberculosis patients, with the most common extrapulmonary manifestations being bone (30%), urinary tract (24%) and lymph node (13%) involvement. A high index of suspicion is required to make the diagnosis of appendicular tuberculosis, although it can cause damage to the appendix without other signs of localized disease. We report a case of a woman diagnosed with primary tuberculous appendicitis in a patient with human immunodeficiency virus (HIV), with evidence of extra-intestinal disease.

**Keywords:** Tuberculosis; Gastrointestinal; Tuberculosis, extrapulmonary; Appendicitis.

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## 1. Introduction

There has been a global decrease in the prevalence of tuberculosis over the last decade, probably related to the global efforts of developed and developing countries to control the disease [1]. Tuberculous appendicitis is a rare disease, with a global incidence of between 1.5-3.0% among tuberculosis patients [2]. First described by Corbin et al in 1873, it has since been rarely recorded in publications and case reports [3]. The diagnostic challenge of tuberculous appendicitis lies in the fact that it manifests clinically in the same way as in non-tuberculous patients; however, the only way to confirm the diagnosis is by testing for mycobacteria in the histopathological findings [3].

Patients often present with no previous history of pulmonary tuberculosis or even symptoms corresponding to the condition. According to an epidemiological survey, only 14% of patients with gastrointestinal tuberculosis have findings compatible with tuberculosis on chest X-rays [4]. In the USA, extrapulmonary disease is seen in around 20-30% of tuberculosis patients, with the most common extrapulmonary manifestations being bone involvement (30%), urinary tract involvement (24%) and lymph node involvement (13%) [3, 4]. Tuberculous appendicitis is even less common, accounting for only 10% of patients with intestinal manifestations, or 0.03% of extra-pulmonary infections [5].

## 2. Case Report

A 53-year-old woman presented to the emergency department of the Emilio Ribas Institute of Infectious Diseases (IIER) with abdominal pain in the right iliac fossa for three days associated with an unmeasured fever, inappetence, chills and nausea without vomiting. On admission, he had no intestinal or genitourinary symptoms. She had a medical history of being a human immunodeficiency virus (HIV) carrier with regular treatment

and undetectable viral load and type 2 diabetes mellitus on regular use of NPH and regular insulin.

On admission, the patient had a pulse of 82 beats per minute and a temperature of 36.5°C with blood pressure of 120x73 mmHg. Abdominal examination showed pain on palpation of the right iliac fossa with positive sudden decompression at Mc Burney's point (Bloomberg +). Laboratory tests on admission showed only altered leukocytes of 13,600 cells/mm<sup>3</sup> with a shift to the left and C-reactive protein of 276 mg/L. A computed tomography (CT) scan of the abdomen and pelvis with intravenous contrast was ordered, which showed a homogeneous collection in the cecum measuring 6.5 x 5.5 cm associated with densification of fatty tissues adjacent to the cecal appendix, corresponding to complicated and suppurated acute appendicitis (Figures 1 and 2).

**Figure 1.** Cross-sectional CT scan of the abdomen and pelvis showing a collection in the right iliac fossa at the base of the caecum measuring 6.5x5.5cm with a liquid level associated with densification of the peri appendicular fat.



The patient was diagnosed with complicated acute appendicitis and underwent conventional appendectomy. The intraoperative findings were compatible with those shown on the CT scan, with a collection near the base of the cecum which was drained and sent for cytological analysis and culture, as well as signs of acute appendicitis with the presence of granulomatous tissue at the base of the appendix. The appendectomy was carried out and the appendix sent for anatomopathological examination (Figure 3). Histopathological examination of the appendix showed an inflammatory process with granuloma formation and the presence of a positive bacillus in the sample (Figures 4 and 5).

The patient made a good recovery in the postoperative period, receiving a diet on the 2nd postoperative day and intravenous antibiotic therapy with ciprofloxacin and metronidazole for seven days. She was discharged from hospital on the 11th postoperative day after starting treatment for tuberculosis with the RIPE regimen (rifampicin, isoniazid, pyrazinamide, and ethambutol). The patient is currently being monitored on an outpatient basis by the infectiology team with no clinical or surgical complications.

**Figure 2.** Coronal CT scan of the abdomen and pelvis showing a collection in the right iliac fossa at the base of the caecum measuring 6.5 x 5.5 cm with a liquid level associated with densification of the peri appendicular fat.



### 3. Discussion

Appendicular tuberculosis is an extremely rare and little-known entity, first described by Corbin in 1873. However, this appendicular involvement is extremely rare, and its pathogenesis is still poorly explained [5, 6]. The bacillus can infiltrate the

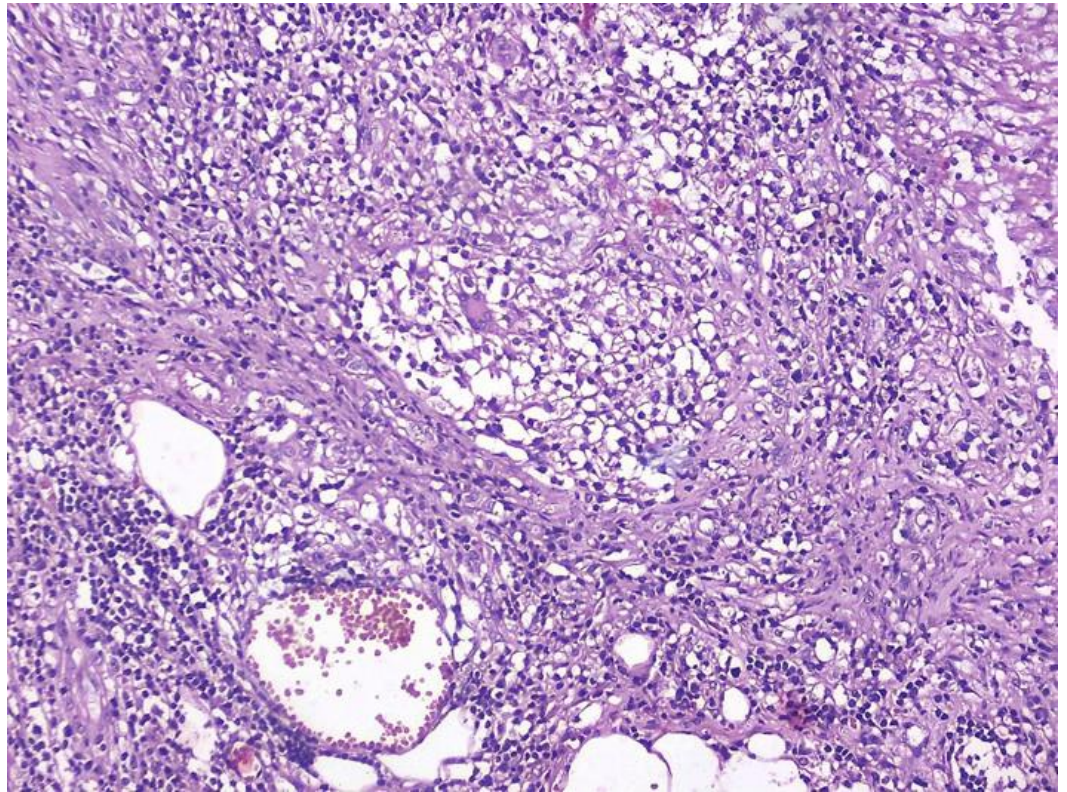
gastrointestinal tract via the hematogenous, lymphatic, and intraluminal routes through the ingestion of infected sputum resulting from pulmonary tuberculosis or contaminated food [7]. Three clinical types of tuberculous appendicitis are described in the literature: 1. initial type with a chronic form characterized by abdominal pain, diarrhea, and sporadic vomiting, possibly confused with ileocecal tuberculosis; 2. acute type with symptoms like acute appendicitis as observed in our clinical case, and 3. latent and asymptomatic type, typically diagnosed in cytology or routine examinations such as colonoscopy [8-10].

**Figure 3.** Macroscopic aspect of the appendix showing the presence of granulomatous tissue at the appendicular base in the topography of the drainage collection.

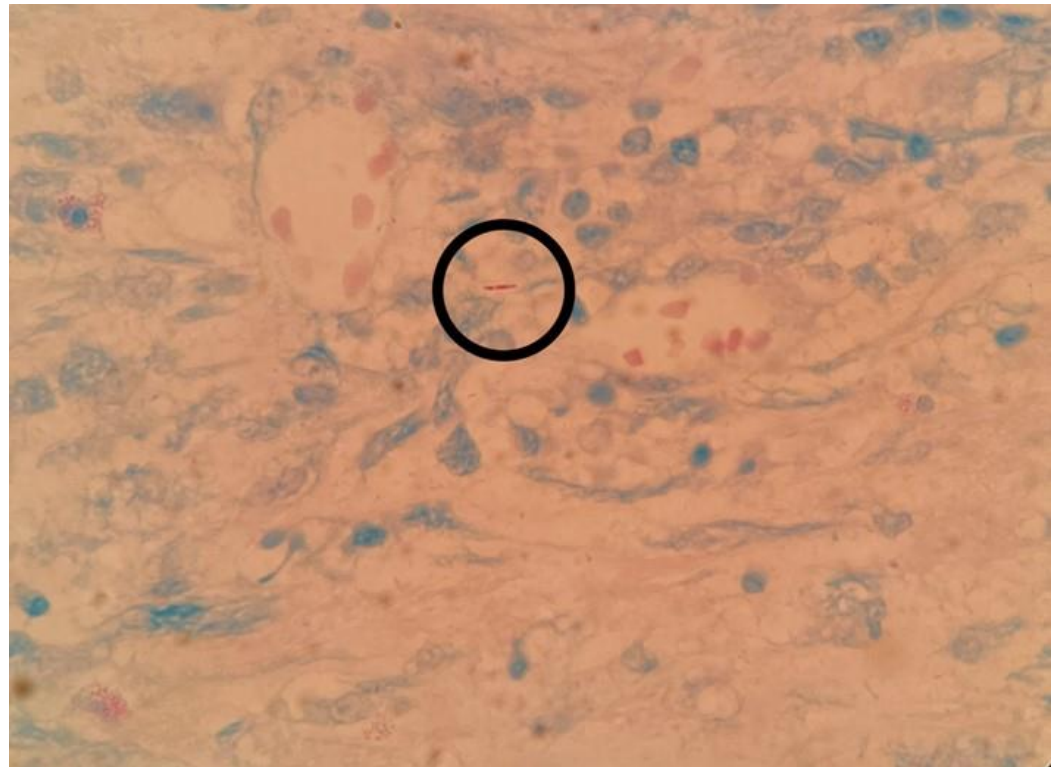




**Figure 4.** Section of the appendix stained with H&E (200x) with the presence of a mal-formed epithelioid granuloma.



**Figure 5.** Section of the appendix with Ziehl-Neelsen stain (1000x) showing the presence of a positive bacillus in the appendicular tissue.



The preoperative diagnosis of appendicular tuberculosis is a challenge, since there are no pathognomonic clinical, biological, or radiological characteristics to suggest it. Consequently, confirmation of the diagnosis can only be obtained through histopathological examination. This case report is consistent with the findings in the existing literature [11, 12]. Macroscopically, the appendix can be normal, ulcerative, or hypertrophied and histopathological examination reveals a tuberculous granuloma with central caseous necrosis surrounded by multiple Langhans-type giant cells located in the appendix, which is pathognomonic of tuberculosis, with direct identification of the bacillus not always observed [14, 15].

Many authors, including Scott et al, have discussed whether appendicular tuberculosis is preceded by infection of the cecum by mycobacteria, as suggested by the frequent presence of ileocecal involvement in necropsy studies [13]. Tuberculous infection of the appendix can result from contiguous infection, but also by hematogenous route to a distant focus, lymph nodes, lungs and even bone. In the medical literature, there are no patients diagnosed with appendicular tuberculosis prior to appendectomy, probably due to the low index of suspicion and correlation with very frustrating symptoms [13]. Although the initial treatment is primarily surgical due to the diagnosis of acute appendicitis, the treatment of appendicular tuberculosis also requires the use of antibiotic therapy with rifampicin, isoniazid, pyrazinamide and ethambutol for 2 months followed by maintenance with isoniazid and rifampicin for a further 7 months, as recommended by the World Health Organization (WHO) [15].

#### 4. Conclusion

We still don't have the means to identify appendicular tuberculosis preoperatively and, instead of presenting a definitive diagnostic method, the characterization of patients at high risk due to immunodeficiency should always be considered. The clinical history of acute appendicitis should raise the suspicion of tuberculous appendicitis in patients in the risk group. With this data, we can raise the index of suspicion, although the preoperative diagnosis is still uncertain.

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**Conflicts of Interest:** None.

**Supplementary Materials:** None.

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