International Journal of Medical Science and Clinical Research
www.journalofmedical.com
Online-ISSN: 2664-7761, Print ISSN: 2664-7753
Received: 22-10-2025, Accepted: 21-11-2025, Published: 06-12-2025
Volume 7, Issue 2, 2025, Page No. 44-46

A rare case of appendicular tuberculosis: A case report

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Abstract
Tuberculosis in all its forms remains a public health problem in Morocco, despite the efforts of the state in terms of prevention and treatment. Isolated appendicular TB is an uncommon form of extrapulmonary TB. We report a case of a 35-year-old woman admitted for diffuse abdominal pain and vomiting associated with a deterioration in her general condition, including weight loss of 15 kg in two months and night sweats. Physical examination and abdominal ultrasound confirmed appendicitis. Surgery was performed and revealed on histopathological examination of the resected appendix the diagnosis of tubercular appendicitis. The patient was initiated on the conventional antitubercular regimen for six months and would be followed up appropriately. This case report highlights the importance of histopathological examination of appendicectomy specimens in order to diagnose rare diseases such as primary TB of the appendix.

Keywords: Tuberculosis, Morocco, public health, extrapulmonary tb, appendicular tuberculosis, tubercular appendicitis

Introduction

Tuberculosis is an infectious disease caused by Mycobacterium tuberculosis. It is the 9th cause of death worldwide and the 1st cause in relation to a single infectious agent, even before the human immunodeficiency virus [1]. Tuberculosis (TB) is an endemic disease in Morocco. In 2021, 29,327 cases were identified which corresponds to an incidence rate of 80 new cases per 100,000 inhabitants, all forms combined [2]. The intestinal localization is characterized by various digestive manifestations and can cause mainly in its ileocecal localization, a diagnostic problem mainly with Crohn's disease [3]. According to necropsy studies, the affected areas in increasing order are: duodenum, colon, ileocecal region and ileum [4]. Isolated tuberculosis of the appendix is rarely reported [4]. The aim of this study is to report a case of appendicular TB revealed by appendicular peritonitis in the maternity department of the Ibn Rochd University Hospital Center of Casablanca (Morocco) in 2023.

Case Report

A 35-year-old patient with no particular medical history and no known exposure to tuberculosis, well vaccinated according to the Moroccan national immunization program (BCG in the first week of life) approximately seven months pregnant, was admitted to the maternity ward with diffuse abdominal pain and vomiting associated with a deterioration in her general condition, including weight loss of 15 kg in two months and night sweats.

On examination, she was conscious, apyrexic (36.5°C) polypneic (30/min) and normocard (80 /min). Her blood pressure was 120/60 mmHg. The abdominal examination noted distended abdomen with tenderness in the right iliac fossa over the McBurney point without any palpable mass. The rectal examination did not reveal nodules, masses, or tenderness. Examination of her respiratory and cardiovascular systems was normal.

Blood tests revealed microcytic and hypochromic anemia with 11.4 g/dL of hemoglobin (normal range 12-16 g/dL), and hyperleukocytosis with a count of 11.8 x 10 (normal range 4.5-11 x 10) with neutrophilia and no lymphopenia. C-reactive protein (CRP) was elevated to 160 mg/L (normal range < 1 mg/L). The rest of the blood investigations were normal. The Mantrels score, also recognized as the Alvarado score, was 8. Abdominal ultrasonography was performed and revealed a large amount of ascites. An abdominal CT scan was also performed and showed an enlarged and inhamed appendix of 12.5 mm long complicated by peritonitis.

The patient was subjected to a laparoscopic appendicectomy for acute appendicular peritonitis. On peritoneal cavity exploration, multiple inhamed nodules were observed in the ileum, the caecum and mesentery. Ascites was explored and evacuated. The appendix was in retrocaecal position. Appendicectomy and peritoneal cleansing were performed, and the specimen was sent for histopathological examination. A prophylactic caesarean section was performed on day 2 post-operatively.

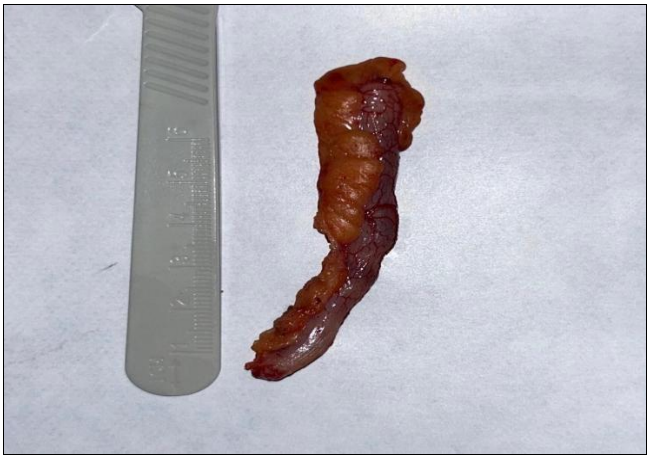

Fig 1: Post-operative picture of the inhamed appendix

Macroscopically, the swollen inhamed appendix measured 7.5cm in lenght and 0, 5 cm of diameter (normal diameter < 6mm). Cut surface showed white pseudomembranes. The lumen was obliterated by an appendicolith. On microscopic

examination, appendix sections revealed along in the thickened wall, multiple gigantocellular epithelioid granulomas and central caseous necrosis. Ziehl Neelsen stain for acid fast bacilli was noncontributory. Based on the location, the diagnosis of tubercular appendicitis was confirrmed (Fig 1).

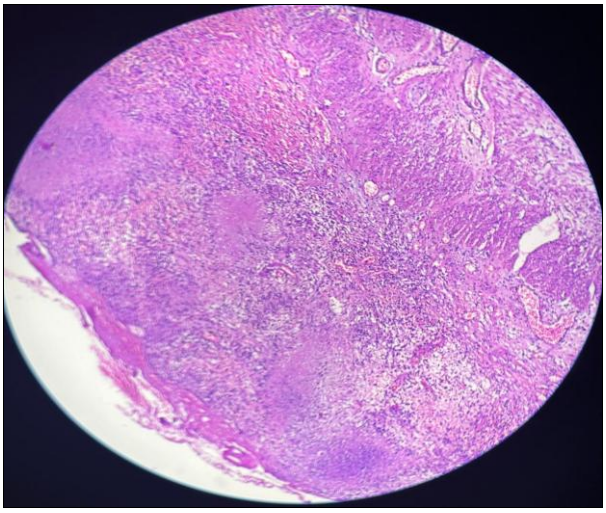

Fig 2: Histopathologic aspects of tuberculosis: multiple epithelioid granulomas with giant cells

Further investigations were performed. Sputum examination for acid-fast bacillus was negative. Intradermal tuberculin reaction was positive (16mm) (normal range < 15mm for a vaccinated person). Chest x-ray showed no abnormality. HIV status was negative.

Antitubercular treatment was started for six months with rifampicin (10 mg/kg/day), isonizid (5 mg/kg/day), pyrazinamid (30 mg/kg/day) and ethambutol (20 mg/kg/day) for two months followed by four months of isonizid and rifampicin (2HRZE/4HR), on a daily basis.

During the follow-up visits, the patient had a favorable postoperative recovery. The surgical scar was clean, and healed successfully. The patient tolerated the antitubercular treatment with no side effects. The abdominal symptoms were resolved within three months and ascites disappeared. A full recovery has been marked to date by the end of the treatment.

Discussion

Worldwide, tuberculosis is on the rise in all its forms, 1 in 5 patients with tuberculosis in the European Union has an extra-pulmonary form, intestinal tuberculosis ranks 6th among extra-pulmonary localizations and the appendix is incriminated in only 1.5 to 3% of all cases of intestinal tuberculosis [5-8].

Theoretically, digestive tuberculosis can reach all segments with an increased tropism for parts rich in lymphoid tissue such as the terminal ileum and the ileo-caecal junction posing a serious diagnostic problem with Crohn's disease, the appendix is incriminated in only 1.5 to 3% of cases [7-9].

The pathogenesis of intestinal tuberculosis, including appendicular location, is poorly understood. Three routes of contamination are possible: hematogenous contamination, local extension or from contaminated sputum swallowed by patients with active pulmonary tuberculosis [10, 11].

Appendicular tuberculosis has 3 anatomical forms: Chronic: characterized by a succession of chronically evolving waves of abdominal pain associated with vomiting and diarrhea, Latent: the appendix is macroscopically almost normal, the diagnosis is made by histology, Acute: the picture is that of a classic suppurated appendicitis [11].

Clinically, appendicular tuberculosis is most often manifested by a classic appendicular syndrome to which is added weight loss (66%), fever (35-50%) and diarrhea (20%), which is evidence of tuberculosis impregnation [11,12].

The diagnosis should be suspected and evoked whenever the abdominal symptoms are suspicious, the patient is living in an endemic area and is immunocompromised [1]. The paraclinical evaluation must consider the epidemiological situation of the country and the material resources available for this purpose [1].

The diagnostic approach remains problematic; the biology is not at all specific, with a biological inflammatory syndrome with elevated white blood cells, anemia and increased CRP [13, 14]. The intradermal reaction is neither sensitive nor specific [11]. The interest of the QuantiFERON-TB test lies essentially in the absence of cross-reaction with the BCG vaccine, which may be responsible for an intradermal reaction > 5 mm in the absence of tuberculosis. Thus, the QuantiFERON-TB is more specific than the intradermal reaction in the BCG vaccinated population [10]. Intraoperative diagnosis is almost impossible the histological study brings the diagnosis of certainty by the demonstration of an epithelioid and gigantocellular granuloma centered by a caseous necrosis and delimited by a lymphocytic corona.

Macroscopically, appendicular tuberculosis can be divided into 3 main aspects: Normal, Hypertrophic, pseudotumor and Ulcerated: which may be complicated by abscess, perforation or fistula [11]. Tuberculosis must be suspected at the slightest doubt, even if the history does not reveal any notion of contagion [15].

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 TB (Fig 2). Hence, granulomatous appendicitis can be linked to various diseases, including infectious conditions such as Yersinia Enterolitica and parasitic infections. Additionally, non-infectious causes, like Crohn's disease, sarcoidosis, diverticulitis, and the presence of foreign bodies, may also be associated [16, 17, 18].

The treatment of appendicular tuberculosis is multimodal; surgery should only be performed in the event of complications; a simple appendectomy has been proposed by some authors as a treatment for isolated appendicular tuberculosis; this attitude has been abandoned and antibacillary chemotherapy should always be administered for 6 months based on (Streptomycin, Rifampicin, Isoniazid, Pyrazinamide) for two months and Rifampicin, Isoniazid for four months [1, 19]. In case of persistent diagnostic doubts, a trial antibacillary treatment must be initiated and only the response to this treatment is taken as a major diagnostic criterion [20]. The parenteral route is preferred in case of incoercible vomiting or digestive malabsorption; treatment should be continued for up to 9 months in patients with AIDS [5]. Resistance to chemotherapy is possible, a situation that requires rapid and appropriate action [21].

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