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Case Series

Pseudo-Tumoral Form of Intestinal Tuberculosis: Diagnostic Challenges (Report of Four Cases)

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Abstract

Intestinal tuberculosis is a rare form of extrapulmonary tuberculosis with a predilection for the ileocecal region. The pseudotumoral presentation is particularly uncommon and poses a major diagnostic challenge because of its clinical, endoscopic, and radiological resemblance to gastrointestinal malignancies and inflammatory bowel disease.

We report a series of four cases of pseudotumoral ileocecal tuberculosis managed in the Gastroenterology Department in Casablanca. The diagnosis was established through colonoscopy with histopathological examination and confirmed by molecular diagnostic techniques, notably polymerase chain reaction (PCR) and the GeneXpert assay. Antituberculosis therapy resulted in favorable outcomes in most patients, while surgical intervention was reserved for complicated cases.

Keywords: Intestinal Tuberculosis; Pseudo-Tumoral Form; PCR; GeneXpert Assay; Antituberculosis Therapy

Abbreviations

TB: Tuberculosis; MTB: Mycobacterium Tuberculosis; ITB: Intestinal Tuberculosis; IBD: Inflammatory Bowel Disease; MTB PCR: Mycobacterium Tuberculosis Polymerase Chain Reaction; CRP: C-Reactive Protein; IGRA: Interferon-Gamma Release Assays; HIV: Human Immunodeficiency Virus; PCR: Polymerase Chain Reaction

Introduction

Tuberculosis (TB) is a contagious infectious disease caused by *Mycobacterium tuberculosis*, primarily affecting the lungs. However, extrapulmonary forms remain relatively common in endemic countries, accounting for nearly 43% of all cases in Morocco [1]. Intestinal tuberculosis (ITB) represents a rare manifestation worldwide, estimated to occur in approximately 2% of cases, with a marked predilection for the ileocecal region [2,3]. In some uncommon clinical presentations, ileocolic involvement may appear in a pseudotumoral form that mimics gastrointestinal malignancy or inflammatory bowel disease (IBD), potentially delaying the management of an otherwise curable condition.

We report four cases of pseudotumoral intestinal tuberculosis in order to highlight the limitations of cross-sectional imaging despite its advances, as well as the contribution of molecular diagnostic techniques in confirming the diagnosis.

Patients and observations

Case 1

A 33-year-old man, an active chronic smoker with a 10 pack-year history, with no known comorbidities and no recent risk factors for viral or tuberculous exposure, was admitted for diffuse abdominal pain evolving over two months. The symptoms occurred in a context of febrile sensations, night sweats, and general deterioration characterized by anorexia and unquantified weight loss.

On admission, the patient was febrile (38 °C) with a normal body mass index (IBD) of 21 kg/m^2. Clinical examination revealed diffuse abdominal tenderness, more pronounced in the right iliac fossa, associated with shifting dullness of the flanks, without palpable abdominal mass or peripheral lymphadenopathy. Laboratory investigations showed leukopenia (2880 cells/mm^3) and lymphopenia (850 cells/mm^3), with an elevated C-reactive protein (CRP) level of 85 mg/L and a positive HIV serology. The erythrocyte and platelet counts, as well as liver function tests were normal.

Abdominal computed tomography revealed regular, substenotic wall thickening of the right colon measuring 14.6 mm, extending to the cecum over a length of 100 mm and resulting in upstream small-bowel dilatation estimated at 35 mm. These findings were associated with a moderate amount of peritoneal fluid and infracentimetric mesenteric and right external iliac lymphadenopathy (Figure 1).

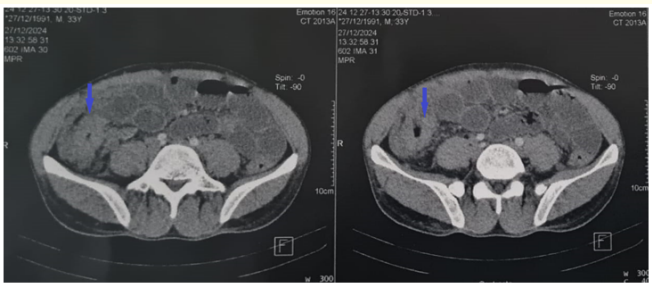

Figure 1: Contrast-enhanced abdominopelvic CT showing circumferential substenotic thickening of the right colon extending to the cecum.

Colonoscopy revealed an ulcerovegetative lesion of the right colon extending to the cecum and the ileocecal valve, which appeared stenotic (Figure 2). Histological examination showed granulomatous colitis with tuberculoid features without caseous necrosis. To differentiate tuberculosis from ileocolic Crohn's disease, molecular testing for *Mycobacterium tuberculosis* DNA using polymerase chain reaction (PCR) on tissue biopsies was performed and returned positive.

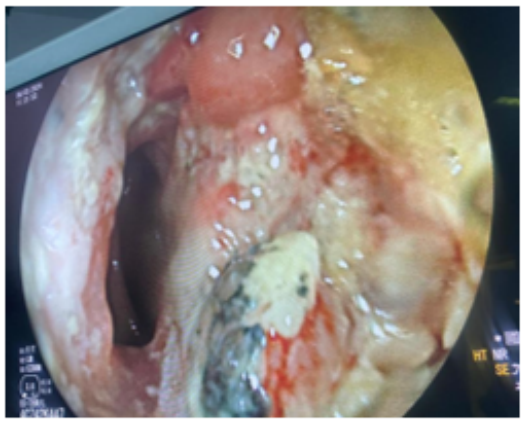

Figure 2: Colonoscopy showing a substenotic ulcerovegetative lesion of the right colon.

Despite the absence of respiratory symptoms, a chest computed tomography scan was performed to investigate possible pulmonary primary infection. The examination revealed a small right-sided pleural effusion associated with multiple micronodules in the left apex, suggestive of pulmonary tuberculosis. The diagnosis was confirmed by a positive GeneXpert test on sputum samples.

The patient was started on antiretroviral therapy along with antituberculosis treatment according to the standard regimen (2RHZE/4RH) for six months. The clinical course was favorable, with resolution of symptoms and normalization of inflammatory markers by the third month of treatment.

Case 2

A 50-year-old woman with no significant past medical history, presented with a two-month history of right flank pain associated with diarrhea, occurring in a context of general deterioration and febrile sensations. Laboratory investigations revealed lymphopenia (918 cells/mm^3) and a markedly elevated CRP level of 244 mg/L.

Given the marked inflammatory syndrome, an abdominopelvic computed tomography scan was performed, revealing multiple deep abdominal lymphadenopathies measuring approximately 1 cm and a 6-cm polypoid mass of the cecum, prompting colonoscopic evaluation. Colonoscopy showed an ulcerovegetative stenosing lesion of the cecum extending to the ileocecal valve (Figure 3). However, histopathological examination of the biopsy samples did not reveal any specific findings. Similarly, tumor marker levels, including carcinoembryonic antigen (CEA) and carbohydrate antigen 19-9 (CA 19-9) were normal. A second colonoscopy was therefore performed, which allowed detection of *Mycobacterium tuberculosis* using polymerase chain reaction (PCR) on tissue biopsy samples.

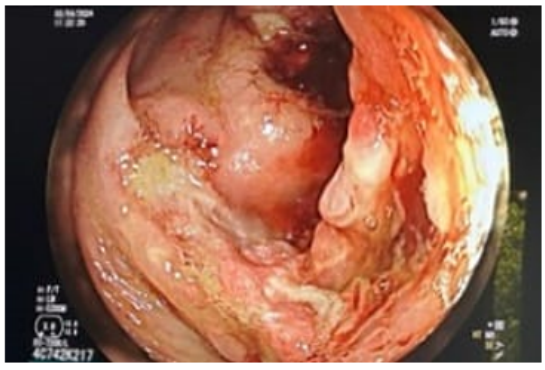

Figure 3: Colonoscopy showing an ulcerovegetative mass of the cecum extending to the ileocecal valve.

Further investigations, including a GeneXpert test on sputum samples and HIV serology, confirmed the diagnosis of multifocal tuberculosis associated with HIV infection. The patient was therefore referred to the infectious diseases department for further management.

Case 3

We report the third case of a 46-year-old man, initially diagnosed with ileocecal Crohn's disease in a private medical center. The diagnosis was based on clinical findings of diarrhea associated with chronic abdominal pain, and on endoscopic evidence of multiple ulcerations at the ileocecal junction, with histology showing non-necrotizing granulomatous colitis. The patient was initially treated with corticosteroids followed by Azathioprine. Three months later, the patient developed fever and night sweats with persistence of the other symptoms, requiring hospital admission.

Laboratory investigations revealed a nonspecific inflammatory syndrome characterized by hypochromic microcytic anemia (hemoglobin 8.4 g/dL), mild thrombocytosis (451 000/mm^3), and an elevated CRP level of 86 mg/L. Lymphopenia (750 cells/mm^3) was also noted, while HIV serology was negative and the interferon-gamma release assay (IGRA) was positive.

Abdominopelvic computed tomography revealed diffuse, regular thickening of the small bowel loops extending to the terminal ileum (maximal thickness 11 mm), associated with submucosal edema, mesenteric fat stranding, and multiple celiomesenteric lymph nodes, the largest measuring 13 mm. At this stage, either an inflammatory flare-up of Crohn's disease or reactivation of latent tuberculosis was suspected. Colonoscopy revealed a retracted and ulcerated ileocecal valve associated with ulcerated right-sided colitis (Figure 4). Polymerase chain reaction (PCR) testing performed on biopsies obtained from ileal ulcers detected *Mycobacterium tuberculosis*, leading to the initiation of antituberculosis therapy.

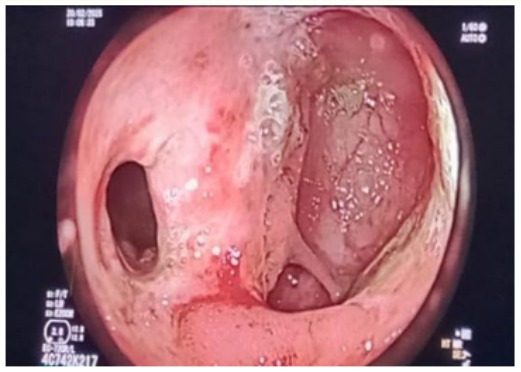

Figure 4: Ulcerated and retracted ileocecal valve on colonoscopy.

Due to the lack of clinical improvement after two months of treatment, a second colonoscopy was performed, revealing an ulcerovegetative mass of the cecum associated with an ulcerated and stenotic ileocecal valve (Figure 5). A repeat PCR test for *Mycobacterium tuberculosis* remained positive. In addition, testing for Rifampicin resistance was performed and returned negative. The case was subsequently discussed at a multidisciplinary team meeting, and continuation of standard antituberculosis therapy was recommended.

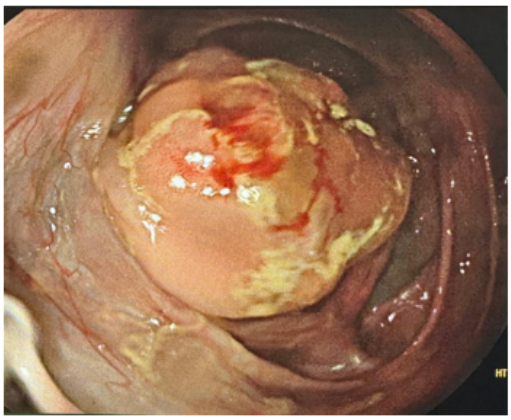

Figure 5: Colonoscopy showing an ulcerovegetative mass of the cecum.

Due to clinical deterioration, notably the development of subocclusive episodes after six months of treatment, the patient underwent ileocecal resection while antituberculosis therapy was continued. The patient was subsequently lost to follow-up.

Case 4

The fourth case concerns a 53-year-old man, an active chronic smoker. He had been diagnosed at the age of 18 with lymph node tuberculosis and was declared cured after six months of antituberculosis treatment with the standard regimen (2RHZE/4RH). The patient presented with recurrent subocclusive episodes evolving over six months in a context of weight loss estimated at 5 kg and febrile sensations.

Physical examination revealed multiple peripheral lymphadenopathies, the largest measuring 15 mm in the right inguinal region. Laboratory investigations showed a nonspecific inflammatory syndrome characterized by leukocytosis (11,380 cells/mm^3) and CRP (40 mg/L), associated with lymphopenia (944 cells/mm^3) and a positive IGRA. HIV serology and sputum testing for *Mycobacterium tuberculosis* were negative.

Abdominopelvic computed tomography showed irregular thickening of the cecum measuring 20 mm over a length of 66 mm, associated with pericolic fat stranding and several mesenteric lymph nodes, the largest measuring 12 mm.

Given the patient's history, intestinal tuberculosis was initially suspected, although malignancy could not be excluded based on the radiological findings. Further investigations included colonoscopy, which revealed a cecal mass with a depressed and ulcerated center (Figure 6). Histological analysis of colonoscopic biopsies confirmed cecal tuberculosis by demonstrating necrotizing tuberculoid granulomas with caseous necrosis and positive tissue PCR for *Mycobacterium tuberculosis*.

Figure 6: Cecal mass with a depressed ulcerated center on colonoscopy.

The patient received six months of antituberculosis therapy with favorable clinical, biological, and radiological outcomes.

Discussion

Abdominal tuberculosis accounts for 5–10% of extrapulmonary tuberculosis cases, ranking third after pleural and lymph node involvement [1,4]. This frequency may double or triple in the presence of HIV infection [4]. In our series, two patients presented with this co-infection, highlighting the importance of systematic screening.

Abdominal tuberculosis most frequently involves the peritoneum, followed by mesenteric lymph nodes and the intestine, particularly the ileocecal region [5–7], while isolated colonic involvement remains uncommon [8]. This predilection is attributed to the high density of lymphoid tissue rich in Peyer's patches in this area, intense local immune activity and fecal stasis that prolongs contact between the bacilli and the intestinal mucosa [6,9].

The hypertrophic pseudotumoral form remains rare, accounting for approximately 5% of cases [10]. It is most often primary,

resulting from the direct ingestion of *Mycobacterium tuberculosis*, and more rarely secondary to hematogenous or lymphatic dissemination from a highly bacilliferous pulmonary focus [11]. As described in our observations, this form typically affects young men aged between 20 and 40 years [12,13], although some studies have reported a female predominance [14,15].

Intestinal tuberculosis represents a significant diagnostic challenge because of its clinicomorphological similarity to colonic cancer and inflammatory bowel diseases with a stenosing phenotype [16]. Misdiagnosis rates may reach 50–70%, even in countries where tuberculosis is endemic [17].

The clinical presentation is generally nonspecific and atypical, and may include constitutional symptoms, fever, abdominal pain, and bowel habit disturbances. In rare cases, the disease may present with complications such as perforation, gastrointestinal bleeding, or intestinal obstruction [18,19].

Computed tomography typically reveals concentric bowel wall thickening, sometimes heterogeneous, with hypodense areas corresponding to caseous necrosis. In some cases, this thickening may mimic a tumor when it appears eccentric and exophytic [4]. The presence of necrotic lymph nodes may also orient the diagnosis toward tuberculosis rather than Crohn's disease. Conversely, fibrofatty proliferation, bowel wall stratification, and the comb sign are more suggestive of Crohn's disease [4,20].

Given the relatively low sensitivity of imaging, estimated at 67% [21], and the need to distinguish tuberculosis from Crohn's disease before initiating immunosuppressive therapy, additional diagnostic tools have been developed for this purpose.

Colonoscopy combined with histopathological and bacteriological analysis of biopsies, is a key diagnostic modality, allowing diagnosis in approximately 60% of cases and often avoiding surgical intervention [22]. Several histological features may be observed, including Langhans giant cells, conglomerate epithelioid histiocytes, and disproportionate submucosal inflammation. However, only the presence of granulomas with caseous necrosis can confirm the diagnosis [23]. Studies have shown that only 13–33% of patients with intestinal tuberculosis present with these findings. Moreover, the limited sensitivity and specificity of histology (68% and 77.1%, respectively), along with the occurrence of non-caseating granulomas in Crohn's disease, justify the use of additional diagnostic techniques [24,25].

Regarding microbiological tests, *Mycobacterium tuberculosis* culture and Ziehl–Neelsen staining are highly specific diagnostic methods, with specificity approaching 100%, although their sensitivity remains limited (approximately 35% and 31%, respectively) [26]. When combined with histological examination, these tests can improve diagnostic accuracy by about 17% [23]. Interferon-gamma release assays (IGRAs), which assess T-cell immune responses, are primarily used for the detection of latent tuberculosis, with an estimated sensitivity of 88% and a specificity of approximately 74% [24]. However, their diagnostic performance may be affected by factors such as immunodeficiency, smoking, and immune-mediated inflammatory diseases [23].

To overcome the limitations of these conventional methods, several rapid molecular techniques have been developed, including the GeneXpert assay and conventional or multiplex polymerase chain reaction (PCR). The GeneXpert assay allows rapid and automated detection of *Mycobacterium tuberculosis* while simultaneously identifying rifampicin resistance (sensitivity 95.7%, specificity 100%, negative predictive value 97.1%, and positive predictive value 100%) [23,26]. Conventional PCR is a molecular technique based on amplification of the IS6110 genetic sequence, which is specific to *Mycobacterium tuberculosis* and absent in other mycobacteria, which explains its relatively limited sensitivity of approximately 50% [26,27]. Multiplex PCR, by contrast, targets several specific genetic sequences (IS6110, MPB64, and 16S rRNA genes), resulting in improved diagnostic performance (sensitivity 87.5%, specificity 100%, negative predictive value 100%, and positive predictive value 86.2%) [28,29]. In our series, PCR was positive in all four cases, allowing confirmation of the diagnosis of intestinal tuberculosis.

From a therapeutic perspective, medical management remains the cornerstone of treatment, while surgery is reserved for complicated forms or situations of diagnostic uncertainty [30]. Standard therapy consists of a two-month intensive phase with isoniazid, rifampicin, pyrazinamide, and ethambutol, followed by a four-month continuation phase with isoniazid and rifampicin. In the absence of disseminated tuberculosis, extending treatment beyond six months has not shown significant benefit [31].

Conclusion

The pseudotumoral form of intestinal tuberculosis is a rare entity that frequently leads to delayed diagnosis due to its clinicoradiological features mimicking neoplastic or chronic inflammatory diseases. This challenge is particularly significant in endemic regions, where the coexistence of predisposing factors such as HIV infection remains common.

Our observations illustrate the limitations of conventional imaging and underscore the crucial role of colonoscopy combined with histological examination and, especially, molecular diagnostic methods. These approaches improve diagnostic accuracy and help prevent inappropriate immunosuppressive or surgical management.

Acknowledgements

None.

Conflict of Interest

None.

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