

Insights into Gastric Tuberculosis: A Case Study of Immunocompetent Patients

**F. Haddad ^a, Z. Chraibi ^{a*}, FZ El Rhaoussi ^a, M. Tahiri ^a,
W. Hliwa ^a, A. Bellabah ^a and W. Badre ^a**

^a *Gastroenterology Department, Ibn Rochd University Hospital, Casablanca, Morocco.*

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

Open Peer Review History:

This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: <https://www.sdiarticle5.com/review-history/115715>

Case Report

Received: 07/02/2024

Accepted: 05/04/2024

Published: 08/04/2024

ABSTRACT

Gastric tuberculosis is a rare manifestation of *Mycobacterium tuberculosis* infection outside the lungs. Its clinical presentation is nonspecific and can be misleading, often resembling peptic ulcer disease or malignancy. The primary source of information pertaining to this rare medical condition predominantly originates from case reports, with scarce publication of comprehensive case series addressing the disease. Diagnosis is most commonly established through histopathological examination of a surgical specimen subsequent to the onset of disease-related complications. However, upper gastrointestinal endoscopy with biopsy represents the technique of choice for diagnosis in the absence of complications. We report two cases of gastric tuberculosis in immunocompetent patients, presenting with chronic abdominal pain, vomiting, and progressive weight loss over several months. The diagnosis was established through endoscopy coupled with biopsy findings. Both patients underwent antibacterial treatment with favorable clinical outcomes.

*Corresponding author: Email: chraibi.zineb@yahoo.fr;

Keywords: Tuberculosis; gastric tuberculosis; epithelioid granuloma; caseous necrosis.

1. INTRODUCTION

Tuberculosis (TB) represents a significant worldwide public health challenge. The extrapulmonary presentations of TB can be deceptive and present diagnostic challenges. Involvement of the gastrointestinal tract is not uncommon, with abdominal tuberculosis affecting around 1 to 3% of all TB cases and approximately 12% of extrapulmonary TB cases. Typically, it affects the ileo-colic region, although occurrences in the stomach and duodenum are rare.

The aim of our work is to describe two cases of gastric tuberculosis in immunocompetent patients.

2. OBSERVATIONS

Case 1:

A 22-year-old female patient, with no significant medical history, presented with abdominal pain evolving since one month. These pains were epigastric, meal-related, crampy in nature, non-radiating, associated with early postprandial vomiting resistant to symptomatic treatment. Furthermore, she did not present with overt gastrointestinal bleeding, transit disturbances, or extra-digestive symptoms. However, she reported a loss of appetite and a weight loss of 20 kg. On clinical examination, the patient was in poor general condition (performance status = 2), afebrile, pale, with epigastric abdominal tenderness, without palpable mass or abdominal

distension. There was no similar illness in past or in family.

On laboratory tests, she had hyponatremia, likely resulting from persistent vomiting. Additionally, her complete blood count, renal function, and liver function were normal, except for thrombocytosis. The C-reactive protein was at 133 mg/L.

An upper gastrointestinal endoscopy was performed, revealing large, hypertrophied, and ulcerated fundic folds (Fig. 1). Histopathological examination revealed non-necrotizing granulomatous tuberculoid chronic fundic gastritis with moderate atrophy, without *Helicobacter pylori*. A search for Koch's Bacillus through PCR on gastric biopsies yielded a positive result.

A chest X-ray was performed and returned normal. A thoraco-abdominal CT scan did not reveal any abnormalities in the thoracic region. However, there was a regular circumferential thickening and submucosal edema of the gastric wall, along with multiple infracentimetric celio-mesenteric, hilar, splenic, and perigastric lymphadenopathies (Fig. 2).

HIV serology and Interferon -gamma release assay (IGRA) were negative. Given the suspicion of gastric tuberculosis, a flexible bronchoscopy was performed, revealing an inflammatory state. Histopathological examination showed an epithelioid granulomatous inflammatory reaction with giant cells and areas of caseous necrosis.

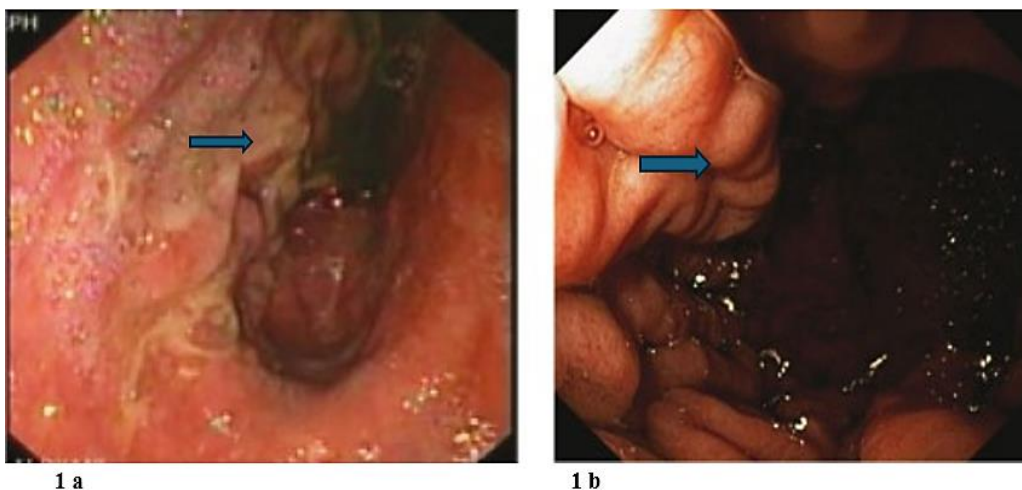


Fig. 1 a-b. Gastric endoscopy showing hypertrophied ulcerative fundic folds (arrow)

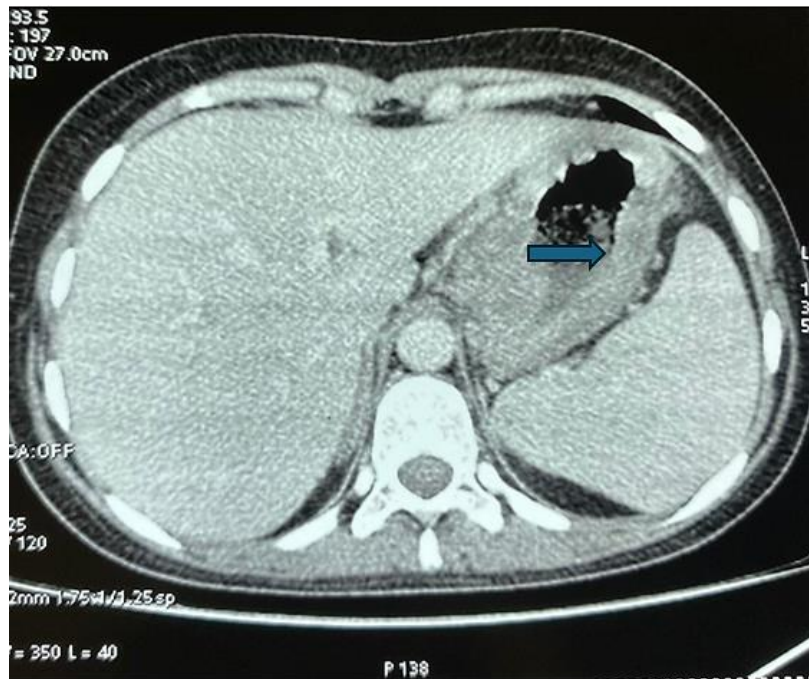


Fig. 2. Abdominal CT with contrast shows gastric wall thickening with enhancement (Arrow)

A multifocal tuberculosis involving the gastric, pulmonary, and lymph nodes, revealed by epigastric pain and vomiting, was thus diagnosed. The patient was treated with antituberculous therapy with isoniazid, rifampicin, pyrazinamide, and ethambutol for the initial two months, followed by rifampicin and isoniazid for an additional four months. Clinical progress was characterized by the resolution of epigastric pain and vomiting, accompanied by improved appetite and general condition.

Case 2:

A 30-year-old female patient, known to have asthma and currently under treatment, presented with 4 months of intermittent fever, abdominal pain, progressive weight loss up to 20 kg, nausea and vomiting. She also reported intermittent episodes of diarrhea and abdominal distention, accompanied by febrile sensations and a decline in overall health. The abdominal pain was epigastric, meal-related, not radiating, and unrelieved by symptomatic treatment. Additionally, the patient denied experiencing gastrointestinal bleeding, or cough. Upon physical examination, the patient appeared in poor general condition (performance status=2), febrile, with ascites and diffuse abdominal tenderness, without hepatomegaly or palpable mass. There was no similar illness in past or family.

An upper gastrointestinal endoscopy was performed, revealing two gastric ulcers and hypertrophied margins, along with erythematous antral gastritis (Fig. 3).

Histopathological examination unveiled the presence of an epithelioid granuloma with caseous necrosis. Polymerase chain reaction (PCR) testing for *Mycobacterium tuberculosis* was positive.

Abdominal CT scan was performed, revealing a regular circumferential of the gastric wall, along with ascites. No visible lymphadenopathy was observed. The chest X-ray and sputum analysis were negative for tuberculosis. The complete blood count revealed a hypochromic microcytic anemia and thrombocytosis. Renal and liver functions were unremarkable. C-reactive protein (CRP) levels were elevated at 54 mg/L. HIV serology and Interferon- gamma release assay (IGRA) results were negative.

Based on these results, a diagnosis of multifocal gastric and peritoneal tuberculosis was made. The patient initiated a course of antituberculosis medication, including 2 months of Rifampicin, Isoniazid, Pyrazinamide, and Ethambutol, followed by an additional 4 months of Rifampicin and Isoniazid. The patient showed favorable clinical improvement.

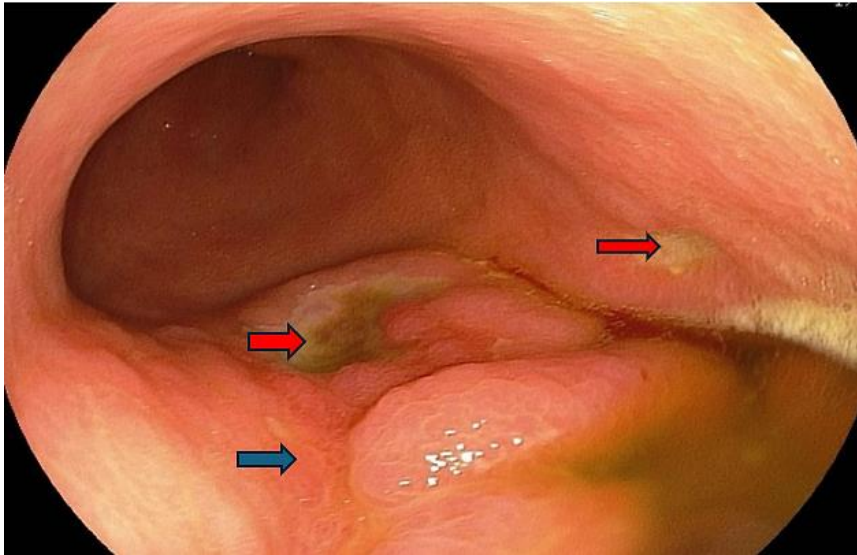


Fig. 3. Gastric ulcers (red arrow) and antral gastritis (blue arrow)

3. DISCUSSION

Tuberculosis poses a major public health challenge globally. The gastrointestinal tract is a rare site of extra-pulmonary tuberculosis infection, accounting for 0.5 to 3% of gastrointestinal tuberculosis cases [1,2]. While abdominal tuberculosis can develop at any age, it is more common in patients aged 25 to 45 years, which aligns with our findings. Also, there is a slight female predominance [3].

Diagnosis is often challenging and delayed due to its nonspecific presentation. Usually, gastric tuberculosis develops as a result of other tuberculous lesions, particularly those affecting the lungs. However, isolated cases of primary gastric tuberculosis have been reported worldwide [3].

Gastric tuberculosis is rare because of the acidic environment of the stomach, its continual motor activity, and the limited presence of lymphatic follicles in the gastric wall [4]. The pathophysiology is unclear. However, one hypothesis suggests that it could be linked to the destruction of the mucosal barrier, reduced secretion of gastric juice, diminished bactericidal effect of gastric juice following mucosal injury, inadequate gastric motility, slower gastric emptying rate, and prolonged retention of *Mycobacterium tuberculosis* in the stomach, allowing ample time for the formation of a tuberculosis focus [5], resulting in a direct infection of the mucosa. The other routes of infection are haematogenous spread or

extension from a neighboring tuberculous lesion [6].

The clinical presentation of gastric tuberculosis is non specific with complaints of abdominal pain, vomiting and weight loss. In addition to the typical symptoms of active tuberculosis, such as afternoon low-grade fever, night sweats, weight loss, fatigue, and anemia, some patients may also exhibit manifestations resembling chronic gastritis and gastric cancer. Epigastric pain is frequently reported as the predominant symptom in gastric tuberculosis patients, often presenting with varying degrees of intensity. Moreover, abdominal tenderness is commonly localized to the right below the xiphoid process, and complications such as peptic ulcers, hematemesis, and melena may arise [7]. When gastric tuberculosis leads to pyloric obstruction, nausea and vomiting become prominent symptoms, with exacerbation typically observed in the afternoon and evening [8]. In our case, the patient presented with nonspecific symptoms consistent with what is described in the literature.

The lesions observed during endoscopy can be categorized into four types: ulcerative, protuberant, miliary nodular, and inflammatory infiltrating. Ulcerative lesions are predominant, accounting for over 80% of gastric tuberculosis cases, with some patients exhibiting giant gastric ulcers [9]. In our cases, the lesions were both ulcerative and inflammatory infiltrating. In diagnosing gastric tuberculosis, identification of an epithelioid granuloma with caseous necrosis or acid-fast bacilli (AFB) is crucial, yet

challenging due to submucosal localization of the granuloma [10]. Thus, additional examinations are often necessary. A 2022 literature review evaluated complementary tests like IGRA, GeneXpert, and PCR. GeneXpert exhibited the highest sensitivity (81–95.7%), while AFB staining showed perfect specificity (100%). Other methods, including histopathology, IGRA, and PCR, varied in sensitivity (68–88%) and specificity (77.1–100%) [11]. Overall, when diagnostic suspicion is high, multiple methods should be explored, with PCR testing recommended early due to its high sensitivity. In our case, gastric biopsy revealed an epithelioid granuloma without caseous necrosis in the first patient and with caseous necrosis in the second patient. In the first case, the diagnosis was confirmed based on PCR results.

Non-caseating granulomas can also arise from Crohn's disease, sarcoidosis, and idiopathic granulomatous gastritis [12]. Distinguishing between these conditions often requires consideration of clinical and histopathological features, as well as culture analysis.

The standard treatment for gastric tuberculosis typically involves conventional antitubercular therapy administered for a minimum of six months, including an initial two-month phase of intensive therapy. Despite being diagnosed through endoscopic biopsy, surgery may still be necessary to address complications such as gastric outlet obstruction, perforation, or bleeding [13].

4. CONCLUSION

In conclusion, gastric tuberculosis, although rare, should be considered as a diagnostic possibility, especially in the endemic context of our country. Diagnosis relies on histopathological examination, which for improved efficacy should be complemented with another method, notably PCR for the detection of *Mycobacterium tuberculosis*.

CONSENT

As per international standards or university standards, patient(s) written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Chaudhary P, Khan AQ, Lal R, Bhadana U. Gastric tuberculosis. *Indian J Tuberc.* 2019, Jul;66(3):411-417. Epub 2018 Nov 10. PMID: 31439189. DOI:10.1016/j.ijtb.2018.10.004.
2. Akgun Y. Intestinal and peritoneal tuberculosis: Changing trends over 10 years and a review of 80 patients. *Can J Surg.* 2005;48(2):131–6. A case report and review of the literature. *J Med Case Rep.* 2015;9:265.
3. Khan FY, AlAni A, Al-Rikabi A, Mizrahkshi A, Osman Mel-M. Primary gastric fundus tuberculosis in immunocompetent patient: A case report and literature review. *Braz J Infect Dis.* 2008, Oct;12(5):453-5. PMID: 19219289. DOI:10.1590/s1413-86702008000500020.
4. Tromba JL, Inglese R, Rieders B, Todaro R. Primary gastric tuberculosis presenting as pyloric outlet obstruction. *Am J Gastroenterol.* 1991;86:1820e1821.
5. Amarapurkar DN, Patel ND, Amarapurkar AD. Primary gastric tuberculosis – report of 5 cases. *BMC Gastroenterol.* 2003;3: 6.
6. Dargan P, Sinha SK, Singh N, Jain BK, Shrivastava UK. Gastrointestinal tuberculosis: A report of three cases and review of literature. *The Internet Journal of Gastroenterology.* 2005;2
7. Ismail Y, Muhamad A. Protean manifestations of gastrointestinal tuberculosis. *Med J Malaysia.* 2003;58: 345–9.
8. Feng S, He Y, Zhang C, Chen D, Zhong J, Zhang S. Primary gastric tuberculosis was misdiagnosed as submucosal mass: A rare case report and review of literature. *Medicine (Baltimore).* 2023, Jul 28; 102(30):e34433. PMID: 37505121; PMCID: PMC10378724. DOI:10.1097/MD.00000000000034433.
9. Elterefi AE, Uwaydah AK, Helal GR et al. Gastric tuberculosis presenting as a large gastric ulcer. *BMJ Case Rep.* 2022;15: e248215.
10. Manoria P, Gulwani HV. Gastric tuberculosis presenting as non healing

- ulcer: A case report. Indian J Tuberc. 2019, Oct;66(4):502-504.
DOI:10.1016/j.ijtb.2018.10.003. Epub 2018 Nov 5. PMID: 31813440.
11. Maulahela H, Simadibrata M, Nelwan EJ et al. Recent advances in the diagnosis of intestinal tuberculosis. BMC Gastroenterol. 2022;22(89).
Available:<https://doi.org/10.1186/s12876-022-02171-7>
12. Petroianni A, Mugnaini L, Laurendi G, Giousue S, Schinina V, Bibbolino C, Bisetti A. Abdominal tuberculosis mimicking Crohn's disease: A difficult diagnosis. Report of a case. Panminerva Med. 2002; 44:155-158.
13. Amarapurkar DN, Patel ND, Amarapurkar AD. Primary gastric tuberculosis – Report of 5 cases. BMC Gastroenterol. 2003; 3:6.

© Copyright (2024): Author(s). The licensee is the journal publisher. This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:

The peer review history for this paper can be accessed here:
<https://www.sdiarticle5.com/review-history/115715>