# Insights into Gastric Tuberculosis: A Case Study of Immunocompetent Patients


## 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.



## Keywords :

Tuberculosis , Gastric Tuberculosis , Epithelioid Granuloma, Caseous Necrosis

## 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.

## 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 (Figure 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.

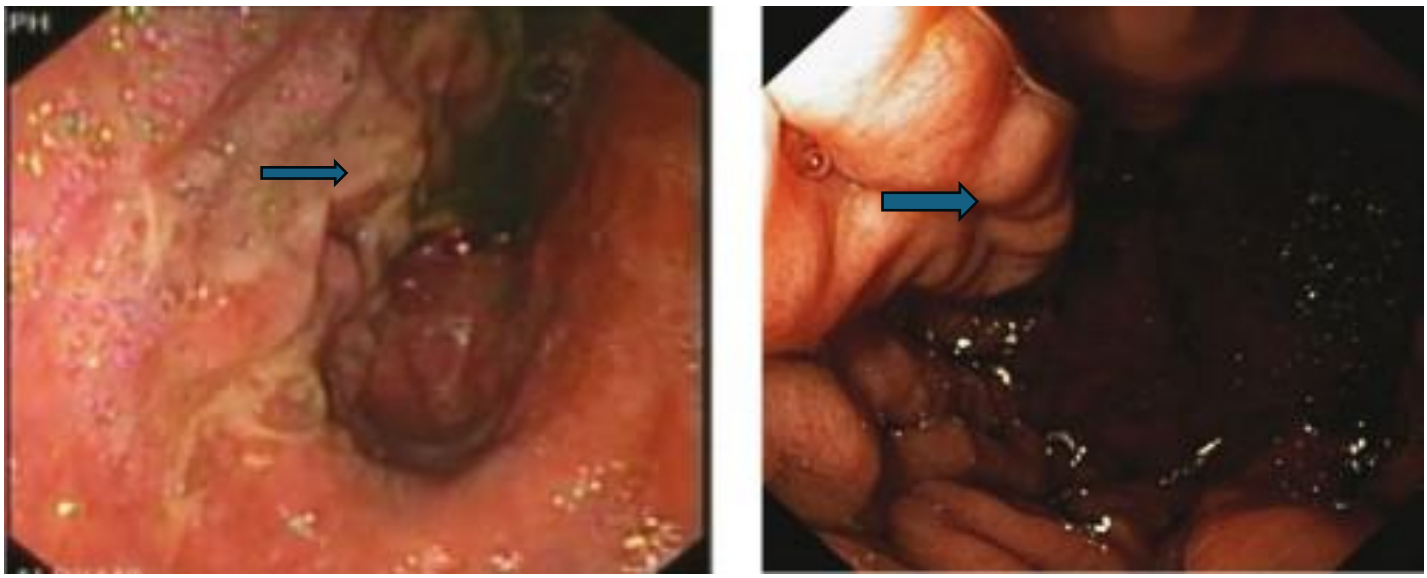

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Figure 1 a-b:Gastric endoscopy showing hypertrophied ulcerative fundic folds (arrow)

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 infracentimetriccelio-mesenteric, hilar, splenic, and perigastric lymphadenopathies (Figure 2).

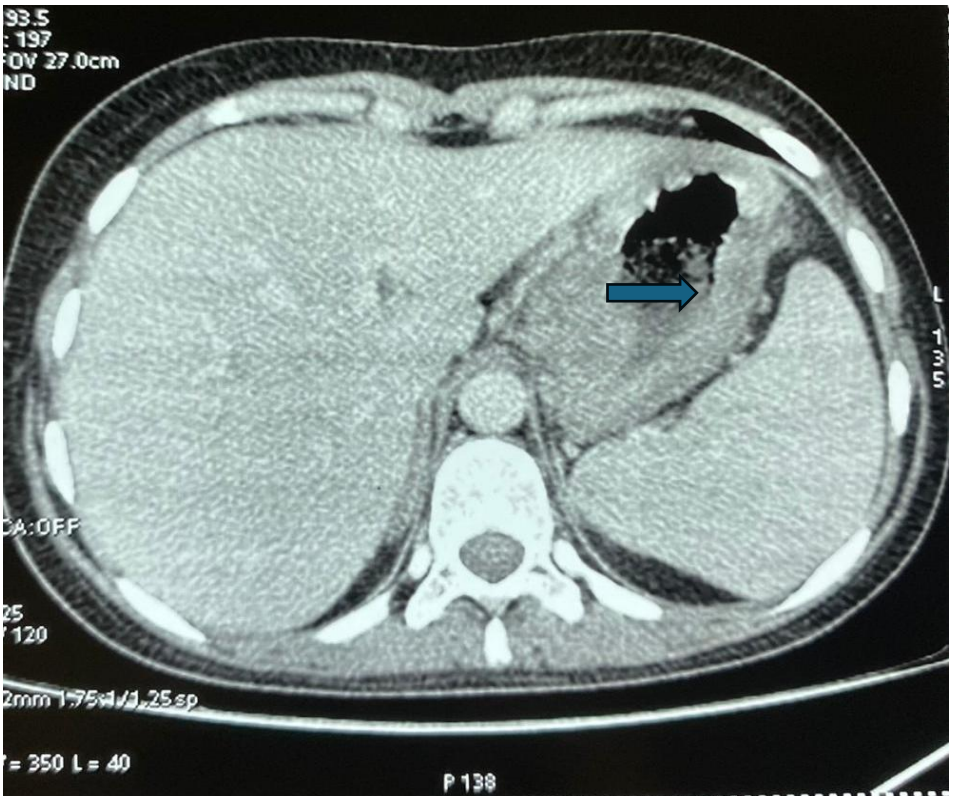


Figure 2: Abdominal CT with contrast shows gastric wall thickening with enhancement. (Arrow)

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.

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 (Figure 3).

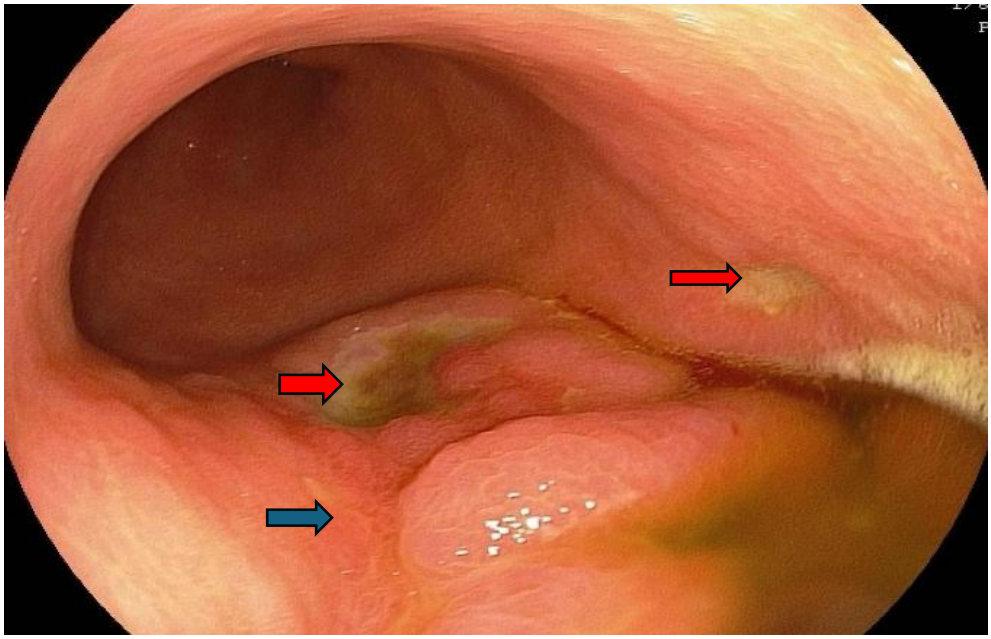

Figure 3: Gastric ulcers (red arrow) and antral gastritis(blue arrow)

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 liverfunctions 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.

## 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). 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 plaints 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).

## 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).

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