GE – Portuguese Journal of Gastroenterology

Clinical Case Study

GE Port J Gastroenterol 2023;30(suppl 2):21–25
DOI: 10.1159/000527203

Received: April 29, 2022
Accepted: September 8, 2022
Published online: November 7, 2022

Gastroduodenal and Colorectal Tuberculosis: Report of 2 Cases

Claudia Alvizuri[a] Andrea Carlín[b] Víctor Aguilar[a] Vanessa Valenzuela[a]

[a]Department of Gastroenterology, Cayetano Heredia National Hospital, Lima, Peru; [b]Universidad San Ignacio de Loyola, Lima, Peru

Keywords
Tuberculosis · Gastrointestinal tuberculosis · Gastroscopy · Stomach ulcer

Abstract
Introduction: Tuberculosis remains a public health concern in developing countries, as well as in developed countries as a result of immigration from endemic areas. Gastroduodenal and colorectal tuberculosis are rare manifestations of gastrointestinal infection. ***Case Presentation:*** We present 2 cases of gastric, duodenal, and colorectal tuberculosis. The first case, a 17-year-old male with no medical record, presented with chronic diarrhea and abdominal pain. At endoscopy, he had multiple ulcers in the stomach, colon, and rectum, which were positive to *Mycobacterium tuberculosis*. The second case was a 43-year-old HIV-positive male, with a history of intermittent fever, nausea, and vomiting. Upper gastrointestinal endoscopy revealed a deep ulcer on gastric fundus that tested positive to *M. tuberculosis* in the acid-fast bacilli staining. ***Discussion/Conclusion:*** Gastroduodenal and colorectal tuberculosis, although rare, should be considered in the differential diagnosis in both immunosuppressed and immunocompetent patients. An adequate tissue sample and appropriate diagnostic tests are essential for the diagnosis and prompt start of first-line antituberculosis agents.

Tuberculose gastroduodenal e retal: relato de 2 casos

Palavras·Chave
Tuberculose · Gastrointestinal · Gastroscopia · Úlcera estomacal

Resumo
Introdução: A tuberculose continua sendo um problema de saúde pública nos países em desenvolvimento, bem como nos países desenvolvidos, em decorrência da imigração. A tuberculose gastroduodenal e colorretalsão manifestações raras de infecção gastrointestinal. ***Apresentação do Caso:*** Apresentamos dois casos de tuberculose gástrica, duodenal ecolorretal. O primeiro caso, um jovem de 17 anos, apresentou diarreia crônica e dor abdominal. Na endoscopia, tinha múltiplas úlceras no estômago, cólon e reto que foram positivas para Mycobacterium Tuberculosis. O segundo caso foi um homem de 43 anos, HIV positivo, com relato de febre intermitente, náuseas e vômitos. A endoscopia digestiva alta revelou úlcera profunda do fundo gástrico positivo para *Mycobacterium tuberculosis* na coloração de bacilos álcool-ácido resistentes. ***Discussão/Conclusão:*** Tuberculosegastroduodenal e colorretal, embora raras, deve ser considerada como diagnóstico em pacientes imunossuprimidos e

Karger@karger.com
www.karger.com/pjg

Correspondence to:
Claudia Alvizuri, claudia.alvizuri@upch.pe

imunocompetentes. Uma amostra de tecido adequada e testes diagnósticos apropriados são essenciais para o diagnósticoe início imediato dos tuberculostáticos de primeira linha.

Introduction

Despite many advances in science in recent years, tuberculosis remains one of the leading causes of deaths worldwide, especially in developing countries [1]. Although pulmonary tuberculosis is the most common site of tuberculosis infection, abdominal tuberculosis is becoming more frequent, which includes involvement of the peritoneum, abdominal visceral organs, lymph nodes, and gastrointestinal tuberculosis [2]. In gastrointestinal tuberculosis, infection of the stomach and rectum is sparsely reported in the literature and has major limitations in its diagnosis [3]. We report 2 cases in immunocompetent and immunosuppressed patients who presented gastric, duodenal, and rectal ulcers due to *Mycobacterium tuberculosis* infection.

Case Report

Case1

We present the case of a 17-year-old male who presented to the emergency department with a 2-year history of cough, chronic abdominal pain, intermittent nausea and vomiting, non-bloody chronic diarrhea, and progressive weight loss up to 40 kg, equivalent to 45% of his body weight. On admission, vital signs were stable. On examination, the abdomen was tender to palpation with diffuse mild pain. No rebound was identified. Laboratory findings demonstrated hemoglobin of 8.7 g/dL (N = 13.2–16.6), mean corpuscular volume of 73 (N = 80–100), mean corpuscular hemoglobin of 22 (N = 27–32), and severe hypoalbuminemia of 2.3 g/dL (N ≥3.5). Biochemical and liver profiles were unremarkable. Human immunodeficiency virus and human T-cell lymphotropic virus 1 and 2 tests were negative. Functional stool test including presence of mucus, blood, polymorphonuclear leukocytes, lactoferrin, fat strains, and serial parasite analysis revealed no significant abnormalities; however, the plain chest X-ray showed apical infiltrates in both hemithorax (shown in Fig. 1). In the abdominal ultrasound, mild hepatomegaly was found without ascites. Endoscopic exams were mandatory for the patient. In the greater curvature of the gastric body, an irregular circumferential ulcer was identified with a diameter of 10 mm, elevated margins and a base with high-density fibrin (shown in Fig. 2). In the anterior wall of the duodenal bulb, a 0.5-mm orifice was present from which a scarce whitish discharge was obtained (shown in Fig. 3). In the colonoscopy evaluation, multiple irregular circumferential ulcers were seen, which involved the terminal ileum (shown in Fig. 4), ileocecal valve, cecum, colon (shown in Fig. 5, 6), and rectum (shown in Fig. 7). Biopsies obtained from the upper and lower lesions were positive to *M. tuberculosis* in the GeneXpert (MTB/RIF) assay, and no resistance to Rifampicin was detected. Histopathology revealed chronic granulomatous inflammation with multinucleated giant cells. First-line antituberculosis drugs were initiated with good clinical improvement. Positive culture results were obtained after 2 months. Informed consent was obtained from the patient for case and image publication.

Case 2

A 43-year-old male with a 2-month diagnosis of acquired immune deficiency syndrome without treatment (viral load of 280,000 copies/mL and a CD4 count of 67 cells/mm^3), presented with 6 months of intermittent fever, diffuse abdominal pain, progressive weight loss up to 10 kg (27% of his body weight), nausea,

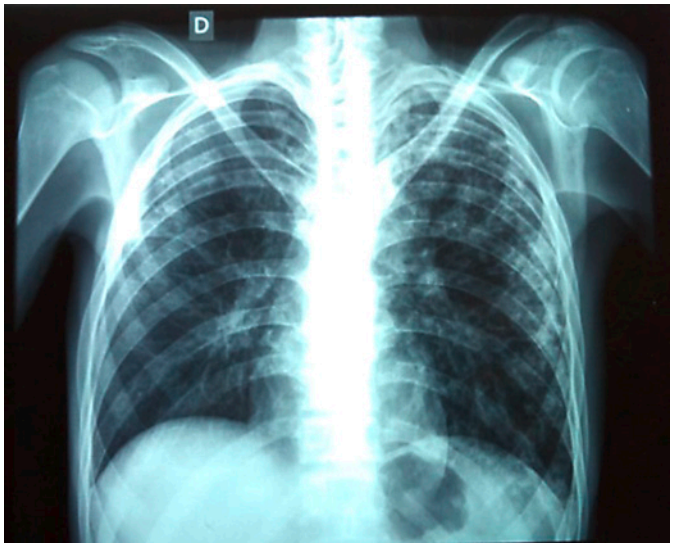

Fig. 1. Plain chest X-ray with apical infiltrates in both hemithorax.

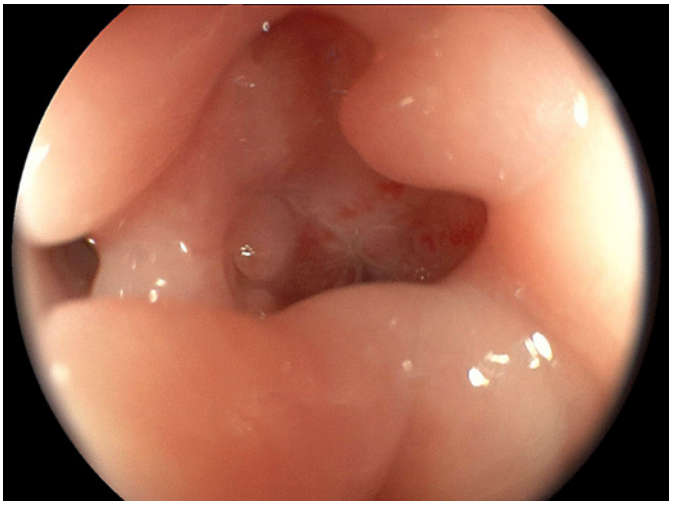

Fig. 2. Gastric irregular ulcer.

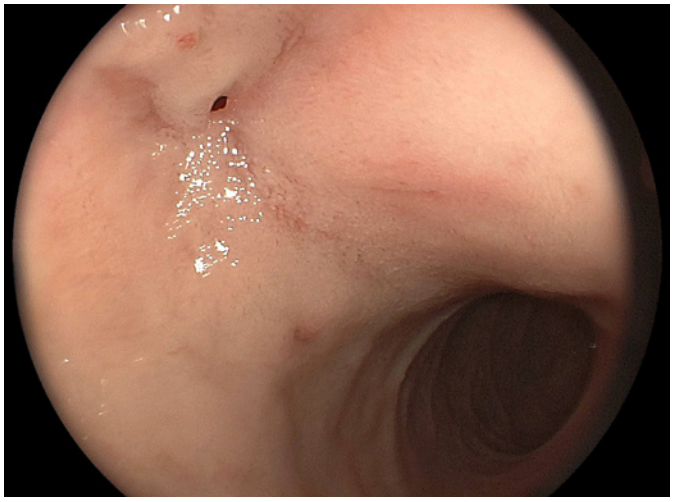

Fig. 3. Duodenal fistula with intermittent whitish discharge.

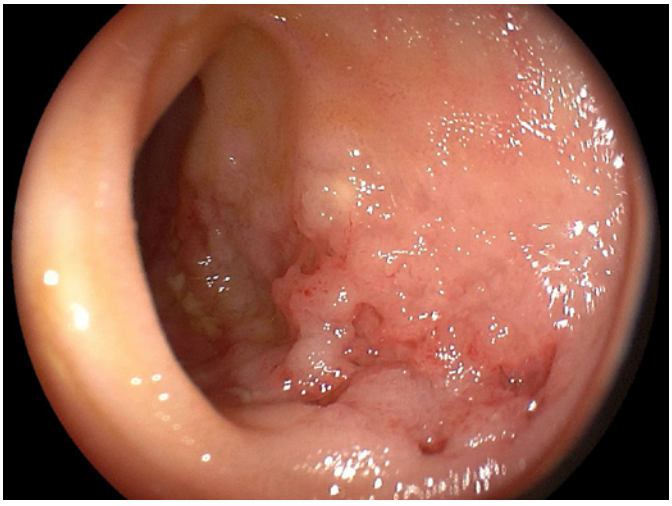

Fig. 4. Terminal ileum.

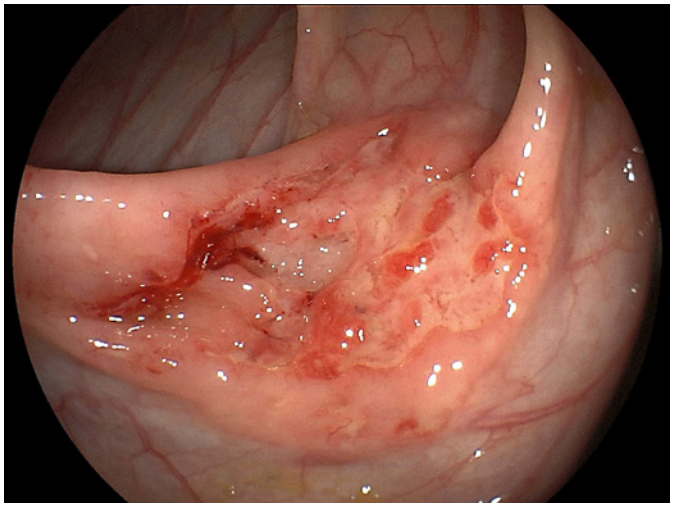

Fig. 5. Ascending colon ulcer.

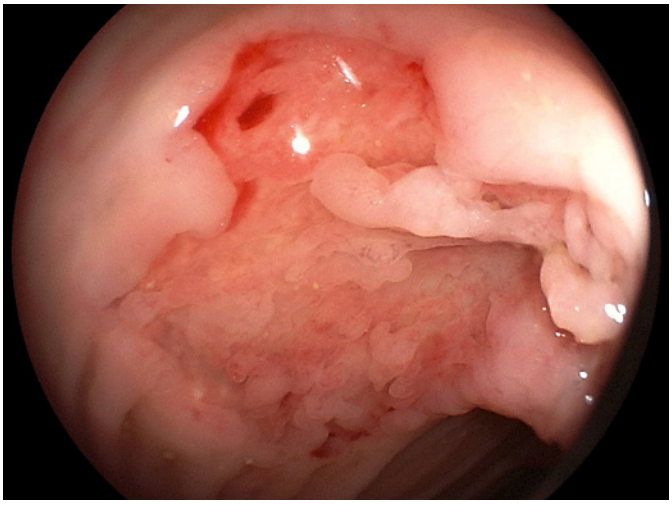

Fig. 6. Transverse colon ulcer.

and vomiting. On examination, the patient was febrile, pale, and emaciated. Hemoglobin of 9.4 g/dL (N = 13.2–16.6), mean corpuscular volume of 86 (N = 80–100), mean corpuscular hemoglobin of 29.2 (N = 27–32), and a non-pathogenic intestinal parasite, Entameba coli, in the parasitology exam were identified. The chest X-ray and sputum analysis were negative for tuberculosis. Abdominal computed tomography revealed retroperitoneal lymphadenopathy, splenomegaly, and a fluid collection in the psoas muscle of 2 cm with no need for drainage. Due to gastrointestinal symptoms such as nausea and vomiting, we decided to perform an upper gastrointestinal endoscopy. A deep irregular ulcer of 8 mm with a fibrin base was seen in the gastric fundus (shown in Fig. 8). Acid-fast bacilli staining in the biopsy was positive for *M. tuberculosis*. With the administration of first-line antituberculosis drugs, the patient had an optimal clinical recovery. Informed consent was obtained from the patient for case and image publication.

Discussion

Gastrointestinal tuberculosis is the most frequent site of affection in abdominal tuberculosis and can be a diagnostic challenge as it can mimic other illnesses as inflammatory bowel diseases, neoplasms, ischemic ulcers, and other infections [3, 4]. The most common affected sites are the ileum, cecum, and proximal colon. Gastric tuberculosis is an uncommon site of infection due to gastric acid that acts as a protective barrier against microorganisms; nevertheless, a high bacterial load can produce direct injury leading to infection. Other routes of contamination are hematogenous, retrograde lymphatic spread, and di-

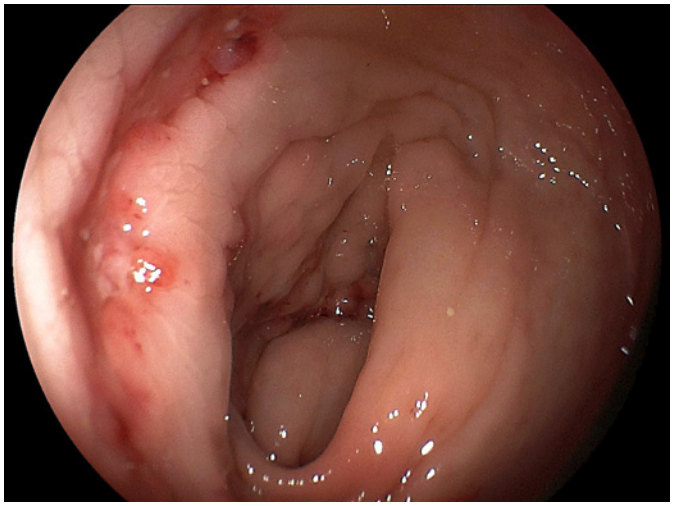

Fig. 7. Rectum ulcer.

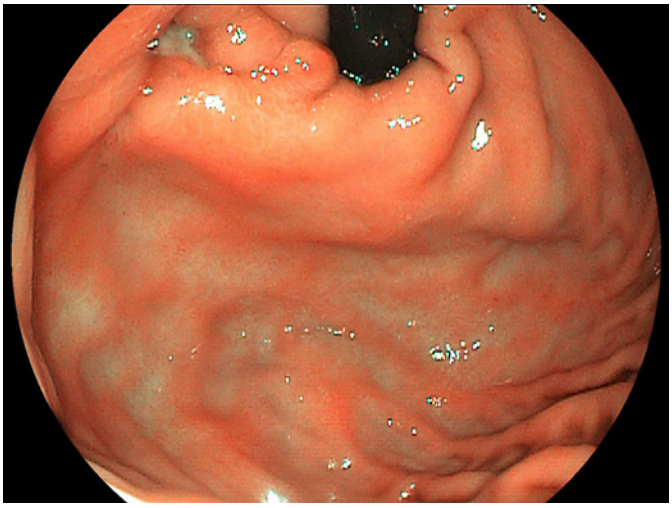

Fig. 8. Gastric fundus ulcer.

rect contact with affected adyacent organs [3, 5]. Symptoms are usually unspecific, ranging from non-specific abdominal pain, dyspepsia, weight loss, and anorexia [3]. Gastric tuberculosis can manifest endoscopically as multiple or single irregular ulcers, fistula formations, and hypertrophic-stenosing lesions, which can produce gastric outlet obstruction [6]. Ulcers are usually located in the lesser curve of the prepyloric region and antrum; however, fundic ulcers have also been described in the literature [7]. Our patients presented ulcers in the gastric corpus and fundus. These lesions were probably related to retrograde lymphatic spread that, although uncommon, has been reported before [3]. Duodenal tuberculosis should be suspected in areas with high endemicity of tuberculosis and can share some symptoms of gastric tuberculosis. In endoscopy or radiological exams, luminal narrowing, mucosal ulcerations, or extrinsic compressions might be seen. In some cases, patients require surgery due to stenosis of the duodenum, and the diagnosis is made postoperatively [8, 9]. Colonic tuberculosis involvement is being more frequently reported in the last years. It mainly affects the ascending colon and cecum, and symptoms can be unspecific as abdominal pain or present with hematochezia or diarrhea. In colonoscopy, lesions can present as ulcers, nodules, polypoid lesions, or luminal narrowing. These lesions usually respond satisfactorily to antituberculosis treatment [10]. On the other hand, rectal tuberculosis is rare and usually associated with immunosuppressive states [11]. Patients can present symptoms such as chronic diarrhea, rectal bleeding, tenesmus, and perineal fistulas, which can mimic an inflammatory bowel disease or cancer [12]. Our patient presented a linear ulcer in the rectum; however, nodular, stenotic, and hypertrophic lesions have been reported by authors before [11, 13].

Diagnosis is usually complicated due to the difficulty in getting an adequate tissue sample and the diagnostic test used. Different methods for diagnosis of gastrointestinal tuberculosis include acid-fast bacilli (AFB) staining, culture, GeneXpert MTB/RIF, and DNA-PCR. AFB is usually performed with the *Ziehl-Neelsen* method, is cost-effective, and has a specificity of 100%. However, the main disadvantage is its low sensitivity of around 31% [14]. Culture is the gold standard test; although it has a specificity of 100%, its sensitivity of only 9.3% can limit an accurate diagnosis [15]. GeneXpert MTB/RIF is a real-time PCR-based test that can also detect resistance to Rifampicin. Studies have shown high sensitivity values in biopsy samples ranging from 81.6 up to 95.7% and specificity from 78.9 to 100% [14, 16]. This test is considered one of the best for the diagnosis of gastrointestinal tuberculosis infection. Finally, DNA-PCR is also very effective with sensitivities up to 65% and specificity of 100% [14].

First-line treatment consists of isoniazid, rifampicin, ethambutol, and pyrazinamide. Administration of intravenous medication can be given in special situations as oral intolerance or adverse reactions [14]. Treatment length of 6 months has been suggested by most guidelines; however, some studies have suggested longer treatment might have better outcomes. In a systematic review published in 2016, no benefits were found in 9-month regimens versus the standard 6-month regimen. Until now, new recommendations cannot be made [17].

Gastrointestinal tuberculosis can manifest as a primary infection or in association with pulmonary tuberculosis in disseminated states. The coexistence between gastrointestinal and pulmonary tuberculosis ranges from 15 to 25%. The rest are reported to be isolated gastrointestinal tuberculosis; however, this number might be underestimated due to difficulties in diagnosing pulmonary tuberculosis. Treatment of pulmonary infection is adequate for gastrointestinal tuberculosis, and patients usually have a good prognosis [18, 19].

Gastroduodenal and colorectal tuberculosis, although rare, should be considered as a diagnosis in immunosuppressed and immunocompetent patients. An adequate tissue sample, which should be obtained from the edge and base of the ulcers, and appropriate diagnostic tests are essential for the diagnosis [20].

Statement of Ethics

Ethical approval was not required for this study in accordance with local/national guidelines. The subjects gave their informed consent for publication of their cases, including publication of images.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Funding Sources

None to report.

Author Contributions

Claudia Alvizuri and Andrea Carlín wrote the manuscript and reviewed the literature. Víctor Aguilar and Vanessa Valenzuela edited the manuscript and approved the final manuscript.

Data Availability Statement

The data that support the findings of the two clinical case studies are available on request from the corresponding author (C. Alvizuri). No personal information was included to protect the participant's privacy.

References

1 Furin J, Cox H, Pai MM. Tuberculosis. Lancet. 2019 Apr 20;393(10181):1642–56.
2 Al-Zanbagi AB, Shariff MK. Gastrointestinal tuberculosis: a systematic review of epidemiology, presentation, diagnosis and treatment. Saudi J Gastroenterol. 2021 Sep–Oct;27(5):261–74.
3 Chaudhary P, Khan AQ, Lal R, Bhadana U. Gastric tuberculosis. Indian J Tuberc. 2019 Jul;66(3):411–7.
4 Eraksoy H. Gastrointestinal and abdominal tuberculosis. Gastroenterol Clin North Am. 2021 Jun;50(2):341–60.
5 Nayyar E, Torres JA, Malvestutto CD. Tuberculous gastric abscess in a patient with AIDS: a rare presentation. Case Rep Infect Dis. 2016;2016:5675036.
6 Manoria P, Gulwani HV. Gastric tuberculosis presenting as non healing ulcer: a case report. Indian J Tuberc. 2019 Oct;66(4):502–4.
7 Khan FY, AlAni A, Al-Rikabi A, Mizrakhshi A, Osman ME-M. Primary gastric fundus tuberculosis in immunocompetent patient: a case report and literature review. Braz J Infect Dis. 2008 Oct;12(5):453–5.
8 Chavhan GE, Ramakantan R. Duodenal tuberculosis: radiological features on barium studies and their clinical correlation in 28 cases. J Postgrad Med. 2003 Jul–Sep;49(3):214–7.
9 Flores HB, Zano F, Ang EL, Estanislao N. Duodenal tuberculosis presenting as gastric outlet obstruction: Aa case report. World J Gastrointest Endosc. 2011 Jan 16;3(1):16–9.
10 Mukewar S, Mukewar S, Ravi R, Prasad A, S Dua K. Colon tuberculosis: endoscopic features and prospective endoscopic follow-up after anti-tuberculosis treatment. Clin Transl Gastroenterol. 2012 Oct 11;3(10):e24.
11 Gompertz M, Carreño L, Gil La Rotta LC. Rectal tuberculosis: an uncommon clinical presentation and differential diagnosis with Crohn's disease. Rev Gastroenterol Mex. 2019 Oct–Dec;84(4):524–6.
12 Sachdeva S, Dahale AS, Dalal A. Isolated rectal tuberculosis with multiple fistulae. Clin Gastroenterol Hepatol. 2021 Sep;19(9):A22.
13 Manoria P, Singhai A, Gulwani HV. Isolated rectal tuberculosis in immunocompetent host. J Glob Infect Dis. 2021 Jul–Sep;13(3):148–50.
14 Lowbridge C, Fadhil SAM, Krishnan GD, Schimann E, Karuppan RM, Sriram N, et al. How can gastro-intestinal tuberculosis diagnosis be improved? A prospective cohort study. BMC Infect Dis. 2020 Mar 30;20(1):255.
15 Maulahela H, Simadibrata M, Nelwan EJ, Rahadiani N, Renesteen E, Suwarti SWT, et al. Recent advances in the diagnosis of intestinal tuberculosis. BMC Gastroenterol. 2022 Mar 1;22(1):89.
16 Elbrolosy AM, El Helbawy RH, Mansour OM, Latif RA. Diagnostic utility of GeneXpert MTB/RIF assay versus conventional methods for diagnosis of pulmonary and extra-pulmonary tuberculosis. BMC Microbiol. 2021 May 13;21(1):144.
17 Jullien S, Jain S, Ryan H, Ahuja V. Six-month therapy for abdominal tuberculosis. Cochrane Database Syst Rev. 2016 Nov 1;11(11):CD012163.
18 Malikowski T, Mahmood M, Smyrk T, Raffals L, Nehra V. Tuberculosis of the gastrointestinal tract and associated viscera. J Clin Tuberc Other Mycobact Dis. 2018 Sep 09;12:111–8. Erratum in: J Clin Tuberc Other Mycobact Dis. 2020 Sep 9;21:100177.
19 Debi U, Ravisankar V, Prasad KK, Sinha SK, Sharma AK. Abdominal tuberculosis of the gastrointestinal tract: revisited. World J Gastroenterol. 2014 Oct 28;20(40):14831–40.
20 Naga MI, Okasha HH, Ismail Z, El-Fatatry M, Hassan S, Monir BE. Endoscopic diagnosis of colonic tuberculosis. Gastrointest Endosc. 2001 Jun;53(7):789–93.