

Single Case

Tuberculosis of the Stomach Mimicking Gastric Submucosal Tumor: Diagnosis by Endoscopic Ultrasound

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Keywords

Extrapulmonary tuberculosis · Gastrointestinal tuberculosis · Gastric tuberculosis · Gastrointestinal endoscopy · Endoscopic ultrasound

Abstract

Introduction: Gastrointestinal tuberculosis (TB), specifically gastric TB, is a rare form of extrapulmonary TB. Diagnosis proves challenging with nonspecific signs and symptoms. In this case report, a 22-year-old male came in with complaints of recurrent hematemesis and melena. **Case Presentation:** We found a submucosal mass with ulceration in the stomach cardia on esophagoduodenoscopy (EGD). The endoscopic ultrasound (EUS) finding was a hypoechoic submucosal lesion with a clear margin; specimens were taken using fine needle aspiration (FNA) for further histopathological examination. The result indicated granuloma of *Mycobacterium Tuberculosis* in pathology, suggesting that the diagnosis was gastric TB. The patient was then treated with antitubercular therapy regimen for 9 months. The previously documented mass in the stomach cardia was no longer visible on the follow-up endoscopy examination, and the patient was considered cured. **Conclusion:** This case shows that gastric tuberculosis should be considered in patients with gastrointestinal symptoms, especially those living in TB endemic regions. Endoscopic examinations, such as EGD and EUS, may aid in the diagnosis of gastric tuberculosis.

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Introduction

Tuberculosis (TB) is a disease caused by *Mycobacterium tuberculosis*, typically affecting the lungs. However, in some cases, it may spread to other sites, referred to as extrapulmonary TB [1]. Globally, the incidence of extrapulmonary TB is around 15% among all TB cases. Among extrapulmonary TB cases, abdominal TB is one of the most common infection sites, with a percentage of 2.7–21% of all extrapulmonary TB cases [2]. However, involvement of the stomach is particularly rare. The gastroduodenal area accounts for only 0.5–2.5% of all abdominal TB cases [3]. A study in South Korea showed that out of all the 69 cases of luminal TB they examined, none were considered gastric TB [4].

Gastrointestinal TB might arise as a primary infection or secondary infection from other sites, such as the lungs. Gastrointestinal TB can affect any site along the gastrointestinal tract (GIT). However, it tends to affect the ileocecal region, specifically the terminal ileum and cecum. It might be caused by prolonged exposure to pathogens in the anatomically constricted area and the abundance of lymphatic tissue in the region. The upper GIT (esophagus, stomach, and duodenum) and the anus are rarely affected. Involvement of gastric TB is rare due to the lack of gastric mucosal lymphatic tissue, acidic properties of the stomach, continuous rapid passage of organisms, and the gastric mucosa serving as local immune factors [5].

Diagnosis of gastric TB remains challenging. Symptoms are vague and unspecific, including mild to moderate abdominal pain, swelling, obstruction, hematochezia, and a palpable abdominal mass, accompanied by systemic manifestations of TB such as fever, weight loss, anorexia, and night sweats [6]. Endoscopic finding of gastric TB may present as an ulcer, nodular hypertrophic mass, or ulcero-hypertrophic lesion, and in some rare cases, an abscess. Ulcers are the most common presentation, affecting the mucosa, submucosa, or serosa layers of the stomach, depending on the inflammatory severity [1]. Imaging diagnostics may show thickening of gastric mucosa, dilated stomach, gastric mass/polyp, lymph node enlargement, superior mesenteric artery syndrome (dilated D1 and D2), or abscess [3].

Currently, no singular examination provides sufficient data to obtain a definite diagnosis of gastric TB. A combination of radiological, microbiological, and endoscopic examinations is needed to aid the diagnosis. It is important to establish a definite diagnosis of whether the symptoms the patient is experiencing are caused by TB or other gastrointestinal etiologies before proceeding with treatment [7, 8]. However, gastric TB usually is paucibacillary and has a low yield of microbiological findings and may result in diagnostic confusion. Therefore, several methods are proposed to increase microbiological yield, including multiple biopsies, well biopsy, endoscopic mucosal resection, and endosonographic (EUS) acquisition in submucosal lesions or lymph nodes [3].

The endoscopic appearance of gastric TB may mimic the submucosal tumor of the stomach with ulceration [9]. Although nonspecific, EUS can help to evaluate the submucosal lesion and differentiate it from other submucosal lesions. Fine needle aspiration or biopsy with EUS is helpful in obtaining histopathology specimens compared to a conventional endoscopic biopsy, which often fails if the lesion is submucosal. This method also allows us to obtain specimens for polymerase chain reaction (PCR) of TB [10]. This case report will describe a gastric TB case with rare clinical manifestations in which EUS had a role in establishing the diagnosis. The CARE checklist has been completed by the authors for this case report, attached as online supplementary material (for all online suppl. material, see <https://doi.org/10.1159/000540293>).

Case Report

A 22-year-old male patient came into the emergency room with a chief complaint of recurrent hematemesis and melena. The patient had experienced recurrent black stools for 1 month before admission. The patient also stated a history of vomiting blood. The patient

declined a history of fever, chronic cough, or night sweats. The only typical TB manifestation in the patient was weight loss. The patient had no specific medical history. The patient also declined a history of lung TB or exposure to TB patients. The patient stated that there were no past interventions or medications before admission.

At the time of admission, the patient had a stable vital sign. No significant finding was found during the physical examination. No typical sign of lung TB was found in the chest x-ray examination. From the laboratory examination, the patient was found to be anemic, and a transfusion of packed red cells (PRC) was given before the patient underwent an endoscopic examination.

The patient underwent an esophagoduodenoscopy (EGD) examination to evaluate the source of the bleeding within the GIT. During the endoscopy procedure, a submucosal mass with ulceration was found within the cardiac of the stomach (Fig. 1). The ulceration was the source of gastrointestinal bleeding in this patient. Endoscopic ultrasound (EUS) was further performed and showed a hypoechoic submucosal lesion with a clear margin (Fig. 2). EUS-guided biopsy was conducted to confirm the pathology of the mass, and a fine needle aspiration biopsy was performed. Histopathological findings of the mass supported the diagnosis of gastric TB (Figure 3a–e). We also conducted IGRA (Interferon Gamma Release Assay) test on the patient, with a positive result.

The patient was given the standard regimen to treat TB according to the national guidelines. Two months of intensive phase of rifampicin, isoniazid, pyrazinamide, and ethambutol, were followed by 7 months of rifampicin and isoniazid. During the course of the treatment, the patient underwent monthly check-ups in the outpatient clinic and reported improvements in symptoms. The patient underwent another endoscopy examination following the completion of the treatment. On the follow-up examination, the previously documented mass in the stomach cardia was no longer visible, and the condition was considered cured.

Discussion

Extrapulmonary TB accounts for approximately 12% of all TB cases worldwide, and gastrointestinal TB accounts for 11–16% of them, accounting for 1–3% of the total cases [11]. Within gastrointestinal TB, the ileocecal region is the most common site of manifestation. In contrast, reports of gastric TB remain rare. It might be due to the acidic properties of stomach content, rapid gastric emptying, and scarcity of lymphatic tissue in the gastric wall [12]. Among the rare cases of gastric TB, the antrum and prepyloric gastric regions are the most common site of infection [1]. Several possible transmission routes include direct infection of the gastric mucosa, hematogenous spread of the disease, or an extension of TB from neighboring lesions [13].

There are no specific clinical findings in patients suffering from gastric TB. Gastric TB may present with similar clinical symptoms to pulmonary TB, including fever, weight loss, anorexia, and night sweats [14]. From a systematic review of ten studies consisting of 211 patients, the most common symptoms in gastric TB were recurrent vomiting (64.4%), symptoms of gastric outlet obstruction (47.1%), and abdominal pain (43.5%) [3]. In the case presented above, the patient presented with a rare manifestation of ongoing symptom of hematemesis and melena. A study conducted in 2018 suggested that there were only 10 cases of reported hematemesis from patient suffering from gastric TB from 1950 up to 2018 [1]. Meanwhile, from the review mentioned above, there were only 6.6% patients (14/211) with history of upper GI bleed in the form of hematemesis or melena [3].

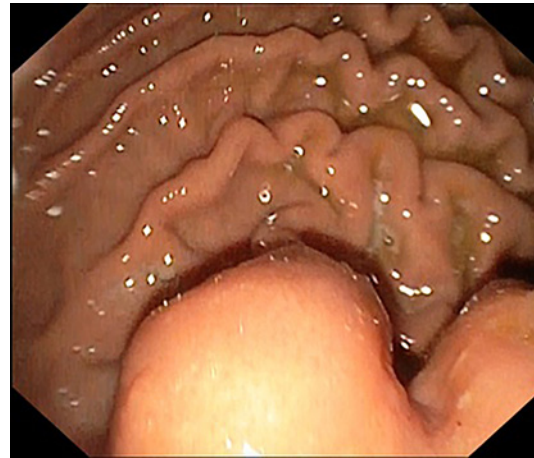


Fig. 1. White light image of a submucosal ulcerated lesion in the gastric cardia.

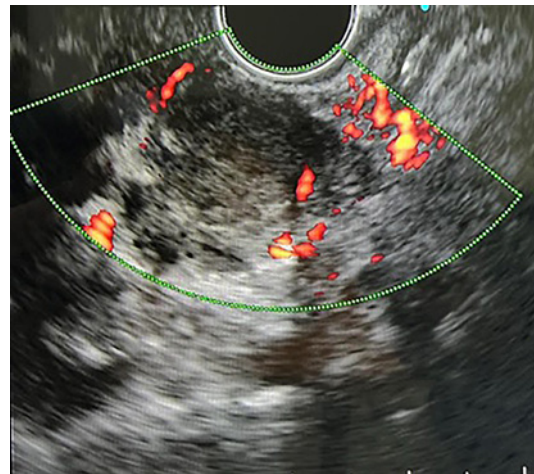


Fig. 2. Endoscopic ultrasound showing a hypoechoic lesion with heterogenous echo.

Endoscopic findings usually show single or multiple ulcers with or without a pyloric channel. Ulcerative lesions are seen mainly around the antrum and along the lesser curvature of the stomach. Patients with failure to respond from traditional ulcer therapy should warrant suspicion of other possible etiologies, including gastric TB [1]. Other endoscopic findings of gastric TB include stricture, gastritis, submucosal lesions, polyp or mass, fistula or sinus, and diffuse gastric thickening [3].

The endoscopic finding of gastric TB in this case was a submucosal tumor. Submucosal tumor or lesion is defined as an intramural growth underneath mucosa, which includes neoplastic and non-neoplastic conditions. The ability of EUS to visualize gastric wall and its layer is important in differentiating “real” submucosal lesions or protrusions from other organs to the stomach. Further, EUS can differentiate whether a submucosal lesion is a tumor, cyst, or vessels (varices). A submucosal tumor will be further identified from their layer of origin, echo pattern, or margin characteristic [15]. Some typical features of gastric TB are: (1) thickened and ill-defined wall; (2) hypoechoic lesion with irregular boundaries and non-homogenous inner echo; (3) presence of para-gastric or abdominal lymphadenopathy; and (4) the connection between the gastric wall lesion and lymphadenopathy. Aside of determining the characteristics and possible etiology of the lesion, EUS is also important in definite diagnosis of TB. EUS-guided fine needle aspiration (EUS-FNA) or EUS-guided fine needle biopsy (EUS-FNB) can provide tissue material for TB diagnosis, as was performed in this case [16].

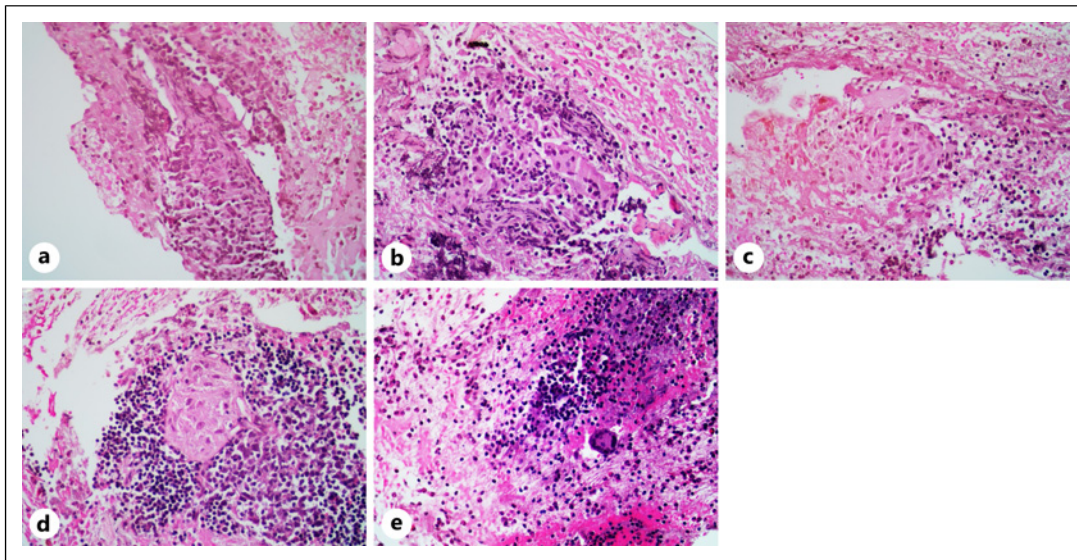


Fig. 3. a–e Anatomical pathology specimen showing a chronic granulomatous inflammation with acute suppurative inflammation. This finding supported tuberculous infection. No malignant tumor cell was found in the specimen.

Microbiological testing following endoscopy usually does not give much information, as only 4–6% of cases successfully detect acid-fast bacilli, and granulomas are only found in 40% of cases. The polymerase chain reaction from gastric biopsy yields the best result with increased sensitivity of up to 95% and specificity of 100% [1]. Besides microbiological tests such as culture, polymerase chain reaction, or acid-fast staining, serum markers or IGRA has emerged as one of the important diagnostic tools in abdominal TB [2]. Shah et al. [3] introduced DIPS classification of gastroduodenal TB that classifies gastroduodenal TB based on diagnosis category (microbiologically confirmed or clinically diagnosed), involvement category (primary or secondary infection); presentation category (gastric outlet obstruction or others); and site of involvement (gastric, duodenal, or gastroduodenal). According to this classification, the gastric TB in this case was D2 (clinically diagnosed), I1 (primary TB), P2 (other presentation), and S1 (isolated gastric TB).

Treatment regimen for gastrointestinal TB revolves around anti-TB drugs or antitubercular therapy (ATT). In reviews and RCTs of abdominal TB, 6-months regimen of ATT is usually sufficient and has similar clinical cure rates and relapse rates compared to the 9-months regimen of ATT [2]. However, this patient received 9-months regimen of ATT in accordance to extrapulmonary TV guideline in Indonesia. This regimen included 2 months of intensive medication, followed by 7 months of adjuvant. Surgery may be considered in complicated cases. Surgery is indicated in patients with gastrointestinal obstruction, perforation, and massive bleeding. However, seeing a good response from medications alone, it was not conducted on this patient.

In conclusion, our case aims to report the rare manifestation of gastric TB accompanied by hematemesis and melena. Patients with gastric TB may present with nonspecific gastrointestinal symptoms; these symptoms warrant examination to find the source of the disease and all possible etiologies. In endemic areas such as Indonesia, patients without any particular risk factor for gastrointestinal problems, particularly those not responding to traditional anti-ulcer therapy, should warrant suspicion of the possibility of other etiologies. Gastric TB should be a part of the differential diagnosis. Endoscopic ultrasound has an essential role in the diagnosis of gastric TB. Histopathological, bacteriological, and tissue specimens can help provide an accurate diagnosis and proper management.

Statement of Ethics

According to national guideline, ethical approval is not required for this study. The subject has given written informed consent to publish the details of his medical case and accompanying images.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

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Author Contributions

Hasan Maulahela and Ari Fahrial Syam designed the analysis and collected data for the manuscript. Marini Stephanie and Yayi Dwina Billianti contributed in data collection and performed the analysis. Hasan Maulahela and Nagita Gianty Annisa drafted and edited the manuscript. ALL authors reviewed and approved the final version of the manuscript.

Data Availability Statement

All data generated or analyzed during this study are included in this article and its online supplementary material. Further inquiries can be directed to the corresponding author.

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