Tuberculous Lymphadenitis Mimicking Gastric Subepithelial Tumor Diagnosed Using Endoscopic Ultrasound-guided Fine-needle Aspiration

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A gastric subepithelial tumor (SET) is commonly detected during a diagnostic endoscopic examination. Gastric tuberculosis (TB), in particular, can present as a SET of the gastric wall. A few cases of gastric TB mimicking a SET have recently been reported. Radiological imaging combined with endoscopic biopsy can aid in the early diagnosis of TB without surgical intervention. A 41-year-old man visited our health promotion center for a regular check-up. Esophagogastroduodenoscopy (EGD) revealed a round and smooth, bulging mucosal lesion suggesting a gastric SET in the upper body of the stomach. Endoscopic ultrasound (EUS) demonstrated a hypoechoic lesion measuring 18 mm, with an obscure layer of origin, and EUS-guided fine-needle aspiration was performed. Microscopic examination of the sample showed chronic granulomatous inflammation. Histopathologically, the aspirated sample showed positive Ziehl-Neelsen staining, confirming a diagnosis of tuberculous lymphadenitis. We describe a case of a patient who presented with tuberculous lymphadenitis mimicking a SET of the stomach. The lesion was found on EGD and confirmed using EUS-guided fine-needle aspiration. (**Korean J Helicobacter Up Gastrointest Res 2018;18:65-69**)

Key Words: Endoscopic ultrasound; Endoscopic ultrasound-guided fine-needle aspiration; Subepithelial tumor; Tuberculosis

INTRODUCTION

Tuberculosis (TB) is an important economic burden and health problem globally.¹ Although TB can involve multiple organs, the lungs are known to be most commonly affected, followed by the gastrointestinal and genitourinary tracts. Abdominal TB, which comprises approximately 1~3% of all cases of TB, is an extrapulmonary manifestation that usually originates from a primary focus of pulmonary TB.^{2,3} Tuberculous involvement of the stomach can present as a subepithelial tumor (SET). However, diagnosis of gastric TB is difficult because it requires a high index of clinical suspicion and an appropriate and adequate histopathological analysis. Few cases of gastric TB mimicking a SET have been reported in previous reports.^{4,5} We present a case of an asymptomatic patient who presented with tuberculous lymphadenitis resembling

a SET of the stomach noted on esophagogastroduodenoscopic (EGD) examination, which was confirmed using endoscopic ultrasound-guided fine-needle aspiration (EUS-FNA).

CASE REPORT

A 41-year-old man, non-smoker, visited our health promotion center for a regular check-up. He was asymptomatic and demonstrated no significant findings on physical examination. He reported past history of pulmonary TB over 20 years prior to presentation, without any recurrence since. An EGD examination showed a well-defined bulging mucosal lesion measuring approximately 20 mm in size with an intact mucosal surface, suggesting the presence of a gastric SET, which was incidentally visualized on the anterior aspect of the upper body of the stomach (Fig. 1A). The lesion showed a smooth surface and firm consistency when probed with a biopsy forcep. However, an EGD examination 2 years prior to the present evaluation had been normal without a SET detected at the time of that evaluation (Fig. 1B), and a chest X-ray

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Fig. 1. (A) Esophagogastroduodenoscopy shows a smooth, elevated subepithelial tumor in the upper body of the stomach. (B) Esophagogastroduodenoscopy performed 2 years prior shows no subepithelial tumor in the upper body of the stomach.

Fig. 2. Chest computed tomography shows focal scarring with small granulomas in bilateral upper and right lower lung lobes (arrow).

was unremarkable. Chest computed tomography (CT) showed focal scarring with small granulomas in both upper lobes and the right lower lobe of the lungs (Fig. 2). Abdominal CT demonstrated a round, low-density lesion with peripheral calcification that was adherent to the stomach wall, and it was presumed to be a perigastric lymph node (Fig. 3). Upon admission, liver function tests and a blood chemistry panel showed: aspartate aminotransferase 31 IU/L, alanine aminotransferase 13 IU/L, white blood cell count 4,600 cells/mm³ (reference range, 3,000~9,000 cells/mm³), erythrocyte sedimentation rate 9 mm/h (reference range, 0~20 mm/h), and C-reactive protein 0.2 mg/dL (reference range, 0~0.5 mg/dL).

Radial EUS showed an 18-mm heterogeneously echoic round lesion with focal calcifications in the stomach, in-

Fig. 3. Abdominal computed tomography demonstrates a round low-density lesion abutting the stomach, measuring approximately 20 mm in size (white arrow), with peripheral calcification.

distinguishable from the layers of the gastric wall (Fig. 4). An EUS-FNA was performed with a curved linear array scope (GF-UCT260; Olympus, Tokyo, Japan) using a 22-gauge needle (Expect 22G Flex; Boston Scientific, Natick, MA, USA) via a transgastric route. We performed 3 passes with a to-and-fro motion technique to ensure maximal aspiration of tissue. Following microscopic examination of the aspirated sample using the hematoxylin and eosin stain, we diagnosed the lesion as chronic granulomatous inflammation (CGI). Subsequently, we examined the sample using a Ziehl-Neelsen stain and a polymerase chain reaction for *Mycobacterium tuberculosis* to establish a differential diagnoses for CGI (Fig. 5). Ziehl-Neelsen staining showed positive results, and a diagnosis of TB was confirmed. A colonoscopic examination was performed to investigate and rule out extrapulmonary

Fig. 4. (A) Radial endoscopic ultrasound shows an 18-mm hypoechoic, round mass indistinguishable from the layers of the gastric wall. (B) Endoscopic ultrasound-guided fine-needle aspiration of the mass is performed via a transgastric route by using a 22-gauge needle.

Fig. 5. Acid-fast bacilli (AFB) staining of the aspirated cells is positive, indicating the presence of *Mycobacterium* (arrows) (AFB stain, $\times 400$).

TB. Colonoscopic examination showed a wide open ileocolonic valve and multiple scars in addition to a mucosal deformity around the cecum and the proximal ascending colon (Fig. 6).

Based on histopathological results, he was eventually diagnosed with tuberculous lymphadenitis and referred to a pulmonologist who initiated treatment with the standard drug regimen comprising 4 antituberculous drugs (isoniazid 400 mg, ethambutol 800 mg, rifampin 600 mg, and pyrazinamide 1,500 mg) orally for 2 months, followed by 3 drugs (isoniazid 400 mg, ethambutol 800 mg, and ri-

Fig. 6. Colonoscopy shows a wide-open ileocolonic valve and multiple scars in addition to a mucosal deformity around the cecum and proximal ascending colon.

fampin 600 mg) for 4 months. The patient did not report any adverse effects during medical treatment.

DISCUSSION

EUS is a well-established modality used for the evaluation of a SET of the gastrointestinal tract. EUS plays a key role in detailed evaluation to identify the layer of origin, the echo pattern, as well as the size, consistency and vas-

cularity of a tumor.⁶ EUS can also differentiate between a SET and other factors causing extrinsic compression of the stomach by identifying the layer from which a SET originates and its relationship with the gastric wall.⁷ Extrinsic compression of the stomach can be caused by adjacent vascular structures, organs, or pathological structures such as masses, cysts, or lymphadenopathy. In this patient, bulging of the stomach resulted from extrinsic compression of the stomach caused by adjacent lymphadenopathy.

Abdominal TB can develop at any age; however, young adults aged between 25 and 45 years are most commonly affected.⁸ Although primary gastric TB is rare, the gastrointestinal tract is a common site of infection for extrapulmonary TB.^{4,9} The clinical presentation varies based on whether it is a primary infection or a lesion secondary to pulmonary TB. Combined radiological and endoscopic imaging can facilitate early diagnosis without the need to perform unnecessary surgical resection. A few case reports indicate that the presentation of TB gastritis or adenopathy can mimic SET-like lesions noted on EGD (Table 1).^{4,5,10-13} Previous EUS studies have revealed that in 4 of 6 cases studied the tumor was observed to have developed in the muscularis propria layer of the gastric wall, which is a common finding associated with gastrointestinal stromal tumors (GISTs).^{4,5,11,12} In 2 patients, the tumor was observed to be present outside the gastric wall—

in 1 patient, it was visualized as a protruding mass with an overlying ulceration and in the other, presented as a SET-like lesion.^{10,13} Endosonographically, GISTs appear as well-circumscribed, hypoechoic round lesions located in the muscularis propria of the gastric wall. Gastric TB also can manifest as hypoechoic lesions developing within the muscularis propria, which makes gastric TB indistinguishable from GIST based on EUS findings.⁴

Histopathological assessment of SET is the key parameter that can aid in differentiating benign from malignant tumors and help to accurately diagnose structures causing extrinsic compression of the stomach. A meta-analysis evaluating the diagnostic efficacy of EUS-fine needle sampling for assessment of upper gastrointestinal subepithelial lesions showed moderate efficacy in providing a tissue diagnosis.¹⁴ Results of a tissue diagnosis of SET obtained after performing an EUS-FNA are occasionally inconclusive in patients suspected of presenting with tuberculous lymphadenitis; therefore, further evaluation with surgical resection or a repeat EUS-FNA should be considered.

Microscopic confirmation of TB remains a challenge. Arriving at a conclusive histopathological diagnosis of TB requires that samples of aspirated tissue or surgical specimens demonstrate caseating epithelioid granulomas or a positive result with the Ziehl-Neelsen stain. Of the 6 patients reported in this context, only 2 were diagnosed as

Table 1. Summary of Tuberculous Gastropathy Mimicking a Subepithelial Tumor

Author	Sex/age (yr)	Symptoms	EGD	EUS (origin/diameter)	Tbc history	Diagnostic tool	Pathology	Treatment
Kim et al. ¹⁰ (2005)	F/43	Epigastric pain	SET-like, ulcer	Outside of gastric wall/no mention	Yes	EUS-FNA	AFB(+)	Anti-TB medication
Kim et al. ⁴ (2005)	F/21	Abdominal discomfort	SET-like	MP layer/26 mm	No	Surgery	TB-PCR(+), caseation necrosis	Anti-TB medication
Niitsu et al. ¹¹ (2012)	F/41	Incidental	SET-like	MP layer/23 mm	Yes	Surgery	Caseation necrosis	None
Gupta et al. ¹² (2012)	M/28	Epigastric pain	SET-like	MP layer/15 mm	No	Surgery	AFB(+)	Anti-TB medication
Lee et al. ¹³ (2013)	F/61	Incidental	SET-like	Outside of gastric wall/30 mm	No	EUS-FNB	AFB(+), TB-PCR(+), caseation necrosis	Anti-TB medication
Imbe et al. ⁵ (2014)	M/71	Incidental	SET-like	MP layer/15 mm	No	EUS-FNA	CGI	None

EGD, esophagogastroduodenoscopy; EUS, endoscopic ultrasound; F, female; M, male; SET, subepithelial tumor; EUS-FNA, endoscopic ultrasound guided fine-needle aspiration; AFB, acid-fast bacilli; TB, tuberculosis; MP, muscularis propria; PCR, polymerase chain reaction; CGI, chronic granulomatous inflammation.

having TB after performing an EUS-FNA.^{5,10} One patient showed CGI on histopathological evaluation but a negative result with Ziehl-Neelsen staining.⁵ The others reported previous history of TB and demonstrated the presence of acid-fast bacilli in the aspirated cells—a finding similar to our case.¹⁰ Once EUS-FNA establishes the diagnosis of TB, anti-TB chemotherapy is typically recommended as the treatment of choice. Fortunately, our patient did not require unnecessary surgery because the EUS-FNA procedure could conclusively confirm TB in tissue samples.

In conclusion, SET-like lesions are often detected during an endoscopy. EUS is a useful modality to aid in differentiating a SET from extraluminal masses and to identify the morphological features of the lesion. EUS-FNA is primarily recommended in patients to obtain a minimally invasive diagnosis without need of surgery. Both, detailed history taking and careful histopathological analysis are important to conclusively diagnose tuberculous lymphadenitis that mimics a SET in the stomach.

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