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CASE REPORT

# Value of Endoscopic Ultrasonography for Diagnosis of Esophageal Tuberculosis: Report of Two Cases

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Esophageal tuberculosis (ET) is rare, even in countries with a high incidence of tuberculosis (1). In some cases, differential diagnosis of ET from esophageal carcinoma is very difficult and may result in an unnecessary esophagectomy (2). One of the main reasons for this difficulty is the poorly described clinical, radiological, and endoscopic features of ET because of its rarity. Another reason is that the evidence of this infection such as isolation of tubercle bacilli and caseous necrosis is not usually detected (3). There are insufficient data on the utility of endoscopic ultrasonography (EUS) in the diagnosis of ET. Herein, we present EUS findings of two cases with ET that were treated successfully with antituberculous chemotherapy.

## Case 1

A 31-year-old man was admitted to our hospital suffering from mild dysphagia and chest pain for 10 months. His medical history revealed no previous tuberculosis infection or any other disease. A proton pump inhibitor had been prescribed without any investigations at another hospital 2 months previously, but it was ineffective. Physical findings and laboratory data on admission were normal including erythrocyte sedimentation rate. Human immunodeficiency virus (HIV) antibody test was negative. Mantoux test revealed a negative reaction 6 mm in diameter. Chest X-ray was normal.

At upper endoscopy, an ulcerovegetant mass was seen on the posterior wall of the esophagus at 30 to 35 cm from the incisors (Figure 1). Histopathological examination of the specimen obtained from the ulcerovegetant mass showed granulomatous inflammation with no caseous necrosis or malignancy. Polymerase chain reaction (PCR) assay of the specimen was negative for tubercle bacilli. Chest computerized tomography (CT) revealed enlarged subcarinal conglomerated lymphadenopathies (LAPs) adjacent to the esophageal wall.

EUS evaluation revealed multiple, round and oval-shaped, hypoechoic, heterogeneous mediastinal LAPs with regular borders adjacent to the esophageal wall at 23 to 33 cm from the incisors. The biggest LAP was 30 mm in diameter and some of them had fine central calcifications (Figure 2). EUS evaluation also showed thickening of the esophageal wall and absence of a border between the adjacent biggest LAP and the esophageal wall at 30 to 35 cm from the incisors.

Although caseous necrosis was not detected on histopathological examination, the presence of granulomatous inflammation with these EUS features led us to the diagnosis of ET. Antituberculosis chemotherapy consisting of isoniazid (300 mg per day), ethambutol (1000 mg per day), rifampicin (600 mg per day), and pyrazinamide (2000 mg per day) was started. No side effect occurred and the patient's symptoms resolved after 1 month from the beginning of the treatment. After 2 months, upper endoscopy revealed prominent shrinkage of the ulcerovegetant mass. Upper endoscopy identified complete disappearance of the ulcerovegetant mass at the sixth month of the treatment. Tubercle bacilli were not isolated on Lowenstein-Jensen medium from the culture of the biopsy specimen

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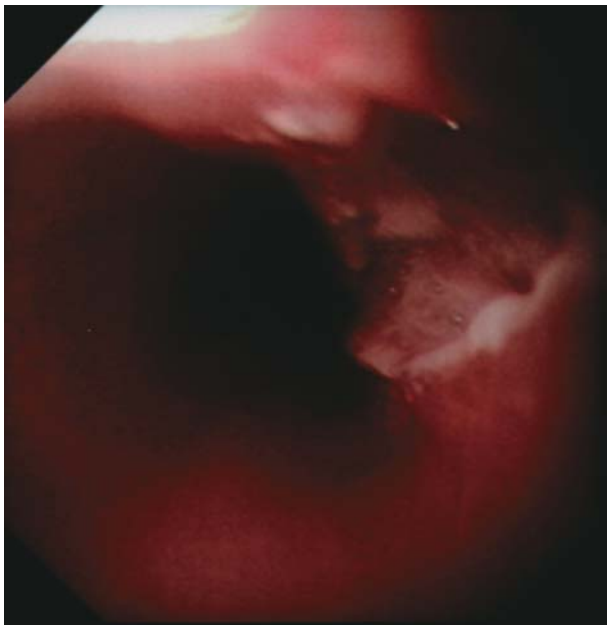

**Fig. 1** Upper endoscopy of case 1 showed an ulcerovegetant lesion at 30 to 35 cm from the incisors

obtained from the ulcerovegetant esophageal lesion. Treatment with isoniazid and rifampicin was continued for 12 months. Endoscopy performed at the end of treatment was completely normal. The patient is still healthy, without any complaints.

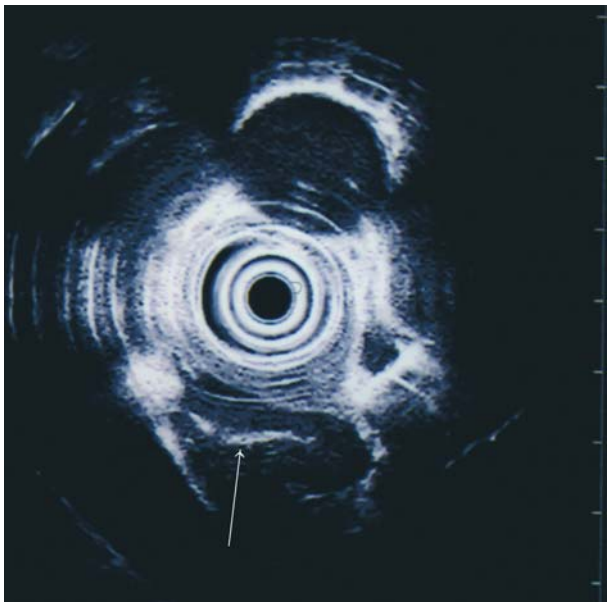

**Fig. 2** EUS evaluation of case 1 revealed multiple mediastinal LAPs at 23 to 33 cm from the incisors. The mediastinal LAPs were seen as round and oval shaped, hypoechoic, and heterogeneous with regular borders. Note the fine central calcification (arrow)

## Case 2

A 50-year-old woman was suffering from dysphagia, chest pain, night sweats, and weight loss (10 kg in 3 months) for 3 months. Her medical history was unremarkable. Her son, mother, and uncle had been diagnosed with pulmonary tuberculosis 10 years previously. As in the previous case, physical findings and laboratory data on admission were normal including erythrocyte sedimentation rate. HIV antibody test was negative. Mantoux test revealed a negative reaction 4 mm in diameter. Chest X-ray was normal.

Upper endoscopy showed an ulcerovegetant lesion on the posterior wall of the esophagus at 29 to 32 cm from the incisors. Histopathological examination of the biopsy specimen showed granulomatous inflammation and demonstrated no caseous necrosis or malignancy. PCR assay of the specimen was negative for tubercle bacilli. Chest CT revealed multiple enlarged subcarinal LAPs and wall thickening of the adjacent esophagus.

EUS evaluation revealed multiple mediastinal LAPs adjacent to the esophageal wall at 25 to 33 cm from the incisors. LAPs were round and oval shaped, hypoechoic, and heterogenous with regular borders. The biggest LAP was 27 mm in diameter and some of them had fine central calcifications. In addition, EUS evaluation revealed thickening of the esophageal wall, and no border echo existed between the adjacent biggest LAP and the esophageal wall at 29 to 32 cm from the incisors (Figure 3).

Antituberculous drugs were started at the same doses as used in the previous case. The patient's symptoms disappeared in the second month of the treatment. No tubercle

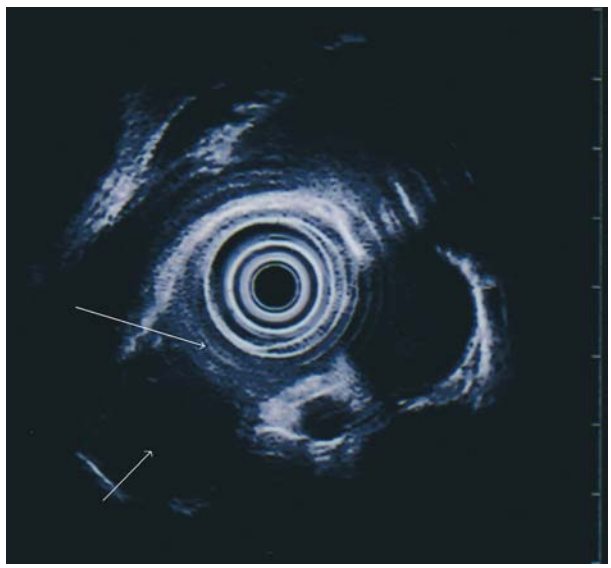

**Fig. 3** EUS view of case 2. No border echo was seen between the biggest LAP (small arrow) and the adjacent thick esophageal wall (big arrow)

bacilli was isolated on Lowenstein-Jensen medium from the culture of the biopsy specimen. After 6 months, upper endoscopy revealed disappearance of the ulcerovegetant mass and showed only a mild granular region at the same location. Treatment with isoniazid and rifampicin was continued for 12 months. At the end of treatment, endoscopy was repeated and no abnormality was seen. The patient is still healthy, without any complaints.

## Discussion

The diagnosis of ET may be difficult because of its rarity and is based on a combination of clinical, radiological, endoscopic, and histolopathological features and, sometimes, response to therapy. Accurate diagnosis requires the isolation of tubercle bacilli from the lesion and/or detection of caseous necrosis histopathologically, however, both of these are not usually established (3). Furthermore, in some cases, malignancy cannot be excluded, resulting in an unnecessary esophagectomy (2).

The main presentation of ET is dysphagia (4). However, patients with ET may also suffer from odynophagia, weight loss, or retrosternal pain or may even be asymptomatic. Like the presentation, radiological (5) and endoscopic findings are also variable (6). Although isolation of bacilli cannot be made, histolopathological examination may be enough to make an accurate diagnosis when both granulamatous inflammation and caseous necrosis are detected. However, when only granulamatous inflammation (with the absence of caseous necrosis) is reported histopathologically, clinicians may fail to make the differential diagnosis of ET. Other granulomatous lesions such as Crohn's disease, fungal infections, syphilis, and sarcoidosis may be suspected. Histopathological examination showed only granulomatous inflammation, while caseous necrosis was not reported in either of our cases. Furthermore, isolation of tubercle bacilli was not achieved in cultures in either of the cases and PCR assays were also negative for tubercle bacilli. We suggested that EUS evaluation might be helpful for differential diagnosis of the esophageal lesions in our cases, although there were insufficient data on the utility of EUS in diagnosis of ET. To our knowledge, utility of EUS in diagnosis of ET has been reported in only one case previously. The EUS features of that case were very similar to those of our cases (7). In both of our cases, EUS evaluation showed multiple mediastinal LAPs which were round and oval shaped, hypoechoic, and heterogeneous with regular borders, and some of them had fine central calcification. Absence of an echo border between the biggest LAP and the adjacent thick esophageal wall was an another EUS feature in both cases. We suggest that the latter EUS feature was caused by fistulisation of the tuberculous LAP into the adjacent esophageal wall.

EUS features of other granulomatous diseases with mediastinal LAPs such as sarcoidosis (8, 9) and histoplasmosis (10) have been described previously. The typical EUS features observed in sarcoidosis were reported as the presence of either isoechoic or hypoechoic LAPs, with atypical vascular structures within them in a subset of patients (9). The presence of calcification in LAPs is unexpected in sarcoidosis. On the other hand, Savides *et al*. reported EUS features of 11 patients with mediastinal granulomas due to histoplasmosis, and EUS evaluation revealed a large mass of matted, posterior mediastinal LAPs that were adherent to a focally thickened esophageal wall in all of these patients and lymph node calcification in 7 of them (10). However, our cases differed from them in the presence of an esophageal ulcerovegetant lesion.

Although we were not able to detect caseous necrosis on histopathological examination or isolate tubercle bacilli, the presence of granulomatous inflammation with these radiological, endoscopic, and EUS features led us to suggest a diagnosis of ET in both cases. The excellent clinical and endoscopic response to antituberculous therapy supported our diagnosis.

In conclusion, ET has to be kept in mind in the differential diagnosis of cases with esophageal ulcerovegetant lesions, and EUS evaluation may be helpful when an accurate diagnosis is not established. The EUS features for ET are esophageal wall thickness with multiple big mediastinal LAPs and absence of a border echo between the LAP and the adjacent esophageal wall. On EUS evaluation, mediastinal LAPs are seen as round and oval shaped, hypoechoic, and heterogeneous with regular borders, and some of them have fine central calcifications.

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