

CASE REPORT

Posterior mediastinal tuberculous lymphadenitis with dysphagia as the main symptom: a case report and literature review

Liangkun Xiong, Xiaowen Mao, Changsheng Li, Zhisu Liu, Zhonglin Zhang

Department of General Surgery, Zhongnan Hospital of Wuhan University, Wuhan 430071, China

ABSTRACT

Introduction: Mediastinal tuberculous lymphadenitis (MTL) is mostly seen in primary tuberculosis in children, uncommon observed in adults. It usually presents the toxic symptoms of tuberculosis but rarely with symptoms characteristic of esophageal compression, such as dysphagia. Such patients can easily be misdiagnosed as esophageal neoplasm and get delayed or faulty treatment.

Case report: A 32-year-old man presented with dull chest pain of one month and dysphagia of five days. CRP was elevated, and a skin test was strongly positive. At upper endoscopy, a protruding lesion covered by normal mucosa was seen at 26 cm from the upper incisor. Barium swallow showed visible external compressive stricture on the middle-lower esophagus with normal mucosal pattern. Chest computed tomography (CT) scan showed a subcarinal mass adjacent to the esophageal wall in posterior mediastinum. An endoscopic ultrasonography (EUS) revealed a hypoechoic lesion suspected of esophageal stromal tumor in the fourth layer. A tissue was obtained by ultrasound-guided fine-needle aspiration (EUS-FNA), but cytopathology, bacilliculture and PCR test had no special findings. The patient required experimental antitubercular treatment and the protruding lesion shrank gradually during therapy period.

Conclusions: MTL could not be ignored in the differential diagnosis of posterior mediastinal mass with dysphagia. Analyzing and evaluating test results comprehensively is the key to make correct diagnosis and timely treatment. The experimental antituberculous treatment should be used if MTL is highly suspected.

KEYWORDS

Mediastinal; tuberculous lymphadenitis; dysphagia

J Thorac Dis 2013;5(5):E189-E194. doi: 10.3978/j.issn.2072-1439.2013.09.03

Introduction

Mediastinal tuberculous lymphadenitis (MTL) is mostly seen in primary tuberculosis in children (1), uncommon observed in adults (2). It usually presents the toxic symptoms of tuberculosis but rarely with symptoms characteristic of esophageal compression, such as dysphagia. Such patients can easily be misdiagnosed as esophageal neoplasm and get delayed or faulty treatment. Here is such a case.

Case report

A 32-year-old man presented with dull chest pain of one month

and dysphagia for solid food of five days. He had no other digestive symptoms, denied weight loss, mild fever, cough and night sweating. He had been admitted because of allergic purpura twice from 2002 to 2003, and it did not relapse until two weeks before hospitalization. Some petechiae were noted on the lower legs in a symmetrical distribution. His other past medical history was unremarkable. CRP was elevated, and a skin test was strongly positive. Tests for infectious diseases were negative, including HIV, hepatitis B, hepatitis C and syphilis. The other laboratory tests were all within normal limits, including ESR, LDH, ADA and tuberculosis protein chip.

At upper endoscopy, a protruding lesion covered by normal mucosa was seen at 26 cm from the upper incisor (Figure 1). His barium swallow showed visible external compressive stricture on the middle-lower esophagus with normal mucosal pattern (Figure 2). Chest computed tomography (CT) scan showed a subcarinal mass adjacent to the esophageal wall in posterior mediastinum (Figure 3). An endoscopic ultrasonography (EUS) revealed a hypoechoic lesion suspected of esophageal stromal tumor in the fourth layer (Figure 4). A grey-white tissue was obtained by ultrasound-guided fine-needle aspiration (EUS-FNA),

Corresponding to: Zhonglin Zhang, MD, PhD. Department of General Surgery, Zhongnan Hospital of Wuhan University, Wuhan 430071, China. Email: surgon1990@gmail.com.

Submitted Jun 21, 2013. Accepted for publication Sep 04, 2013.
Available at www.jthoracdis.com

ISSN: 2072-1439

© Pioneer Bioscience Publishing Company. All rights reserved.

but cytopathology, bacilliculture and PCR test had no special findings.

Though multiple examinations had been conducted, the diagnosis was still a mystery. The patient required experimental antituberculous treatment according to the positive skin test. After the first month of careful treatment, an enhanced CT scan showed the reduced node had central low attenuation and peripheral rim enhancement, with some cystic low density formed. The radiological feature as response to antituberculous therapy supported for the diagnosis of tuberculosis. The patient

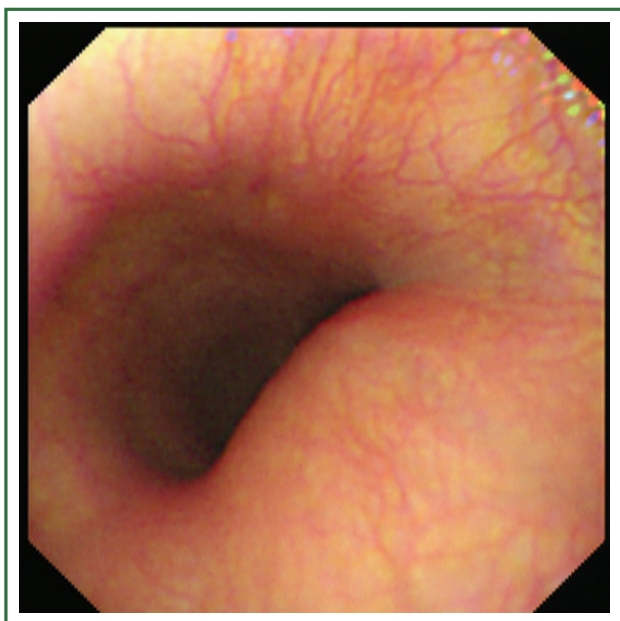


Figure 1. Endoscopic view of a protruding lesion covered by normal mucosa located 26 cm from the upper incisor.

checked regularly CT, barium swallow and endoscopy. The size of the protruding lesion reduced gradually during therapy period (Figures 5,6). He received antituberculous treatment for 12 months and did not have obviously adverse reactions except hyperuricemia of 700 $\mu\text{mol/L}$ (normal, 90-420 $\mu\text{mol/L}$) which disappeared after stopped pyrazinamide in the second month of treatment. The symptoms of purpura also disappeared in the second month.

Discussion

Dysphagia with esophageal mechanical obstruction usually results from stricture caused by intramural or extrinsic lesions. Esophageal neoplasm is the most frequent cause and considered first in the clinic. Conventional endoscopy is an established method for diagnosing gastrointestinal tract diseases, however it usually can not appropriately evaluate the endoluminal protrusions with normal mucosa alone (3). EUS can distinguish between extrinsic compression and submucosal tumor with 95% to 100% accuracy (4-6), which is superior to endoscopy and radiological examination (7). It separates the digestive wall into five layers and reveals the exact origin of a lesion. In fact, the EUS did not define the exact origin in our case. The inflammatory adhesion between the esophagus and lymphonodus might cause the confusion of the stricture. EUS also helps to differentiate diagnosis between benign and malignant submucosal tumors (8) and improves the diagnostic accuracy (9) according to the characteristics of echo. But Hwang *et al.* (6) found that EUS imaging alone is insufficient to accurately diagnose 3rd and 4th layer hypoechoic masses which agreed with the histologic diagnosis in only 10 of 23 cases. So he advised to obtain histologic confirmation whenever possible.

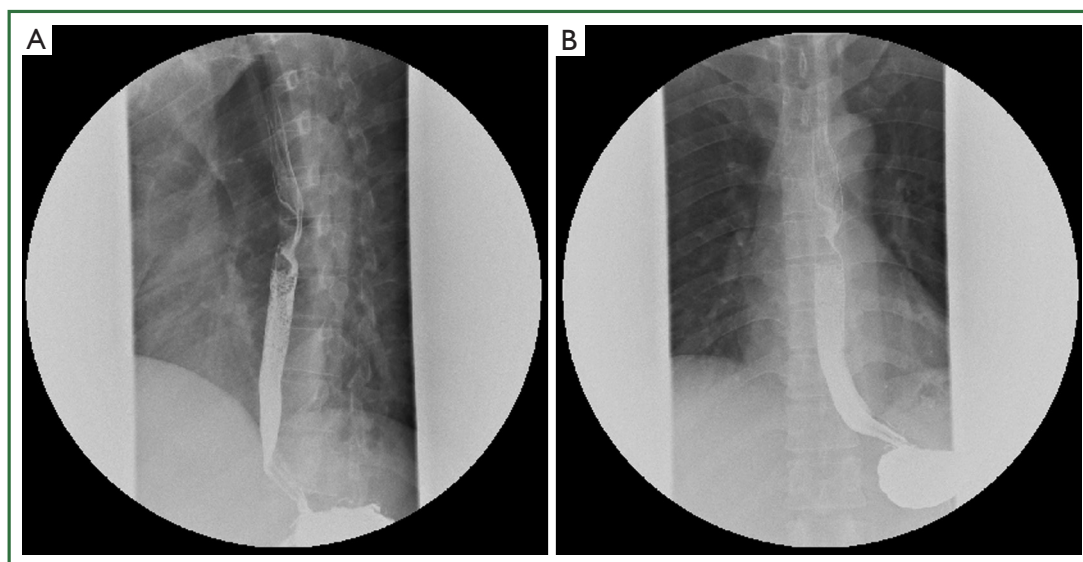


Figure 2. Barium swallow showing visible external compressive stricture on the middle-lower esophagus with normal mucosal pattern.

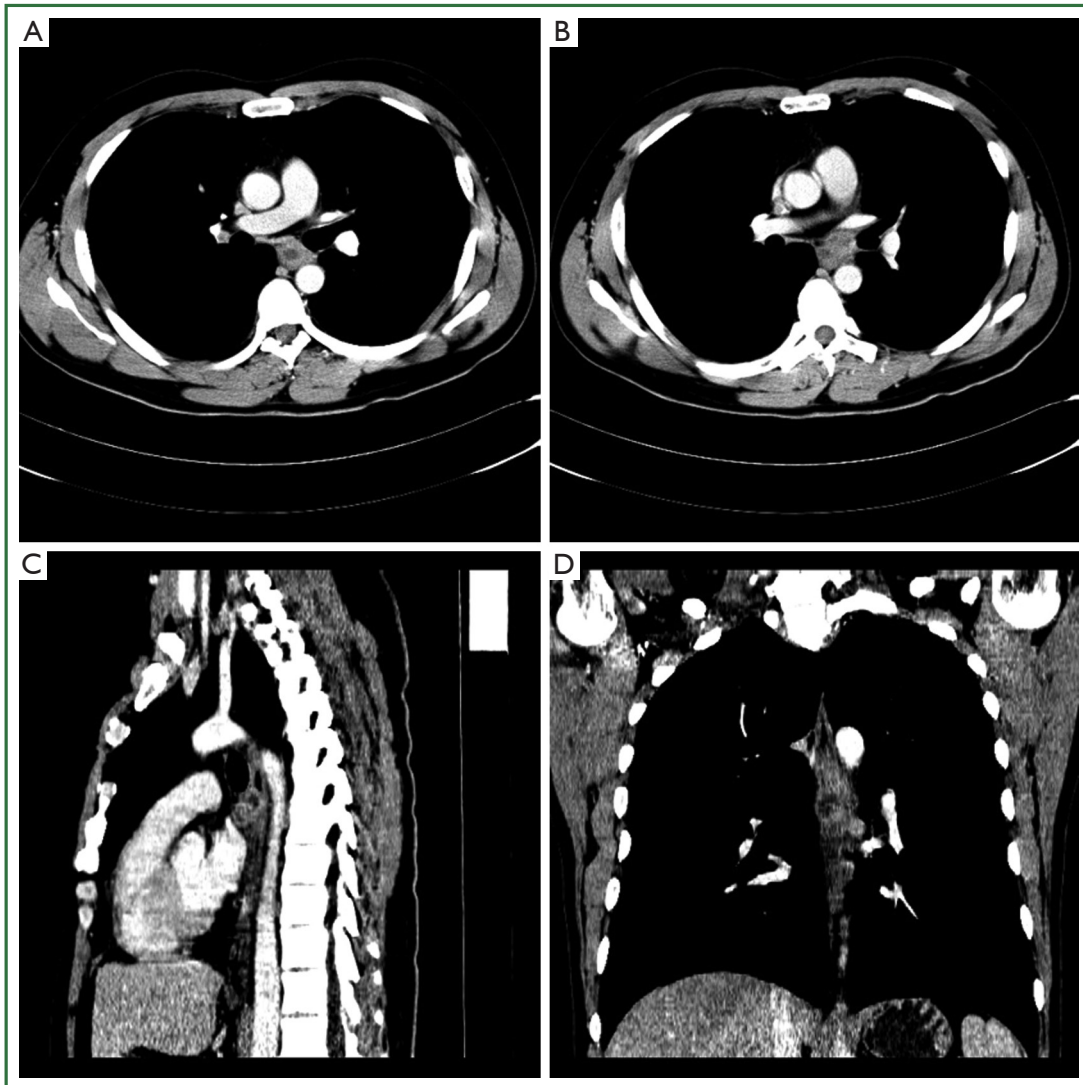


Figure 3. Computed tomography chest scan showing a subcarinal mass adjacent to the esophageal wall in posterior mediastinum.

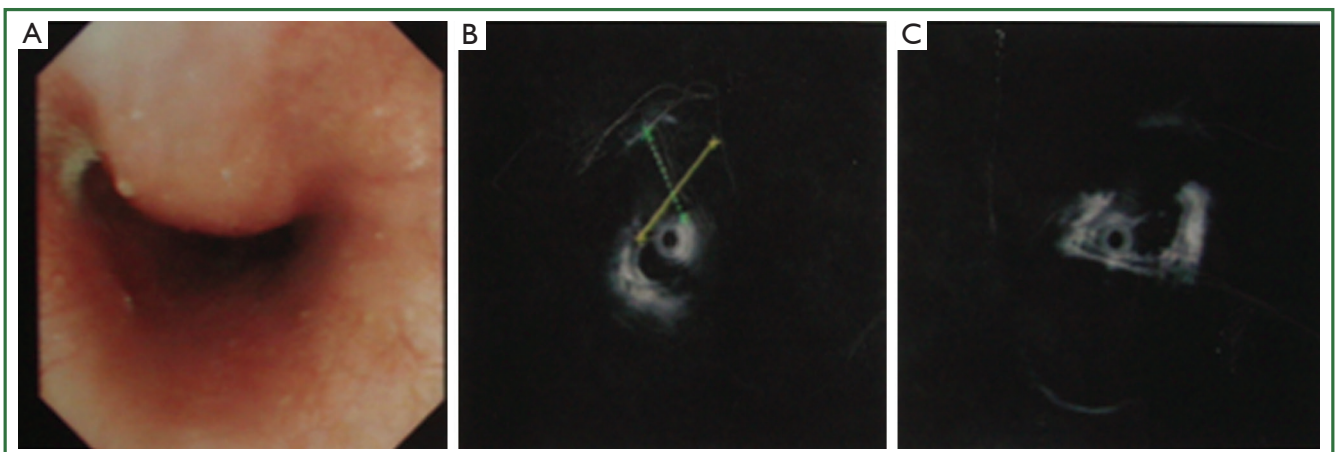


Figure 4. Endoscopic ultrasonography revealing a hypoechoic lesion suspected of esophageal stromal tumor in the fourth layer.

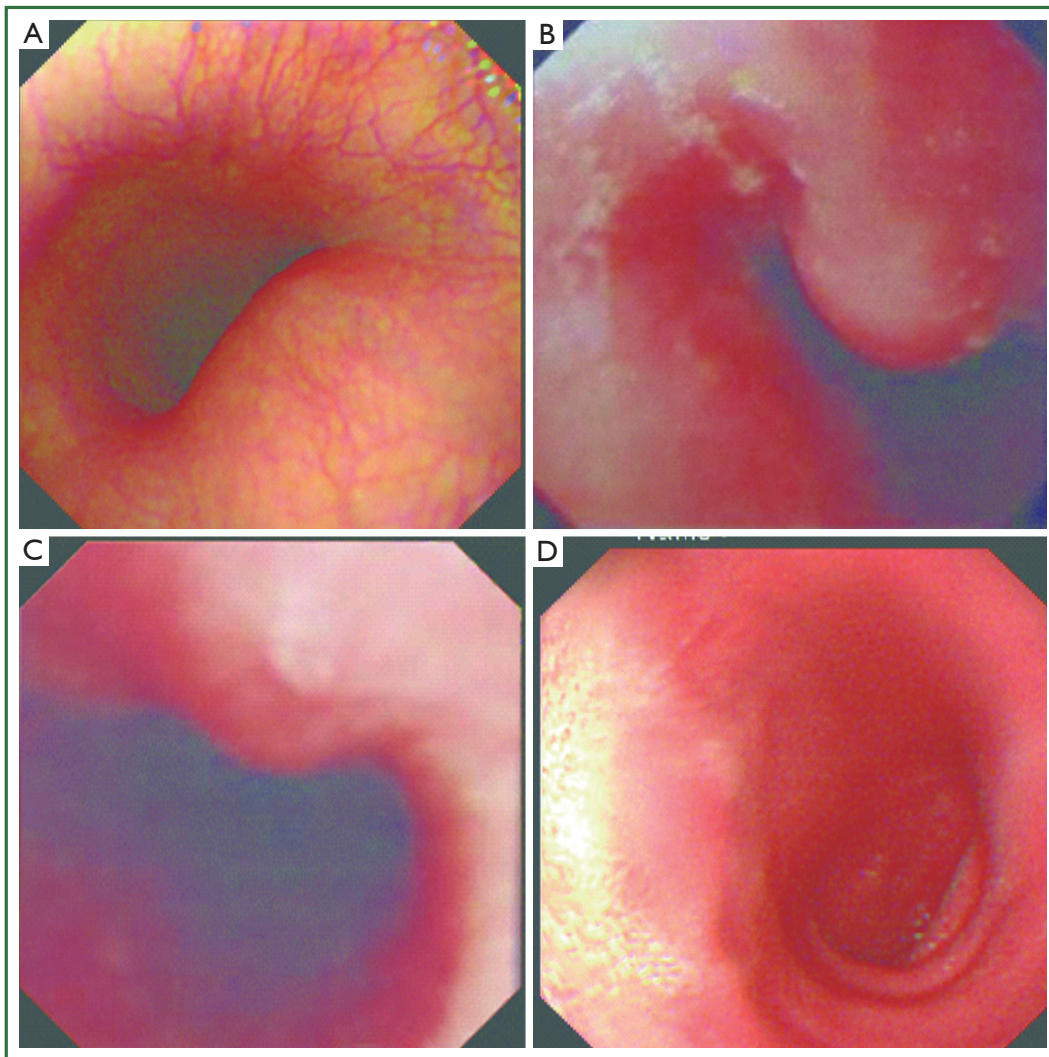


Figure 5. (A) Before treatment; (B) After 1-month treatment; (C) After 2-month treatment; (D) after 8-month treatment. Esophagoscopy showing that the size of the protruding lesion reduced gradually during therapy period.

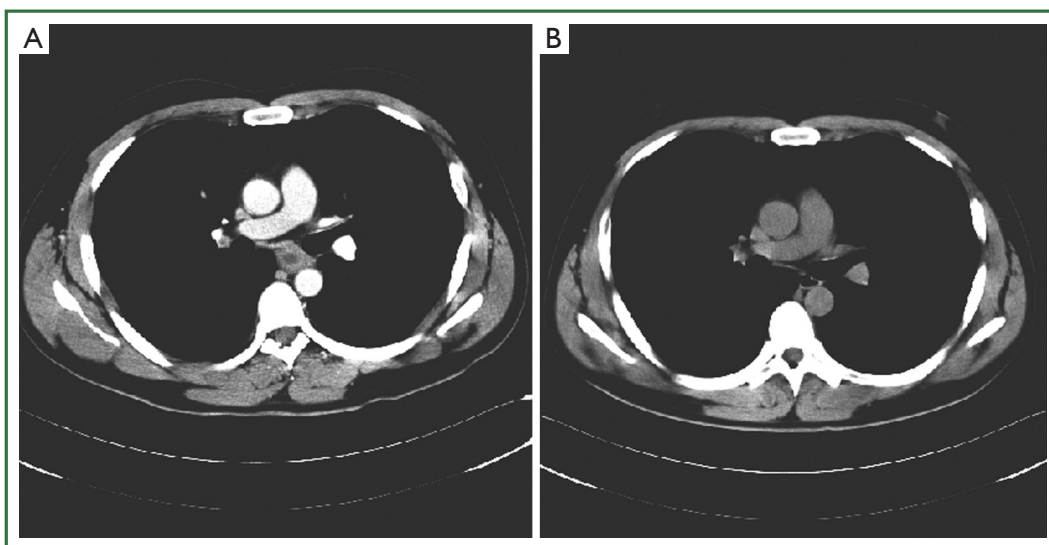


Figure 6. (A) Before treatment; (B) After 9-month treatment. Computed tomography chest showing the disappearance of the posterior mediastinal mass after 9 months of antituberculous therapy.

MTL can cause dysphagia by compressing the thoracic esophagus. The enlarged lymph nodes mainly locate in the upper and middle zone of the mediastinum and more in the right side than in the left side (10,11). The tuberculin skin test is a screening measure for tuberculosis. Although the skin test has false-positive and false-negative rate, it also can provide some reference for tuberculosis (12,13). The imageological technique is of great help to diagnosis of MTL. The classical CT findings are nodes with central low attenuation and peripheral rim enhancement, frequently with a multilocular appearance (10,11,14,15). But when lymph nodes have tuberculous hyperplasia with no caseous necrosis, its enhancement is homogeneous without a central low density area (10). In our case, the CT features conformed to the typical imaging manifestation of lymphoid tuberculosis after 1-month antituberculous treatment, but the anatomic relationship between the mass and esophageal wall could not be still clarified. The most common MRI imaging appearance of MTL is as inhomogeneous nodes with marked hyperintensity on T2-weighted images and peripheral enhancement (16). Some studies on the EUS features of MTL have been done in recent years. Fritscher-Ravens *et al.* (17) reported that inhomogeneous, hyperechoic areas with or without shadowing were seen within the tuberculosis nodes. The acoustic shadowing might represent gas produced by the bacteria within or calcifications of former inactive tuberculosis. Rana *et al.* (18) summarized that patchy anechoic or hypoechoic areas or hyperechoic foci in the mediastinal lymph nodes on EUS were important signs of mediastinal tubercular lymphadenopathy.

Biopsy is always a good tool in the diagnosis of disease. Cytopathology and bacilliculture can be carried out on samples directly collected from the infection site. Further, when histopathology and culture are negative, PCR test can be performed as a diagnostic method for extrapulmonary tuberculosis (19,20). As a minimally invasive tool, EUS-FNA can aid cytological evaluation to diagnosis gastrointestinal diseases and mediastinal diseases if sufficient material has been obtained. The diagnostic accuracy is not associated with mass location, mass size, needle size, but 3.0 or more needle passes and combined cytologic-histologic analysis enhance the accuracy (21). For MTL, Fritscher-Ravens *et al.* (17) reported the sensitivity, specificity, and positive and negative predictive values of EUS-FNA were 86%, 100%, 100%, and 91%, respectively. In our case, a grey-white tissue was obtained by EUS-FNA, but all of cytopathology, bacilliculture and PCR test had no special findings. A new biopsy was refused. The overall risk of complications from EUS-FNA is relatively low (1.6%) (22) with perforation, aspiration pneumonia, bleeding. But a case of mediastinal-esophageal fistulae after EUS-FNA of tuberculosis of the mediastinum reported by Von Bartheld *et al.* (23) is worth our attention. Furthermore, EUS also can apply to the lesions in locations that are difficult to access (e.g., posterior mediastinum) (24). Mediastinoscopy (25,26) and thoracoscopy (27)

can obtain diagnostic material from a mediastinal mass safely and easily. Mediastinoscopy has been shown to have the best diagnosis yield (100%) (28) in MTL. But they are invasive procedures and done under general anesthesia. The CT scan (Figure 3) showed that the mass was between the atrium and tracheal carina, meanwhile prior to the esophagus. The special location made that both of the mediastinoscopy and thoracoscopy could not be conducted.

Other rare mediastinal disease such as sarcoidosis, lymphoma, or distant metastases should be included in the differential diagnosis of MTL. Some laboratory tests such as tumor makers, serum adenosine deaminase (29-31), angiotensin converting enzyme (32,33) and radiological examinations are helpful to identify these diseases. The CT scan of sarcoidosis usually shows that symmetrical and homogeneous enlargement of bilateral hilar lymph nodes (11), which can be used to differentiate it from tuberculosis. Homogeneous enhancement is more commonly seen in lymphoma than in tuberculosis (34). For most metastases, it will be not difficult to be diagnosed after the primary disease has emerged.

At the initial stage of the disease, our patient was advised to undergo surgery because of misdiagnosis of esophageal cancer and other mechanical tumors by other hospitals. Although the radiological, endoscopic and EUS-FNA did not provide evidence to establish tuberculosis infection, the positive skin test gave a prompting to the diagnosis of MTL. The CT scan and endoscopy response to antituberculous therapy supported for the diagnosis of tuberculosis. The allergic purpura may be the extra-pulmonary manifestation of tuberculosis caused by abnormal immunity.

The prognosis of MTL with an adequate treatment is well, but surgery be prepared, when necessary, to resolve the symptoms of esophageal compression. In conclusion, we could not ignore the diagnosis of MTL facing posterior mediastinal mass with dysphagia. Analyzing and evaluating test results comprehensively is the key to make correct diagnosis and timely treatment. The experimental antituberculous treatment should be used if MTL is highly suspected.

Acknowledgements

Disclosure: The authors declare no conflict of interest.

References

1. Venkateswaran RV, Barron DJ, Brawn WJ, et al. A forgotten old disease: mediastinal tuberculous lymphadenitis in children. *Eur J Cardiothorac Surg* 2005;27:401-4.
2. Amorosa JK, Smith PR, Cohen JR, et al. Tuberculous mediastinal lymphadenitis in the adult. *Radiology* 1978;126:365-8.
3. Argüello L. Endoscopic ultrasonography in submucosal lesions and extrinsic compressions of the gastrointestinal tract. *Minerva Med*

- 2007;98:389-93.
4. Motoo Y, Okai T, Ohta H, et al. Endoscopic ultrasonography in the diagnosis of extraluminal compressions mimicking gastric submucosal tumors. *Endoscopy* 1994;26:239-42.
 5. Rösch T. Endoscopic ultrasonography in upper gastrointestinal submucosal tumors: a literature review. *Gastrointest Endosc Clin N Am* 1995;5:609-14.
 6. Hwang JH, Saunders MD, Rulyak SJ, et al. A prospective study comparing endoscopy and EUS in the evaluation of GI subepithelial masses. *Gastrointest Endosc* 2005;62:202-8.
 7. Shen EF, Arnott ID, Plevris J, et al. Endoscopic ultrasonography in the diagnosis and management of suspected upper gastrointestinal submucosal tumours. *Br J Surg* 2002;89:231-5.
 8. Martínez-Ares D, Souto-Ruzo J, Yanez LJ, et al. Usefulness of endoscopic ultrasonography in the preoperative diagnosis of submucosal digestive tumours. *Rev Esp Enferm Dig* 2005;97:416-26.
 9. Nikolić M, Boban M, Ljubic N, et al. Evaluation of upper gastrointestinal submucosal lesions by endoscopic ultrasonography. *Acta Med Croatica* 2009;63 Suppl 3:29-37.
 10. Luo MY, Liu L, Lai LS, et al. Deepgoing study on intrathoracic tuberculous lymphadenitis in adults using multidetector CT. *Chin Med J (Engl)* 2010;123:1283-8.
 11. Tang SS, Yang ZG, Deng W, et al. Differentiation between tuberculosis and lymphoma in mediastinal lymph nodes: Evaluation with contrast-enhanced MDCT. *Clin Radiol* 2012;67:877-83.
 12. King AB. Accurately interpreting PPD skin test results. *Nurse Pract* 1999;24:144-7.
 13. Orsi GB, Antoniozzi T, Ortis M, et al. Skin test screening for tuberculosis among healthcare students: a retrospective cohort study. *Ann Ig* 2013;25:311-5.
 14. Im JG, Song KS, Kang HS, et al. Mediastinal tuberculous lymphadenitis: CT manifestations. *Radiology* 1987;164:115-9.
 15. Moon WK, Im JG, Yeon KM, et al. Mediastinal tuberculous lymphadenitis: CT findings of active and inactive disease. *AJR Am J Roentgenol* 1998;170:715-8.
 16. Moon WK, Im JG, Yu IK, et al. Mediastinal tuberculous lymphadenitis: MR imaging appearance with clinicopathologic correlation. *AJR Am J Roentgenol* 1996;166:21-5.
 17. Fritscher-Ravens A, Ghanbari A, Topalidis T, et al. Granulomatous mediastinal adenopathy: can endoscopic ultrasound-guided fine-needle aspiration differentiate between tuberculosis and sarcoidosis? *Endoscopy* 2011;43:955-61.
 18. Rana SS, Bhasin DK, Srinivasan R, et al. Endoscopic ultrasound (EUS) features of mediastinal tubercular lymphadenopathy. *Hepatogastroenterology* 2011;58:819-23.
 19. Mehta PK, Raj A, Singh N, et al. Diagnosis of extrapulmonary tuberculosis by PCR. *FEMS Immunol Med Microbiol* 2012;66:20-36.
 20. Ajantha GS, Shetty PC, Kulkarni RD, et al. PCR as a diagnostic tool for extra-pulmonary tuberculosis. *J Clin Diagn Res* 2013;7:1012-5.
 21. Rong L, Kida M, Yamauchi H, et al. Factors affecting the diagnostic accuracy of endoscopic ultrasonography-guided fine-needle aspiration (EUS-FNA) for upper gastrointestinal submucosal or extraluminal solid mass lesions. *Dig Endosc* 2012;24:358-63.
 22. Bardales RH, Stelow EB, Mallery S, et al. Review of endoscopic ultrasound-guided fine-needle aspiration cytology. *Diagn Cytopathol* 2006;34:140-75.
 23. von Bartheld MB, van Kralingen KW, Veenendaal RA, et al. Mediastinal-esophageal fistulae after EUS-FNA of tuberculosis of the mediastinum. *Gastrointest Endosc* 2010;71:210-2.
 24. Südhoff T, Hollerbach S, Wilhelms I, et al. Clinical utility of EUS-FNA in upper gastrointestinal and mediastinal disease. *Dtsch Med Wochenschr* 2004;129:2227-32.
 25. Nalladaru ZM, Wessels A. The role of mediastinoscopy for diagnosis of isolated mediastinal lymphadenopathy. *Indian J Surg* 2011;73:284-6.
 26. Jacob B, Parsa R, Frizzell R, et al. Mediastinal tuberculosis in Bradford, United Kingdom: the role of mediastinoscopy. *Int J Tuberc Lung Dis* 2011;15:240-5, i.
 27. Kitami A, Suzuki T, Usuda R, et al. Diagnostic and therapeutic thoracoscopy for mediastinal disease. *Ann Thorac Cardiovasc Surg* 2004;10:14-8.
 28. Ayed AK, Behbehani NA. Diagnosis and treatment of isolated tuberculous mediastinal lymphadenopathy in adults. *Eur J Surg* 2001;167:334-8.
 29. Wetzel E, Müller-Quernheim J, Lorenz J. Serum adenosine deaminase as a parameter for activity in sarcoidosis. *Pneumologie* 1999;53:323-8.
 30. Aghaei M, Karami-Tehrani F, Salami S, et al. Adenosine deaminase activity in the serum and malignant tumors of breast cancer: the assessment of isoenzyme ADA1 and ADA2 activities. *Clin Biochem* 2005;38:887-91.
 31. Tarhan G, Gümüşlü F, Yılmaz N, et al. Serum adenosine deaminase enzyme and plasma platelet factor 4 activities in active pulmonary tuberculosis, HIV-seropositive subjects and cancer patients. *J Infect* 2006;52:264-8.
 32. Linssen N. Increased serum activity of angiotensin-converting enzyme (ACE): indication of sarcoidosis? A 'Bayesian' approach. *Ned Tijdschr Geneesk* 2003;147:1292-3; author reply 1293.
 33. Tasaki M, Hattori N, Ihara D, et al. Case report: A case of Hodgkin lymphoma required a differential diagnosis from sarcoidosis due to elevated serum level of angiotensin converting enzyme (ACE). *Nihon Naika Gakkai Zasshi* 2012;101:1401-3.
 34. Tang SS, Yang ZG, Deng W, et al. Differentiation between tuberculosis and lymphoma in mediastinal lymph nodes: Evaluation with contrast-enhanced MDCT. *Clin Radiol* 2012;67:877-83.



Cite this article as: Xiong L, Mao X, Li C, Liu Z, Zhang Z. Posterior mediastinal tuberculous lymphadenitis with dysphagia as the main symptom: a case report and literature review. *J Thorac Dis* 2013;5(S):E189-E194. doi: 10.3978/j.issn.2072-1439.2013.09.03