

A case report of metastatic breast cancer initially presenting with esophageal dysphagia

Ailing Liu, MD^a, Yunlu Feng, MD^a, Bo Chen, MD^b, Li Li, MD^c, Dongsheng Wu, MD^a, Jiaming Qian, MD^a, Aiming Yang, MD^{a,*}

Abstract

Rationale: Breast cancer metastasis to the esophagus is uncommon. To our knowledge, the present case is the first report of breast cancer with dysphagia as the initial symptom.

Patient concerns: A 62-year-old woman was admitted to our hospital for progressive dysphagia.

Diagnoses: Endoscopic ultrasound-guided fine needle biopsy of the esophageal lesion found poorly differentiated carcinoma, and surgical resection of the breast nodule revealed invasive ductal carcinoma.

Interventions: The patient underwent an esophagectomy, and the immunohistochemistry of surgical specimen was identified as metastatic breast cancer. Then patient was treated with chemotherapy and hormone therapy.

Outcomes: The patient remained symptom-free during 5 months of follow-up examinations.

Lessons: This case indicates that metastatic breast cancer to the esophagus should be considered as a cause of esophageal stricture in older women.

Abbreviations: CT = chest computed tomography, EGD = esophago-gastro-duodenoscopy, EMR = endoscopic mucosal resection, EUS = endoscopic ultrasound, EUS-FNA = endoscopic ultrasound-guided fine needle aspiration, EUS-FNB = endoscopic ultrasound-guided fine needle biopsy, PET-CT = positron emission tomography-computed tomography, SUV = standard uptake value.

Keywords: dysphagia, esophageal stricture, metastatic breast cancer

1. Introduction

Tumor metastasis to the esophagus is an unusual occurrence, with the breast and lung as the most frequent origin.^[1] Breast cancer is the most common cancer in females. The most common sites of breast cancer metastasis are the bone, liver, brain, and lung, whereas metastasis to the esophagus is rare.^[2] Diagnosis of esophageal stricture due to metastatic breast cancer is often difficult, and most cases are diagnosed by autopsy or surgery.^[3] Breast cancer presenting with dysphagia as the first manifestation is rarely reported, as esophageal metastasis typically occurs a long time after diagnosis and treatment of the primary breast tumor.^[4]

Here we report a case of metastatic breast cancer to the esophagus with dysphagia as the initial symptom.

Editor: N/A.

The authors have no conflicts of interest.

^a Department of Gastroenterology, ^b Department of Pathology, ^c Department of Thoracic Surgery, Peking Union Medical College Hospital, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing, China.

* Correspondence: Aiming Yang, Department of Gastroenterology, Peking Union Medical College Hospital, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing, 100730, China (e-mail: yangaiming@medmail.com.cn).

Copyright © 2018 the Author(s). Published by Wolters Kluwer Health, Inc. This is an open access article distributed under the terms of the Creative Commons Attribution-Non Commercial License 4.0 (CCBY-NC), where it is permissible to download, share, remix, transform, and buildup the work provided it is properly cited. The work cannot be used commercially without permission from the journal.

Medicine (2018) 97:45(e13184)

Received: 30 July 2018 / Accepted: 18 October 2018

<http://dx.doi.org/10.1097/MD.0000000000013184>

2. Case report

A 62-year-old woman was admitted due to progressive dysphagia over the course of 3 months. The patient had lost 8 kg, but experienced no diarrhea, hematochezia, or abdominal distension. The patient had no history of malignancy. A physical examination found no abnormalities.

A barium swallow (Fig. 1) identified a stricture in the middle of the esophagus. Chest computed tomography (CT) (Fig. 2) revealed a thickened esophageal wall at the site of the stricture and a dilated upper esophagus. There were multiple enlarged lymph nodes on the bilateral subaxillary, hilar, and mediastinal regions. An esophago-gastro-duodenoscopy (EGD) (Fig. 3) showed the esophageal lumen stenosis and normal mucosa. Using an endoscopic ultrasound (EUS) (Fig. 4), the thickness of the esophageal wall was found to be about 1.2 cm, and its structure was classified as abnormal. The ultrasound of the breast and axillary lymph node found that there was a hypoechoic nodule of 1.4 × 0.9 cm at the 12 o'clock direction from the right nipple. The structure of the right axillary lymph nodes had been destroyed. Positron emission tomography-computed tomography (PET-CT) demonstrated that the mid-esophagus wall was thickened with a maximum of standard uptake value (SUV) of 4.8. There were irregular nodules above the right nipple (SUV 3.7), and there were enlarged lymph nodes in the right axillary area, which could not exclude malignant tumor metastasis. Histopathology by endoscopic ultrasound-guided fine needle biopsy (EUS-FNB) (Fig. 5) indicated that several allotypic spindle cells had infiltrated into the fibrous and smooth muscle tissues, some of which had undergone plasmacytoid changes. The tumors were diagnosed as poorly differentiated carcinoma after

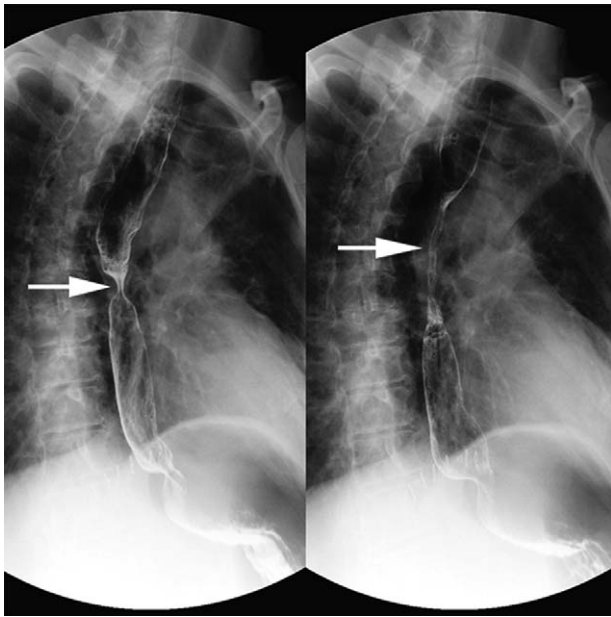


Figure 1. Upper digestive tract radiograph showing mid-esophagus stricture (arrow).

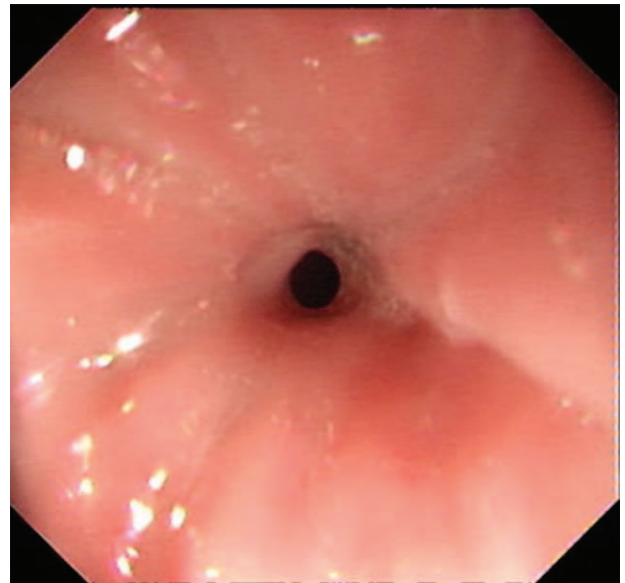


Figure 3. Endoscopy showing the esophageal lumen stenosis and normal mucosa.

combining these data with immunohistochemical analyses. Immunohistochemical results were as follows: AE1/AE3 (+), CD138 (-), Ki-67 (index 40%), S-100 (-), SMA (-), P53 (-), ER (80%). Excision biopsy of the nodule located in the right breast revealed breast invasive ductal carcinoma (moderately to well differentiated, the second grade). Immunohistochemistry: ER (10%), PR (-), Her-2 (-), EGFR (-), CD10 (-), CK5/6 (-), ECadherin (+), CgA, Ki-67 (20%), P120 (membrane +), P63 (-), P53 (-), Syn (-).

Because a diagnosis of esophageal metastasis from breast cancer was suspected, the patient underwent a total esophagec-

tomy with cervical esophagogastrostomy. Pathological analysis (Fig. 6) demonstrated poorly differentiated adenocarcinoma, which was compatible with primary breast cancer, involving the esophageal submucosa, muscularis, adventitia, vasculature, right



Figure 2. Computed tomography (CT) scan showing thickening of the esophageal wall around the stricture (arrow).

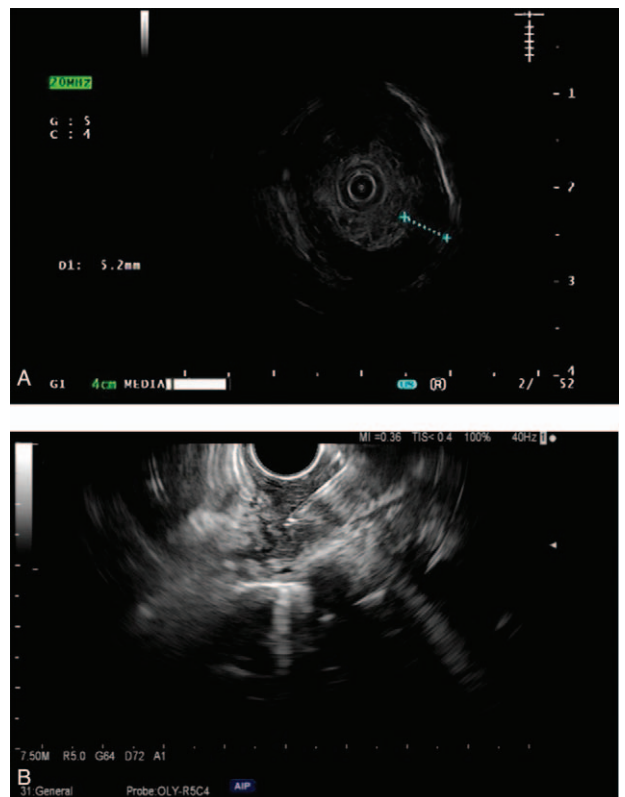


Figure 4. Endoscopic ultrasound (EUS) revealing the esophageal wall was thickened and the abnormal structure as detected by mini-probe (A) and linear array scope (B).

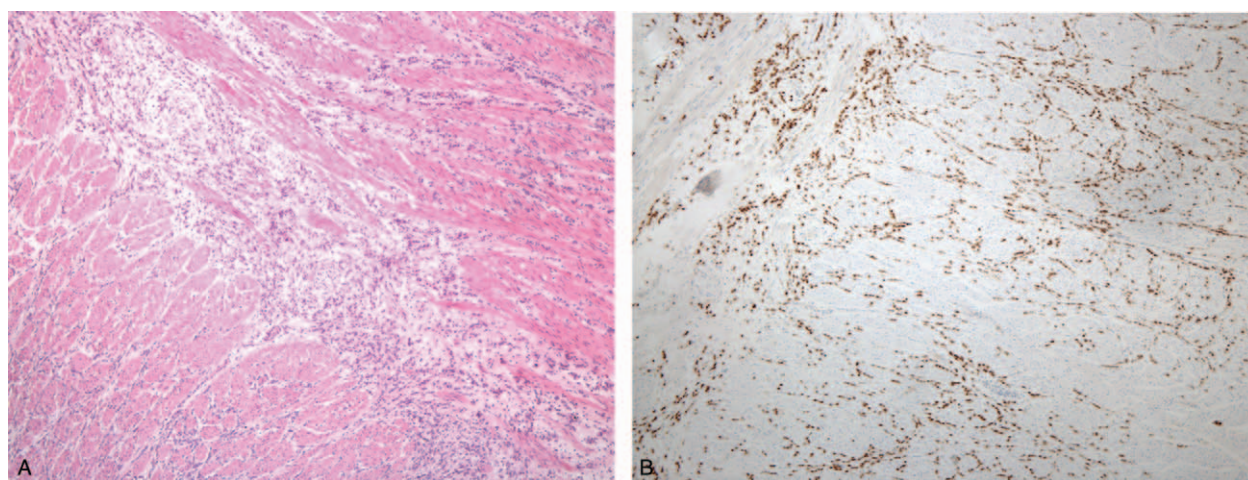


Figure 5. Histopathology by EUS-FNB (A and B) showing that several atypic spindle cells infiltrated the fibrous and smooth muscle tissues, and were estrogen receptor-positive (magnification $\times 100$). EUS-FNB = endoscopic ultrasound-guided fine needle biopsy.

recurrent laryngeal nerve, and gastric minor curvature nodes. There were vascular tumor emboli in the fat and fibrous tissues around the left supraclavicular area. Immunohistochemical results were as follows: ER α (90% positive), PR (–), Her-2 (2+), AE1/AE3 (+), CK20 (–), Vimentin (–), S-100 (neural +), GCDPF-15 (\pm), GATA3 (+), CD34 (vessel +), D2-40 (lymphatic vessels+), Mammaglobin (–), P120 (membrane +), E-cadherin (+). The final diagnosis was invasive ductal carcinoma in the right breast (T1N2M1, IV stage) with esophageal metastasis. The patient was treated with hormone therapy (anastrozole) and TAC (docetaxel 110 mg, doxorubicin 110 mg, cyclophosphamide 800 mg) chemotherapy. During 5 months of follow-up examinations, she remained symptom-free.

The study was reviewed and approved by Peking Union Medical College Hospital. Informed consent was obtained from the patient for publication of this case report and any accompanying images.

The patient gave consent to publish this case report and read the article and confirmed its content.

3. Discussion

Esophageal involvement in breast cancer mostly occurs in postmenopausal women. The most common clinical manifestation is dysphagia, accompanied by weight loss, anorexia, vocal dysfunction, and so on. Patients may not experience dysphagia until 7.1 ± 4.2 years after being diagnosed and treated for breast cancer.^[4] Metastatic lesions are typically located in the middle or distal thirds of the esophagus, which may be related to lymph node metastasis.^[2] Our patient was a postmenopausal woman with an initial presentation of dysphagia. An upper digestive tract radiograph, CT scan, and endoscopy all suggested stricture in the mid-esophagus.

The mechanism of esophageal involvement in breast cancer has been controversial. Tumor cells may metastasize to periesophageal lymph nodes through intra-mammary lymphatic channels, leading to esophageal obstruction. In some cases, metastasis may cause intramural tumor deposition deeper in the mucosal layer. Therefore, endoscopic analysis can show normal esophageal mucosa in many patients with esophageal stricture.^[5] In our case,

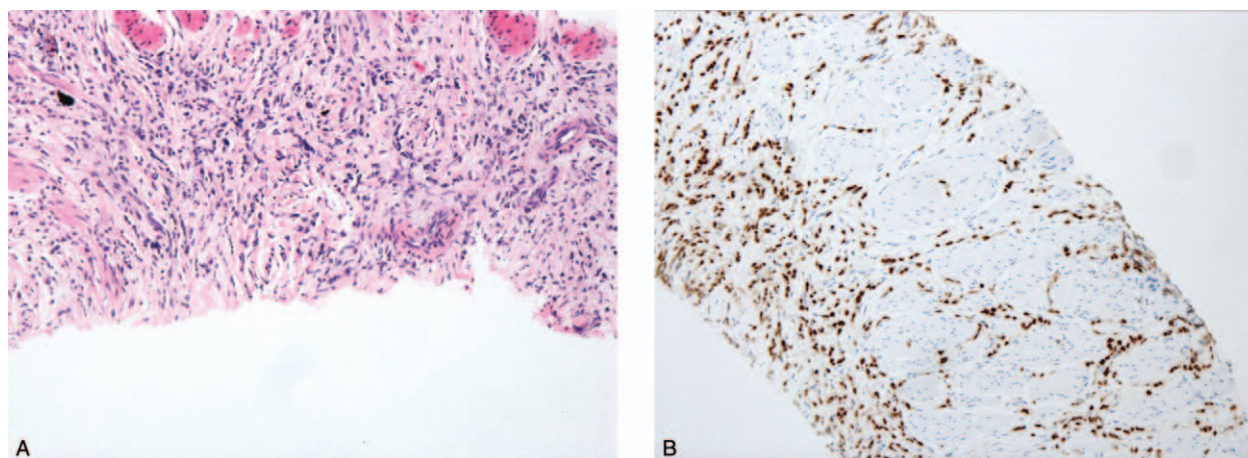


Figure 6. Pathology by surgery (A and B) showing poorly differentiated adenocarcinoma, which was compatible with primary breast cancer, and was estrogen receptor-positive (magnification $\times 40$).

EUS revealed thickening of the esophagus wall without enlargement of the periesophageal lymph nodes. Postoperative pathological results revealed no metastasis to the paraesophageal lymph nodes. Thus, in this case, intramural metastasis caused the stricture.

Diagnosis of an esophageal stricture due to breast cancer is difficult, as differentiating primary esophageal tumors, benign esophageal strictures, and mediastinal carcinomatosis is not trivial when the lesion is in the submucosa and is surrounded by a normal mucosa. Endoscopic biopsies are usually negative for submucosal lesions. EUS-FNB is safe and effective for the diagnosis of breast cancer metastases to the esophagus. Sobel et al^[6] reported that cytological evaluation of specimens obtained by endoscopic ultrasound-guided fine needle aspiration (EUS-FNA) in 11 out of 12 patients identified metastatic breast adenocarcinoma and no complications resulted from the EUS-FNA procedures. Metastatic esophageal cancer was highly suspected in our patient, and tissue pathology analyses obtained by EUS-FNB classified the lesion as poorly differentiated carcinoma, confirming the malignant diagnosis. Endoscopic mucosal resection (EMR) is another method for safely collecting tissue for histological diagnosis. EMR has been used to diagnose breast cancer metastasis to the esophagus in a patient presenting with esophageal stricture.^[7]

Because esophageal metastasis from breast cancer is rare, and patients are asymptomatic for a long time, the prognosis is difficult to predict. It has been reported that treatment by esophagectomy has the best outcome. Kawabata et al^[8] reported a 79-year-old woman developed dysphagia 26 years after radical mastectomy, and lived 8 years after the esophagectomy. Radiotherapy, chemotherapy, and hormone therapy are also effective treatments. Erman et al^[9] reported a woman who developed esophageal metastasis 11 years after breast cancer diagnosis. She survived for 5 years with a combination of radiotherapy, chemotherapy, and hormone therapy. For patients who cannot tolerate chemotherapy or radiotherapy, metallic stent placement is an alternative to palliation.^[5] Our patient was diagnosed with a malignant esophageal tumor based on pathological analysis. However, it was difficult to determine whether it was a primary or secondary tumor. Her dysphagia symptoms were significantly aggravated by swallowing anything but liquid. Ultimately, an esophagectomy was performed to provide a definite diagnosis and for symptom remission. Postoperative pathology was consistent with metastatic breast cancer. Immunohistochemistry showed the tumor was positive for the estrogen and progesterone receptors. She was diagnosed as stage IV invasive ductal carcinoma, which was considered unresectable. For patients who have metastatic breast cancer, which cannot be cured, the primary treatment is palliative-intent systemic therapy. Patients with hormone receptor-negative disease can choose cytotoxic chemotherapy, and patients with

hormone receptor-positive disease have exhausted endocrine therapy options.^[10] Our patient did not undergo modified radical mastectomy/axillary lymphadenectomy and received TAC chemotherapy and hormone therapy as definitive treatment. She was expected to have a good prognosis.

4. Conclusions

In conclusion, to our knowledge, we report the first case of metastatic breast cancer to the esophagus initially presented with dysphagia. This case indicates that for aged women with esophageal stricture, metastatic breast cancer to the esophagus should be considered. EUS-FNB can be useful for further diagnosis, and if necessary, esophagectomy should be performed.

Author contributions

Investigation: Bo Chen, Li Li.

Writing – original draft: Ailing Liu, Yunlu Feng.

Writing – review & editing: Dongsheng Wu, Jiaming Qian, Aiming Yang.

Ailing Liu orcid: 0000-0000-2384-7360.

References

- [1] Haney JC, D'Amico TA. Transhiatal esophagogastrectomy for an isolated ovarian cancer metastasis to the esophagus. *J Thorac Cardiovasc Surg* 2004;127:1835–6.
- [2] Rampado S, Ruol A, Guido M, et al. Mediastinal carcinosis involving the esophagus in breast cancer: the “breast-esophagus” syndrome: report on 25 cases and guidelines for diagnosis and treatment. *Ann Surg* 2007;246:316–22.
- [3] Varanasi RV, Saltzman JR, Krims P, et al. Breast carcinoma metastatic to the esophagus: clinicopathological and management features of four cases, and literature review. *Am J Gastroenterol* 1995;90:1495–9.
- [4] Anderson MF, Harell GS. Secondary esophageal tumors. *AJR Am J Roentgenol* 1980;135:1243–6.
- [5] Suzuki R, Singh H, Ramireddy S, et al. Endoscopic ultrasound-guided fine needle aspiration for smooth benign appearing esophageal stricture due to metastatic breast cancer. *Endosc Ultrasound* 2013;2:35–7.
- [6] Sobel JM, Lai R, Mallery S, et al. The utility of EUS-guided FNA in the diagnosis of metastatic breast cancer to the esophagus and the mediastinum. *Gastrointest Endosc* 2005;61:416–20.
- [7] Sunada F, Yamamoto H, Kita H, et al. A case of esophageal stricture due to metastatic breast cancer diagnosed by endoscopic mucosal resection. *Jpn J Clin Oncol* 2005;35:483–6.
- [8] Kawabata R, Kimura Y, Kawase T, et al. Long-term survival of a patient with esophageal metastasis from breast cancer treated with esophagectomy. *Gan To Kagaku Ryoho* 2014;41:2024–6.
- [9] Erman M, Karaoglu A, Oksuzoglu B, et al. Solitary esophageal metastasis of breast cancer after 11 years: a case report. *Med Oncol* 2002;19:171–5.
- [10] Gradishar WJ, Anderson BO, Balassanian R, et al. Breast Cancer, Version 4.2017, NCCN Clinical Practice Guidelines in Oncology. *J Natl Compr Cancer Netw* 2018;16:310–20.