A Case of Esophageal Stricture Due to Metastatic Breast Cancer Diagnosed by Using Endoscopic Ultrasound Guided Fine Needle Biopsy

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Metastatic cancer to the esophagus is rare and the breasts are the most common primary tumors that metastasize to the esophagus. Since metastatic breast cancer is located in the submucosal layer, diagnosis by general forceps biopsy is difficult. Hence, various techniques including endoscopic ultrasound guided fine needle aspiration, endoscopic ultrasound guided fine needle biopsy, unroofing technique, and submucosal tunneling method are used for diagnosis. Moreover, the patient’s medical history should be inspected carefully and previous histological findings of cancer should also be evaluated. Herein, the authors report a case of metastatic breast cancer along with literature reviews. Endoscopy was performed in patient who had undergone breast cancer surgery 13 years previously. Histological examination from a midesophageal stricture was normal. Endoscopic ultrasound was performed and uneven hypoechoic masses were found in the third layer of the esophageal wall. The esophageal stricture was finally diagnosed as metastatic breast cancer by endoscopic ultrasound-guided fine needle biopsy. (Korean J Helicobacter Up Gastrointest Res 2015;15:136-140)

Key Words: Neoplasm metastasis; Endosonography; Biopsy, fine-needle; Esophagus; Breast neoplasms

INTRODUCTION

The incidence rate of breast cancer in Korea has increased since the 1970s, and now breast cancer has the highest incidence rate among cancers in women. In 2010, 16,398 new breast cancer patients were registered. Breast cancer metastasizes to various organs like the lymph nodes, lung, bones, liver, and brain. In a rare case, metastasis to the gastrointestinal tract was reported. Although metastatic cancer to the esophagus is rare, the most common primary tumors that metastasize to the esophagus are breast.

Esophageal strictures caused by metastatic cancer are hard to access with an endoscope and obtaining enough tissue for diagnosis is also difficult. This case report concerns an esophageal stricture in a 56-year-old woman who had been treated for breast cancer 13 years previously. The esophageal stricture was diagnosed along with metastatic breast cancer through endoscopic ultrasound-guided fine needle biopsy.

CASE REPORT

A 56-year-old woman visited our clinic with the main complaint of dysphagia, which had occurred 1 week previously. An esophageal stricture was found by using upper gastrointestinal endoscopy in the primary healthcare institution, and the patient was transferred to our hospital to identify the cause. The patient had undergone surgical excision, cancer chemotheraphy, and radiation therapy for left breast cancer 13 years previously and showed no abnormal recurrence symptoms thereafter.

Blood pressure at the time of the visit was 110/70 mmHg, pulse rate was 74 times/min, and body temperature was 36.8°C. Blood test results were as follows: leucocyte count 7,100/μL, platelet count 210,000/μL, hemoglobin level 13.0 g/dL, and C-reactive protein level 0.60 mg/dL. The serum electrolyte test results were as follows: sodium 143 mEq/L, potassium 3.9 mEq/L, and chloride 101 mEq/L. Finally, the serum chemistry examination results were as follows: total protein 6.8 g/dL, albumin 4.2 g/dL, aspartate aminotransferase 21 U/L, alanine aminotransferase 14 U/L, alkaline phosphatase 326 IU/L, gamma glutamyl transpeptidase 11 U/L, total bilir-
ubin 0.8 mg/dL, blood urea nitrogen concentration 20 mg/dL, and creatinine 0.6 mg/dL. No abnormal findings were detected on chest and abdominal radiography.

On upper gastrointestinal endoscopy in our hospital, a mid-esophageal stricture and smooth mucosal surface were found, while prominent protruding lesions or unstained area on Lugol’s solution staining were not observed (Fig. 1). The endoscope did not pass through, and histological examination of the proximal stricture areas resulted in no abnormal findings. Hypermetabolic wall thickening in the mid- and lower thoracic esophagus was found by using CT and PET-CT, which raised suspicions of a malignant tumor or inflammation (Fig. 2). Multiple lymph node and bone metastases were also observed. However, no abnormal lesion was observed in the stomach. Therefore, an endoscopic ultrasound examination was performed, which revealed uneven hypoechoic masses in the third layer of the esophageal wall. Disruption of the normal esophageal wall layer pattern was also seen. Consequently, EUS-guided fine needle biopsy (EUS-FNB)
was performed by using a ProCore 22 gauge needle (Echo Tip ProCore; Wilson-Cook, Limerick, Ireland) (Fig. 3). From histopathological examination, metastatic mammary ductal carcinoma was diagnosed, and immunohistochemical staining showed that the cancer was estrogen receptor positive and progesterone receptor positive (Fig. 4). Hormone therapy using anastrozole is being administered to the patient. The patient had no dysphagia during follow-up. After 9 months of follow-up, the esophageal stricture was not found on gastrointestinal endoscopy (Fig. 5).

**DISCUSSION**

Although metastatic cancer rarely occurs in the esophagus, it is observed in various cancers. Metastasis to the esophagus can occur in three ways depending on the lo-
Esophageal findings from upper gastrointestinal endoscopy after 9 months of hormone therapy. The esophageal stricture that was previously present 20 cm away from the upper incisor is no longer present (the point indicated by the forceps).

Fig. 5. Esophageal findings from upper gastrointestinal endoscopy after 9 months of hormone therapy. The esophageal stricture that was previously present 20 cm away from the upper incisor is no longer present (the point indicated by the forceps).

First, primary cancer in organs proximal to the esophagus metastasizes directly. For example, cancers that occur in the larynx, trachea, bronchi, stomach, thyroid, or hypopharynx metastasize in this way. On the other hand, a distant primary tumor metastasizes to the esophagus through lymphatics or the blood stream. Primary cancers of the breast, pharynx, pancreas, testis, eye, tongue, prostate, and tibia correspond to this way.

Breast cancer is the most common cancer among cancers metastatic to the esophagus. In spite of arguments, there are two mechanisms that explain breast cancer metastasis to the esophagus. Infiltration of periesophageal lymph nodes through intramammary lymphatic channels cause esophageal strictures, and in this case, strictures mostly occur at the carina level. The other mechanism is that breast cancer infiltrates intramural lymphatic channels in the esophagus, breaks the nerve plexus causing dysphagia, and thereafter, intramural tumor growth results in stricture of the esophageal lumen.

In the present case, dysphagia occurred due to metastasis to the esophagus 13 years after surgical excision of breast cancer. The incidence of metastasis such a long time after the removal of the primary cancer is due to the tendency of the tumor to grow slowly, the mean time from mastectomy to the occurrence of dysphagia is 7.1±4.2 (mean±SD) years, and dysphagia mostly occurs within 4~5 years.

Primary esophageal cancer can be diagnosed by using endoscopy and tissue biopsy of the stricture region, whereas esophageal metastatic cancer exhibits concentric stricture, and only normal or erythematous change at the esophageal mucosa of the stricture region is observed. In addition, since esophageal metastatic cancer is mostly localized to the submucosal layer, it is difficult to obtain proper specimens by using endoscopy-guided biopsy. In the present case, there was no abnormal finding in the endoscopic histological examination of the esophageal stricture region.

In particular, considering that it is hard for an endoscope to pass through and to observe all lesions, it is not easy to decide a diagnostic method. In the past, diagnosis was possible only on autopsy or surgery. In contrast, recently, there have been reports that metastatic breast cancer to the esophagus can be diagnosed through EUS-guided fine needle aspiration (EUS-FNA) or endoscopic mucosal resection. Sobel et al. reported that infiltration of the esophageal wall or metastasis to lymph nodes proximal to the esophagus were diagnosed by using EUS-FNA in 11 of 12 patients with metastatic breast cancer (91%), in whom diagnosis by using endoscopic biopsy failed. Out of these, five patients had submucosal infiltration with normal mucosa. Endoscopic mucosal resection has the advantage that subepithelial tumor tissue can surely be obtained without surgery, but is more invasive than EUS-FNA or EUS-FNB. EUS-FNA and EUS-FNB are methods that allow collection of tissue specimens more safely compared to surgery or endoscopic mucosal resection.

Kim et al. reported 75% diagnosis rate for subepithelial tumors by using EUS-FNB. The present case also obtained tissue by using it, and diagnosis was made by using immunohistochemical staining.

In conclusion, an esophageal stricture with a smooth mucosal surface was found in a patient who had received treatment for breast cancer 13 years previously. Breast cancer metastasis to the esophagus was diagnosed in the esophageal stricture using EUS-FNB. In order to diagnose metastasis from malignant tumors, a detailed interview about the patient’s medical history is important.
REFERENCES