

Case Report

Endobronchial Metastases of Fibrosarcoma and Non-Hodgkin's Lymphoma

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Abstract

Endobronchial metastases of extrapulmonary malignant tumors are rarely encountered. Herein, we have reported two cases of endobronchial metastases from nonpulmonary tumors. The first case was a 32-year-old female patient who underwent surgery for a sclerosing epitheloid fibrosarcoma in her left thigh in 2007. Metastatic bilateral parenchymal nodules in her lungs were seen on thorax CT. Bronchoscopy revealed a mass plugging, particularly in the openings of the anterior and lateral basal segments of the left lower lung lobe. Pathological examination of the biopsies was interpreted as fibrosarcoma metastasis. The second case was a 49-year-old male patient who complained of cough, weight loss, excessive sweating, and fatigue. A 7×8 cm, irregular limited soft tissue density in the right middle lobe of the lung that showed air bronchogram and cystic regions was detected on thorax CT. Bronchoscopy was performed. Pathological examination of the bronchoscopic materials taken from the mass that had obstructed the entrance of the middle lobe revealed a large B cell diffuse lymphoma.

Keywords: Endobronchial metastasis, fibrosarcoma, non-Hodgkin's lymphoma

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Introduction

Endobronchial metastases of extrapulmonary malignant tumors are rarely encountered. Breast, renal, and colorectal carcinomas most commonly cause endobronchial metastases.^{1,2} According to a literature review, endobronchial metastases from fibrosarcoma and non-Hodgkin's lymphoma are very rare occurrences. Our cases, therefore, are unique.

Case Reports

Case 1

The first case was a 32-year-old female patient who underwent surgery for a sclerosing epitheloid fibrosarcoma in her left thigh in 2007. This patient was admitted with complaints of coughing. Bilateral metastatic parenchymal nodules in her lungs were seen on thorax CT, which were denser and larger in the subpleural regions (Figure 1A). Bronchoscopy revealed a mass that particularly plugged the openings of the anterior and lateral basal segments in the left lower lobe (Figure 1B). Pathological examinations of biopsies taken from this area were interpreted as fibrosarcoma metastasis (Figures 1C and 1D). The tumor cells in the biopsy material that were taken from the lung were positive for pancytokeratin and negative for cytokeratin 7, cytokeratin 20, TTF-1, synaptophysin, chromogranin, and CD 56. We comparatively evaluated the biopsy materials taken from her thigh in 2007 and those from the lung. The tumor cells from the thigh lesion had an epithelioid character

and were similar to the tumor cells obtained from the lung. Radiologically, the Bilateral, multiple lesions along with immunophenotypic findings were primarily suggestive of metastases.

Case 2

The second case was a 49-year-old male patient with complaints of coughing, weight loss, excessive sweating, and fatigue. He was referred to our hospital from another hospital. The patient underwent a thorax CT scan for his complaints of coughing about five months before referral to our hospital. At that time the lung lesions were not detected, however, a lesion of approximately 7 cm in diameter was detected in the spleen in the upper abdominal sections of the same thorax CT scan. The patient did not consent to undergo further examinations for this finding. He was referred to our hospital from another hospital with the additional complaints of right chest pain, dyspnea on exertion, and weight loss. A 7 × 8 cm irregularly limited soft tissue density in the right middle lobe of the lung that showed an air bronchogram and cystic regions was detected on thorax CT. The lesion was found to have a wide floor contact with pleura laterally, with medial extension to the hilus and covered the fatty planes between the superior vena cava and right pulmonary vein. There was narrowing of the bronchus in the middle lobe (Figure 2A). A mass that was about 11 cm in diameter was also detected in the spleen in the upper abdominal section of the thorax CT scan and on the spiral abdominal CT scan. Bronchoscopy was performed (Figure 2B). Pathological examination of the needle aspiration and biopsy material taken from the pink colored mass, which easily bled and obstructed the entrance of the middle lobe was notable for large B cell diffuse lymphoma by immunohistochemical staining (Figures 2C and 2D). CD10, CD45, CD20, and Bcl-2 were all positive in the biopsy materials obtained from the lung. The lesion was thought to have originated from the spleen with endobronchial involvement. As the splenic mass was very large, a splenectomy was performed taking into consideration the risk of rupture. According to reports, splenectomy has been

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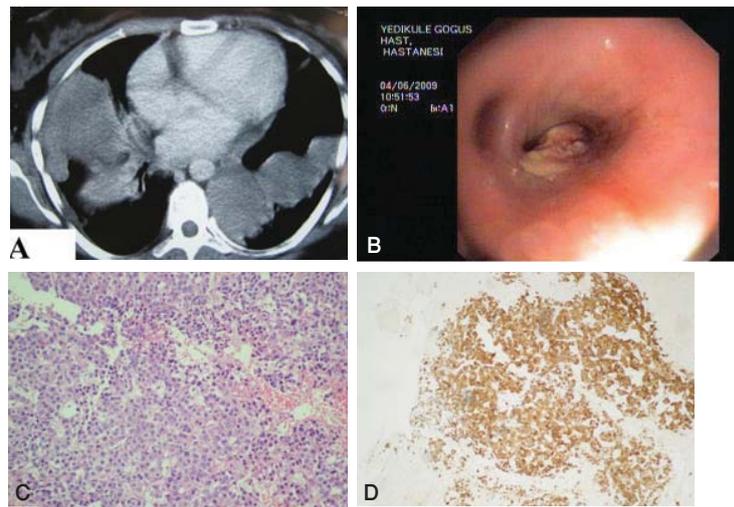


Figure 1. A) Metastatic parenchymal masses located bilaterally as seen on thorax CT. **B)** The orifices of the anterior and lateral basal segments in the left lower lobe were obstructed by the mass on Fiberoptic bronchoscopy (FOB). **C)** The tumor cells formed nest and cord structures, with hyperchromatic nuclei, obvious nucleoli, clear cytoplasm, and a round epithelioid appearance. (H&E, magnification: 200×). **D)** Positive immunohistochemical reaction with pancytokeratin in tumor cells with an epithelioid appearance. (magnification: 200×).

performed in such cases. CD20 and CD68 were both found to be positive. CD3, CD5, pancytokeratin, and factor 8 were all negative in the immunohistochemical examination of the splenic mass. The patient's endobronchial lesion completely resolved following chemotherapy.

Discussion

Endobronchial metastases resembling primary lung cancer in their symptoms and radiological findings should be differentiated from primary lung cancer by pathological examination, because differential diagnosis is very important for appropriate treatment planning. Although lung metastases from extrapulmonary malignant tumors are common, endobronchial invasions are quite rare. The ratio of endobronchial metastases of extrapulmonary solid organ malignancies has been reported to be 2%–5% as seen by autopsy. Endobronchial metastasis is often a late sign of the primary tumor, but can rarely be detected before the diagnosis of the primary tumor.¹ Endobronchial metastases predominantly originate from breast, renal, and colorectal tumors. However, bladder, thyroid, ovarian, nasopharyngeal, prostate, uterine, cervical, and testis tumors, as well as plasmocytomas, melanomas, gastric tumors, schwannomas, and sarcomas may also cause endobronchial metastases.⁵

Fibrosarcoma is a malignant neoplasm of mesenchymal origin. It is a very rare malignancy that may occur anywhere in the body and in any age group, even as a congenital neoplasm. It arises from superficial and deep connective tissue.⁶ There are only two publications regarding endobronchial metastasis of fibrosarcoma in the English literature.^{6,7} Diagnostically, the most challenging problem is to distinguish sclerosing epithelioid fibrosarcoma (SEF) from undifferentiated carcinoma, which might be impossible based purely on histology. Therefore, immunohistochemical analysis appears mandatory. Specific protein expression or genetic changes have not been described in SEF. The only immunostaining marker that is consistently reported to be positive (as with our patient) is vimentin, a general marker for soft tissue sarcomas and therefore not specific for SEF. Occasional positivity of rare tumor cells for other general markers of soft tissue sarcomas such as EMA, S100,

or cytokeratin are not useful in the diagnosis of a patient with SEF, because these also may be positive in other tumors.^{3,4} Thus, we have established this patient's diagnosis of SEF based on morphologic criteria. It has been reported that endobronchial metastases of non-Hodgkin's lymphoma are much less common than those from Hodgkin's lymphoma.⁸ The various mechanisms suggested for development of endobronchial lesions in patients with lymphoma include direct invasion from an adjacent mediastinal or parenchymal lesion, lymphatic dissemination to the peribronchial tissues, hematogenous dissemination, and transbronchial aspiration of tumor emboli. The most common mechanisms are direct bronchial invasion and hematogenous dissemination.⁹

Endobronchial spread of extrapulmonary malignant tumors are classified into four groups: type I (direct metastasis to the bronchus); type II (bronchial invasion by a parenchymal lesion); type III (bronchial invasion by mediastinal or hilar lymph node metastasis); and type IV (endobronchial invasion with lymphangitis carcinomatosa).¹⁰ Type II was the most common type among our cases.

The most commonly reported symptoms are cough, hemoptysis, dyspnea, and wheezing.¹⁰ Asymptomatic cases of endobronchial metastases have also been detected.⁵ The most common complaint observed among our cases was coughing. Although radiological findings may vary in endobronchial metastases, the most common radiological findings reported are atelectasia, hilar expansion, and the presence of single or multiple nodules as detected in our cases.^{1,11}

Bronchoscopy is shown to be a valuable method for diagnosis and selection of treatment modality. Endobronchial metastatic disease is diagnosed by histopathological examination of biopsies taken during bronchoscopy. Heitmiller used bronchoscopy for the diagnosis of all 23 endobronchial metastasis cases and Shepherd used bronchoscopy to diagnose 28% of cases.^{5,12} In our cases the diagnoses were made after performing bronchoscopies. In addition to surgical evaluation of metastatic disease, bronchoscopy has been noted to be an important tool for the differentiation of conditions such as opportunistic pulmonary infections, hemorrhage or drug reactions, all of which may resemble metastases radiologically in extrapulmonary malignancy cases.¹¹

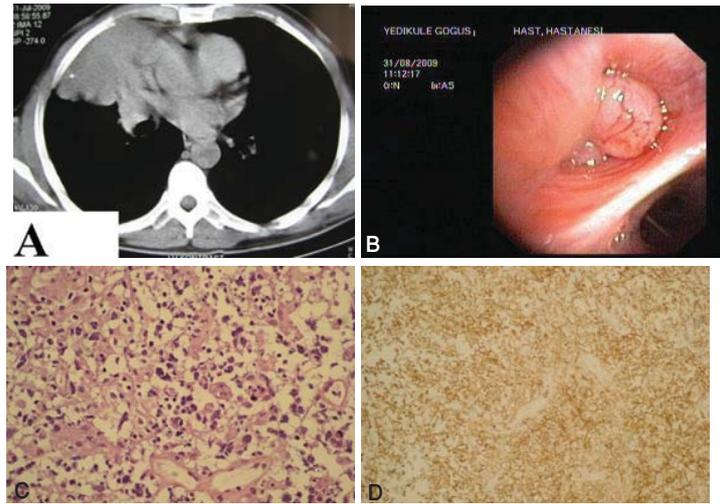


Figure 2. **A)** A 7×8 cm mass located at the right middle lobe, as seen on thorax CT. **B)** The entrance of the middle lobe was obstructed by the mass on Fiberoptic bronchoscopy (FOB). **C)** Bronchoscopic biopsy showed large, round neoplastic lymphoid cells with irregular distribution in the vascular stroma (H&E, magnification: 400×). **D)** Leukocyte common antigen-positive tumor cells as seen on immunohistochemical examination (magnification: 200×).

The time between diagnosis of the primary tumor and appearance of endobronchial metastasis is approximately nine months to five years.^{1,5,10,13} In our cases this interval was five months and two years. It is believed that development of endobronchial metastasis is an advanced metastatic disease with a poor prognosis, however, prognosis in such cases also depends on the type of primary tumor and presence of other metastatic sites.^{5,14} Therefore treatment should be planned according to the case.

Histology of the primary tumor, localization and number of lesions, and presence of other metastatic sites all influence the choice of treatment.¹⁰ We have evaluated our cases accordingly. In our cases, chemotherapy and radiation therapy were chosen as primary treatments.

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