Endobronchial Submucosal Lymphangitic Metastasis from Papilla of Vater Carcinoma

Alev Atasever[1], Berrin Doğan[1], Tuncay Göksel[1], Deniz Nart[2]

[1]University of Ege School of Medicine, Chest Diseases, İzmir, Turkey
[2]University of Ege School of Medicine, Pathology, İzmir, Turkey

Abstract

Background: Endobronchial metastasis (EBM) from extrapulmonary neoplasms is rare. Variable-sized nodules are typical radiologic features, whereas submucosal lymphangitic carcinoma is an uncommon involvement. **Case description and results:** We present a patient who had pancreatico-duodenectomy five months previously for Vater's papilla cancer. She had respiratory symptoms with bilateral lung infiltrations and diffuse thickening of the interstitium, representing lymphangitic metastasis, radiologically. Bronchoscopic findings demonstrated submucosal spreading of the tumor. Histological studies resulted in diagnosis of metastatic adenocarcinoma of pancreatic origin. **Conclusion:** To our knowledge, this is the first case in the literature with endobronchial submucosal lymphangitic metastasis of Vater's papilla cancer. This tumor may be considered in the differential diagnosis of endobronchial metastasis. Also, in light of this case report, patients with Vater's papilla cancer should be evaluated for endobronchial metastasis if there are respiratory symptoms, for staging of the primary tumor.

Keywords: endobronchial metastasis, papilla of vater cancer

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INTRODUCTION

Although the lungs are one of the most common sites of distant metastasis, endobronchial spread from extrapulmonary tumors is rare. The incidence of endoluminal metastasis is estimated to be approximately 2% [1]. Breast, kidney, colorectal, uterine cervix, sarcoma and skin cancers are primarily associated with endobronchial metastasis (EBM) [2,3]. It is important to make a distinction between endobronchial metastases from primary lung cancer because treatment modalities may be different. Pulmonary metastases classically develop via the lymphatic or hematogenous route [4], but direct seeding to the tracheobronchial wall or secondary involvement as well as direct invasion is also possible [5]. The typical radiological finding of a pulmonary metastasis is variable-sized nodules. Air-space consolidation with or without ground-glass opacification is frequently seen in the metastatic cases from the gastrointestinal tract [6]. However, submucosal diffuse lymphangitic carcinoma is an uncommon form of metastatic involvement. Although some cases have been reported with solitary lung nodules [7], to our knowledge, there has been no case with endobronchial lymphangitic metastasis from papilla of Vater cancer. In this report, endobronchial submucosal lymphangitic metastasis from papilla of Vater carcinoma, which is extremely rare, is presented.

Corresponding Author: Alev Atasever
Ege University, School of Medicine, Chest Diseases, İzmir, Turkey
Phone: +90232 3902900, E-Mail:alevatasever@yahoo.com

CASE REPORT

A 48-year-old woman was referred to our outpatient clinic with the symptoms of dyspnea, chest pain, cough, sweating and fever lasting for 15 days. She had a 20 pack-year history of cigarette smoking, but had quit smoking the year before. A pancreaticoduodenectomy was performed for Vater's papilla cancer five months previously, and she was subsequently treated with 5-fluorouracil chemotherapy. She experienced respiratory symptoms with a temperature of 38°C 15 days ago. With these clinical findings and bilateral lung infiltrations, she was considered to have pneumonia and was treated with one of the respiratory quinolones (Levofloxacin -1000 mg/day). Although her fever was controlled with the treatment administered, her other symptoms persisted and she was therefore referred to our clinic. On physical examination, temperature was 36.8°C, respiratory rate 22/min, blood pressure 110/60 mmHg and pulse rate 100/min. Chest auscultation revealed inspiratory crackles in the left middle and lower lung fields; the remainder of the physical examination was unremarkable. White blood cell count was 7650/mm^3 and serum chemistry was normal. The chest X-ray on admission showed a consolidative infiltration with air-bronchogram both in the right upper zone and right paracardiac area. In the left middle and lower zones, there was a diffuse thickening of the interstitium which caused infiltrative opacities (Figure 1). Computerized tomography (CT) scan demonstrated multiple mediastinal and abdominal lymphadenopathies and consolidations with air-bronchogram in the lower lobes and the posterior segment of the right upper lobe (Figure 2). Among these consolidative opacities, diffuse

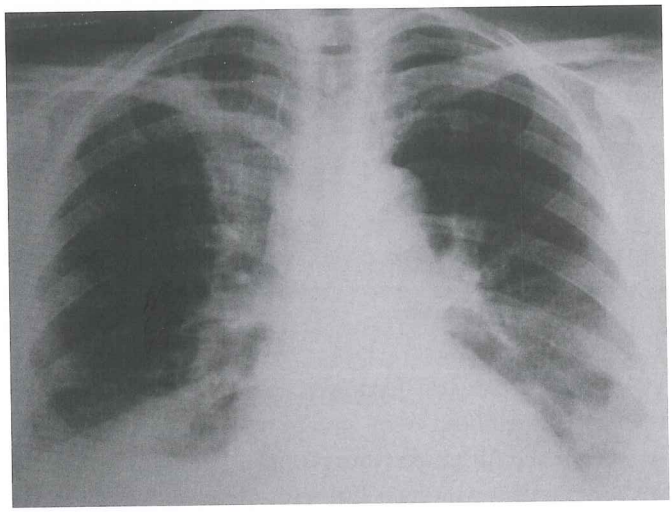

Figure 1. The radiologic findings of the case

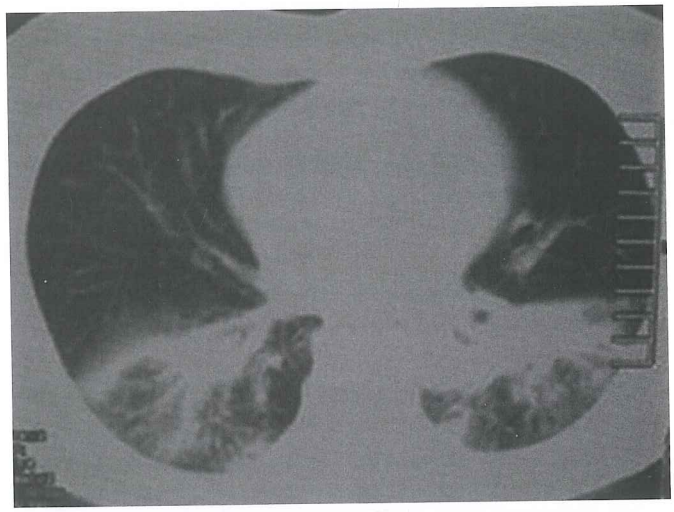

Figure 2. Computerized tomography findings of the case

thickening of the interstitium representing lymphangitic metastasis was also shown on CT scan. Bronchoscopy was performed for the diagnosis and sampling, which revealed narrowing of both lower lobe bronchi, and submucosal spreading with an irregular margin with hyperemic, hypertrophic and edematous mucosa (Figure 3). On histological examination of the bronchoscopic biopsy and brushing samples, although bronchial epithelium was intact, submucosal lymphangitic channels were permeated by tumor cells which exhibited an acinar structure. With regard to the immunohistochemical study, cytokeratin 7, 19, 20 and TTF-1 were carried out to distinguish between primary and metastatic adenocarcinoma; TTF-1 and cytokeratin 20 were negative, but 7 and 19 were expressed in tumor cells. Immunohistochemical stains established 'metastatic adenocarcinoma' probably originating from the bile duct, gallbladder or the pancreas. The final diagnosis was based on histological and immunohistochemical examination and identified metastatic adenocarcinoma. The patient is still alive and was referred to the medical oncology department for planning of her future treatment.

DISCUSSION

In this report, a case of previously unreported endobronchial lymphangitic spread from papilla of Vater cancer is presented. The incidence of lung metastasis is estimated between 20% to 50% in extrapulmonary tumors, as the lungs are thought to be the most important drainage organ [8]. However, the incidence of EBM is not so frequent and is reported to be 1-5% [4,9,10]. The incidence of EBM is underestimated because routine bronchoscopic examination is not commonly performed. There are four developmental modes of EBM: 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, a peripheral lesion extended along the proximal bronchus. In our case, it was impossible to determine which type predominated; however, both type II and type III were thought to be responsible.

The major symptoms of endobronchial metastasis are cough, dyspnea and hemoptysis, but 50-60% of the patients may be asymptomatic [11,12]. This case presented all respiratory symptoms as well as fever. Fever might have been due to the concomitant lower respiratory tract infection and was controlled with the appropriate antibiotic therapy. The common radiological findings of EBM are lymphadenopathy, atelectasis or normal chest roentgenogram; pulmonary infiltration and pulmonary nodules can be seen infrequently [9,13,14]. Metastasis from adenocarcinoma may spread into the lung along the intact alveolar walls (lepidic growth) similar to bronchoalveolar cell carcinoma. The radiologic features of metastasis from adenocarcinoma are air-space nodules, consolidation with air bronchogram, focal or extensive ground-glass opacities and nodules with CT halo signs [6]. The consolidation with air bronchograms usually mimics pneumonia. Our case was also initially considered as pneumonia because of the consolidations on the chest X-ray. The diagnosis of lymphangitic carcinomatosis is generally based on a characteristic radiologic pattern of diffuse reticulonodular infiltration associated with hilar enlargement in patients with a known diagnosis of cancer [15]. Scala et al. described a case with endobronchial metastasis from stomach carcinoma whose CT scan revealed a reticular lymphangitic carcinomatosis pattern with hilar and mediastinal lymphadenopathy [16]. In one study involving 161 patients with pulmonary metastasis who underwent CT scan examination,

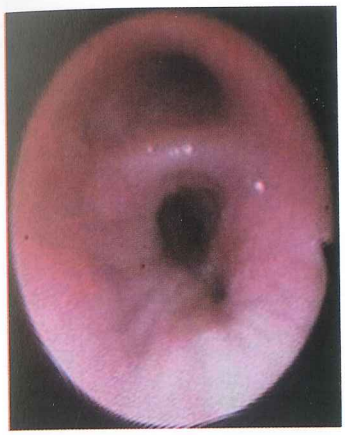

Figure 3. The bronchoscopic view of the case

five showed obstruction and/or narrowing of the bronchi, while no lesion was found in one and six had endobronchial metastatic lesions revealed by bronchoscopy. Even though CT scan cannot always demonstrate intraluminal lesions, it should be performed when bronchoscopy reveals endoluminal metastasis. With CT, not only single or multiple metastatic nodules, but also hilar or mediastinal lymphadenopathies can be demonstrated [17]. Both bilateral air space consolidations and lymphangitic carcinomatosis were found in our case with endobronchial submucosal spread, radiologically. All of the radiological features in our case were compatible with the findings reported in other studies [15-17]. The diffuse interstitial pattern of lymphangitic carcinomatosis and air space consolidation may be misdiagnosed as an acute or subacute infectious process, radiation pneumonitis, drug reaction, or as other interstitial lung diseases. Therefore, bronchoscopy must be performed for the differential diagnosis and to view the endobronchial lumen. Although bronchoscopic findings resemble primary bronchogenic carcinoma in most cases, biopsy from pathologic lesions usually confirms the diagnosis. Yong et al. [18] demonstrated the identical histopathological findings in bronchoscopic biopsy materials in two cases with primary uterine cervical cancer. Aranda et al. [15] presented six cases of lymphangitic carcinomatosis diagnosed by transbronchial biopsy and autopsy confirmed the same findings in four of them, while tumor cells were found in lymphatic channels in one patient. The diffuse bronchial and peribronchial lymphatic involvement can be revealed by a non-invasive diagnostic tool, bronchoscopy. In our case, although bronchoalveolar lavage was not diagnostic for an infection or malignancy, bronchoscopic brush and biopsy materials demonstrated lymphangitic carcinomatosis. Various intervals (26.4-63.5 months) are reported for the development of endobronchial metastasis from the diagnosis of primary tumor [11,18].

CONCLUSION

In conclusion, this is the first case of papilla of Vater cancer with endobronchial submucosal lymphangitic metastasis, and it must be considered in the differential diagnosis of endobronchial metastasis. Also, patients who have respiratory symptoms with papilla of Vater tumor should be evaluated for endobronchial metastasis, which is important for the staging and treatment of the primary tumor. Conversely, papilla of Vater should be considered among the primary sites of endobronchial metastases.

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