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Case Report
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A Signet Ring Cell Gastric Carcinoma Case Diagnosed with Pulmonary Lymphangitic Carcinomatosis

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Abstract

Background: Gastric carcinoma is one of the most common malignancies encountered in adulthood. It may present with various clinical symptoms and signs. It commonly spreads through haematogenous and lymphatic routes and rarely presents with pulmonary lymphangitic carcinomatosis.

Case Presentation: A forty three years old male patient applied with the symptoms of progressive dyspnea and cough. Although his radiological findings supported interstitial lung disease, there was no response to antibiotics and corticosteroid treatment. Transbroncial biopsy indicated pulmonary lymphangitic carcinomatosis originating from metastatic signet ring cell gastric adenocarcinoma.

Discussion: Pulmonary lymphangitic carcinomatosis is a rare manifestation of metastatic gastric cancer. Cases usually present with various respiratory symptoms. The disease having a bad prognosis is usually diagnosed using transbroncial or open lung biopsy. By keeping lymphangitic carcinomatosis in mind, an underlying neoplasm should be suspected in patients having an interstitial pattern in chest x-ray but no response to treatment.

Keywords: Pulmonary lymphangitic carcinomatosis; Transbronchial biopsy; Gastric adenocarcinoma

Introduction

Pulmonary Lymphangitic Carcinomatosis (PLC) is a rare lung disease characterized with obstruction and diffuse infiltration of the pulmonary lymphatic system with tumor cells [1]. PLC, a very rare indication of gastric adenocarcinoma, is very rarely encountered in adults having metastatic gastric carcinoma [2]. PLC is recommended to be diagnosed with transbronchial or open lung biopsy [3]. Even if the diagnosis is made at an early stage, the prognosis is worse in PLC cases with signet ring cell gastric adenocarcinoma. Few cases having metastatic lymphangitic carcinomatosis have been reported in the literature [4-6]. We present a case hospitalized for interstitial lung disease or primary malignity and diagnosed with PLC originating from signet ring cell gastric adenocarcinoma using transbronchial fine needle aspiration biopsy (TBFNAB).

Case Presentation

A 43 -year-old male patient applied to the emergency clinic with the complaints of coughing and progressive dyspnoea. His complaints started 5-6 months ago with a significant dyspnoea during the previous 2 weeks. Our case was a smoker (20 package/year) with no significant issues in his family history. He had no drug history except salbutamol inhaler (2 puff, 4-6 times a day).He had no contact with pets or any material whose inhalation could be harmful to lung health. His baseline examination findings were as follows: blood pressure 130/82 mmHg, heart rate 101 beats/min, respiratory rate 25 breaths/min., fever 37.5 ^{o}C, and oxygen saturation (SaO2) 88% in room air and 97% in supplemental 2 lt/min. oxygen through nasal cannula. The case was significantly cashectic, tachypneic, dyspneic, and mildly agitated and was using his auxiliary respiratory muscles. There was no peripheral lymphadenopathy. Examination of the respiratory system revealed bibasilar fine rales and wheezing. His chest x-ray revealed newly developed diffuse interstitial appearance which was absent in his chest x-ray performed 5 months ago. His computed tomography showed diffuse interstitial thickening, reticulonodular pattern and consolidation areas in the lower lobes and enlarged mediastinal lymph nodes (Figure 1).

The patient with acute respiratory failure was hospitalized. A wide spectrum non-specific antibiotheraphy and 1 mg/day dose corticosteroid were initiated. There was no growth in blood, urine

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Table 1: Radiologic characteristics of pulmonary lymphangitic carcinomatosis.

Chest radiography	Chest CT scan
Coarse bronchovascular markings with irregular outline	Smooth (early stage) and nodular (late stage) thickening of interlobular septa and peribronchovascular interstitium
Coarse reticulonodular pattern with intraparenchymal extension of tumour	Polygonal arcades with thickened limbs from thickened septa of adjacent lobules
Unilateral or bilateral changes predominantly in the lower lobes of the lungs	Normal lung architecture is maintained
Kerley A and B lines	Ground-glass appearance from interstitial edema or extension of the tumour into the parenchyma
Hilar and mediastinal lymphadenopathy (20-40% of cases); usually asymmetric	
Pleural effusion (30-50% of cases)	
No abnormalities (30-50% of cases)	

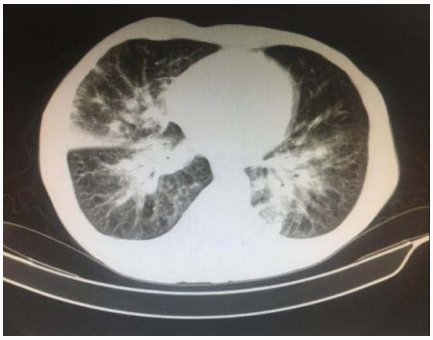

Figure 1: Computed tomography showed diffuse interstitial thickening, reticulonodular pattern and consolidation areas in the lower lobes.

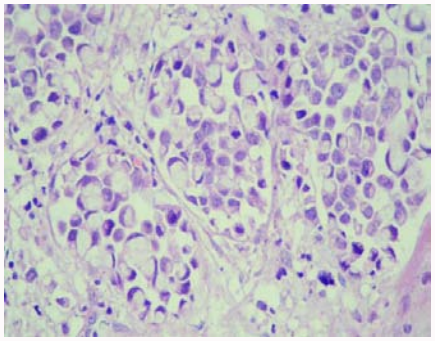

Figure 2: Atypical epithelial cells containing tumor-like signed ring cell-cytoplasmic mucin (H & E, x400).

and sputum cultures. Upon clinical deterioration and progressive respiratory failure, the patient was admitted to the intensive care unit for ventilatory support. On the 2nd day of the intensive care unit, TB-FNAB was performed using an endotracheal tube. Cytologic examination reported as signet ring cell stomach adenocarcinoma with lung metastasis (Figure 2). The patient died due to progressive respiratory failure and multiple organ failure on the 9th day of his hospitalization.

Discussion

Lung metastases of malignant tumors are usually in the form of nodular lesions while PLC is observed only in 6-8% of them [2,7]. Spread of tumor cells into the pulmonary lymphatic system or adjacent interstitial tissue leads to an increase in bronchovascular bundles and thickening of septa. Desmoplastic reaction due to proliferation of neoplastic cells and lymphatic dilation by tumor secretions or edema liquids result in interstitial thickening. Spread to the lymphatic area within adjacent parenchyma and outside interstitium leads to a nodular pattern. While nearly all metastatic neoplasms such as lip cancer may lead to PLC, it is most frequently seen in breast, stomach, lung, pancreas and prostate cancers [3,8]. Usually, primary cancer symptoms are either masked with pulmonary symptoms or not present in PLC. Coughing and dyspnea are the most frequently encountered symptoms [9]. In our case, coughing and progressive dyspnea were more prominent than GIS complaints. Although 30-50% of the PLC cases having a histologically proven disease have a normal chest x-ray, there exist various radiological changes in PLC Table 1**.** The baseline chest x-ray of the case at the emergency service revealed no symptoms except an increase in aeration while the radiologic evaluation on the 5th month showed a very significant diffuse interstitial pattern and mediastinal lymph adenopathies (Figure 1). Pulmonary sarcoidosis, interstitital lung disease, primary lung malignancy, hypersensitive pneumonitis, and lymphoma should be considered in the differential diagnosis of PLC. Nodular patterns can be seen in CT in these diseases. While the nodules are most often located in the upper lobes in sarcoidosis, they are mostly located in the lower lobes in PLC. Either transbronchial or open lung biopsy can be performed in the differential diagnosis of interstitial lung disease, primary lung malignancy and lymphoma. Our case was diagnosed using TBFNAB. According to the American Cancer Society, 5-year observed survival rates are 71% in stage 1A, 57% in stage 1B, 45% in stage 2A, 33% in stage 2B, 20% in stage 3A, 14% in stage 3B, 9% in stage 3C and 4.4% in stage 4 gastric adenocancer patients (10). Our case was diagnosed with PLC originating from signet ring cell adenocarcinoma died before any medical oncology consultation.

Conclusion

Pulmonary lymphangitic carcinomatosis should be considered and necessary evaluations should be done for a definite diagnosis in cases applying with the complaints of cough and progressive dyspnea and found to have bilateral pulmonary infiltrate without any known cause.

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