Mucinous Adenocarcinoma of the Lung: A Great Mimicker of Pneumonia

Manuel Cabrera Charleston 1, Daniella Lizarraga Madrigal 1, Asad Khan 2, George Eapen 2, Horiana Grosu 2

1. Internal Medicine, Instituto Tecnológico y de Estudios Superiores de Monterrey, Monterrey, MEX 2. Pulmonary Medicine, MD Anderson Cancer Center, Houston, USA

Corresponding author: Manuel Cabrera Charleston, mcch98@gmail.com

Abstract

Mucinous adenocarcinoma is a rare lung cancer that can mimic the appearance of infectious pneumonia on imaging. The present report describes the case of an 88-year-old man who presented with a cough that was not responsive to treatment. Based on chest X-ray findings consistent with pneumonia, he was treated with oral antibiotics. After the patient’s symptoms did not improve, a computed tomography scan was performed, which showed a confluent consolidation in the left lower lung and a cavitation suggestive of pneumonia. The patient was then admitted to the hospital to receive intravenous antibiotics. Although his cough continued, laboratory findings were within normal ranges and bacterial cultures were negative. He underwent two bronchoscopic procedures with bronchoalveolar lavage and was diagnosed with parainfluenza and rhinovirus/enterovirus, for which he was treated with prolonged antibiotics and steroids. His symptoms still failed to improve, and a bronchoscopy with cryobiopsy was performed, with a positive result for mucinous adenocarcinoma. This case illustrates the need to distinguish mucinous adenocarcinoma from pneumonia to improve the early diagnosis of this rare cancer and patient outcomes.

Keywords: lung adenocarcinoma, pneumonia, computed tomography, lung cancer, mucinous adenocarcinoma

Introduction

Lung cancer is the leading cause of cancer-related death in the world, and lung adenocarcinoma is among the most common types of lung cancer. Mucinous adenocarcinoma, formerly called mucinous bronchoalveolar carcinoma, is the rarest type of lung adenocarcinoma [1,2]. Mucinous adenocarcinoma can be difficult to differentiate from pneumonia owing to their similar radiological findings. Typical computed tomography (CT) findings indicative of mucinous adenocarcinomas, such as consolidations and opacities, can mimic those of pneumonia. We present a case in which a mucinous adenocarcinoma of the lung was initially diagnosed as pneumonia.

Case Presentation

The patient was an 88-year-old frail man who initially presented to an urgent care center with a cough. The cough was productive with clear phlegm. His cough was mostly at night and occasionally postprandial. He had a history of diabetes mellitus and hypertension and was a lifelong nonsmoker. Based on chest X-ray findings showing a left lower lobe consolidation, the patient was treated with oral antibiotics for 10 days for presumed pneumonia (Figure 1). Two days after completing the antibiotic treatment, his symptoms of productive cough with clear phlegm persisted, and a CT imaging was performed, which showed a dense consolidation with a cavitary lesion in the left lower lobe. He was given a second course of antibiotics for presumed pneumonia for 14 days. In view of no improvement after 14 days of antibiotics, the patient was admitted to the hospital to receive intravenous antibiotics. Although his cough did not respond to treatment. Based on chest X-ray findings consistent with pneumonia, he was treated with oral antibiotics. After the patient’s symptoms did not improve, a computed tomography scan was performed, which showed a confluent consolidation in the left lower lung and a cavitation suggestive of pneumonia. The patient was then admitted to the hospital to receive intravenous antibiotics. Although his cough continued, laboratory findings were within normal ranges and bacterial cultures were negative. He underwent two bronchoscopic procedures with bronchoalveolar lavage and was diagnosed with parainfluenza and rhinovirus/enterovirus, for which he was treated with prolonged antibiotics and steroids. His symptoms still failed to improve, and a bronchoscopy with cryobiopsy was performed, with a positive result for mucinous adenocarcinoma. This case illustrates the need to distinguish mucinous adenocarcinoma from pneumonia to improve the early diagnosis of this rare cancer and patient outcomes.

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The patient was referred for a transbronchial cryobiopsy at our institution. Pathologic examination of the cryobiopsy specimens showed alveolar walls lined by cellular proliferation of columnar cells with abundant cytoplasm containing mucin, consistent with mucinous adenocarcinoma. Treatment was initiated with carboplatin, pemetrexed, and nivolumab. At the three-month follow-up, the patient was doing well and tolerating the current treatment.

**Discussion**

Mucinous adenocarcinoma, as its name indicates, is a mucus-producing tumor [1]. It was formerly known as
bronchioloalveolar cell carcinoma [5]. It accounts for about 5% of lung carcinomas [4]. The diagnosis can be difficult on small biopsy specimens [4]. This type of tumor does not have a specific clinical manifestation [3]. Mucinous adenocarcinomas are most commonly found in the lower lobe of the lungs, similar to our patient’s presentation [5].

Diagnosis of mucinous adenocarcinoma of the lung is usually delayed because its radiologic appearance mimics that of infectious pneumonia [6]. Moreover, this rare neoplasm has several forms. The neoplastic type shows a lobular consolidation on plain radiography and is particularly difficult to differentiate from pneumonia. However, CT imaging is helpful in diagnosing mucinous adenocarcinoma. Findings such as low-attenuating consolidation and the CT angiogram sign, which should show the enhanced pulmonary branches in the consolidation of the hypoattenuating parenchyma, after infusion of contrast medium may indicate mucinous adenocarcinoma [7], with cavitation formation in the consolidations being observed in 40% to 70% of cases [2]. The variant of mucinous adenocarcinoma with cavitation, such as in our patient, tends to have a worse prognosis than the noncavitary type [8].

Overall, mucinous adenocarcinomas are considered to have a prognosis and survival that is similar to that of non-mucinous adenocarcinomas. Moreover, the stage at diagnosis and molecular markers are important evolving areas in the evaluation and management of patients with lung adenocarcinoma [9]. The prognosis can be adversely or positively affected by the tumor’s genetic mutation status, especially when EGFR mutation is present [10]. Our patient’s genetic profile did not identify a targetable mutation; hence, he is currently being treated with carboplatin, pemetrexed, and nivolumab per the standard of care and tolerating this therapy well.

Conclusions
We have presented a case of mucinous adenocarcinoma of the lung. This tumor is uncommon, difficult to distinguish on imaging from infectious pneumonia, and has a generally poor prognosis in the absence of targetable molecular mutations. Increased awareness of the disease presentation and the diagnostic challenges may help to improve the rates of diagnosis at early disease stages and improve outcomes. Clinicians should be aware of the unusual radiological manifestations of these rare lung tumors.

Additional Information
Disclosures
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