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Case Report

Delayed Diagnosis: Pulmonary Invasive Mucinous Adenocarcinoma Presenting as Interstitial Lung Disease

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Abstract

Cancer incidence and mortality rates are rapidly increasing worldwide, due to multiple reason such as an aging and growing population, and changes in risk factors associated with cancer. Several forms of cancer can affect each organ system. This is a case report involving a 80 year old female diagnosed initially with aspiration pneumonia and then lost to follow up for several years. She was again diagnosed with pneumonia, however required hospitalization a short while after that time. Further workup yielded a differential of multifocal pneumonia or interstitial lung disease, and later a diagnosis of advanced stage mucinous adenocarcinoma of the lung. This particular cancer has nonspecific clinical and radiological findings and has been known remain localized until its advanced stages. Consequently, it could have been curative with proper follow up after initial presentation.

Keywords: Mucinous Adenocarcinoma; Presenting; Interstitial; Lung Disease

Introduction

Non-communicable diseases account for the majority of deaths in the 21st century and cancer is projected to be the leading cause and barrier to prolonged life expectancy. Among these, lung cancer remains a global leader with an estimated annual 2 million new diagnoses and nearly 2 million projected deaths [1]. Lung cancer is classified into two major subtypes - small cell and non-small cell. Non-small cell cancer is further stratified into adeno, squamous cell and large cell carcinomas. Adenocarcinomas are subdivided into two categories - mucinous and non- mucinous. The suspicion of lung cancer is high when typical symptoms appear along with an incidental finding on chest imaging. However, unusual symptoms and findings can sometimes delay a timely diagnosis. We present a case where a patient is initially presumed to have multifocal pneumonia versus interstitial lung disease, based on history, clinical presentation and radiologic imaging, but is later diagnosed with stage 4 invasive mucinous adenocarcinoma (Formerly Mucinous Bronchoalveolar Carcinoma).

Case

80-year-old caucasian female, never-smoker, with a past medical history of hypertension, hypothyroidism, and chronic diarrhea presented initially to her PCP with progressive dyspnea for the previous 2 months. She gave a history of mild shortness of breath and cough with morning sputum production for the past 4 - 5 years. A non-contrast CT chest 3 years prior revealed left lower lobe consolidation concerning for possible aspiration pneumonia. Patient was treated with a course of antibiotics at that time but had no radiologic follow-up. She continued to tolerate these respiratory symptoms until approximately 2 months prior to presentation, at which time she could no longer cope with daily non-strenuous tasks. She reported weight loss of 10 - 15 LBS, loss of appetite and watery diarrhea, which had recently been diagnosed as IBS by her primary care team. She denied a history of smoking, exposure to second-hand smoke, asbestos or domesticated birds, and had no history of autoimmune disease, including in the family. Chest x-ray at this time showed diffuse bilateral interstitial changes. CT chest was suggestive of diffuse bilateral dense consolidations, predominantly in the lower lobes. She was again treated as an outpatient with a course of antibiotics and bronchodilators.

On presentation to the ED a month later, the patient was afebrile, tachypneic, and mildly hypoxic on room air. Physical exam revealed bilateral diffuse crackles. Labs were significant for elevated rheumatoid factor and d-dimer. CTA chest revealed bilateral diffuse opacities, and a posterior left lower lobe acute pulmonary thromboembolic of low burden. She was anticoagulated and initially treated for possible ILD. Sputum cultures negative for bacteria (including TB) as well as fungal etiology. VATS lung biopsy was performed. Intraoperatively, she was found to have significantly gross fibrotic lung with areas of pleural retraction and cystic changes. Pathologic examination revealed findings suggestive of invasive mucinous adenocarcinoma with lepidic pattern with stromal and lymphatic invasion. Clinically, this was consistent with stage 4 mucinous ad-

enocarcinoma. She was further evaluated by oncology team and treatment options were discussed. Patient wished to proceed with comfort care measures and passed away two months later in a hospice house.

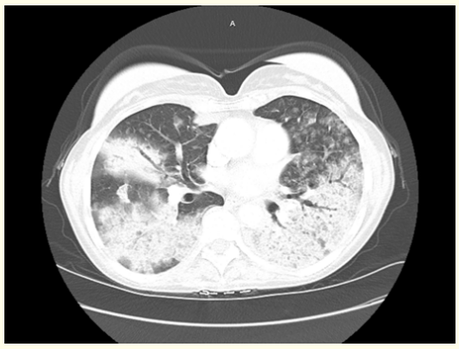

Figure 1: CT Chest with dense bilateral consolidations.

Discussion

In relation to adenocarcinomas, the term lepidic was initially defined as tumor cells proliferating along the surface of intact alveolar walls without stromal or vascular invasion [2]. The 2011 and 2015 WHO classifications of lung tumors subdivided adenocarcinomas into non-mucinous and other variants. Bronchoalveolar carcinoma (BAC) was renamed to invasive mucinous adenocarcinoma (IMA). Furthermore, the use of lepidic non-invasive growth pattern was now applicable to invasive adenocarcinomas [3].

IMAs are relatively rare in comparison to their non-mucinous counterparts. A majority of IMA tumor cells produce and secrete mucin. However, they currently appear to show inconsistencies in identification via mucin typing and genetic marker aberrations [4]. Clinically, IMA symptoms can be very nonspecific, and can show multilobe, pneumonia like radiography [5,6].

Therefore, a thorough clinical history of the presenting illness has been found to be significant, with a few important distinctions. Compared to pneumonia, IMA patients experience symptoms for a vastly greater period of time. Fever, dyspnea, sputum production is more commonly observed with pneumonia, in addition to higher WBC counts and inflammatory marker levels. Distinctions within imaging also plays a vital role in a timely diagnosis. Ill-defined margins with surrounding ground glass opacities are more consistent with pneumonia, whereas internal bubble lucency and pleural retraction are more observed with IMA. On CT margin analysis, the margin of the consolidation lesion in pneumonia has a gradually declining attenuation slope in comparison to IMA [5].

IMAs tend to be localized to lower lobes bilaterally, with relatively small tumor size and no lymph node invasion. However due to their rarity, definitive diagnosis is generally not made until advanced stages, thereby giving varying levels of survival rates with treatment in comparison with other adenocarcinomas [7-9]. Non-small cell lung cancers in stages 1 - 3 are treated with chemotherapy, radiation, surgery or a combined modality. Advanced staged cancers are treated with systemic therapy. Additionally, newly diagnosed advanced NSCLCs should undergo molecular testing, particularly programmed cell death ligand 1 (PD-L1) to assess for effectiveness of immunotherapy [10].

With our patient, IMA was presumed to have started nearly 5 years prior to definitive diagnosis. A multitude of factors including lack of frequent prior exposure to disease at our institution, a focus on a differential of pneumonia even after multiple failed antibiotic treatments, and poor follow up by both healthcare providers and the patient led to a substantial delay in a timely diagnosis. Ultimately, it severely limited her treatment options, leaving only a poor prognosis.

Conclusions

IMA should be kept in the differential diagnosis of any patient presenting with multifocal pneumonia or interstitial lung disease with architectural distortion, particularly if it is not responding to antibiotics and corticosteroid therapy. This case highlights the difficulties faced in the diagnosis of invasive mucinous adenocarcinoma in the presence of inflammation and fibrosis.

Conflict of Interest Statement

Neither the author nor any of the co-authors have any financial or personal relationships with other people or organizations that could inappropriately influence our work.

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