

Clinical Communications: Adults



OCCULT LUNG CANCER OCCLUDING A PULMONARY VEIN WITH SUSPECTED VENOUS INFARCTION, MIMICKING PNEUMONIA AND A PULMONARY EMBOLUS

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Abstract—Background: Patients with lung cancer present to the emergency department (ED) in a variety of ways. Symptoms are often nonspecific and can lead to a delay in diagnosis. Here, a lung cancer mimicked two illnesses, adding to the diagnostic complexity. This case highlights diagnostic pitfalls as well as advantages and limitations of imaging utilized in the emergency setting. **Case Report:** We report a case of an occult lung cancer occluding a pulmonary vein, which at first mimicked pneumonia and later a pulmonary embolism (PE) and arterial lung infarction. The patient presented to the ED with cough and a lung opacity on chest radiograph that was treated with antibiotics. However, recurrent visits to the ED with similar complaints were further investigated with computed tomography angiogram (CTA). At first the scan was considered positive for PE. Further inspection revealed that the CTA findings were not typical for PE, but rather a slow flow state likely caused by an occult mass occluding a pulmonary vein with venous infarction. Biopsy revealed a lung adenocarcinoma. In addition to the case presentation, the typical signs of PE on CTA with correlating images and diagnostic pitfalls are discussed. **Why Should an Emergency Physician Be Aware of This?:** This case report raises two themes that can be of interest to emergency physicians. The first is that lung cancer has many guises. Here it mimicked two distinctly different diseases, pneumonia and PE. The second is that, although CTA is highly sensitive and specific for diagnosing PE, it has limitations that may lead to false positive

readings. When clinical signs and symptoms fail to correlate with the imaging diagnosis, alternative explanations should be sought. © 2016 Elsevier Inc. All rights reserved.

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INTRODUCTION

Lung cancer is the leading cause of cancer-related death in the United States, and is the most common cancer associated with emergency department (ED) visits, representing 26.9% of all cancers. It is frequently associated with pain and respiratory symptoms, but can have a variety of other presenting symptoms such as fever and venous thromboembolism (VTE) (1,2). Reaching the correct diagnosis can be challenging, as lung cancer can mimic other diseases commonly seen in the ED, such as pneumonia. Although imaging can expedite the diagnosis, it may also lead one down the wrong path if the radiological findings do not correlate with the clinical symptoms and presentation. Therefore, knowledge of the spectrum of lung cancer presentations and the strengths and weaknesses of various forms of imaging are key in avoiding possible pitfalls.

CASE REPORT

A 53-year-old man presented to the ED with a productive cough for 1 week and blood-streaked sputum. He reported a 40-pack-year history of smoking tobacco. He was found to have a heart rate of 56 beats/min, temperature of 36.9°C, oxygen saturation of 99%, and blood pressure of 120/71 mm Hg. Physical examination was unremarkable. The white blood cell (WBC) count was 13.9. A chest radiograph revealed a left lower lobe peripheral opacity (Figure 1). The patient was discharged and prescribed a course of azithromycin, with instructions for medical follow-up. A repeat visit to the ED was made 2 months later with similar complaints of several days of cough sometimes associated with green sputum and chest pain. The temperature was 36.8°C, WBC count was 12.4, and rales were found at the left base on physical examination. The chest radiograph again demonstrated an opacity in the left lower lobe. The patient was discharged with a diagnosis of pneumonia and given a course of antibiotic therapy; however, he was advised that follow-up was needed because an underlying cancer was suspected. A third visit to the ED with chest pain prompted concern for pulmonary embolism (PE), for which a computed tomography angiogram (CTA) was performed. The CTA was of high diagnostic quality and showed a hypodensity of the left lower lobe pulmonary artery, suggesting a filling defect suspicious for PE. Furthermore, there was an opacity in the left lower lobe suggesting an arterial lung infarction (Figure 2). On closer inspection of the CTA, the low density in the pulmonary artery was not a true filling defect but a false positive secondary to heterogeneous mixing of intravenous (i.v.) contrast that transitioned from



Figure 1. Frontal view of the chest demonstrates an ill-defined peripheral opacity in the left lower lobe.



Figure 2. Multi-planar reformatted computed tomography angiogram image shows a gradual change in density of the left lower lobe pulmonary artery and the ill-defined borders of the filling defect (white arrow). An associated opacity is seen in the left lower lobe (white arrowhead). This opacity is not wedge shaped and is relatively large and diffuse for a typical arterial infarction. The lung cancer causing the occlusion is partially imaged in the left perihilar region (black arrow).

densely opacified blood to nonopacified blood. The noted left lower lobe lung opacity was large and diffuse, rather than a subsegmental opacity that would be more typical of an arterial pulmonary infarction. A careful inspection of the perihilar region showed a subtle soft tissue structure surrounding the left lower lobe bronchus with occlusion of the left inferior pulmonary vein (Figure 3). A subsequent positron emission tomography-CT scan and biopsy of this occult soft tissue lesion demonstrated an Fludeoxyglucose (FDG) avid stage 4 adenocarcinoma of the lung.



Figure 3. Axial computed tomography angiogram image at the level of the left atrium demonstrates the lung cancer to be subtle and is noted to involve the posterior left atrium and occlude the left inferior pulmonary vein, with only a short segment of vein remaining (black arrow). The mass also encases and narrows the airway (white arrow).

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