



A 44-Year-Old Man with Cough of Several Weeks' Duration

Urgent message: Lung cancer—the leading cause of cancer-related deaths in the United States—may first present with relatively benign symptoms and findings, such as those seen in urgent care. A pulmonary nodule may be the first manifestation of lung cancer in tobacco users. Early diagnosis and intervention, as well as ensuring a patient has appropriate and timely access to follow-up, is a critical measure in decreasing mortality.

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Introduction

Lung cancer is the second most common cancer in both females and males, and is the leading cause of death due to cancer, with an average age of diagnosis of 70-years-old; the likelihood for a man to develop lung cancer is 1 in 15, while for a woman it is 1 in 17.¹ Risk factors include:

- tobacco smoking
- asbestosis exposure
- radon exposure
- air pollution
- previous radiation therapy
- family or personal history of lung cancer
- arsenic in drinking water

Screening for lung cancer is recommended for adults age 55 to 80 who have a 30-pack-year smoking history and are current smokers or have quit in the last 15 years.² Nodules on chest x-ray should be closely followed as Fleischner guidelines, especially in individuals who smoke tobacco. The reported incidence of malignancy in a solitary pulmonary nodule, defined as a single round or oval opacity in the pulmonary parenchyma measuring <3 cm in diameter and surrounded by pleura, is 3% to 6% in the general population.³

Case Presentation

A 44-year-old male presented to urgent clinic for a cough that had been increasing in frequency over a few weeks. He denies any associated hemoptysis, weight changes,



night sweats, or chills. He denied any past medical history. His father died from a Pancoast tumor that invaded the spine. The patient was a one pack-per-day smoker since he was a teenager. Physical exam revealed a well-nourished, well-developed male in no acute distress. He had a benign physical exam, including during auscultation of the lungs. Due to the patient's timeline of cough and risk factors, the decision was made to proceed with a

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Table 1. Acute vs Chronic Cough Presenting to Urgent Care	
Classification of cough	Concerning for
Acute cough (<3 weeks)	<ul style="list-style-type: none"> • Upper respiratory infection • Lower respiratory infection • Pulmonary embolism • Pneumonia • Exacerbation of chronic issues (eg, COPD or CHF)
Chronic cough (>8 weeks)	<ul style="list-style-type: none"> • Asthma • Gastroesophageal reflux • Postnasal drip in addition to • ACE inhibitor use, GERD, eosinophilic esophagitis, and asthma
RED FLAGS <ul style="list-style-type: none"> • Systemic symptoms (ie, fever, chills, night sweats) • Weight loss • Tobacco use • Personal or family history of cancer, radon exposure, or previous radiation therapy 	

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chest radiograph, which noted a small nodule. He was counseled on the findings and was told to follow up with pulmonology for further evaluation given his risk factors. The patient had multiple no-shows and cancellations at the pulmonology office.

Lung Cancer

For patients under the age of 45, it is unlikely that a pulmonary nodule will be a harbinger of cancer. One study showed that patients diagnosed under the age of 40 years old constituted about 5% of lung cancers.^{4,5} General rules for following up on pulmonary nodules are with Fleischner guidelines. Depending on the size and number of nodules, recommendations are outlined for how many months later a patient with a solitary pulmonary nodule should come back for another evaluation.⁶

Cough

The first step in the evaluation of cough is to determine

the duration.⁷ If a patient has had a cough for less than 3 weeks, it is acute; subacute is 3 to 8 weeks and chronic is more than 8 weeks. Acute coughs include upper/lower respiratory infections, pulmonary embolism, pneumonia, and exacerbation of chronic issues such as COPD or CHF.

Chronic cough may be due to asthma, gastroesophageal reflux, or postnasal drip in addition to ACE-I use, GERD, eosinophilic esophagitis, and asthma. Red flags include systemic symptoms (ie, fevers, chills, night sweats), weight loss, tobacco abuse, a personal history or family history of cancer, radon exposure, or previous radiation therapy.⁷

Indications for Chest X-ray in the Urgent Care Setting

Indications for chest radiographs include chest trauma, acute respiratory or cardiac disease in a patient with no recent/available radiographs, hemoptysis, suspected pneumonia or pleural effusion, positive TB skin test, or suspected mass. The following are not normally indications for radiographs: URI, uncomplicated COPD exacerbation, and screening for lung cancer.⁸ Although the patient did present with a cough and had risk factors that made lung cancer higher on the differential, a chest radiograph wasn't necessarily indicated in this patient.

Follow-up

Ensuring patients understand the potential for more serious illness and diagnostic uncertainty is important for their motivation to follow up. For example, providing a mechanism for making appointments 24/7 can increase follow-up.⁹ One study showed that web-based appointment systems reduced the average wait time from 98 minutes to 7 minutes, which improves satisfaction and thus decreases no-show rates.¹⁰ Another way to encourage follow-up is for healthcare workers to address what occurred during the urgent care visit, such as providing the patient mentioned above with information about the meaning of his radiograph findings. One study showed that giving an outpatient a follow-up appointment at the time of discharge increases follow-up compliance compared with solely being given discharge instructions.^{9,11} Although the patient described in this case study was given an appointment, he had multiple no shows and may not have known that the appointment had been made.

Resolution of the Case

A year after his initial visit to urgent care, the patient re-

presented as a transfer for multifocal pneumonia and large lung mass. He was found to have multiple intracranial metastases, as well as necrotic adenopathy in the right neck. He was now experiencing symptoms including increasing productive cough, neck pain, and sputum production. On initial evaluation during this hospital visit the patient had extensive lymphadenopathy of the supraclavicular and subauricular area. He underwent CT-guided biopsy of the right clavicular mass, which showed poorly differentiated non-small-cell carcinoma consistent with metastatic pulmonary adenocarcinoma. CT scan of the chest showed extensive supraclavicular, mediastinal, hilar, and axillary lymphadenopathy. Lytic lesions were noted in the cervical spine. Large masses were noted in the bilateral upper lungs. The patient was discharged and followed up with hematology-oncology for palliative chemotherapy and radiation.

Two months after diagnosis the patient re-presented with increasing shortness of breath with complete occlusion of the right middle lobe and right lower lobe bronchi with complete collapse of the right middle and lower lobes on CT, and a large pericardial effusion on ECHO. He was provided comfort care and ultimately passed away.

Discussion

Findings of metastatic lung cancer include persistent cough, shortness of breath, sudden weight loss, and hemoptysis. Paraneoplastic syndrome also can occur. Syndrome of inappropriate antidiuretic hormone secretion, also known as SIADH, can cause patients to have hyponatremia, leading to confusion. Hormones can cause hypercalcemia in squamous cell carcinoma. Bone pain, nail clubbing, and increasing skin pigmentation can also occur.

Though our patient did not have these symptoms when he initially presented, integrating some of these questions, such as regarding weight loss, hemoptysis, or family history of cancer into the initial history may help with diagnosis of subtle cases. Early diagnosis and routine follow-up are vital for patient safety.

Summary Points

- Lung cancer is the most common cause of cancer-related death in America, with over 149,000 predicted deaths for the year 2019.¹
- Follow-up of abnormal urgent care test results is important for patient safety, as well as risk management
- Patients under the age of 45 are very unlikely to have lung cancer; however, those with risk factors and pul-

Table 2. When Should a Chest X-ray Be Performed in the Urgent Care Center?

X-ray is indicated in patients:

- with chest trauma
- with acute respiratory or cardiac disease with no recent/available radiographs
- with hemoptysis, suspected pneumonia, or pleural effusion
- who have had a positive TB skin test
- who have a suspected mass

X-ray is not typically indicated in patients:

- diagnosed with upper respiratory infection
- with uncomplicated COPD exacerbation
- as screening for lung cancer

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monary nodules need to have follow-up according to the guidelines.

- Patient follow-up instructions should be action- and time-specific. ■

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