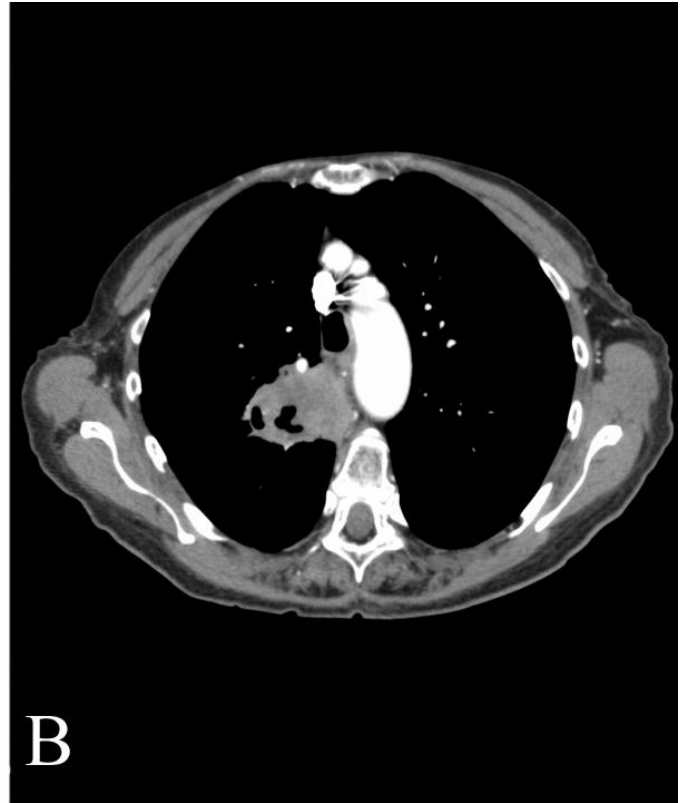


CLINICAL PRESENTATION AND RADIOLOGY QUIZ QUESTION

A 67 year old woman presents with recurrent cough. She has no fever but feels fatigued. The patient is a chronic smoker. She has had multiple bouts of bronchitis. A plain film was obtained, and a chest CT was also performed:

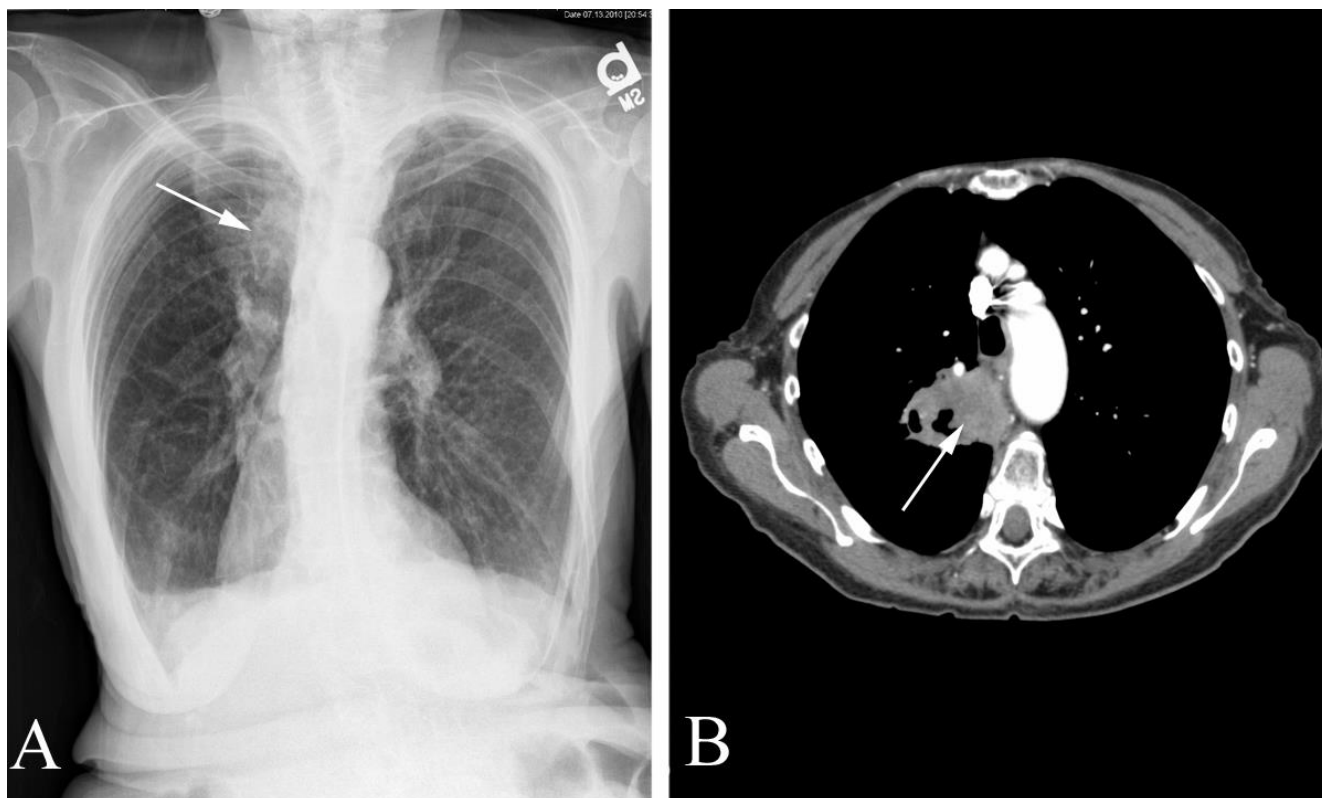


Which of the following steps is *not* appropriate in the evaluation of this patient?

- (a) positron emission tomography (PET scan)
- (b) bronchoscopy
- (c) computed tomography directed biopsy of the lesion
- (d) follow-up CT in 3 to 6 months to document stability of the lesion

RADIOLOGY QUIZ QUESTION, ANSWER, AND EXPLANATION

[For the patient history and question, see Page 1.]



67 year old woman, a chronic cigarette smoker, with recurrent cough and bronchitis. A. PA chest radiograph shows hyperinflation of the lungs and abnormal density along the right medial lung (arrow). B. Axial contrast-enhanced CT study shows a right medial lung mass (arrow).

Answer: (d), follow-up CT in 3 to 6 months to document stability of the lesion is *not* an appropriate next step in evaluation of this patient, and thus (d) is the correct answer.

Positron emission tomography (PET scan) is an appropriate next step, which would be expected to show hypermetabolism in the lesion as well as any metastatic deposits, and thus (a) is *not* the correct answer. Bronchoscopy with sampling of the lesion is an appropriate next step, and therefore (b) is *not* the correct answer. Computed tomography directed biopsy of the lesion is also an appropriate next step, and thus (d) is *not* the correct answer.

IMAGING STUDY AND QUESTIONS

The patient underwent a procedure:



Imaging questions:

- 1) What type of study is shown?
- 2) Are there any abnormalities?
- 3) What is the most likely diagnosis?
- 4) What is the next step in management?

IMAGING STUDY QUESTIONS AND ANSWERS



Imaging questions:

- 1) What type of study is shown? A CT-directed biopsy.
- 2) Are there any abnormalities? Yes. The patient's right lung mass is shown. There is a biopsy needle in the mass.
- 3) What is the most likely diagnosis? Lung malignancy.
- 4) What is the next step in management? Await the return of the biopsy results.

PATIENT DISPOSITION, DIAGNOSIS, AND FOLLOW-UP
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The biopsy of the lung mass showed “moderately differentiated invasive squamous cell carcinoma. The patient’s poor lung function and extent of the tumor excluded the possibility of curative surgery, and she was treated with radiation.

SUMMARY

Presenting symptom: The patient had recurrent cough with multiple bouts of bronchitis, which remitted with treatment with antibiotics. During one of these bouts, however, a chest radiograph demonstrated an abnormality that required further evaluation.

Imaging work-up: As noted in Radiology Quiz of the Week #57 and #58, the first imaging study of choice for evaluating ambulatory patients with cough is a chest radiograph. In those cases when the plain film demonstrates an abnormality that needs further characterization, as was the case in this patient, the next step in imaging is a CT scan.

Establishing the diagnosis: When the patient has an obvious lung mass, as in this case, diagnosis rests on a microscopic evaluation of tissue. This tissue may be obtained by a CT-directed biopsy, bronchoscopic biopsy, operative biopsy, or operative resection.

Take-home message: When imaging is performed in ambulatory patients with cough, the initial study should be an upright, two-view chest radiograph. If an abnormality is detected that requires further imaging characterization, CT is almost always the best next step. When the CT shows a mass, further evaluation typically includes tissue characterization.

FURTHER READING

Goroll AH and Mulley AG. "Evaluation of subacute and chronic cough" Chapter 41 in *Primary Care Medicine: Office Evaluation and Management of the Adult Patient*, 6th edition, Lippincott William & Wilkins.

Porter RS (Editor). Cough in adults. Chapter in *The Merck Manual of Patient Symptoms*, Merck & Company, Whitehouse Station, NJ 2008.

Renfrew, DL. Cough, dyspnea, and lung nodules. Chapter 10 of *Symptom Based Radiology*, Symptom Based Radiology Publishing, Sturgeon Bay, WI, 2010, available for no charge at www.symptombasedradiology.com.

Seller RH. Cough. Chapter 9 in *Differential Diagnosis of Common Complaints*. Saunders, 2000, Philadelphia.