

**Chest Radiology
In-Training Test Questions
for Diagnostic Radiology Residents**



QUALITY IS OUR IMAGE

March, 2013

Sponsored by:

Commission on Education

Committee on Residency Training in Diagnostic Radiology

© 2013 by American College of Radiology. All rights reserved.

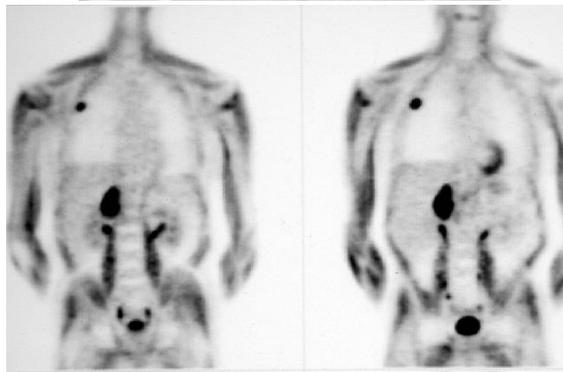
1891 Preston White Drive -- Reston, VA 20191-4326 -- 703/648-8900 -- www.acr.org

1. Which statement is true regarding lung cancer?
- A. Part-solid nodules are more likely to be malignant than solid or ground glass nodules.
 - B. Yearly chest x-rays in smokers and former smokers have been shown to decrease mortality.
 - C. Ground glass features are associated with invasive tumor.
 - D. Eccentric calcification is a reliable predictor of benignity in a nodule.

Rationales:

- A. **Correct.**
- B. *Incorrect.* Large studies have demonstrated no survival benefit.
- C. *Incorrect.* Ground glass is associated with bronchioloalveolar pattern of spread, which is non-invasive in situ tumor.
- D. *Incorrect.* Diffuse, central, and popcorn calcification is associated with benign nodules, but eccentric calcification can be seen in both benign and malignant lesions.

2. You are shown a CT image (Figure 5A) and two images from an F-18 FDG (fluorodeoxyglucose) PET scan (Figure 5B) of a 71-year-old man. What is the MOST LIKELY diagnosis?



- A. Benign nodule
- B. Stage I lung cancer
- C. Stage II lung cancer
- D. Stage IV lung cancer

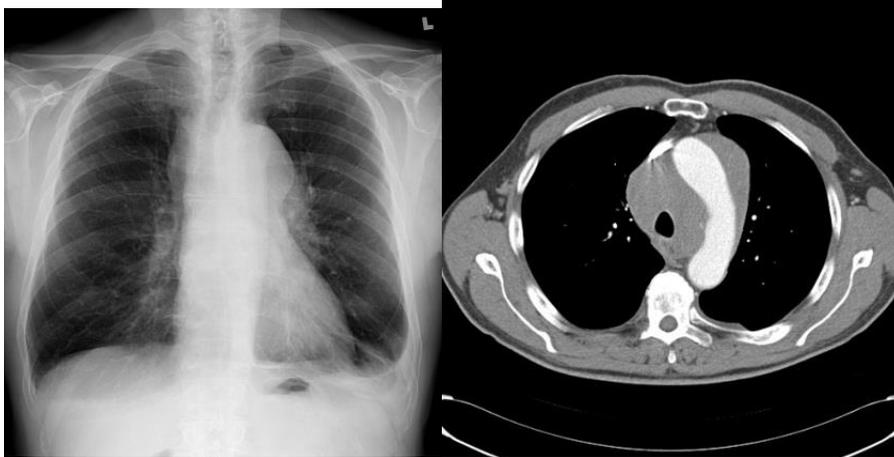
Rationales:

- A. *Incorrect.* Benign nodules may show uptake on FDG PET scan, but rarely this intense. Benign etiology does not explain adrenal activity.
- B. *Incorrect.* Without the adrenal activity, this would be typical of Stage I lung cancer.
- C. *Incorrect.* There is no adjacent nodal activity to suggest T1or2 N1 disease.
- D. **Correct.** The adrenal gland is one of the most common sites of metastasis from bronchogenic carcinoma and may be seen in otherwise Stage I disease. This tumor is T1N0M1 or Stage IV.

Citations:

Fletcher, James W., M.D.; PET Scanning and the Solitary Pulmonary Nodule; Seminars in Thoracic and Cardiovascular Surgery, Vol 14 no. 3 (July), 2002: pp268-274.

3. You are shown chest radiograph and CT scan of 78-year-old male who is status post radical prostatectomy for prostate cancer about three years ago. What is the most likely diagnosis?



- A. Lymphoma
- B. Metastatic prostate cancer
- C. Mediastinal Fibrosis
- D. Hematoma

Rationales:

- A. **Correct.** Patient underwent biopsy which was positive for T-cell lymphoma. Non-hodgkin's lymphoma can be seen in older adults (median age 55).
- B. *Incorrect.* Although generalized adenopathy and mediastinal masses mimicking lymphoma have been reported in the literature (see reference) they are rare. The patient is status post radical prostatectomy 3 years prior and had been well since.
- C. *Incorrect.* Presumed interval development, lack of calcifications (from histoplasmosis) and radiographic appearance of extensive soft tissue mass make this entity less likely.
- D. *Incorrect.* The aorta is intact and there was not history of trauma.

4. Which of the following statements about localized fibrous tumors of the pleura is TRUE?
- A. They are associated with asbestos exposure.
 - B. They are associated with hypertrophic pulmonary osteoarthropathy.
 - C. They account for the majority of pleural tumors.
 - D. Most of these tumors arise from parietal pleura.

Rationales:

A. *Incorrect.*

B. **Correct.** Localized fibrous tumor of the pleura are relatively rare tumors of the pleura. About 80% of them arise from the visceral pleura. They affect male and female patients equally. They are not associated with smoking, asbestos exposure or other environmental pollutants. About half of the patients are asymptomatic when the tumor is discovered incidentally. They occasionally reach very large size and produce symptoms of cough, dyspnea and chest pain. Paraneoplastic syndromes such as hypoglycemia and hypertrophic osteoarthropathy are present in 4-5 % of the cases.

C. *Incorrect.*

D. *Incorrect.*

Citations:

Muller, N.L., Fraser, R.S., Colman, N.C., and Pare', P.D. Radiologic Diagnosis of Diseases of the Chest.

W.B. Saunders, Co., Philadelphia, PA 2001 Mcloud, TC. Thoracic Radiology: The Requisites. Mosby, Inc., St. Louis, MO 1998.

5. OK Which one of the following diseases is MOST LIKELY to be a cause of pulmonary artery aneurysm or pseudoaneurysm?
- A. Pulmonary infection
 - B. Mediastinal fibrosis
 - C. Metastasis
 - D. Goodpasture's syndrome

Rationales:

A. **Correct.** Pulmonary artery aneurysms are rare. They may occur secondary to infection (Septic emboli, Tuberculosis etc.), catheter-related complications, pulmonary hypertension or vasculitides. The most common cause is probably catheter-related complications. Rasmussen aneurysm is a mycotic aneurysm that occurs in relation to tuberculus infection.

B. *Incorrect*

C. *Incorrect*

D. *Incorrect*

Citations:

Muller, N.L., Fraser, R.S., Colman, N.C., and Pare', P.D. Radiologic Diagnosis of Diseases of the Chest. W.B. Saunders, Co., Philadelphia, PA 2001.

6. Concerning lung cancer staging, which one of the following is MOST indicative of unresectability?
- A. Size of the tumor
 - B. Pleural effusion
 - C. Scalene node
 - D. Ipsilateral hilar adenopathy

Rationales:

A. *Incorrect.*

B. *Incorrect.*

C. **Correct.** Lung cancer staging is based on the TNM classification. Based on this classification, stage III B and above is considered unresectable disease. Stage III B constitutes N3 and/or T4 disease. N3 disease involves contralateral hilar or mediastinal nodes or scalene or supraclavicular nodes. While T4 disease involves invasion of tumor into mediastinum, heart, great vessels, trachea, esophagus or chest wall as well malignant pleural or pericardial effusion.

D. *Incorrect.*

Citations:

Muller, N.L., Fraser, R.S., Colman, N.C., and Pare', P.D. Radiologic Diagnosis of Diseases of the Chest. W.B. Saunders, Co., Philadelphia, PA 2001.

7. Which of the following is the MOST common location for a Morgagni hernia?
- A. Left cardiophrenic
 - B. Right cardiophrenic
 - C. Left paraspinal
 - D. Right paraspinal

Rationales:

A. *Incorrect.*

B. **Correct.** Morgagni hernia represents a congenital diaphragmatic defect. They occur in the right cardiophrenic angle. The hernia sac usually contains intraabdominal fat and may contain air filled loops of bowel.

C. *Incorrect.*

D. *Incorrect.*

Citations:

Muller, N.L., Fraser, R.S., Colman, N.C., and Pare', P.D. Radiologic Diagnosis of Diseases of the Chest. W.B. Saunders, Co., Philadelphia, PA 2001.

8. Which one of the following radiographic signs represents chronic deep vein thrombosis at CT venography?
- A. Central low attenuation
 - B. Perivenous soft tissue edema
 - C. Venous dilatation
 - D. Central calcification

Rationales:

A. *Incorrect.*

B. *Incorrect.*

C. *Incorrect.*

D. **Correct.** The findings of chronic deep vein thrombosis on CT venography include calcification of thrombi within veins as well as that of venous walls, shrunken veins and presence of collateral vessels. Central low attenuation within veins, perivenous soft tissue edema and venous dilatation are signs of acute deep vein thrombosis.

Citations:

Katz DS, Loud PA, Bruce D, Gittleman AM, Mueller R, Klippenstein DL, Grossman ZD. Combined CT venography and pulmonary angiography: A comprehensive review. *Radiographics* 2002; 22:S3-S24.