

Radiology corner



Case 1

A 44-year-old male presents with chronic cough and joint pains.

What is the main abnormality (figure 1)?

- a) Upper lobe fibrosis
- b) Pulmonary congestion
- c) Lung cancer
- d) Mediastinal abnormality
- e) Upper lobe consolidation

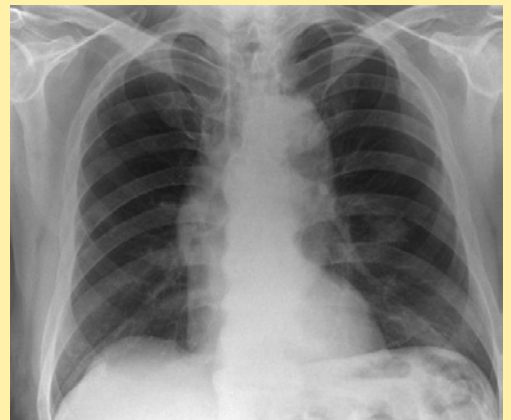


Case 2

A 62-year-old male presents with chest pain.

What is the main abnormality (figure 2)?

- a) Soft tissue mass
- b) Vascular abnormality
- c) Bony abnormality
- d) Normal appearances
- e) Hilar abnormality



Answers

Case 1

a) Upper lobe fibrosis. There is upper lobe fibrosis mainly on the right side; note the reticular shadowing in the right upper lobe, tracheal deviation to the affected side, elevation of the horizontal fissure and apical pleural cap likely due to the fibrotic process pulling down the extrapleural fat. There is also a background mainly upper zone pulmonary nodularity. This patient had a longstanding history of sarcoidosis.

The differential diagnosis for these appearances would include:

- tuberculosis (look for associated calcifications)
- sarcoidosis (may see lymph node calcification)
- radiotherapy (usually unilateral and most commonly associated with previous breast cancer so look for evidence of previous breast surgery, mastectomy or surgical clips)
- ankylosing spondylitis (generally bilateral and the spinal ankylosis should be evident)
- chronic hypersensitivity pneumonitis (bilateral)
- progressive massive fibrosis (bilateral with background nodularity and relevant occupational history of occupational dust exposure)

Case 2

a) Soft tissue mass. There is a solitary rounded soft tissue opacity in the left mid-zone, which was confirmed to be due to a primary bronchogenic adenocarcinoma. The chest radiograph should be compared with old films to ensure that the lesion is not longstanding. If the lesion is new, or if there are no old films, then the diagnosis of exclusion in a patient of this age, especially given the hyperinflated lungs that suggest a past smoking history, is malignancy. The aorta is unfolded, which accounts for the appearances of the aortic arch.

The differential for these appearances would include:

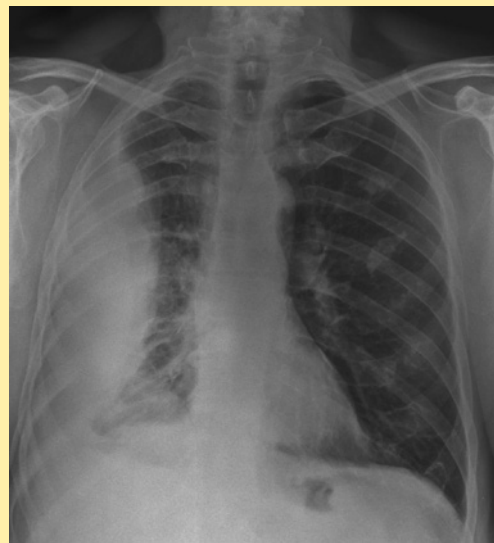
Malignant	Primary bronchogenic carcinoma Metastases
Benign	Adenoma Hamartoma
Granuloma	Tuberculosis Histoplasmosis
Infective	Pneumonia
Inflammatory	Vasculitis Rheumatoid lung
Vascular	Post-traumatic haematoma Arteriovenous malformation

Case 3

A 57-year-old male presents with weight loss, breathlessness and new onset of chest pain.

What is the likely underlying cause for these appearances (figure 3)?

- a) Empyema with evidence of previous tuberculosis exposure
- b) Mesothelioma with evidence of previous asbestos exposure
- c) Haemothorax with evidence of multiple traumatic injuries
- d) Pleural adenocarcinoma with evidence of metastatic disease
- e) Extra-thoracic soft tissue mass with evidence of rib destruction



Case 4

A 34-year-old female presents with left-sided severe chest pain.

What is the best description for the radiographic abnormalities (figure 4)?

- a) Renal osteodystrophy
- b) Myelofibrosis
- c) Mastocytosis
- d) Sickle cell disease
- e) Metastatic disease



Answers

Case 3

b) Mesothelioma with evidence of previous asbestos exposure. There is a right-sided pleurally based abnormality, which appears slightly lobular in places. This may be due to a combination of a diffuse pleural thickening/pleural fluid collection, with the fluid component likely to be the principle contributing cause. There is associated compression of the underlying right lung. There is evidence of previous asbestos exposure with left-sided calcified pleural plaques. Although other lung malignancies are also more common in the presence of asbestos exposure and should also be considered, given the large pleural effusion and evidence of past asbestos exposure, the main suspicion is of malignant mesothelioma. Benign asbestos-related pleural effusion is also possible but the effusion is usually smaller in that case. Diffuse pleural thickening could be due to a number of conditions:

Malignant	Involvement by other tumours	Primary bronchial adenocarcinoma Breast carcinoma Lymphoma Malignant thymoma
Benign	Post-tuberculosis infection Previous empyema Benign asbestos-related pleural thickening	

Case 4

d) Sickle cell disease. The bones are sclerotic due a generalised increase in bone density. In addition, note the H-shaped vertebrae due to endplate avascular necrosis. This patient has sickle cell disease. Other findings to assess for on a chest radiograph include:

Parenchymal abnormalities	Pneumonia Infarction
Bones	Avascular neurosis of the humeral head (subarticular sclerosis; this is also present in the current case) Bone destruction due to osteomyelitis (commonly <i>Salmonella</i> spp.) Generalised loss of bone density with a coarsened trabecular pattern (increased medullary space) Generalised increase in bone density can occur, as in this case
Mediastinal masses	Extramedullary haematopoiesis
Left upperquadrant	Calcified spleen or, more commonly, small or absent splenic soft tissue outline due to autoinfarction/hyposplenism