

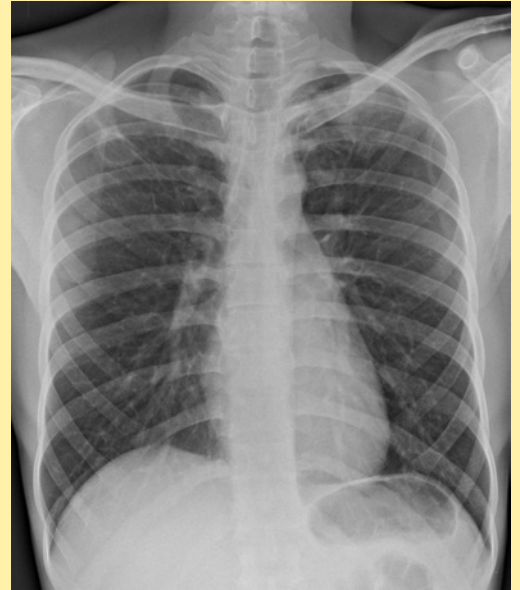
Radiology corner



Case 1

A 36-year-old male presents with fever, malaise and productive cough.

1. What is the main abnormality?
 - a) Mediastinal abnormality
 - b) Hilar abnormality
 - c) Bony abnormality
 - d) Lung parenchymal abnormality
 - e) Normal appearances



Case 2

A 48-year-old female presents with fatigue and generalised weakness. Haematological investigations revealed a pancytopenia.

1. What is the main abnormality?
 - a) Lung parenchymal and bony abnormality
 - b) Mediastinal and bony abnormality
 - c) Pleural and bony abnormality
 - d) Bony abnormality
 - e) Lung parenchymal and mediastinal abnormality



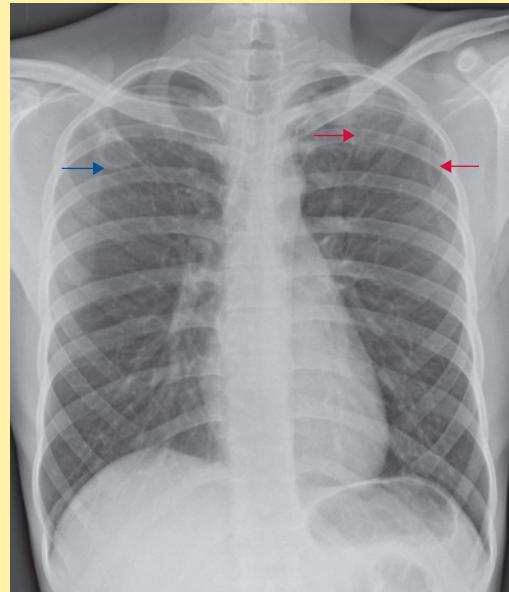
Answers

Case 1

1. d) Lung parenchymal abnormality. There is increased opacification at both apices (arrows) with probable cavitation at the right apex (blue arrow). This patient was subsequently diagnosed with tuberculosis (TB).

In primary TB, the initial focus of infection can be located anywhere within the lung and TB can present with a wide variety of different appearances. Cavitation is relatively uncommon in primary TB occurring in 10–30% of cases. There may also be evidence of mediastinal nodal enlargement. The infection generally becomes localised and a caseating granuloma forms which may calcify; this is known as a Ghon focus. When a calcified node and a Ghon lesion are present the combination is known as a Ranke complex.

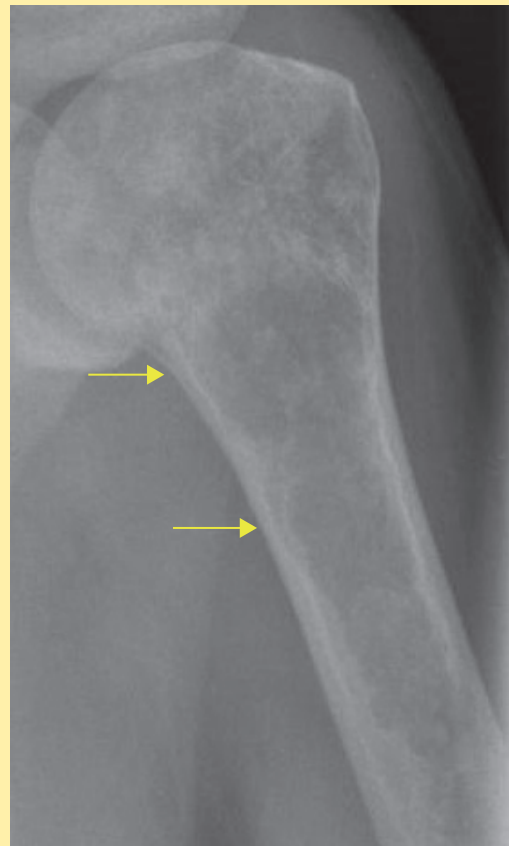
Post-primary/reactivation/secondary TB occurs later, frequently in the setting of a decreased immune status. In most cases, post-primary TB within the lungs develops in the posterior segments of the upper lobes or the superior segments of the lower lobes. The typical appearance of post-primary TB is that of patchy consolidation or poorly defined linear and nodular opacities. In post-primary TB, cavitation is more common than in primary TB and hilar enlargement is seen in up to a third of cases. Miliary TB and lobar consolidation are also recognised presentations of post-primary TB, the former due to haematogenous spread.



Case 2

1. d) Bony abnormality. The bones are diffusely sclerotic. Note the abnormal marrow cavity of the bone (best appreciated within both humeri) with evidence of endosteal scalloping (curvilinear thinning of the cortex of the bone; arrows). This is because the marrow cavity is filled with abnormal neoplastic cells in this patient with multiple myeloma. Endosteal scalloping is particularly seen in myeloma although the usual bony abnormality would be lucent areas, as seen in this case in the humeri, rather than diffuse osteosclerotic appearances seen elsewhere in the bony skeleton which are a much rarer, but recognised finding in multiple myeloma. Metastatic bony malignancy is the most common cause of diffuse bony sclerosis, with prostate cancer the most common cause in males and breast cancer the most common cause in females.

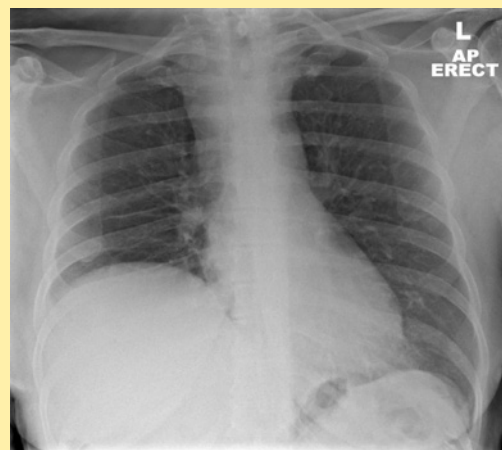
Other less common causes of a generalised increase in bone density include: renal osteodystrophy; myelofibrosis; sickle cell disease; osteopetrosis; pyknodysostosis; fluorosis; and mastocytosis.



Case 3

A 51-year-old female smoker presents with haemoptysis and weight loss.

1. What is the main abnormality?
 - a) Hilar abnormality
 - b) Lung parenchymal abnormality
 - c) Mediastinal abnormality
 - d) Bony abnormality
 - e) Normal appearances



Case 4

A 46-year-old female presents with back pain.

1. What is the main abnormality?
 - a) Lung parenchymal abnormality
 - b) Pleural abnormality
 - c) Normal appearances
 - d) Rib notching
 - e) Soft tissue abnormality

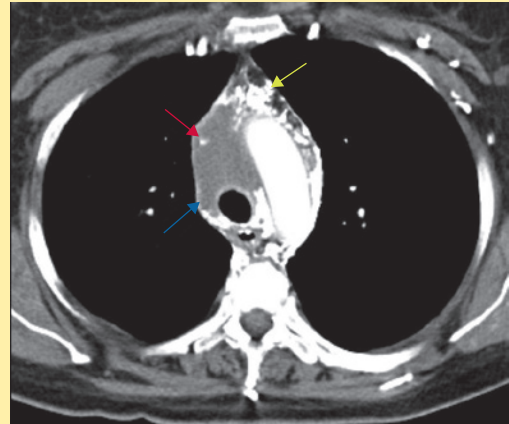


Answers

Case 3

1. c) Mediastinal abnormality. There is widening of the superior mediastinum with abnormal soft tissue within the right paratracheal region. This patient was confirmed to have small cell lung cancer.

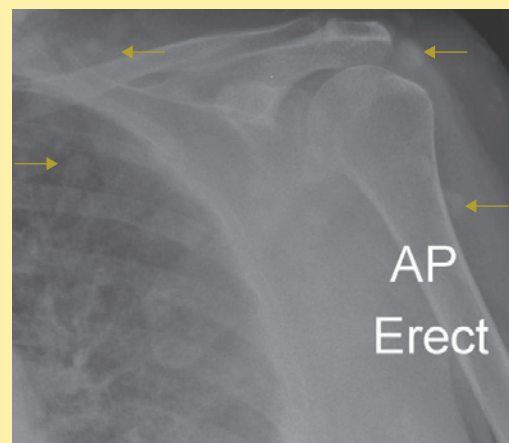
The right hemidiaphragm is also elevated raising the possibility of phrenic nerve palsy as a potential complication. Given the location of the abnormal soft tissue, the patient is at risk of developing superior vena cava obstruction. Note on the axial computed tomography (CT) image from the same patient the mass (blue arrow) with the attenuated superior vena cava (red arrow) and multiple collateral vessels (yellow arrow).



Case 4

1. e) Soft tissue abnormality. There are multiple rounded soft tissue opacities projected over both lungs and over the soft tissues of the neck, upper arms and lateral chest wall. Because of the numerous chest wall nodules the presence of lung nodules or other pulmonary abnormalities is difficult to assess. Comparison should be made with previous chest radiographs to look for change and cross-sectional imaging using CT would be required if there is a suspicion of underlying lung disease.

The findings are in keeping with multiple cutaneous/subcutaneous neurofibromas in this patient with neurofibromatosis type 1 (NF-1). NF-1 has a number of thoracic and lung parenchymal abnormalities that can be assessed on a chest radiograph (listed in the table below). [This patient was morbidly obese hence the limited penetration of the radiograph.]



Lung parenchyma	Thin walled cysts are the most common (upper zone predominance) Interstitial fibrosis (lower zone predominance)
Thoracic cage	Kyphoscoliosis Ribbon rib deformity Rib notching (intercostal nerve involvement)
Soft tissues	Neurofibromas on the chest wall Lateral thoracic meningoceles (widened neural foraminae) Extra-adrenal pheochromocytomas