Chapter 2 Unknown Primary

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J. Mihailovic et al., *FDG PET/CT in Clinical Oncology*,
DOI 10.1007/978-3-642-29866-0_2, © Springer-Verlag Berlin Heidelberg 2012

Case 1

30-Year-Old Male with Metastatic Adenocarcinoma; Unknown Primary

History: One year ago, this patient developed right shoulder pain; plain films were reportedly negative. The pain worsened, and he developed lower extremity weakness and shaking. He was admitted to hospital and was found to have a large mass in the thoracic spine causing cord compression. Partial resection of the mass was performed followed by radiotherapy for 10 days. Pathology demonstrated moderately differentiated adenocarcinoma with surrounding desmoplastic reaction of presumed pancreatic origin. The patient received three cycles of gemcitabine and cisplatin, last dose 4 months ago. He received Zometa as treatment for bone metastases and started docetaxol 2 months ago, and second cycle was completed 1 month ago. Patient presented with clinical progression of tumor.

Findings:

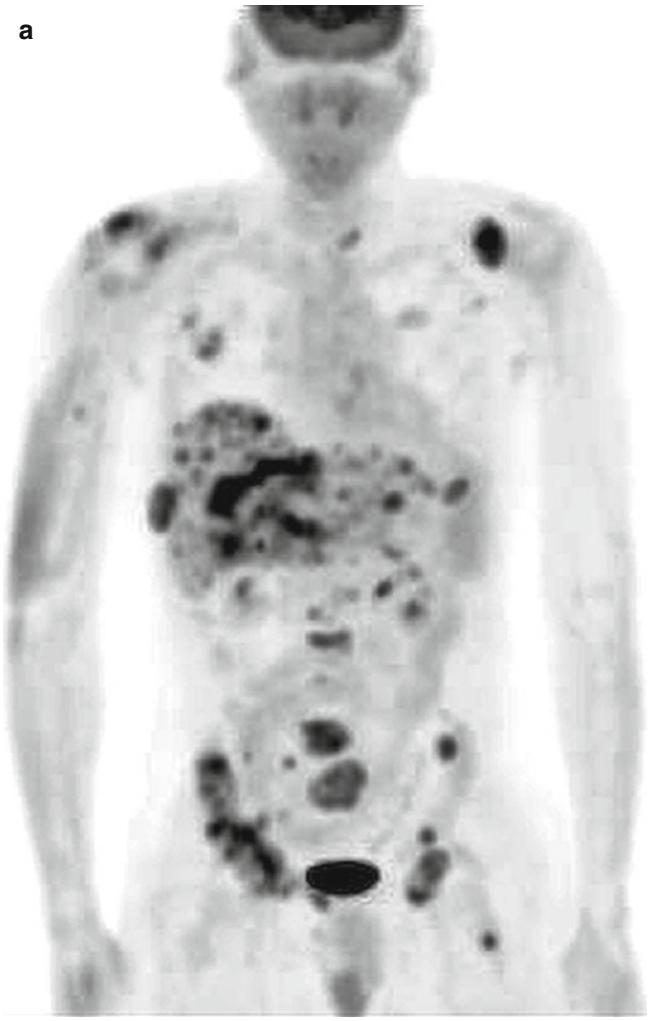


Fig. 2.1 (**a**) Prior MIP image



Fig. 2.1 (**b**) Current MIP image

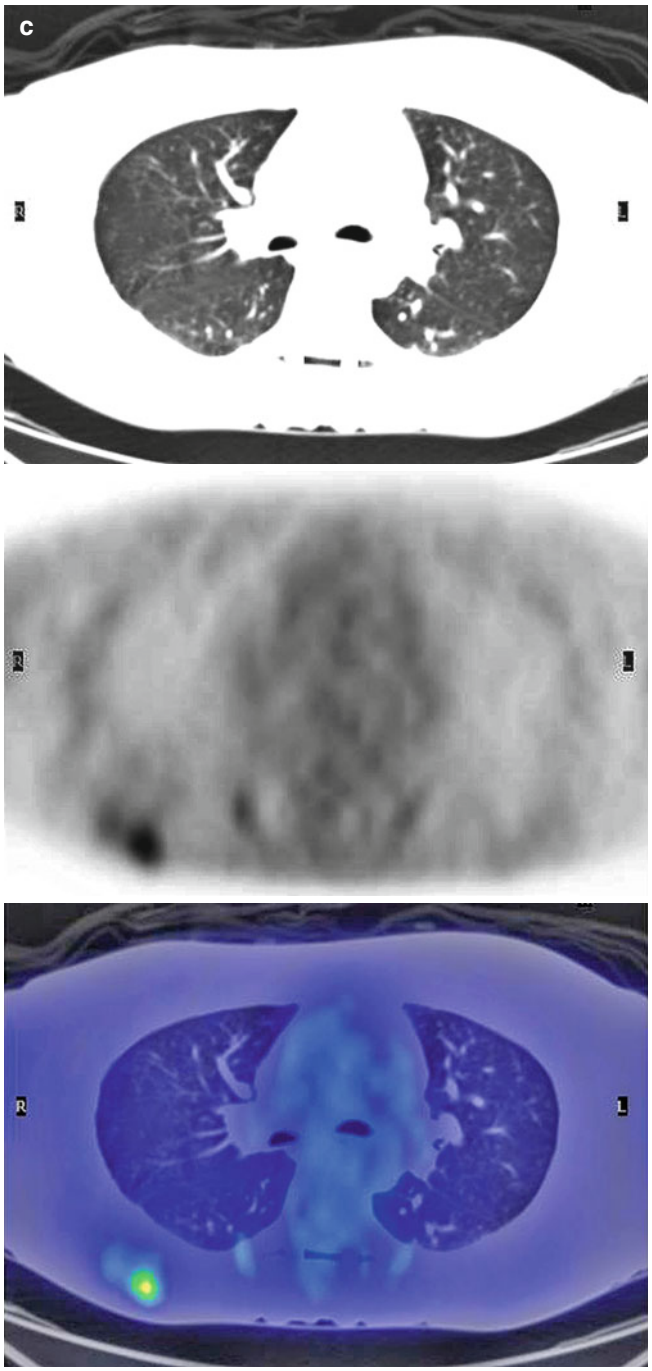


Fig. 2.1 (**c**) Two months ago, scan showed multiple skeletal lesions, small lesion in the right midlung on MIP, and no lesion in right upper lobe

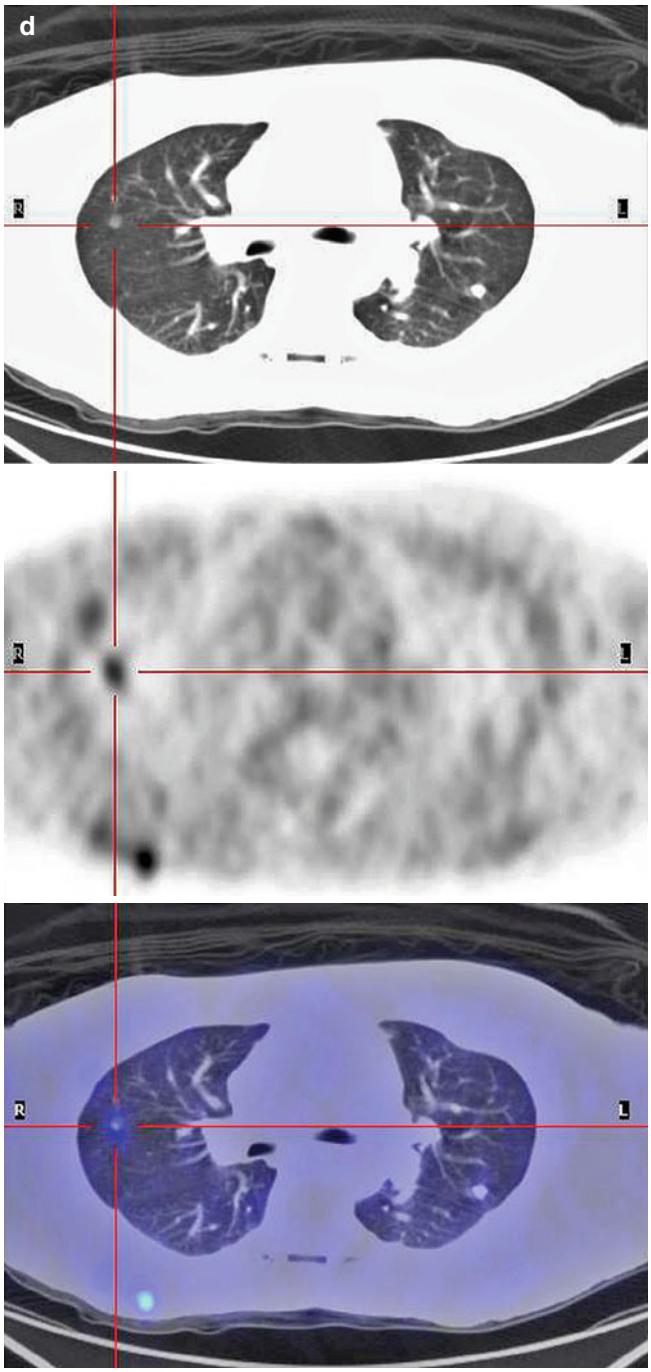


Fig. 2.1 (**d**) Current scan shows new pulmonary nodule consistent with metastases in the right upper lobe, 1.0 cm, SUVmax 3.1

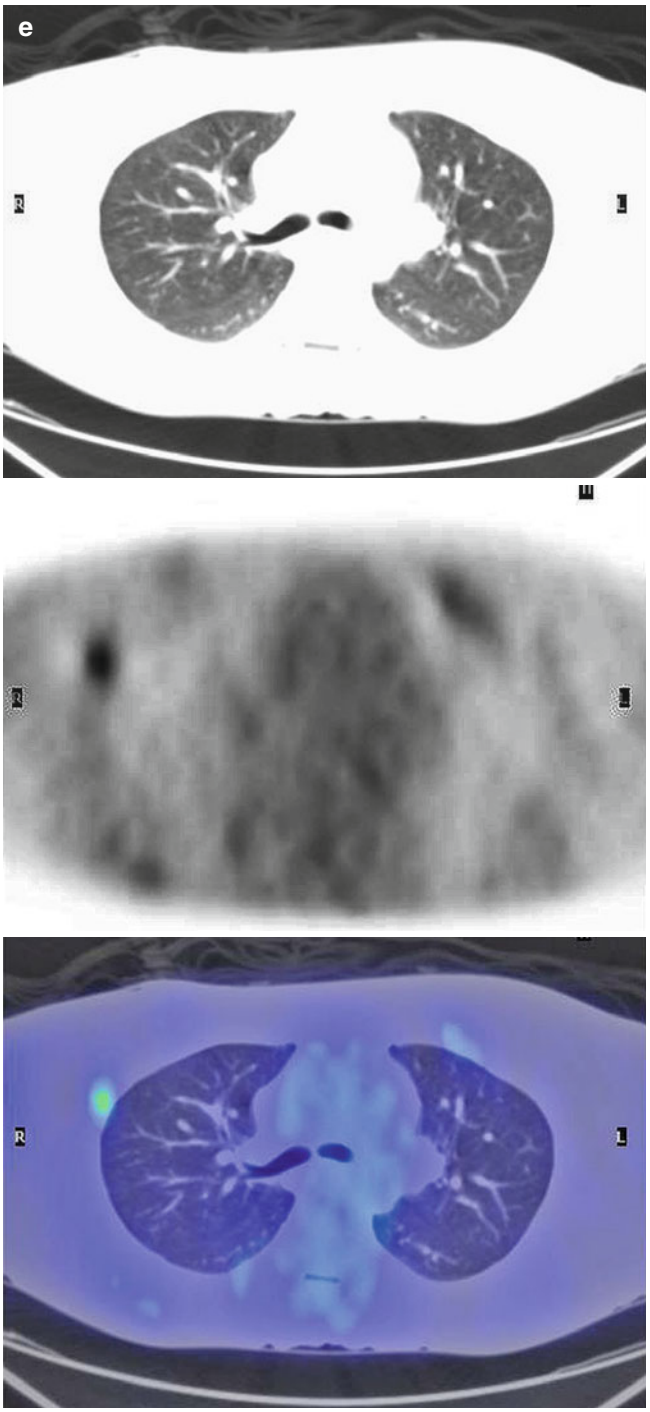


Fig. 2.1 (**e**) Prior scan without lesion in the inferior aspect of the left upper lobe

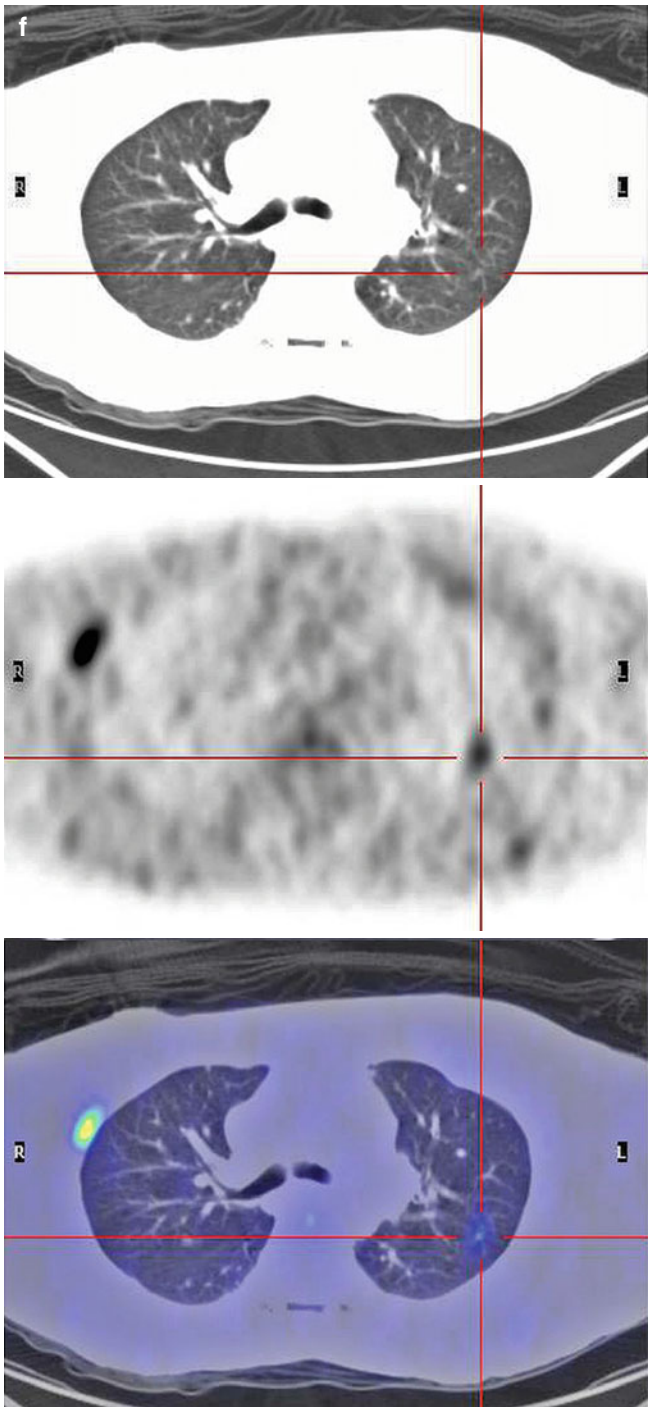


Fig. 2.1 (**f**) Current scan shows new nodule consistent with metastases in the inferior aspect of the left upper lobe, 1 cm, SUVmax 3.2

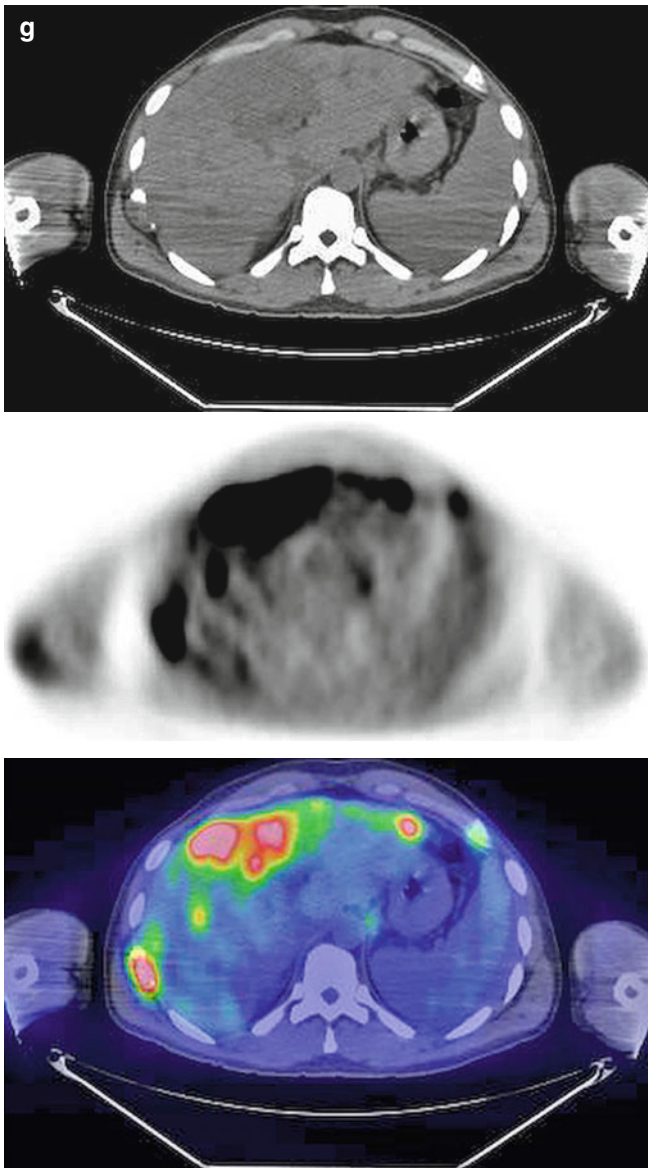


Fig. 2.1 (**g**) Prior scan showed several liver FDG avid foci, with SUVmax up to 20.3

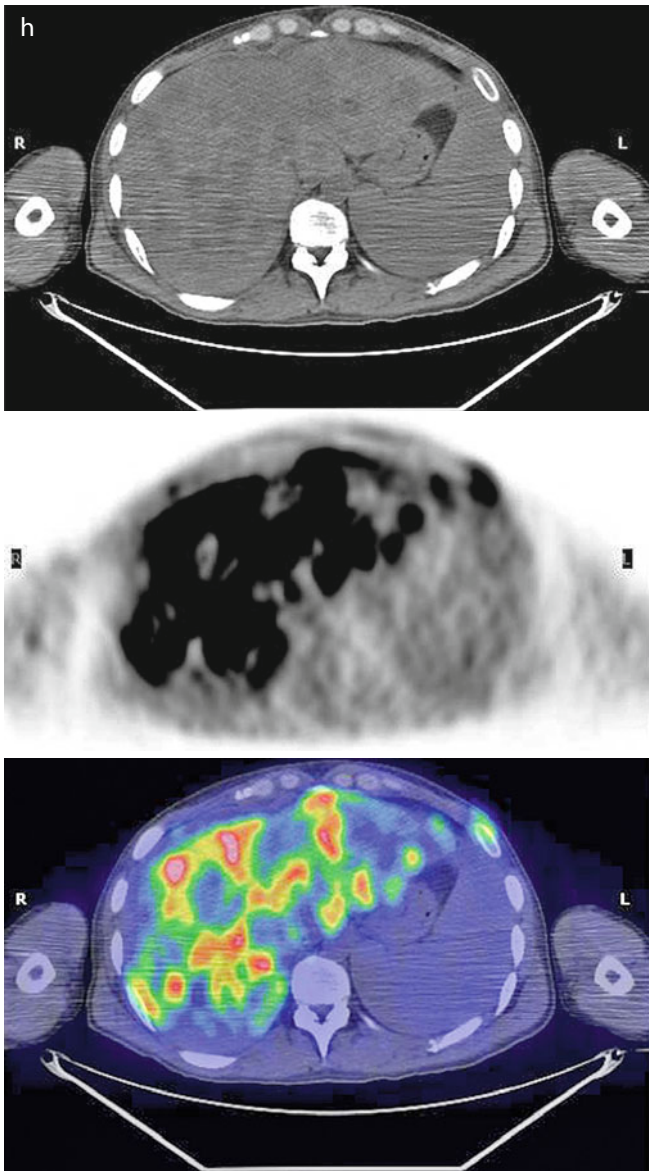


Fig. 2.1 (**h**) Liver is heterogeneous with FDG avid low-density lesions (SUVmax up to 15.7) consistent with metastatic disease. Several new hypermetabolic lesions are present. The spleen is enlarged without hypermetabolic activity which may relate to interval development of portal hypertension due to hepatic replacement

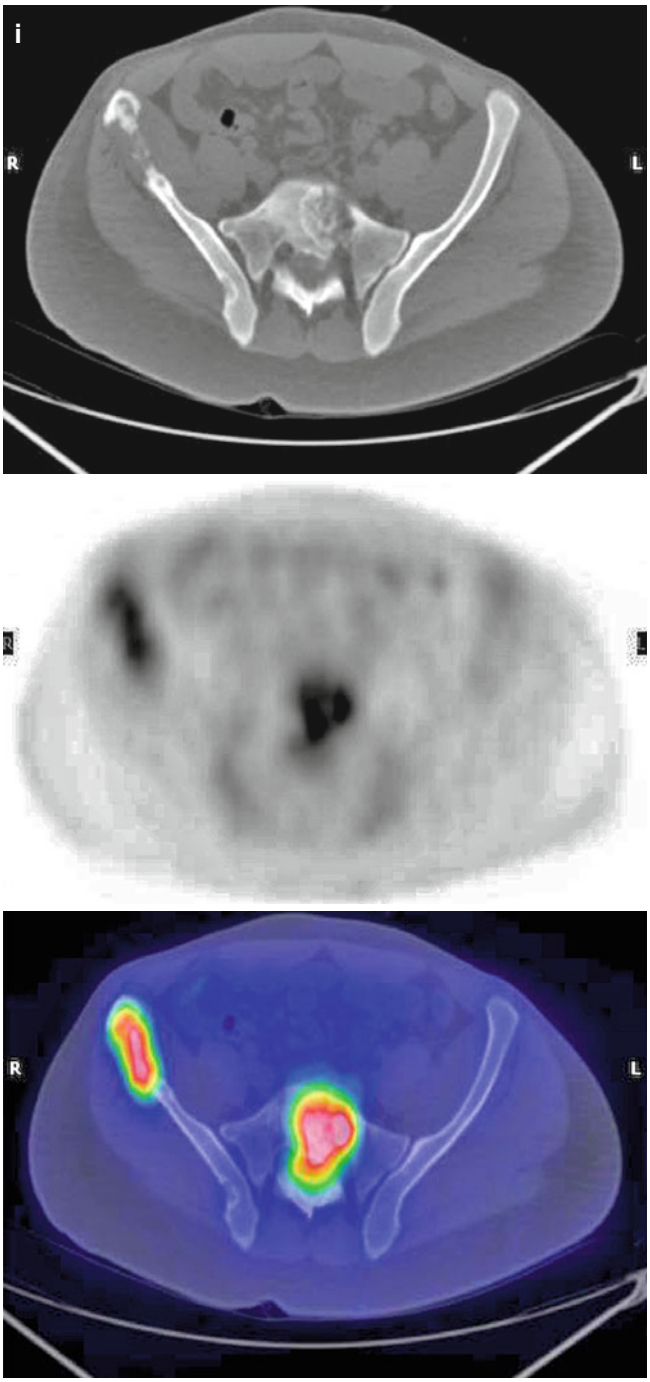


Fig. 2.1 (**i**) Prior scan showed hypermetabolic lesion of the right iliac crest, SUVmax 14.1, and within the midsacrum with SUVmax 10.8

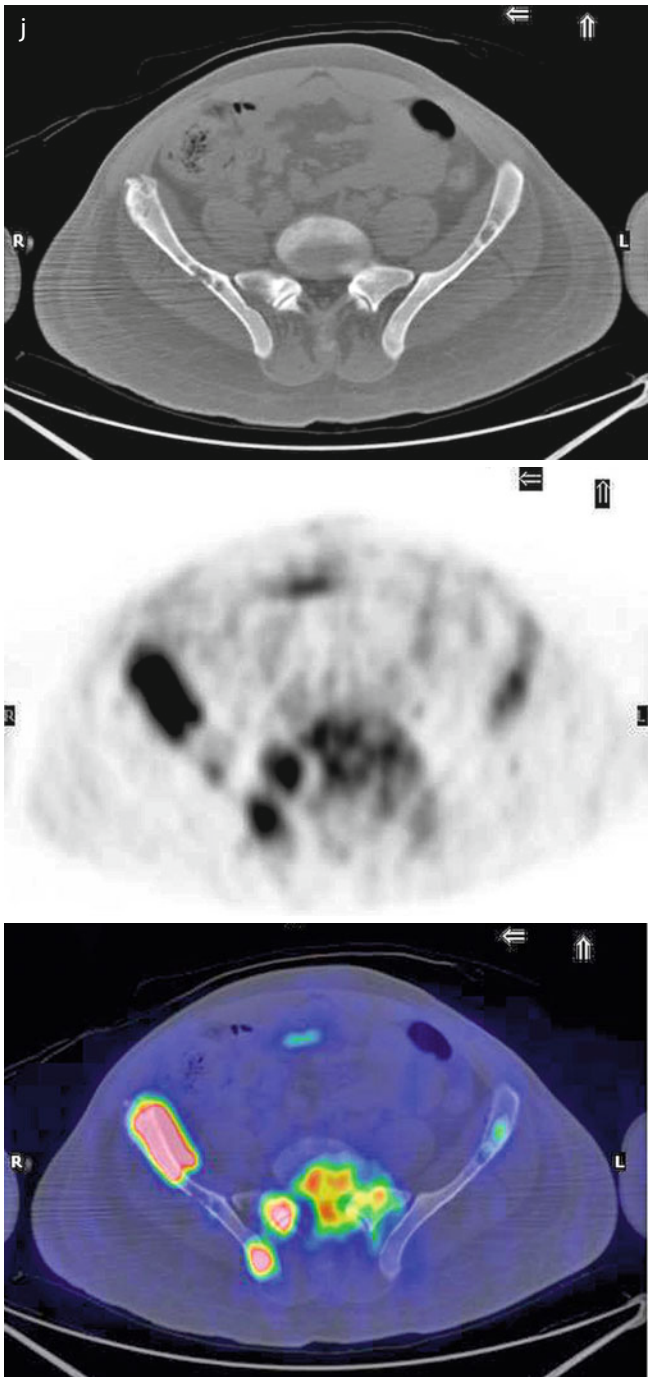


Fig. 2.1 (**j**) Current scan showed increase in size and number of hypermetabolic osseous metastases of the pelvis. SUVmax of right iliac crest lesion has increased to 19.7; sacrum lesions have increased to SUVmax 15.6

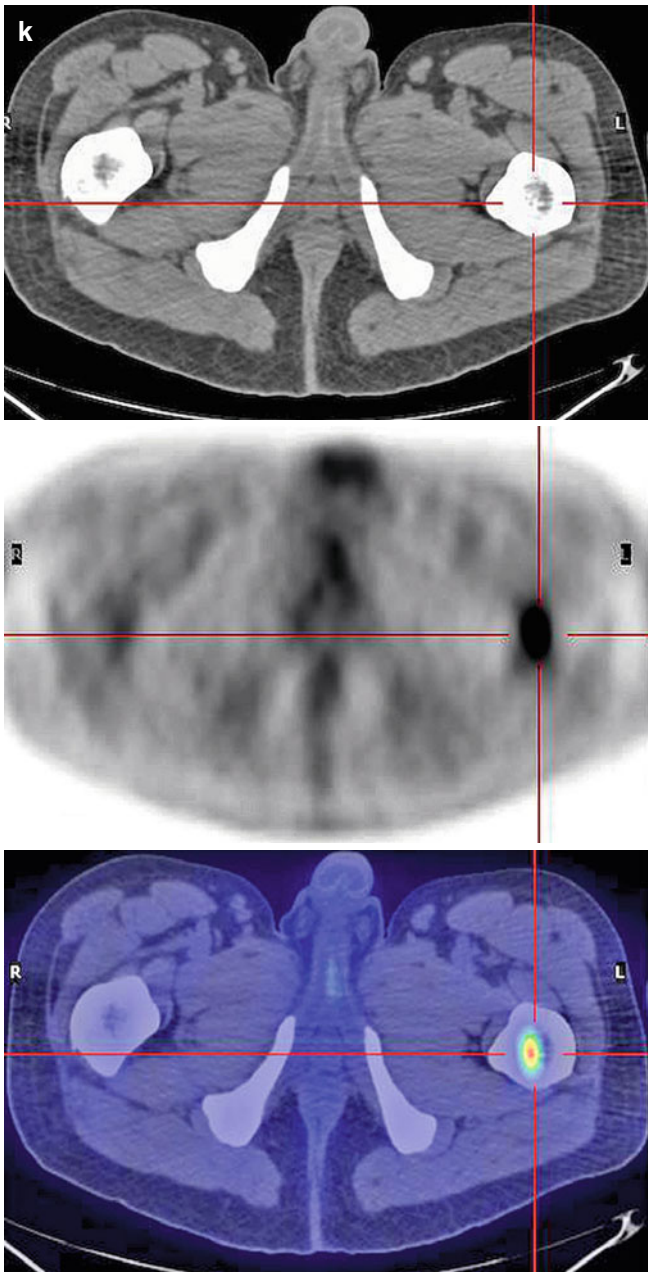


Fig. 2.1 (**k**) Prior scan showed FDG avid lesion of the proximal intertrochanteric left femur, 10.3

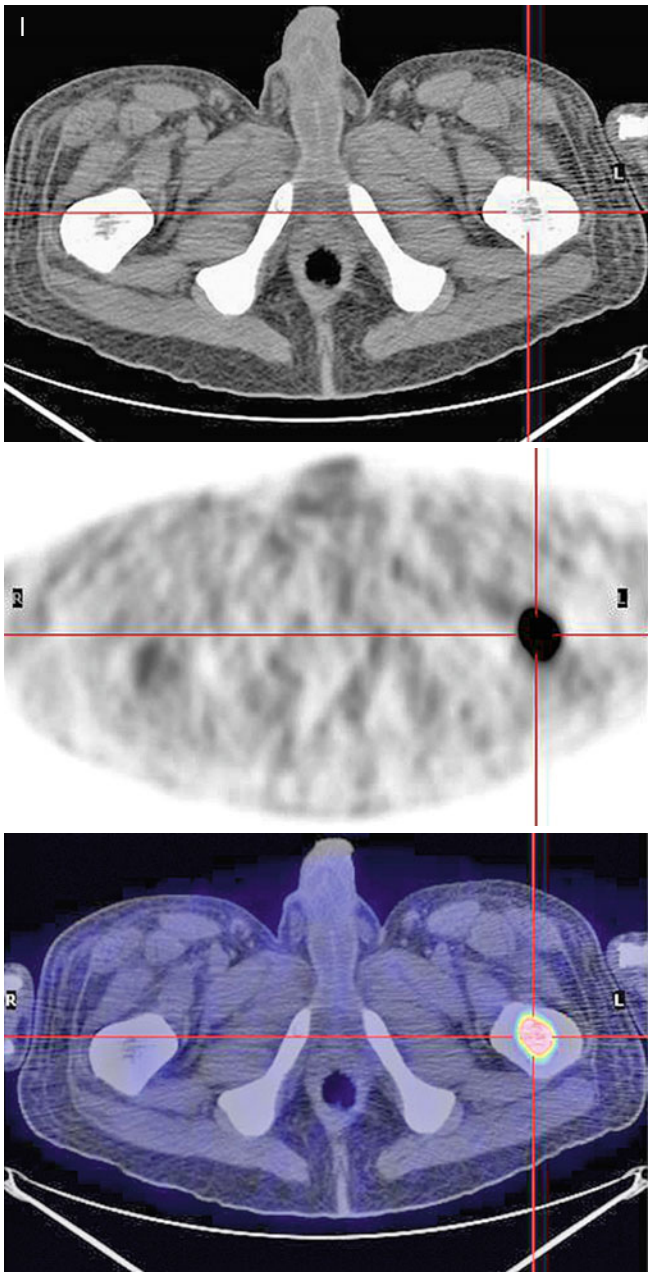


Fig 2.1 (**l**) Present scan showed FDG avid lesion of the proximal intertrochanteric left femur, SUVmax 16.8

Impression: Likely metastatic lung tumor with soft tissue and skeletal involvement.

Outcome: Pathology revealed poorly differentiated adenocarcinoma, primary unknown (and still uncertain). Patient scheduled for palliative radiotherapy.

Teaching Point

Based on the initial tissue sample, tumor was suspected to be of pancreatic origin; treatment for pancreatic adenocarcinoma results in poor response (survival with progression); pattern is suggestive of primary lung tumor which in retrospect might have been considered initially. Comprehensive evaluation of tumor throughout entire body provides a pattern of distribution that may be helpful, is suggesting primary tumor site and type, and offers guidance for therapy.

Case 2

51-Year-Old Woman with Stroke and Mass Surrounding Airway

History: The patient presented with stroke, right middle cerebral artery CVA, and respiratory difficulties 1 month earlier. Patient underwent successful clot extraction but remained with neurological sequelae, large neck mass, and concern for airway maintenance. Routine CT evaluation identified a right hilar lung mass (4.8×4.2 cm) with associated superior mediastinal lymphadenopathy.

Findings:



Fig. 2.2 (**a**) The MIP image

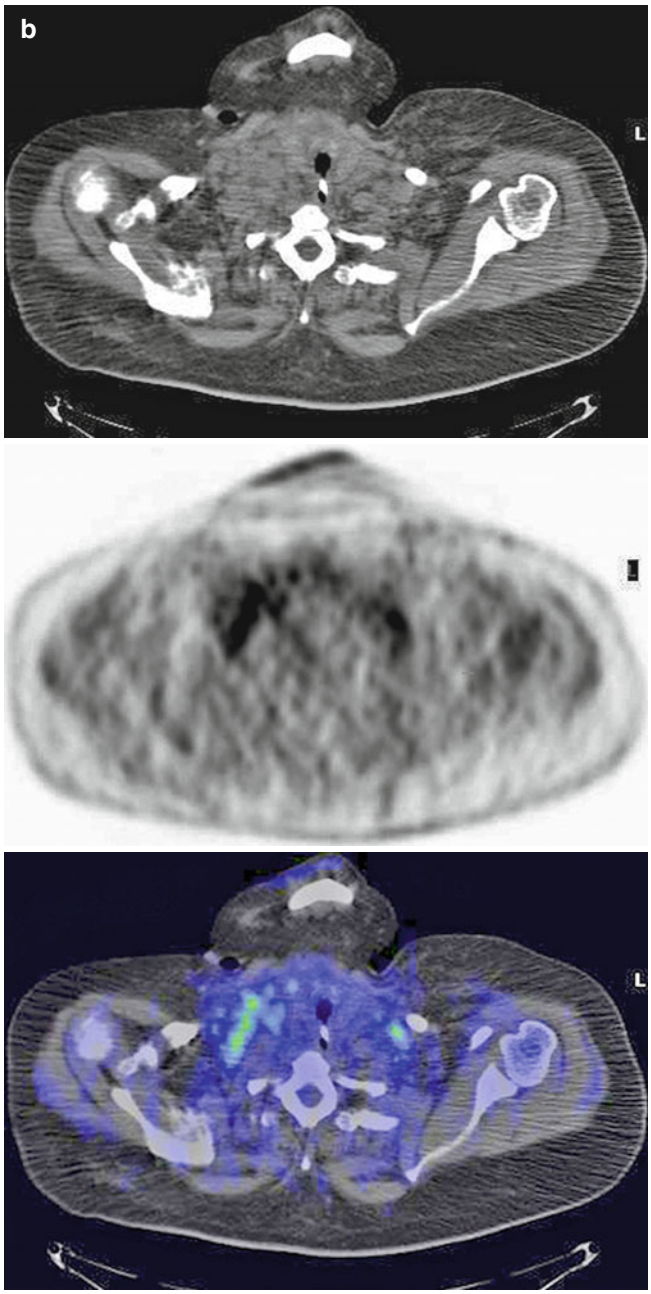


Fig. 2.2 (**b**) Bilateral level IV nodal enlargement in the neck with increased FDG uptake, 5.8×3.9 cm, SUVmax 7.8

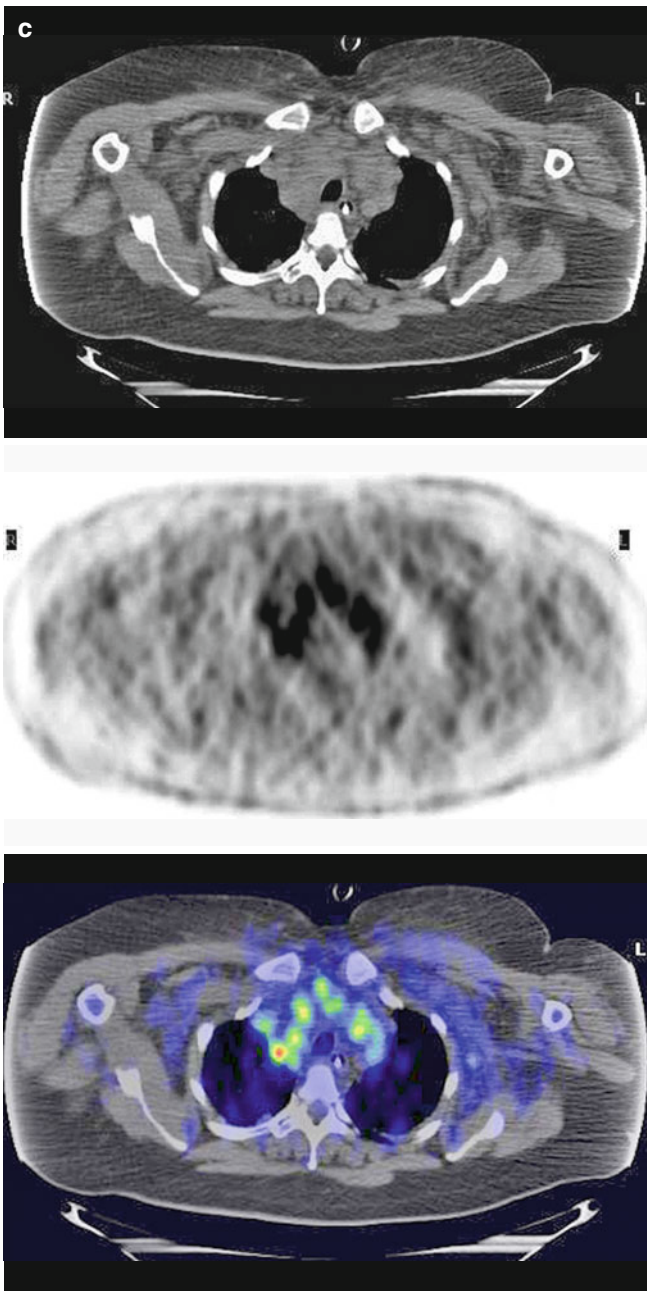


Fig. 2.2 (**c**) Multiple enlarged superior mediastinal nodes with increased FDG uptake, SUVmax 13.6

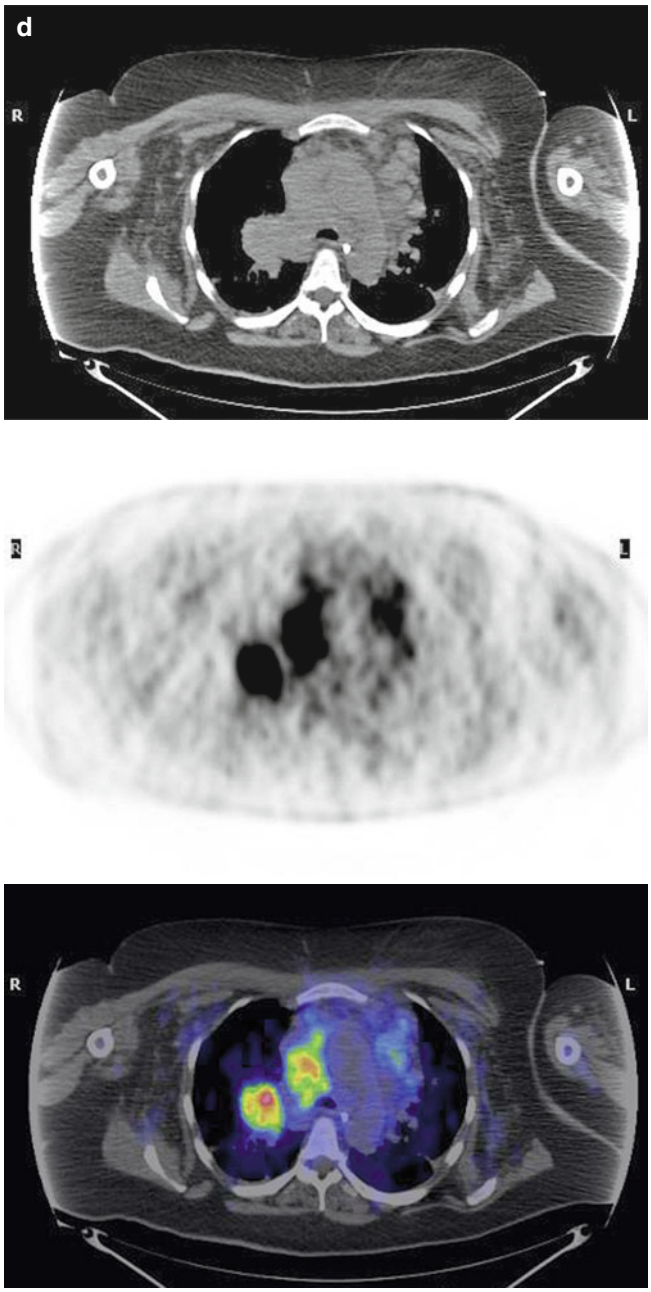


Fig. 2.2 (**d**) Large right hilar mass which measures 4.1 × 4.0 cm and demonstrates an SUVmax of 14.4; there is also compression of trachea in anterior-posterior direction

Impression: FDG avid right hilar mass suspicious to primary lung tumor, metastatic cervical and mediastinal adenopathy.

Outcome: Ultrasound-guided fine-needle aspiration of the precarinal lymph node was performed; pathology revealed metastatic adenocarcinoma, consistent with lung primary.

Teaching Point

Patients who present with masses detected either on physical examination or x-ray procedure represent a challenge and opportunity for FDG PET/CT. In many cases, no clear diagnosis is possible by FDG PET/CT alone, but the images demonstrate extent of disease and the pattern of disease involvement which may be suggestive of primary diagnosis, as well as providing potential biopsy sites.

http://www.springer.com/978-3-642-29865-3

FDG PET/CT in Clinical Oncology
Case Based Approach with Teaching Points
Mihailovic, J.; Goldsmith, S.J.; Killeen, R.P.
2012, XIV, 453 p., Hardcover
ISBN: 978-3-642-29865-3