

17 Newer Tracers

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18F-AV-45 AND 18F-FDG

***Case 17.1* Findings**

The 18F-FDG PET brain images (Fig. 17.1, top) demonstrate normal tracer distribution in the gray matter and in the bottom 18F-AV-45 PET images demonstrate normal white matter uptake (Fig. 17.1).

***Case 17.2* Findings**

The 18F-FDG brain PET images of the brain (Fig. 17.2, top) demonstrate bilateral temporal hypometabolism consistent with dementia of Alzheimer's type by pattern and the 18F-AV-45 PET images of brain (Fig. 17.2, bottom) demonstrate diffuse uptake in the brain with loss of gray and white matter demarcation unlike in case 1 (Fig. 17.2).

64Cu-ATSM (64Cu-ATSM: COPPER (II)-DIACETYL-BIS(N4-METHYLTHIOSEMICARBAZONE) AND 18F-FDG)

***Case 17.3* Findings**

18F-FDG PET/CT images (Fig. 17.3, left) demonstrate mild to intense uptake in cervical mass with uptake in bladder above it. 64Cu-ATSM PET/CT images (Fig. 17.3, right) show peripheral rim of uptake in one

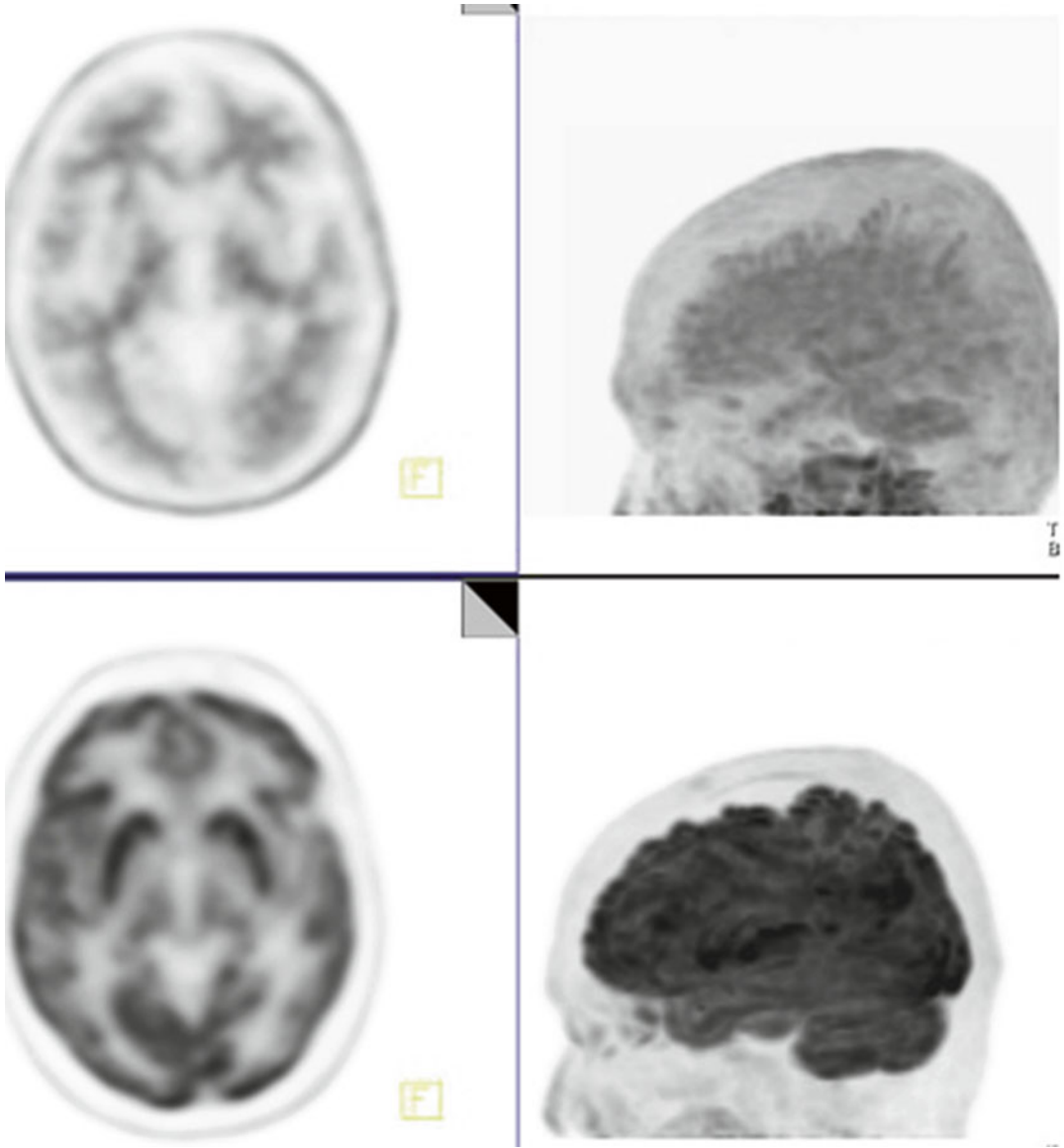


FIG. 17.1

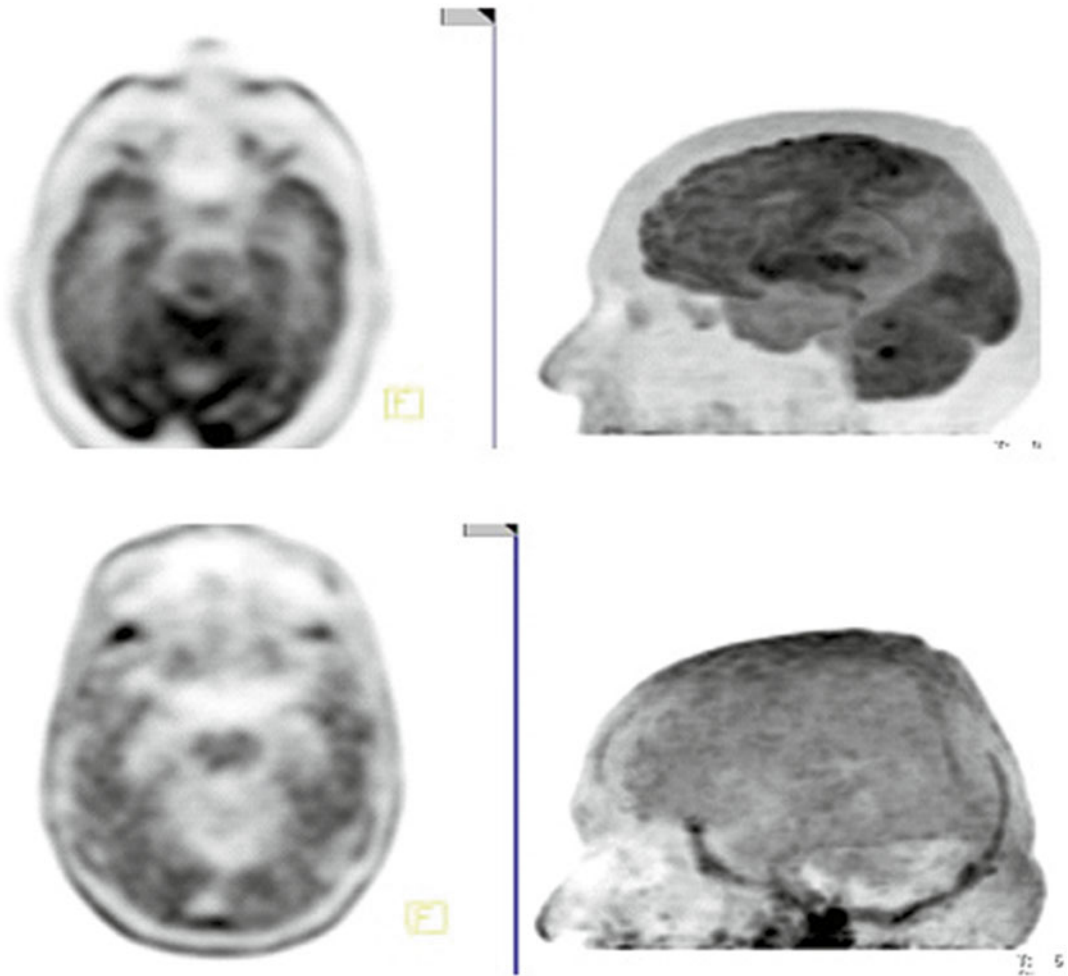


FIG. 17.2

region of tumor and intense uptake in the other (Fig. 17.3, bottom). The ^{64}Cu -ATSM is retained in hypoxic tissues, but rapidly washes out of normoxic tissues (Fig. 17.3).

18F-MISO (18F-FLUOROMISONIDAZOLE)

Case 17.4 Findings

Images of ^{18}F -MISO PET/CT scan of the brain show focal uptake in the right parietal region (Fig. 17.4). ^{18}F -MISO is the prototype hypoxia imaging agent. Uptake is homogeneous in most normal tissues, reflecting

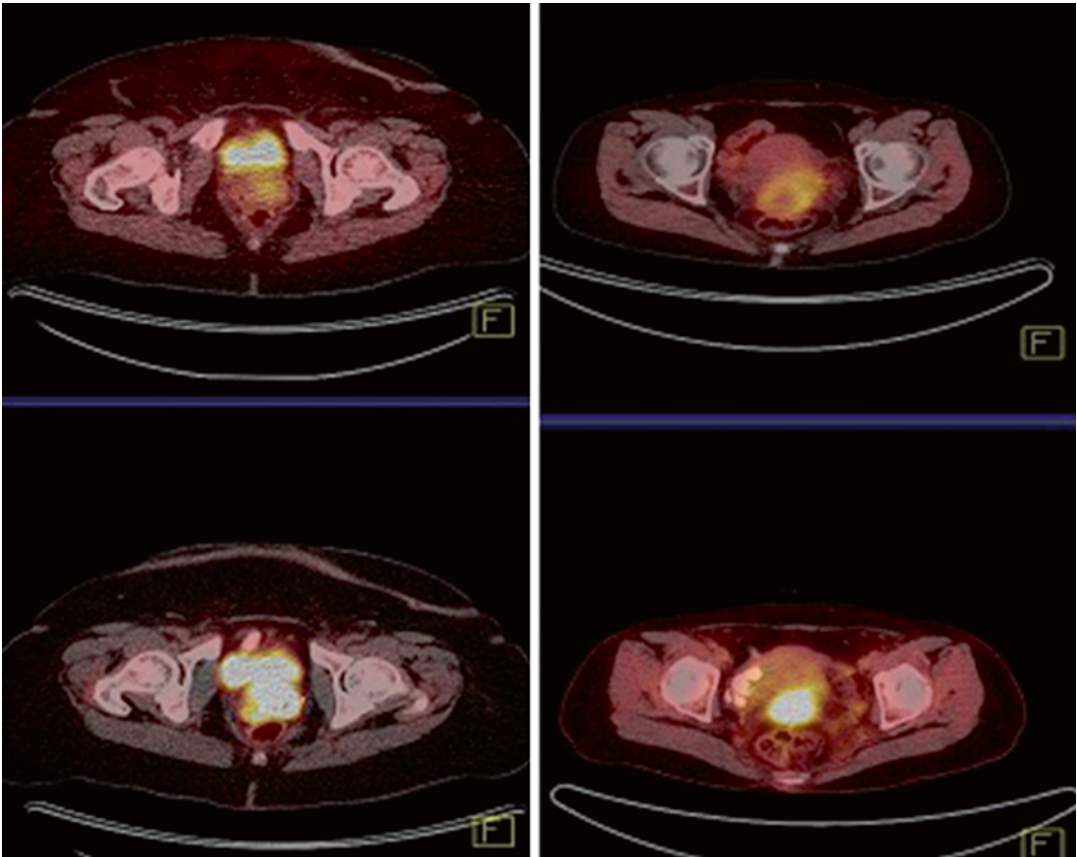


FIG. 17.3

its high partition coefficient (near unity), and delivery to tumor's is not limited by perfusion. $[^{18}\text{F}]\text{MISO}$ binds to large molecules in tumor cells that have a low level of oxygen and therefore hypoxic and resistant to treatment (Fig. 17.4).

F-18 FLT

Case 17.5 Findings

^{18}F -FLT PET/CT images show physiologic uptake in bone marrow, but there is pathologic uptake in right breast mass (Fig. 17.5).

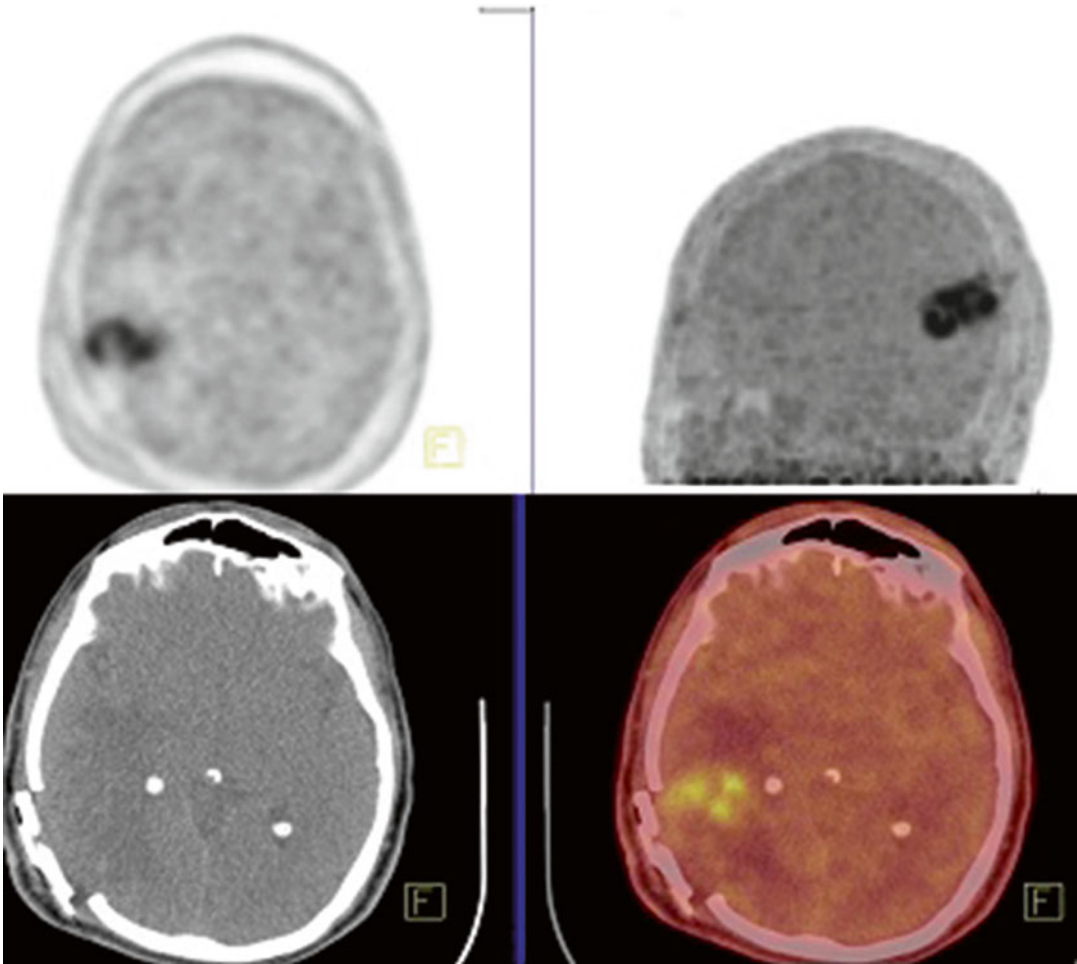


FIG. 17.4

Case 17.6 Findings

The ^{18}F -FLT PET/CT images show thymic uptake before (Fig. 17.6, left) and is decreased after chemotherapy (Fig. 17.6, right). There is physiologic uptake in the marrow and pathologic uptake in the right breast mass (Fig. 17.6).

Case 17.7 Findings

^{18}F -FLT PET/CT images of patient with melanoma with uptake in the left lung metastasis as well in the primary lesion in the right mid arm, medially (Fig. 17.7). There is physiologic uptake in the bone marrow (Fig. 17.7).

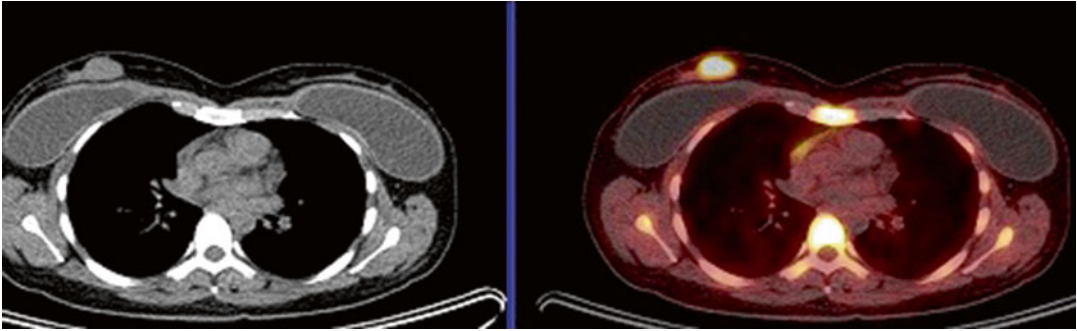


FIG. 17.5

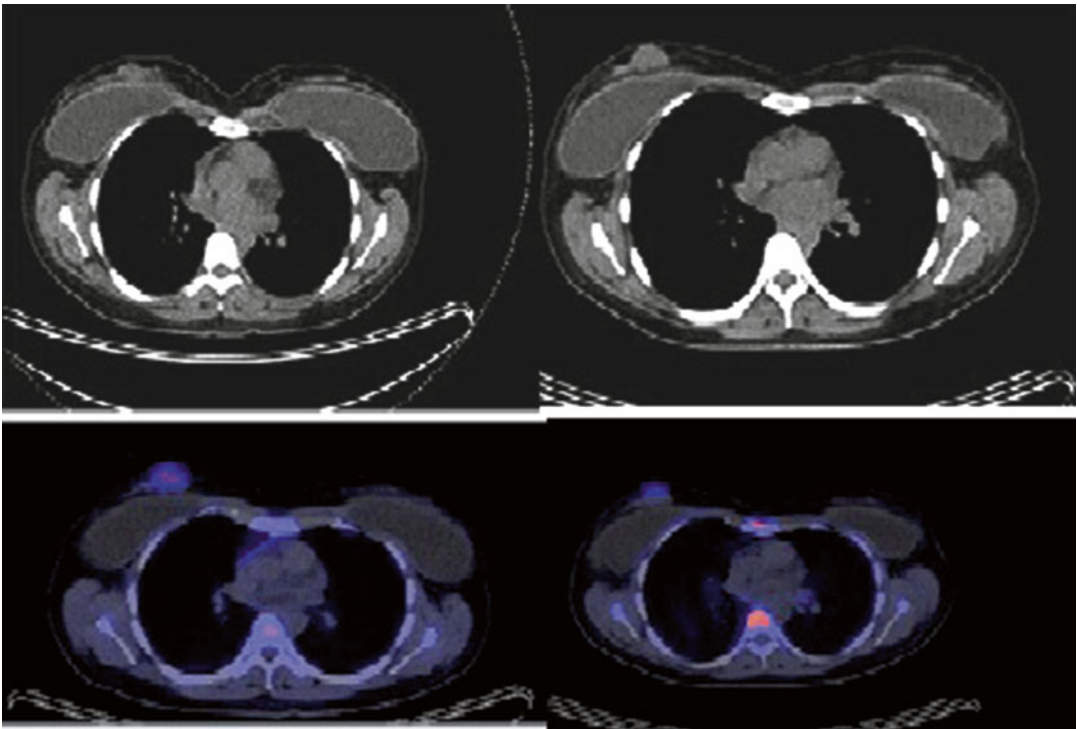


FIG. 17.6

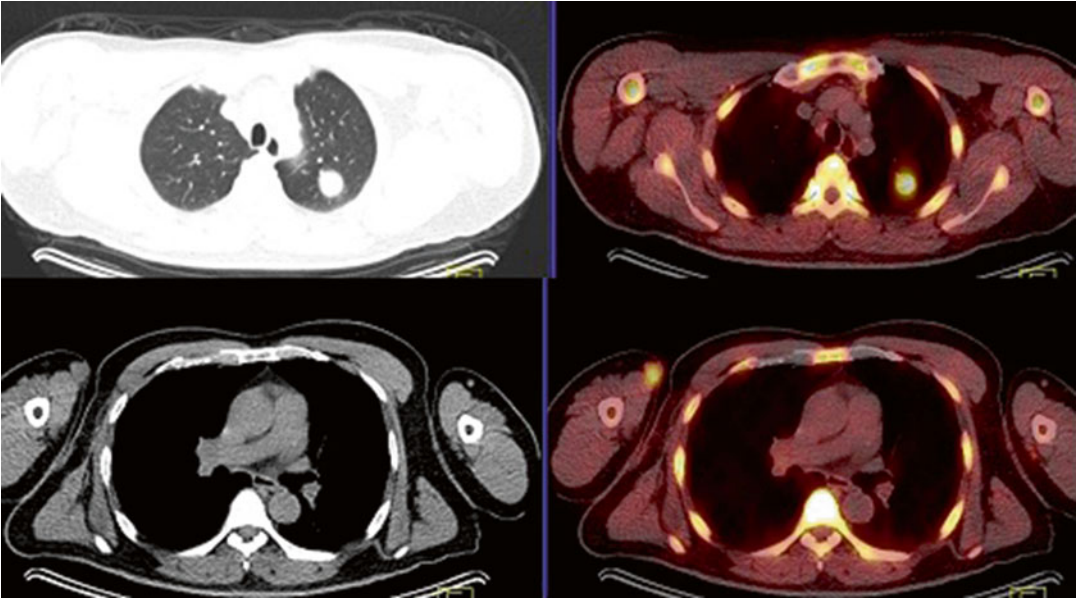


FIG. 17.7

Case 17.8 Findings

¹⁸F-FLT PET/CT images of a patient with transitional cell carcinoma of the bladder with metastases to the lungs (Fig. 17.8).

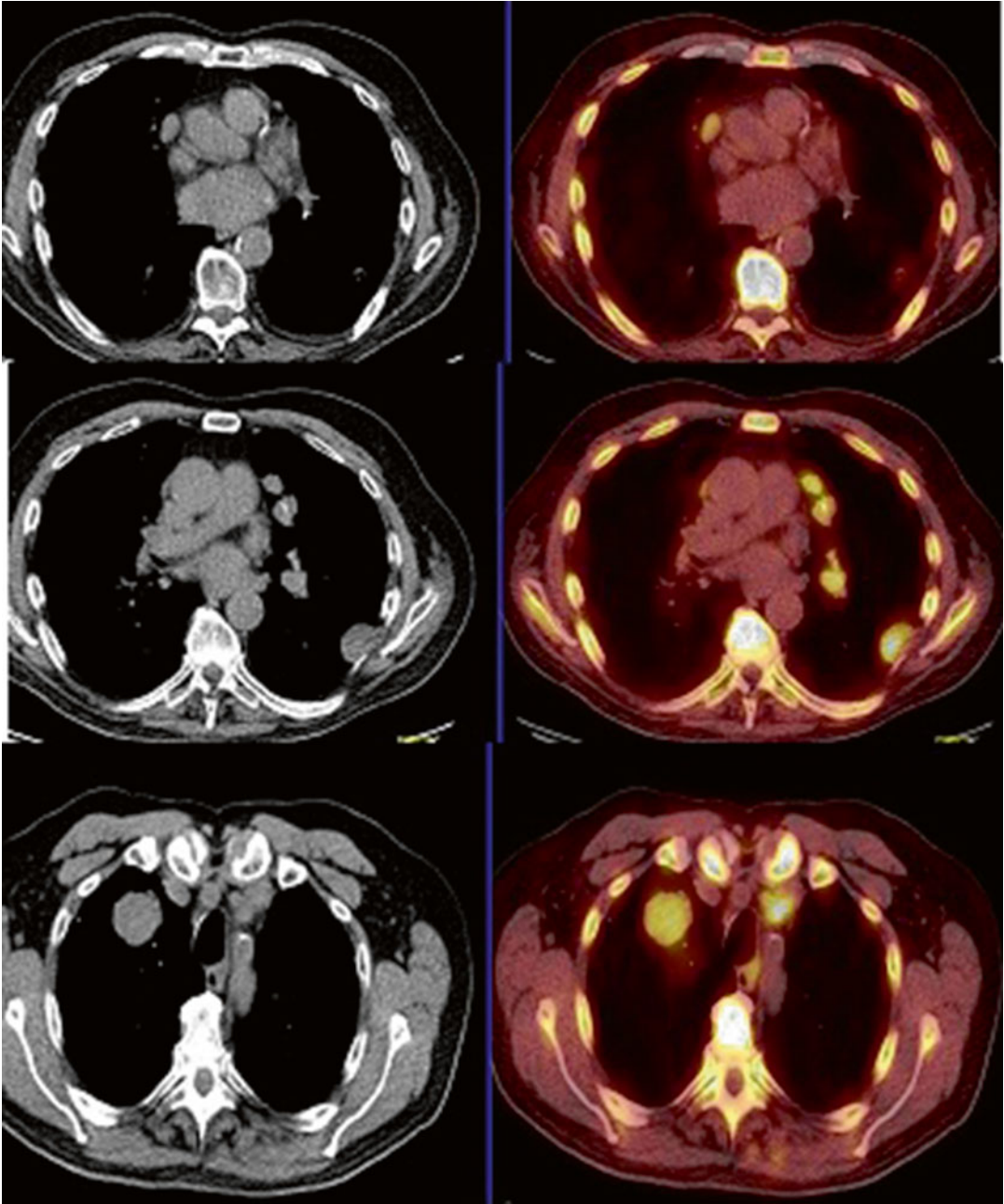


FIG. 17.8