

up ^{18}F -FDG and appear as a “hot spot.” To date, PET has been mostly used for staging and detection of metastases in lung cancer and in the detection of nodules >15 mm in diameter. Combined ^{18}F -FDG PET-CT imaging has been shown to improve the accuracy of staging in NSCLC compared to visual correlation of PET and CT or either study alone. CT-PET has been found to be superior in identifying pathologically enlarged mediastinal lymph nodes and extrathoracic metastases. A standardized uptake value (SUV) of >2.5 on PET is highly suspicious for malignancy. False negatives can be seen in diabetes, in lesions <8 mm, and in slow-growing tumors (e.g., carcinoid tumors or well-differentiated adenocarcinoma). False positives can be seen in certain infections and granulomatous disease (e.g., tuberculosis). Thus, PET should never be used alone to diagnose lung cancer, mediastinal involvement, or metastases. Confirmation with tissue biopsy is required. For brain metastases, magnetic resonance imaging (MRI) is the most effective method. MRI can also be useful in selected circumstances, such as superior sulcus tumors to rule out brachial plexus involvement, but in general, MRI does not play a major role in NSCLC staging.

In patients with NSCLC, the following are contraindications to potential curative resection: extrathoracic metastases, superior vena cava syndrome, vocal cord and, in most cases, phrenic nerve paralysis, malignant pleural effusion, cardiac tamponade, tumor within 2 cm of the carina (potentially curable with combined chemoradiotherapy), metastasis to the contralateral lung, metastases to supraclavicular lymph nodes, contralateral mediastinal node metastases (potentially curable with combined chemoradiotherapy), and involvement of the main pulmonary artery. In situations where it will make a difference in treatment, abnormal scan findings require tissue confirmation of malignancy so that patients are not precluded from having potentially curative therapy.

The best predictor of metastatic disease remains a careful history and physical examination. If signs, symptoms, or findings from the physical examination suggest the presence of malignancy, then sequential imaging starting with the most appropriate study should be performed. If the findings from the clinical evaluation are