4 PATHOLOGIC EVALUATION OF LUNG CANCER

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Chapter Overview

The goals of pathologic evaluation of lung cancer are to accurately classify the tumor and to determine the extent of invasion (pleural, vascular-lymphatic, and chest-wall soft tissue) and the status of the surgical margins. The pathologic classification of lung tumors set out by the World Health Organization has been changed significantly in recent years. The most important changes are the revisions in the definitions of the neuroendocrine tumors (typical carcinoid, atypical carcinoid, small cell carcinoma, and large cell neuroendocrine carcinoma) and bronchioloalveolar adenocarcinoma. Because adenocarcinoma of the lung is becoming one of the most common malignant tumors of the lung, recognition of atypical adenomatous hyperplasia, the putative precursor lesion for adenocarcinoma, is becoming more important. The use of immunohistochemical stains, such as stains for thyroid transcription factor 1 and cytokeratin subsets, is recommended for distinguishing between primary adenocarcinoma of the lung and metastatic adenocarcinoma. Electron microscopy has a limited role in the diagnosis of lung cancer; it is useful for recognizing neuroendocrine granules in tumors and for differentiating adenocarcinoma from mesothelioma. At present, molecular biology techniques have a very limited role in the diagnosis and classification of lung cancer; however, with further advances in knowledge, it is likely that these techniques will come to have clinical applications.

Introduction

Lung cancer will be diagnosed in approximately 169,400 new patients in the United States in the year 2002. Many lung tumors are detected in asymptomatic individuals during routine examination or during follow-up for other diseases. Solitary pulmonary nodules are detected in 0.1% to 0.2% of routine chest radiographs. Of these nodules, 60% are benign, while the remaining 40% turn out to be malignant. The pathologist’s main role in the management of lung tumors is to promptly evaluate lung nodules to confirm or rule out malignancy. Prompt and accurate pathologic evaluation minimizes the number of invasive procedures performed for benign processes and expedites resection of malignant nodules, thereby affording the best chance for cure.

Diagnosis of Lung Cancer

Diagnostic Algorithm

The diagnostic algorithm shown in Figure 4–1 is useful in the pathologic evaluation of a lung nodule. Because infectious and other nonneoplastic