The Papanicolaou Society of Cytopathology System for Reporting Respiratory Cytology

Lester J. Layfield • Zubair Baloch
Editors

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Definitions, Criteria, Explanatory Notes, and Recommendations for Ancillary Testing

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Preface

This atlas is an extension of the Respiratory Guidelines sponsored by the Papanicolaou Society of Cytopathology [1, 2]. The guidelines are composed of documents describing a categorization system with definitions, criteria, and explanatory notes as well as recommendations for ancillary testing of pulmonary specimens. The guidelines are developed to address the diagnosis and categorization of pulmonary specimens obtained by sputum cytology, bronchial brushings, bronchial washings, and fine-needle aspiration cytology. The final guidelines resulted from an initial draft document prepared by multidisciplinary committees of physicians with expertise in the diagnosis and management of patients with respiratory disease. The guidelines were first published in *Diagnostic Cytopathology* [1, 2]. All documents are based on the expertise of the authors, a review of the literature, and discussion of the draft document over an 18-month period.

This atlas monograph is on the proposed standardized terminology scheme for respiratory cytology specimens. The atlas is supplemented with cytologic criteria, sample interpretive reports, explanatory notes, and a large number of photomicrographs illustrating specimen types assigned to the various diagnostic categories. The proposed terminology scheme recommends a six-tiered system similar to that used for the Papanicolaou Society of Cytopathology system for reporting pancreaticobiliary cytology [3]. The respiratory guidelines use the categories: nondiagnostic, negative (for malignancy), atypical, neoplastic (benign or low grade), suspicious for malignancy, and positive for malignancy. The present scheme for respiratory cytology uses the neoplastic category in a way similar to that first pioneered in the Papanicolaou Society of Cytology system for reporting pancreaticobiliary cytology [3].

The neoplasm category includes clearly benign neoplasms such as pulmonary hamartoma and granular cell tumor but also contains lesions of undetermined malignant potential. The category positive for malignancy is reserved for high-grade malignancies including squamous cell carcinoma, adenocarcinoma, and small-cell carcinoma of the lung. Also included within the malignant category are carcinoid tumors following the histopathologic classification recommended by the World Health Organization [4, 5]. Because bronchioloalveolar carcinoma is no longer considered a diagnostic category by the WHO, these neoplasms are classified as adenocarcinoma in situ, minimally invasive adenocarcinoma, or invasive adenocarcinoma with a lepidic pattern based on resection specimens [6]. This has complicated cytologic and indeed small core biopsy analysis of such adenocarcinomas. The World Health Organization has stated that the

terms adenocarcinoma in situ and minimally invasive adenocarcinoma should not be used in the diagnosis of cytology specimens [5]. When a noninvasive pattern is found in a small biopsy specimen or when the cytology specimen demonstrates attributes of adenocarcinoma in situ, the tumor should be diagnosed as an adenocarcinoma with a comment that adenocarcinoma in situ, minimally invasive adenocarcinoma, or invasive adenocarcinoma with a lepidic pattern may be present.

Traditionally, pulmonary carcinomas were divided into small cell and non–small cell types. Subsequent to the development of targeted therapies, it is now required that non–small cell carcinomas should be classified into a more specific type such as adenocarcinoma or squamous cell carcinoma whenever possible. This may require immunohistochemical staining, but cytologists should bear in mind the need to preserve material for molecular analysis when an adenocarcinoma is present.

The present cytologic terminology scheme places specimens into useful diagnostic categories associated with known and progressive malignancy risks while attempting to provide maximum flexibility for patient management.

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