

TUMORS OF THE LOWER RESPIRATORY TRACT

Averill A. Liebow, M.D.



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ARMED FORCES INSTITUTE OF PATHOLOGY

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ATLAS OF TUMOR PATHOLOGY

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by

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INTRODUCTION

Better understanding of the physiology of the thorax and its contents led to positive pressure anesthesia, whereby the lungs became as readily accessible to surgical intervention as the abdominal viscera. Knowledge of the natural history of intrathoracic tumors has, therefore, assumed an immediate practical importance demanding rapid development.

These neoplasms comprise a complex group whose classification is still controversial. Often a clear distinction cannot be made between tumors of bronchial and parenchymal origin. Furthermore, atypical proliferative processes merge gradually into neoplasms. The table of contents of this fascicle represents a classification made because of the necessity of taking a stand, vulnerable as it may be. The most controversial of these groupings are the tumors classified under adenoma of the bronchus and bronchiolar carcinoma, and the primary tumors of the pleura. The tumors grouped under adenoma of the bronchus are by some classified as adenocarcinomas of low malignancy. Pulmonary adenomatosis often is considered a benign entity separate from bronchiolar carcinoma, but is here classified as a variant of bronchiolar carcinoma. In the controversy over whether or not localized or diffuse pleural tumors are derived from the lining mesothelial cells, the stand is taken that such tumors do exist but are rare and should be diagnosed with caution.

Nomenclature for Bronchi and Lung Segments

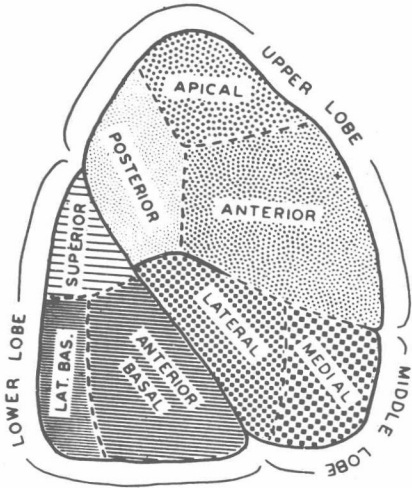
Accurate localization of lesions is important in recording facts that may contribute to an understanding of the natural history of pulmonary disease. The segments into which the lung may be divided are bronchovascular units that may often be approached individually in resective surgery. The Jackson-Huber nomenclature for these segments (fig. 1) is generally satisfactory and has now become the accepted standard. It will be employed in the subsequent pages.

Obstruction of the Bronchus

The clinical symptoms of benign or malignant endobronchial tumors are primarily due to the mechanical effects of partial or complete obstruction of an expanding and contracting airway. Tumors of the parenchyma when located near a major bronchus or tumors involving hilar lymph nodes may produce similar effects by external pressure on the bronchus. The physiologic mechanisms involved with abundant illustrative clinical and pathologic material are extensively discussed by Jackson and Jackson.

NOMENCLATURE OF BRONCHI AND LUNG SEGMENTS

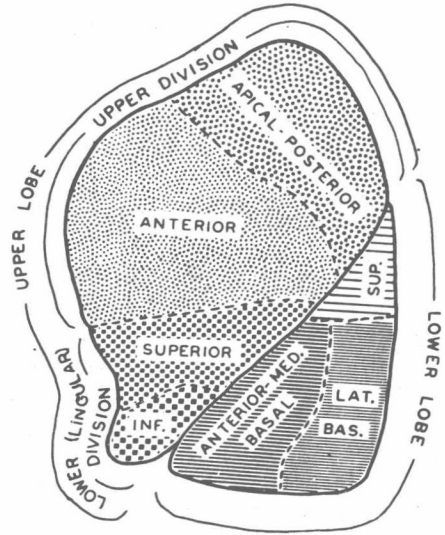
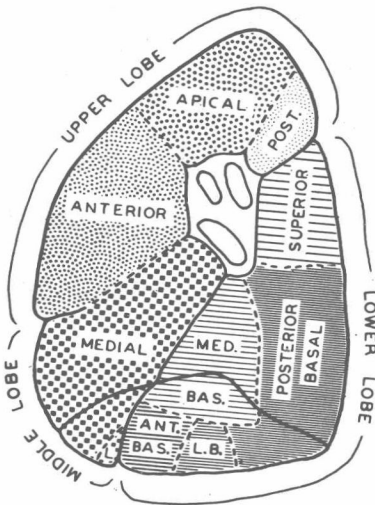
Figure 1. The labelled subdivisions on the diagram are segments of the lung. Each bronchial branch is named to correspond with the segment of lung which is indicated by the same type of stippling and crosshatching. This nomenclature has been widely accepted and is that suggested by Jackson and Huber. (Jackson, C. L., and Huber, J. F. "Correlated applied anatomy of the bronchial tree and lungs with a system of nomenclature." *Dis. of Chest*, 9: 319-326, 1943. This illustration is similar to figure 2 and a portion of Plate I in their article.) *A. F. I. P. Acc.* No. 218737-278.



Lateral View

RIGHT

Medial and Basal View



Lateral View

LEFT

Medial and Basal View

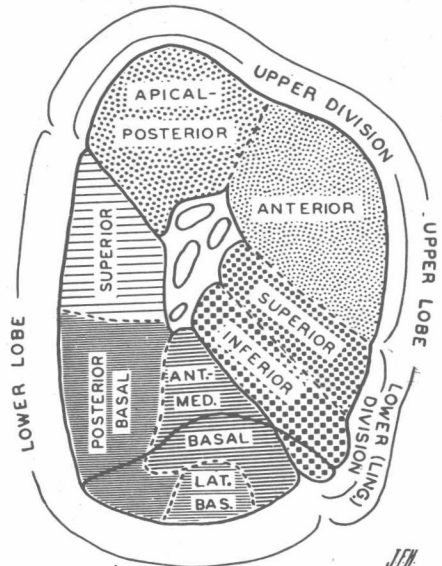


Fig. 1

ATYPICAL PROLIFERATION

(Figures 2 and 3 are from the same case)

Figure 2. Proliferated squamous epithelium at the margin of an infarct of the lung. The squamous cells seem to fill the lumina of the branches of a bronchiole associated with the occluded artery. $\times 27$. A. F. I. P. Acc. No. 218737-80.

Figure 3. Detail of squamous epithelium in figure 2, showing keratinization. $\times 170$. A. F. I. P. Acc. No. 218737-81.

Figure 4. Proliferated epithelium probably of mucous glands in the wall of a bronchiectatic sac. These cells resemble those seen in certain bronchial adenomas. $\times 150$. A. F. I. P. Acc. No. 218737-82.

Figure 5. Proliferated epithelium probably of a remnant of a mucous gland in the wall of a bronchiectatic sac. $\times 150$. A. F. I. P. Acc. No. 218737-83.



Fig. 2

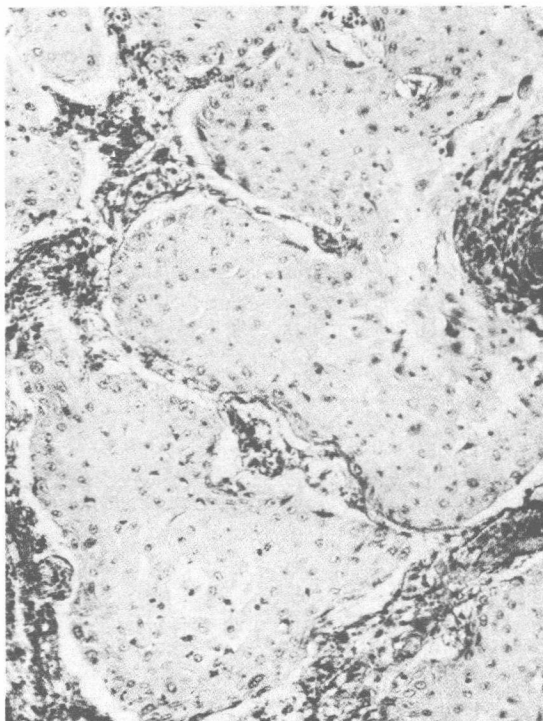


Fig. 3



Fig. 4

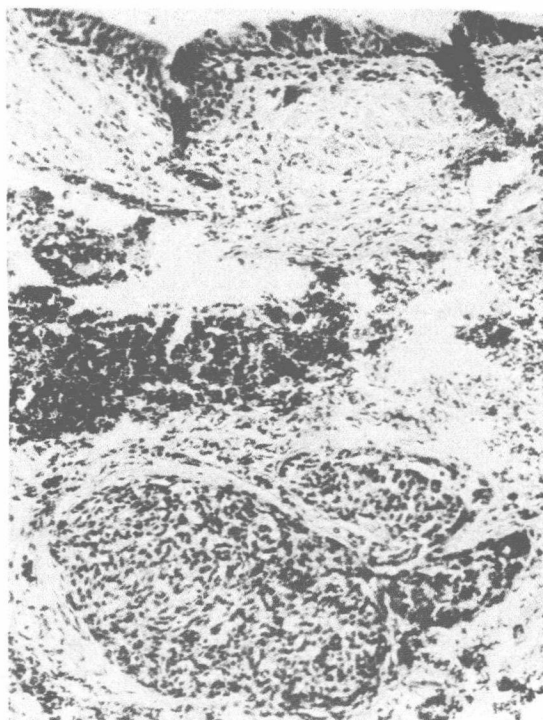


Fig. 5

ATYPICAL PROLIFERATION

Figure 6. Regeneration of cells lining alveolar spaces. Lining of bronchiole continuing as non-ciliated cuboidal epithelium into smaller spaces. The latter cannot be identified as the original alveoli. A. F. I. P. Acc. No. 218737-84.

Figure 7. Epidermidization of lining of alveolar duct. Note also the proliferation of the cuboidal cells adjacent to the areas of squamous metaplasia. $\times 200$. A. F. I. P. Acc. No. 218737-42.

Figure 8. Atypical proliferation in organizing pneumonia. Very atypical cells line the terminal respiratory passages. Such cells when seen in smears from sputum can easily be confused with those desquamated from a malignant neoplasm. $\times 270$. A. F. I. P. Acc. No. 218737-59.

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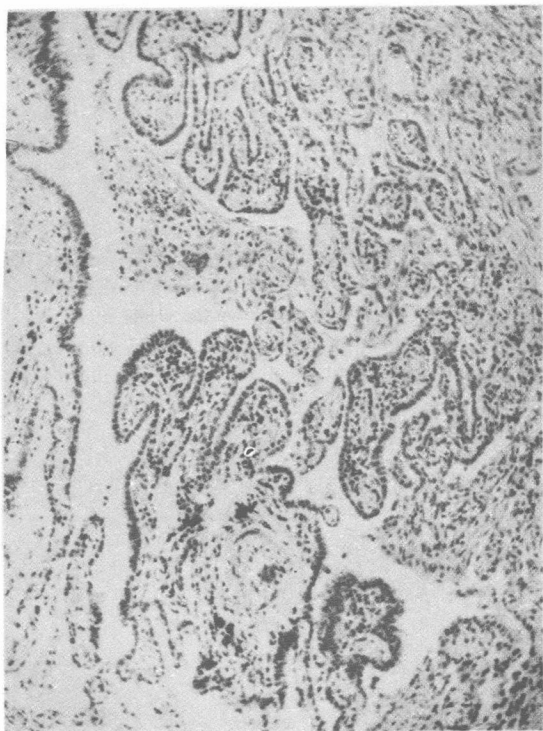


Fig. 6

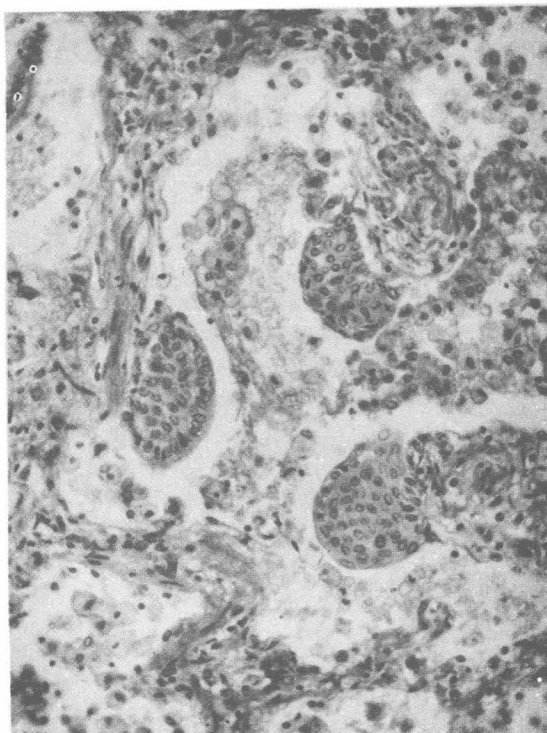


Fig. 7

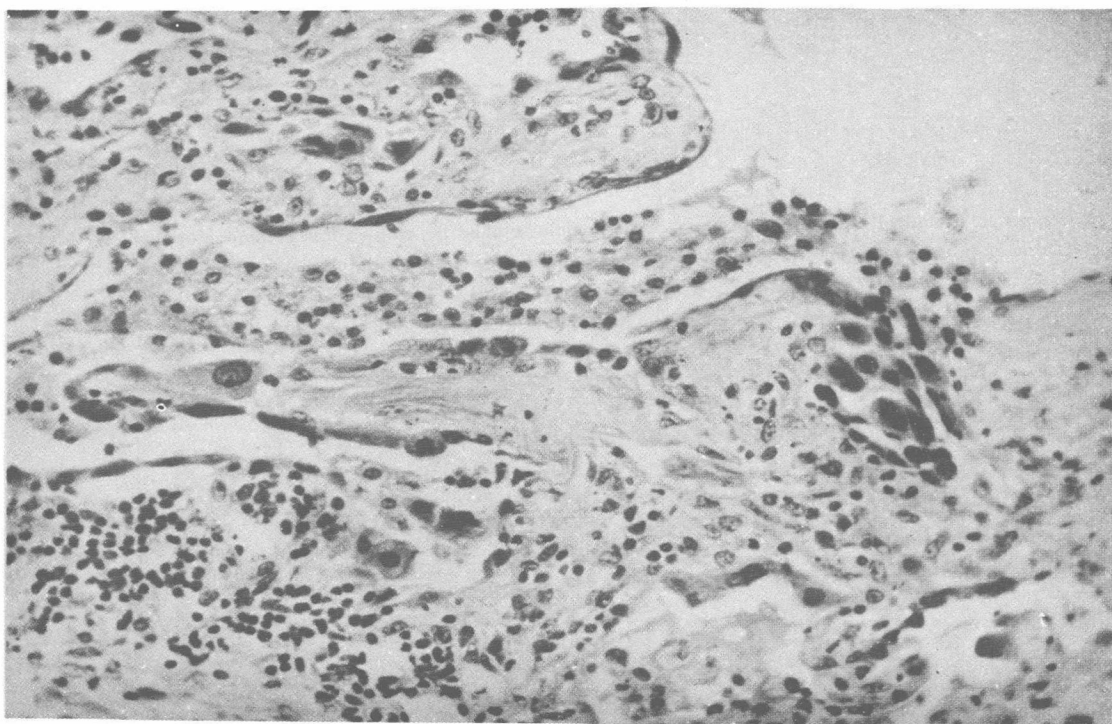


Fig. 8