Cytopathology of Pulmonary Disease

Monographs in
Clinical Cytology
Vol. 11

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Cytopathology of Pulmonary Disease

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106 figures, of which 18 are in color, 24 tables, 1988

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Monographs in Clinical Cytology

Library of Congress Cataloging-in-Publication Data
Rosenthal, Dorothy L.
Cytopathology of pulmonary disease.
(Monographs in clinical cytology; vol. 11)
Bibliography: p.
Includes index.
1. Lungs - Cytopathology. 2. Lungs - Diseases - Diagnosis. I. Title. II. Series.
WI M0567KF v. 11 / WF 600 R815c]
RC711.R57 1988 616.2'4071 88-670
ISBN 3-8055-4740-4

Bibliographic Indices
This publication is listed in bibliographic services, including Current Contents and Index Medicus.

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Printed in Switzerland by Thr AG Offsetdruck, Pratteln
ISBN 3-8055-4740-4

Contents

Dedication VII

Acknowledgements VIII

Introduction IX

I. Anatomy and Functional Histology

Anatomy 1

Histology 2

II. Variations among Benign Cellular Elements in Exfoliated and Aspirated Material 3

Benign Cells in Sputum Samples 13

Fiberoptic Bronchoscopic Specimens 18

Fine Needle Aspirate Samples 19

Bronchoalveolar Lavage 20

III. Cell Changes Currently not Associated with Neoplasia 23

Cytologic Changes Specific to Cell Types 23

Noncellular Elements 36

IV. Infectious Diseases 42

Introduction 42

Tuberculosis and Sarcoidosis 42

Major Fungi Causing Granulomatous Inflammation in the Lung 44

Histoplasmosis 46

Coccidioidomycosis 47

Cryptococcosis 51

North American Blastomycosis 52

Invasive Fungal Pneumonias 56

Aspergillosis 58

Mucormycosis (Phycomycosis) 62

Fungi Variably Producing Disease 62

Candidiasis 64

Actinomycosis 64

Nocardioides 65

Pneumocystis 67

Contents VI
Viral Infections 72
Specific Viral Infections 76
Herpes Virus Type I 76
Cytomegalovirus 78
Varicella-Zoster Virus 80
Measles Virus 82
Adenovirus 82
Respiratory Syncytial Virus 84
Influenza Virus 84
Bacterial Infections 84
Infectious Rarities 85

V. Probable Preneoplastic Lesions and Their Role in Carcinogenesis of Lung Cancer 86

V. Neoplasms of the Lung 93
General Considerations 93
Classification of Lung Tumors 95
Squamous (Epidermoid) Carcinoma 96
Adenocarcinoma 107
Small Cell `Oat Cell' Carcinoma 132
Large Cell Undifferentiated Carcinoma 150
Carcinoid Tumors 152
Other Primary Lung Tumors 153
Lymphomas and Leukemia 156
Miscellaneous and Rare Tumors 162
Metastatic Carcinoma to the Lungs 169
Comparative Cytologic Criteria for Lung Tumors 169

VII. Diagnostic Accuracy of Pulmonary Cytology 189
Historic Background 191
Sputum Cytology 191
Fiberoptic Bronchoscopy 195
Fine Needle Aspiration of the Lung 197
Bronchoalveolar Lavage 198
Accuracy of Cell Typing 199

VIII. Into the Future (circa 1987) 203
IX. Appendix: Preparatory and Staining Procedures 207
References 213
Subject Index 229

Dedication
Once again, my children, Ann, James and Larry, waited patiently while this monograph took shape.
It is living testimony to the lesson that my parents stressed: Nothing is impossible!
To all of them, for their love and understanding, this effort is dedicated.

Acknowledgements
I am fortunate that I have practiced cytology only since the invention of the fiberoptic bronchoscope. I cannot imagine life without it! To those who came before, I salute their skill in dealing with more art than science. To all those at UCLA who believe in cytodiagnosis of lung disease, my sincere thanks. Particular gratitude is owed to Dr. Donald Tierney, Chief of Pulmonary Disease at UCLA, and his flexible bronchoscopists, first Dr. Fouad Ben-Isaac, and now Dr. Henry Gong. Their productive collaboration is reflected in these pages; without them and the Pulmonary Fellows, this book would not have been possible. To the cytotechnologists on the UCLA Otology Service, my special thanks for their care in the preparation and interpretation of the challenging specimens we receive on a daily basis.

A cytology text is only as good as its illustrations. Carol Appleton’s skills in developing the negatives are obviously superb, and are only exceeded by her patience at my demands. The secretarial efforts of Rochelle Greenwald and Giok Brandt are much appreciated. Denise Greder and her editorial staff at Karger paid meticulous attention to the details which make a scientific text readable. My thanks to the UCLA pathology residents who humorously tolerated the time that this work stole from their education; my collective experience with them is in large part responsible for the final product. Finally, to Dr. George L. Wied and Mr. Thomas Karger, who convinced me that another book on respiratory cytology was needed, I hope this volume affirms their conviction.

Introduction
Respiratory cytology has assumed a primary diagnostic place in the order of the work-up for the patient with pulmonary disease. The importance placed upon the cytologic diagnosis has resulted from a cumulative experience of the past 25 years [115, 118, 130, 131, 139, 285]. The early years of cytology, from the 1940s through the 1950s, were devoted to samples from the female genital tract, and definitely established the discipline as diagnostically reliable. The simplicity and low cost of cytologic sampling made the technique attractive for other body sites. The coincidence of the now obvious world-wide epidemic of carcinoma of the lung, and the development of the fiberoptic bronchoscope [103, 228] accelerated the experience of cytopathologists with samples from the lower respiratory tract. Today, such specimens constitute the second most popular body site in most cytopathology laboratories which deal with both gynecologic and nongynecologic samples.

Although there are scattered early reports of diagnosis of lung cancer based on cell samples from expectorated sputum, it was not until the past quarter century that the need for screening of patients at risk for lung cancer saw the establishment of mass population screening programs, utilizing sputum cytologies. The great hope that such programs would effect
the diagnosis of early lesions and thus improve the dismal salvage rate, did not prove true, and most of the general lung cancer screening projects have folded.

In current protocols for the work-up of patients with pulmonary disease, especially lung cancer, sputum cytology still plays a major role, and the diagnostic yield from sputum cytology alone in a patient with clear evidence of a lung neoplasm can be as high as the yield from bronchoscopically obtained specimens, depending on the cell type [113]. Sample adequacy is enhanced if the specimens are induced [185].

However, current practice has established the immediate use of the fiberoptic bronchoscope [37; 118, p. 8; 234] when a patient with evidence of pulmonary disease, either benign or neoplastic, presents to the pulmonologist.

Introduction

The overall diagnostic yield of fiberoptic bronchoscopy is too great to delay the procedure, waiting for diagnosis of a sputum sample. With cost-effectiveness being the keystone to medical survival, this technique is definitely one whose time is now.

While cancer diagnosis automatically comes to mind when considering respiratory cytodiagnosis, numerous infectious diseases can be definitely diagnosed or strongly suspected based on samples recovered either via fiberoptic bronchoscopy, bronchoalveolar lavage, or transthoracic needle aspiration. As the patient population becomes more complex, including the numerous immunocompromised patients from whatever cause, the need for astute non-neoplastic/infectious diagnosis is a mandate that the cytopathology laboratory cannot ignore. While special stains are a classic crutch, the portions of this book devoted to infectious disease will hopefully convince the reader that much information, frequently definitive, can be gained from material stained in the standard Papanicolaou manner. This allows treatment to begin within a few hours of collection of the diagnostic sample, with minimal expense.

When all factors are considered, the role of the cytotechnologist and cytopathologist in the management of patients with respiratory disease is key to the successful outcome of these patients. The high diagnostic yield of pulmonary cytodiagnosis is, without question, the result of a team approach. From our experience at UCLA, we strongly and enthusiastically emphasize the importance of close collaboration of the cytology staff with the bronchoscopy team and the thoracic radiologists. The excellent and highly diagnostic specimens which illustrate this book are the result of this cooperative effort.