Key Facts in Pulmonary Disease

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KEY FACTS in PULMONARY DISEASE

Edited by

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With 20 Contributors

Churchill Livingstone
New York, Edinburgh, London, and Melbourne 1983

Acquisitions editor: Gene Kearn
Copy editor: Ann Ruzycka
Production editor: Michiko Davis
Production supervisor: Nina R. West
Compositor: Bi-Comp, Inc.
Printer/Binder: Fairfield Graphics

Distributed in the United Kingdom by Churchill Livingstone, Robert Stevenson House, 1–3 Baxter's Place, Leith Walk, Edinburgh EH1 3AF and associated companies, branches and representatives throughout the world.

First published in 1983

Printed in U.S.A.

ISBN 0-443-08214-6
9 8 7 6 5 4 3 2 1

Library of Congress Cataloging in Publication Data
Main entry under title:

Key facts in pulmonary disease.

(Key facts)
Bibliography: p.
Includes index.
1. Lungs—Diseases—Handbooks, manuals, etc.
I. Sharma, Om P. II. Balchum, Oscar J. III. Series.
[DNLM: 1. Lung diseases—Diagnosis—Handbooks.
2. Lungs diseases—Therapy—Handbooks. WF 600 K39]
RC756.K48 1983 616.2'4 83-7412
ISBN 0-443-08214-6

Manufactured in the United States of America

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PREFACE

Key Facts in Pulmonary Disease is a practical introductory guide for medical students, interns and residents in internal and pulmonary medicine, and busy clinicians who need quick access to the basic essentials of diagnosing and treating common pulmonary disorders. This book will also serve the growing army of paramedical staff who play an important role in the care of the pulmonary disease patient.

Key Facts in Pulmonary Disease is divided into three sections: The first, "The Patient," deals with the evaluation of symptoms and signs, basic chest radiology and lung physiology, sputum analysis, the role of bronchoscopy, indications for the use of radionuclear scanning techniques, and the immunologic assessment of the patient. The second, "The Disease," examines and presents the common respiratory diseases in an easily comprehended outline format. The information, which is pragmatic and clear, covers the definition, pathology, pathogenesis, clinical features, differential diagnosis, and principles of management. The third, "The Therapy," discusses the indications for the use of antibiotics, bronchodilators, oxygen, and ventilators.

Each chapter provides key, pertinent references. This book is a primary manual. Its aim is to be the stepping stone to numerous more comprehensive texts on pulmonary disease.

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ACKNOWLEDGMENTS

We are extremely grateful to our colleagues who have contributed to this book. The burden of typing was borne by Ms. Olivia Sheppard and Mrs. Evelyn Kiyan, to whom we are very much indebted. We also wish to thank Mr. Gene Kearn, Senior Medical Editor, and Ms. Ann Ruzycka, Copy Editor, who have been most helpful and cooperative in the preparation of this book.

KEY FACTS in PULMONARY DISEASE

CONTENTS

1

History and Physical Examination: Analysis of Symptoms and Signs

Om P. Sharma, M.D.

SYMPTOMS

Patients with pulmonary disease often have one or more of the following symptoms:

I. Dyspnea
   A. Is a subjective feeling.
   B. Is a symptom, not a sign.
   C. Is defined as difficult, labored, uncomfortable breathing. "Shortness of breath" and dyspnea are considered synonymous.
   D. Remains poorly understood, but the following are some of the hypotheses put forward to explain the sensation of "breathlessness":
      1. Stimulation of J-receptors and irritant lung receptors.
      2. Dyspnea occurs when a critical level of impulses to the respiratory control mechanism is reached. Dyspnea would also be felt if the medullary respiratory center is discharging above a certain critical level.
      3. Dyspnea is felt when the ventilation is excessive for the degree of activity.
   E. Occurs when there is a significant interference with the physiologic functions of the lungs.
      1. Disorders of "the conducting" or ventilatory system
         The bronchial tree down to the respiratory bronchioles

and alveolar spaces is the conducting system. A decrease in the cross-sectional area can cause dyspnea. The obstruction may be centrally located bronchogenic carcinoma or diffuse involving thousands of bronchioles and small bronchi as in bronchial asthma. Chronic bronchitis, bronchiectasis, mucoviscidosis, and widespread mucus plugging of the airways are important causes of dyspnea.

2. Disorders of the "interstitial" or "diffusion" system

   Diseases that involve the alveolocapillary membrane and the connective tissue framework of the lung frequently produce dyspnea. The origin of this dyspnea is not known but it is most likely due to stimulation of lung vagal reflexes. Diffuse interstitial fibrosis, sarcoidosis, rheumatoid lung, scleroderma lung, cryptogenic fibrosing alveolitis, radiation pneumonitis, inorganic or organic pneumoconiosis and drug-induced lung disease are several clinically important causes of dyspnea.

3. Disorders of the "vascular" system

   Pulmonary emboli, vasculitides due to systemic lupus erythematosus, polyarteritis nodosa, allergic vasculitis, and mitral stenosis are some of the diseases that interfere with the perfusion.

F. Can be divided into five groups:

1. Acute dyspnea

   Pulmonary embolism, pneumothorax, bronchial asthma, pneumonia, acute upper-airway obstruction (allergic reactions, foreign body, infections, neoplasms).

2. Chronic dyspnea

   Chronic obstructive pulmonary disease (chronic bronchitis, emphysema), congestive heart failure, recurrent small pulmonary emboli, interstitial lung diseases (sarcoidosis, diffuse idiopathic pulmonary fibrosis).

3. Paroxysmal nocturnal dyspnea

   Left-sided heart failure, sleep apnea syndrome, mite-induced asthma, tropical eosinophilia.

4. Recurrent paroxysmal dyspnea (day or night)

   Bronchial asthma, allergic bronchopulmonary aspergillosis, parasitic lung diseases, carcinoid syndrome.

5. Orthopnea

Congestive heart failure.

G. May be graded as follows:

	Grade
1. Short of breath climbing a flight of stairs	1
2. Short of breath during level walking at a reduced pace	2
3. Short of breath walking about the house, talking, shaving, washing	3
4. Short of breath at rest	4

II. Cough

A. Is a protective reflex that keeps the bronchial tree clear of physical, chemical, or biologic irritants and excessive secretions.

B. Is a forced expiratory maneuver that starts with a closed glottis. After intrathoracic pressure has been built up, the glottis is opened suddenly and air is forced out through the airways. Most coughs are preceded by an inspiration and terminate with a closed glottis.

C. Has many causes, which include most respiratory diseases; ear, nose, and throat abnormalities; cigarette smoking; and allergic responses to inhaled antigens. Cough may be the sole manifestation of asthma, lung cancer, and pulmonary tuberculosis.

D. May be dry or productive; acute or chronic; transient or persistent; and noctural (left heart failure) or early morning (chronic bronchitis).

1. Acute dry cough may occur in common cold, viral tracheitis, and laryngitis, mycoplasma pneumonia, neurosis, and carcinoma.

2. Cough with expectoration is always a sign of bronchopulmonary disease. The gross appearance, color, odor, amount of sputum, the presence or absence of blood are important guides in assessing the severity of the underlying disease.

III. Expectoration

Whenever a patient produces sputum, it is important to determine its color, volume, odor, and consistency (Table 1-1).

Table 1-1. SPUTUM CHARACTERISTICS IN COMMON RESPIRATORY DISORDERS

Disease	Type of Sputum
Chronic Bronchitis	Mucoid, yellow or green and rarely blood streaked; small amounts; mostly in the morning
Bronchiectasis	Yellow or green and sometimes blood tinged; large amounts; mostly in the night
Bronchical Asthma	Thick, mucoid with Charcot–Leyden crystals and Curschmann's spirals
Cystic Fibrosis (Mucoviscidosis)	Thick, viscid, mucopurulent
Alveolar Carcinoma	Large amounts of watery, mucoid, or milky secretions
Broncholithiasis	Hard, gritty, sand-like particles
Pulmonary Edema	Frothy, blood-tinged; large amounts
Pneumococcal Pneumonia	Thick, brown (rusty), sticky
Friedlander (Klebsiella) Pneumonia	Slimy, sticky
Anerobic Lung Abscess	Foul or fetid, mucopurulent

IV. Hemoptysis (Expectoration of Blood)

A. Is a common respiratory symptom that should always be taken seriously. More than half of all patients who expectorate blood have one of the following diseases:
   1. Pulmonary tuberculosis
   2. Bronchogenic carcinoma
   3. Bronchiectasis
   4. Mitral stenosis

B. Bleeding from the nose, nasopharynx, and gums may be inhaled and then coughed up. This is not true hemoptysis. Thus, a thorough examination of the mouth, nose, and upper airways is a must in patients with hemoptysis.

C. Bleeding from esophageal varices may be confused with hemoptysis.

D. If the expectoration of blood continues over many days with a decrease in amount, the bleeding is from the lungs.

E. Faint streaking of sputum with blood is seen in bronchitis, tuberculosis, and acute respiratory infections.