

Q&A Color Review of Thoracic Imaging. SJ Copley MD, DM Hansell MD, and NL Müller MD PhD. *Q&A Color Review* series. New York: Thieme. 2005. Soft cover, illustrated, 176 pages, \$39.95.

Imaging plays an important role in the diagnosis and treatment of patients with thoracic disease. The chest radiograph remains the initial, and often primary, imaging tool used in diagnosis and management. Many additional imaging modalities are now readily available, and their use is increasing in clinical medicine. These include traditional and high-resolution chest computed tomography (CT), ultrasound, nuclear medicine (including positron emission tomography), and magnetic resonance imaging. With these advances comes greater sensitivity for detecting subtle abnormalities, as well as an increasing number of descriptors and pathologies in thoracic imaging. This book uses a question/answer format to present an array of clinical diagnoses based on abnormalities detected with imaging.

This text includes 100 case scenarios, each separated into a short case history and selected images, with the diagnosis and supporting information on the following page. A brief history, physical examination, and additional pertinent clinical information such as laboratory findings and pulmonary function test results are included with each unknown case. Each case is accompanied by an imaging study, most commonly a chest radiograph or selected axial images from a chest CT. Some questions include images from other modalities, such as ultrasound, nuclear medicine (including positron emission tomography), or angiography.

The diagnosis is given on the following page, along with additional information. The answer includes a description of the imaging findings, differential diagnosis, and, in some cases, further diagnostic tests that would confirm the diagnosis. In most cases, further images are provided. In some cases the initial image is repeated with findings marked. In others there are images from the next logical imaging modality used in the workup, such as the corresponding CT to the given chest radiograph. Additional clinical data and laboratory tests may also be included. Pathology correlation, genetic information, and other facts about the diagnosis are given when applicable.

The unknown cases include diseases of the lungs, chest wall, and heart, and thoracic manifestations of systemic diseases.

Diagnoses range from common illnesses such as cancer and pneumonia, to extremely rare clinical entities such as relapsing polychondritis and alveolar microlithiasis. Most unknown cases are in adults, although a few pediatric and neonatal cases are included. The cases are in random order with regard to difficulty, incidence, and pathology. In some cases the images are secondary, as the diagnosis can be made on the basis of the history and physical alone. In those instances, one can examine the radiograph for confirmatory findings.

Most classic radiographic diagnoses are included, such as sarcoidosis, tuberculosis, and lobar collapse. Other cases commonly found in teaching files and on examinations are also given, such as lymphangioleiomyomatosis, pulmonary alveolar proteinosis, and pulmonary sequestration. The common differential diagnoses are also covered, such as single or multiple pulmonary nodules, lymphadenopathy, and mediastinal masses. Some cases are presented more than once, demonstrating different manifestations of the same process, such as the various presentations of sarcoidosis, tuberculosis, and *Aspergillus*-related illnesses.

At the beginning of the book is a list of abbreviations commonly used in chest imaging. Included are items as straightforward as "PA" (posteroanterior) and "AIDS" (acquired immune deficiency syndrome), to more specialized terms such as "UIP" (usual interstitial pneumonia), "DAD" (diffuse alveolar damage), and "HPOA" (hypertrophic pulmonary osteoarthropathy). Following this is a glossary of terms used in radiographic reports, from "cyst" and "emphysema" to "honeycombing" and "tree-in-bud." Included in the definitions are both descriptions of the finding and the anatomic or pathologic correlation. These 2 sections are quite helpful in decoding the language used in thoracic radiology.

This book is intended for medical students and physicians interested in thoracic imaging, as well as for radiology residents preparing for board examinations. It may also be useful for anyone who utilizes chest imaging as part of their clinical practice.

The organization of the book has both benefits and drawbacks. The abbreviation list and glossary in the front are extremely helpful, not only with the subsequent questions, but also to understand terms commonly used in chest imaging. The text is easy to use. It can be read cover to cover, or picked up in spare moments to flip through

a few questions. The questions are in random order. A question showing a common finding such as pneumothorax could be followed by a question on an esoteric clinical entity probably never to be encountered in one's career. This may be difficult to follow, particularly for someone new to chest radiology and with limited clinical context in which to place the cases. An alternative approach, used in the *Case Review* series (published by Mosby), is to categorize questions into 3 groups, based on difficulty, with a general progression from easier to more difficult.

The information given in both the questions and answers is accurate and robust. The cases presented include relevant information and findings. The answers are brief and therefore readable, but they draw from a broad range of information, including not only radiographic information but also clinical and pathology information. Enough information is presented that one can pick up important aspects of different disease processes. Further information is available on more exhaustive sources, and in fact, at the end of the text there is a list of Web sites and other textbooks where such information can be found.

The book itself is compact enough to carry in the pocket of a lab coat for easy perusal during free moments in the day; however, the price of this small size is small images. The CT findings are generally easy to see, but the resolution of the chest radiographs is limited (a bright light is essential). High-contrast findings such as masses, calcifications, or mediastinal contours can be seen, but more subtle findings are difficult to see. For example, even in retrospect, a case of pneumothorax is not discernable. At times, only a single view is given where two would be helpful, and would generally be available in clinical practice. In these cases, however, the second view is often provided with the answer.

The descriptions of the findings are clear and include phrases and signs often used by radiologists, such as "ground glass" or "crazy paving." Without some radiographic knowledge, however, the findings might not be appreciable even with a written explanation. In some instances, the images are replicated in the answer section, with the findings clearly labeled, which is quite helpful. Of note, although this book is part of the *Q&A Color Review* series, the images, like the majority of images in radiology, are in black-and-white.

The text is not intended as a comprehensive source for chest imaging, but it provides quite a bit of information in the answer sections. It includes cases that are often presented to radiology residents in teaching files and on examinations. The images, particularly the chest radiographs, are small, but perhaps that is good preparation for the reprinted tests. For those who like the question/answer format of learning, this text would be a useful adjunct to more exhaustive texts.

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Imaging of the Airways: Functional and Radiologic Correlations. David P Naidich MD, W Richard Webb MD, Philippe A Grenier MD, Timothy J Harkin MD, and Warren B Gefter MD, editors. Philadelphia: Lippincott Williams & Wilkins. 2005. Hard cover, illustrated, 216 pages, \$129.

In the last 10 years there have been a number of advances in both the radiologic and bronchoscopic appraisal of and bronchoscopic management of airway diseases. The goal of these authors was to put forth a comprehensive book that illustrates the benefits and limitations of state-of-the-art technologies of airway assessment, in order to best serve the patient. Naidich, Webb, Grenier, and Gefter are renowned thoracic radiologists, and Harkin, a renowned interventional pulmonologist.

This compact, well-illustrated text contains 6 chapters, based predominantly on the distribution of diseases within the tracheobronchial tree. The first chapter is dedicated to airway anatomy and the specific computed tomography (CT) techniques and variables used to evaluate the airways, including 3-dimensional reconstructions and virtual bronchoscopy. The second chapter reviews the bronchoscopic appearance of airway diseases with virtual-bronchoscopic correlates and discusses the technique and limitations of transmural biopsies of extraluminal structures (primarily lymph nodes). The chapter briefly introduces various bronchoscopically guided treatment modalities (eg, laser phototherapy, photodynamic therapy, cryotherapy, stenting), autofluorescent bronchoscopy, and endobronchial ultrasound.

The next 3 chapters discuss and demonstrate the CT appearance (axial, coronal, sagittal, 3-dimensional reconstruction, inspiratory-expiratory, and/or virtual bronchoscopic) of disease processes that affect the trachea and central bronchi (Chapter 3), and small airways (Chapter 5), and various causes of bronchiectasis (Chapter 4). Differential diagnoses for particular CT patterns are often displayed in color-highlighted tables, which is a particularly useful detail for residents and fellows. The last chapter touches on functional imaging techniques, some of which are currently used in clinical practice, such as ventilation-perfusion scintigraphy, static inspiratory-expiratory CT scanning, physiologic imaging of the upper and lower airways with CT and magnetic resonance imaging (MRI) in obstructive sleep apnea, tracheobronchomalacia, and chronic obstructive pulmonary disease. The remainder of the chapter deals with experimental techniques in CT (using stable xenon gas), MRI (using hyperpolarized noble gases), and molecular imaging, which may soon permit investigation of regional ventilation, perfusion, and inflammation in patients, and the results of which can be fused with CT images, allowing function and structure correlations. There are hundreds of references in each chapter, and the index is quite useful, although not exhaustive.

The intended readership includes residents and fellows in radiology, thoracic surgery, and pulmonary medicine, subspecialists in these fields, and those with an interest in expanding their knowledge of airway imaging.

A few inconsequential faults do not substantially detract from this book. Among these are the lack of an accepted conventional display of standard and virtual bronchoscopic images, which can be confusing, because CT images are displayed as if viewed from below and bronchoscopic images as if viewed from above. The images are therefore flipped 180 degrees with respect to each other. In some illustrations the images or arrows do not show what the legend or text indicates (Figures 2–8, 2–19, 3–8, 3–22, 3–23, 4–12, 5–22). There are a few minor mistakes where words are interchanged: “osteochondrolytica” for “osteochondroplastica” (page 86), “proximal death” for “proximal disease” (page 102), “dermatomyosis” for “dermatomyositis” (page 148), and “collagen tissue disease” for “connective tissue disease” (page 149). I found rare typographical errors (“mucus”

spelled 2 different ways in the same sentence, misspelling of an author’s name). One other error was the inclusion of 10 R/L nodes as mediastinal rather than as hilar nodes (page 39). Overall, the chapters are well written and well organized and nearly all of the images are excellent. The book’s division of chapters based on anatomic location is practical and useful with regards to the generation of differential diagnoses in the clinical setting.

Radiologic assessment of the airways has always been an important adjunct to bronchoscopy, particularly because of CT’s ability to provide “road mapping.” Virtual bronchoscopy allows the bronchoscopist to visualize the pathway leading to a suspicious airway abnormality before the procedure, which is a valuable tool now that ultra-thin bronchoscopes are available. Airway imaging in combination with physiologic or functional measurements will allow us to better understand the effects of pathologic processes and interventions on the patient, perhaps leading to new interventions or prevention of disease. Knowledge of currently available technology in both radiologic and bronchoscopic areas will benefit the radiologist as a consultant and the pulmonologist and thoracic surgeon by allowing them to use these tools in patient management.

This book is a timely and valuable resource. The recent explosion of literature on this topic has created the need for an up-to-date review in the form of a textbook, and this publication provides that information in an interesting and easy-to-read fashion.

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Functional Imaging of the Chest. Hans-Ulrich Kauczor MD, editor. *Medical Radiology Diagnostic Imaging* series, AL Baert and K Sartor, editors. Berlin: Springer-Verlag. 2004. Hard cover, illustrated, 228 pages, \$159.

Until recently, imaging of the chest has been limited to evaluating structure and morphology, while various aspects of lung function were the dominion of pulmonary function tests. Correlation between the imaging

24. What is the color of fat on a radiograph? It is slightly darker than soft tissue. 25. Fluid build-up in the alveoli causes what appearance? It causes peribronchial cuffing; Kerley B lines. 26. The heart shadow should not exceed what? 50% of the thoracic diameter. 27. How are blood vessels easily identified on the ultrasound? Compressibility of veins compared to arteries. So there you have it! That wraps up our study guide on Reviewing of Thoracic Imaging in Respiratory Care. I hope that these practice questions can help you learn everything you need to know about Egan's Chapter 21. Just a tip: Be sure to read through this information until you fully know and understand the material.