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# Nuclear Medicine in Tropical and Infectious Diseases

F.J.H.N. Braga, ed.

Norwell, MA: Kluwer Academic Publishers, 2002, 280 pages, \$149

This hardcover book is the 34th volume in the *Developments in Nuclear Medicine* series edited by Peter H. Cox. This particular volume was edited by Francisco J. Braga, who wrote several chapters himself, but there were multiple international contributors. Most are from Brazil, as is Dr. Braga, but several others are from Europe, including Belgium, Italy, and Spain, and some are from South Africa or the United States.

The book is well organized. There are 30 chapters divided into 6 sections. The first 7 chapters are devoted to diseases caused by bacteria, and the next 7 cover diseases caused by fungi. Three chapters are on protozoa; 2, on virus disease; 5, on helminths; and the final 6, on advances in imaging of infection and inflammation. The references, rather than being grouped by chapter, are grouped by section—a good choice because of the considerable overlapping of references in some chapters within a section.

The book is well written. Each chapter starts with a general introduction. A discussion of etiology, epidemiology, means of transmission, and pathology follows, and then nuclear imaging of the disease is covered. Generally, the topics are covered well and comprehensively. I enjoyed reading about the various infectious diseases, especially those less common in North America. Tuberculosis, leprosy, syphilis, Lyme disease, and brucellosis are discussed thoroughly. Fungi are then discussed, including coccidioidomycosis, histoplasmosis, and others periodically encountered in imaging in the United States. Particularly in the first 24 chapters, which are disease specific, the introductory section is even more interesting than the nuclear imaging section. For example, the epidemiologic discussions of tuberculosis, both pulmonary and extrapulmonary, and of leprosy are good reviews. The chapters on sporotrichosis and on coccidioidomycosis are also excellent.

The discussions on nuclear imaging cover methods that have been used and methods that are recommended. Most of the imaging methods, of course, involve the use of gallium, as that is the most widely accepted radiopharmaceutical worldwide. Also, there is quite a bit on labeled-cell imaging, and some  $^{18}\text{F}$ -FDG PET findings are discussed—such as those for hydatid disease and a few other inflammatory conditions. Unfortunately, not much information is given on PET. Three-phase  $^{99\text{m}}\text{Tc}$ -methylene diphosphonate bone scan findings are described for almost all infectious diseases that involve the bone, from syphilis to tuberculosis, brucellosis, and paracoccidioidomycosis. Where applicable, the authors discuss tests for specific conditions, such as  $^{123}\text{I}$ -metaiodobenzylguanidine

scintigraphy and gated blood-pool findings in Chagas' heart disease. The role of nuclear medicine tests such as  $^{99\text{m}}\text{Tc}$ -diisopropyl iminodiacetic acid,  $^{99\text{m}}\text{Tc}$ -glucoheptonate, and  $^{99\text{m}}\text{Tc}$ -sulfur colloid in various fungal disorders is discussed. Lymphoscintigraphy is well displayed in the chapter on filariasis, as is renal imaging in the chapter on schistosomiasis.

The last section, "Advances in Infection and Inflammation Imaging," is certainly most interesting. It covers the choice of radiopharmaceuticals for imaging infection and inflammation, discusses the investigation of fever of unknown origin, and describes potential future infection-imaging agents. Also discussed is the potential for imaging fungal cell wall structure and implications for the development of tracers. The authors describe the potential of glucans, chitins, and mannoproteins, as well as of phospholipids and other components, as targets in the cell wall. A discussion follows about cutting-edge research on molecular imaging of mononuclear cell-mediated inflammation using the anti-induced endothelial cell adhesion molecule and other adhesion molecules, and fragments of antibodies and radiolabeled interleukin-2. This discussion also includes  $^{99\text{m}}\text{Tc}$ -labeled ciprofloxacin and other labeled antibiotics as imaging agents. The last chapter involved the labeling of microorganisms and parts of microorganisms, but the writing is, unfortunately, somewhat choppy and less clear.

Overall, I very much recommend this book as a worthwhile reference for any nuclear medicine professional dealing with infectious or tropical diseases. The book does, however, have some limitations. The quality of the images is poor, but whether because of poor reproduction by the publisher or poor source images is hard to tell. However, the images do carry the message. Another concern about the book is that it has practically no correlative images. As far as I could see, the only nonnuclear image in the whole book is one CT scan of the brain. It would have been helpful if the authors had presented some correlative imaging by CT, MRI, or sonography—specifically, where these other images failed and nuclear medicine excelled or was more specific in a particular case. This book was, however, published in 2002, and perhaps a new edition will soon become available with better-quality images and more correlative images. Nevertheless, I meanwhile recommend acquisition of this current edition.

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