

occipital region. Better descriptions in the legends of the pulse sequences used in every MR spectroscopy would have added significantly to the descriptive material. Good clinical examples including wide ranging pathology are presented. There is a nice final chapter by Drs. Chang and Ernest (both of whom are well-known investigators in HIV) on physiologic MR to evaluate HIV-associated disorders. The remaining chapters on seizures, psychiatric and neurodegenerative disorders, and trauma are basically surveys of these fields. The chapter on pediatrics, however, is more extensive (156 pages), informative, and useful than the preceding 3 chapters. Here Drs. Melham and Gotay present a nice survey of physiologic MR of the pediatric brain.

Overall, the book is highly readable and the image quality is good throughout, though a few images are unnecessarily dark. There are advanced techniques that are not included in this book, such as fMR (cortical activation), time-resolved MR angiography, and CSF flow studies, but of course it was the author's intent to concentrate just on the application of MR spectroscopy, diffusion, and perfusion in brain MR imaging. Perhaps future editions will include these newer areas of MR interest.

The book is recommended as an excellent description of advanced techniques in clinical settings and will be useful to all practicing neuroradiologists.

BOOK REVIEW

Nuclear Medicine in Clinical Diagnosis and Treatment, 3rd ed

Peter J. Ell and Sanjid Sam Gambhir, eds. 3rd ed., 2 vols. Churchill Livingstone; 2004, 1950 pages, 1761 illustrations, \$399.

This is a comprehensive 2-volume text on nuclear medicine. The third edition of this well-known reference work has almost 2000 pages. I.P.C. Murray and P.J. Ell edited the 2 previous editions of the book, and now P.J. Ell and S.S. Gambhir have edited this new edition.

Preface and Stated Goals: In the preface, Ell and Gambhir refer to the "increasing role of nuclear medicine in the investigation and management of cancer patients" and "the increasing role of small animal imaging instrumentation" and define this period of nuclear medicine "as the most exciting times ever for the field." Therefore, this edition gives particular attention to fluorodeoxyglucose positron-emission tomography (PET), PET-CT, and molecular imaging and the investigation of the central nervous system (CNS). For readers of the *AJNR*, these 3 fields are of significant interest, particularly the specific investigation of the CNS. The editors comment about the new atlas section of the book, which includes a brain atlas, and about the basic sciences section. The latter maintains a question-and-answer format and now includes special topics: cell biology and molecular imaging fundamentals, optical imaging technology, and statistical issues, such as clinical decision making and decision analysis fundamentals. They conclude their preface by referring to the authors and section editors as leaders in the field of nuclear medicine from around the world. They dedicate their book to "a new gener-

ation of clinical physicians and basic scientists" and express the hope that "this book will help us to better understand the past, simplify the present, and provide some insights into the potential future of nuclear medicine." In reviewing the book, we see that they have indeed pursued, and in many aspects they have achieved, their goals.

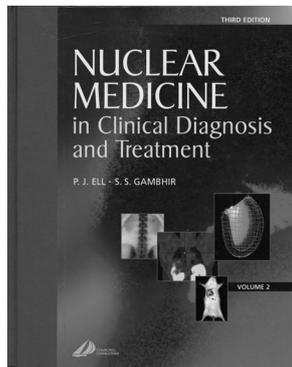
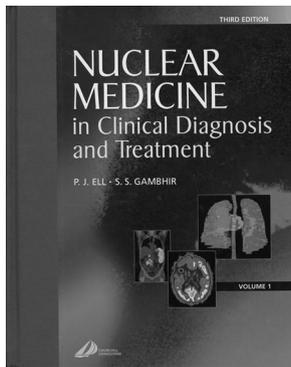
Esthetics: The 2 volumes are eye-catching and appropriately sized. The paper is of high quality and the typefaces are clear and attractive. Color is used well to define the different chapters of the book and even the individual pages. The images of the cases presented are mostly representative and are of high teaching value. The book is divided into 8 clinical sections, and each exploring a different aspect of nuclear medicine: (1) tumor diagnosis and therapy, (2) disorders of the bones and joints, (3) gastrointestinal function, (4) acute care, (5) nuclear cardiology, (6) neurology and psychiatry, (7) renal disorders, and (8) basic sciences. The sections are subdivided into a total of 133 chapters.

Index, Contents, Contributors, Foreword, and Preface: Each volume includes a complete and comprehensive index, as well as the table of contents, names of the contributors, foreword, and preface. The complete 80 pages are printed in each volume.

The Contributors: There are 236 contributors to this book, 54 of whom are from the United States. Each section or part has an advisory editor, and 10 of them are from the United States. As the authors state in their preface, this is an international book, reflecting the views of nuclear medicine people throughout the world. This book offers the best aspects of clinical nuclear medicine because it is the product of the experience and enthusiasm of the dedicated international contributors. On the other hand, the contributors are specialists who try to write optimistically and comprehensively on their topics, even if the method is sometimes nearly obsolete—for example, the discussion on Myoscint. In addition, the use of many educated specialists and a fractionated presentation of many topics has resulted in many avoidable redundancies. In general, despite the fact that there are section editors for the book, the overall impression underscores the autonomy of the contributors who helped produce this book.

Development of Nuclear Medicine, History, and Trends: Reading this book was a wonderful journey through the years and knowledge of the emergence of modern nuclear medicine. The contemporary practice of nuclear medicine is also well reviewed. There are many new topics, of current and great clinical significance or related to vital research activities that this book reviews, some discussed exhaustively and others briefly. This book is primarily directed to the nuclear specialist, practitioner, or researcher who has particular interest in nuclear medicine and wants to know more, before he or she digs into the vast literature on the topic.

General Remarks: For some, who have limited interest in nuclear medicine, the material may appear too much, and the 2 volumes may be cumbersome and difficult to handle. Others, however, will find the book quite informative, well referenced, and, though opinionated here and there because of some particular experience of the contributor, will consider this as a good reference book. There will also be some readers who may know certain topics better than the contributors and might find the coverage of some issues inadequate; for others,



historical topics were not excluded or shortened enough. It is an excellent information resource for nuclear topics, but also contains material not directly related to nuclear medicine. It serves as an adequate introduction to all nuclear medicine topics, but some aspects are specifically favored even for methods that are not in great use. For US practitioners, the use of Becquerels instead of Curies will create some difficulties, but the US scientists have to follow the general trends in international regulations and nomenclature. It is interesting that the PET issues are dealt with separately, depending on the indications. This created many repetitions, each time with the usual introduction of the utility of PET and PET-CT.

Distribution of the Material: Volume 1 covers tumors, bone, gastrointestinal (GI) tract, and acute care. Volume 2 covers nuclear cardiology, neuropsychiatric disorders, renal disorders, and basic sciences.

Volume 1. Tumors are covered in section 1 (590 pages). It is an exhaustive review of the topic—appropriately so, in light of current trends in nuclear medicine practice and research. Part A covers diagnostics, part B covers therapeutics, and part C includes atlases of PET and single-photon emission tomography (SPECT), which provide excellent coverage of tumor imaging and the utility of CT for localization and definition of the lesions. Insofar as SPECT/CT is concerned, there is no consensus as to its utility. Section 2 deals with disorders of bones and joints adequately (187 pages). Section 3 covers the quantitative studies of GI function mostly adequately (72 pages). In section 4, most of the nuclear medicine studies available for the acute care of patients (emergency nuclear medicine) are included (myocardial infarction, pulmonary thromboembolism, gastrointestinal bleeding, cholescintigraphy, etc; 150 pages).

Volume 2. Section 5, covers nuclear cardiology correctly (147 pages), and section 6 covers nuclear medicine in neurologic and psychiatric diagnosis (227 pages). It is a detailed review of the clinical applications and an excellent coverage of the research efforts in the field, followed by an informative atlas. CNS tumors, however, are reviewed in section 1. Section 7 deals with nuclear medicine in renal disorders (197 pages). It places much emphasis on methodology and less on clinical experience. Section 8, which is 250 pages long, is dedicated to basic sciences and covers every practical issue about basic sciences as it relates to nuclear medicine practice with many new interesting and informative chapters.

This organization of the book, by indication rather than by method of imaging, is extended into the individual sections

and the chapters. Because of it, there is a tendency to repeat the methodological issues. Despite that unavoidable problem, structuring the book according to clinical indications appears to work better than a methodologic approach would have achieved. Although the abnormalities on the images are already identified with markings, the atlases appear to significantly contribute to the learning of the topics that they address by increasing the ability of the reader to perceive and recognize lesions.

Specific Topics: Chapter 120 (pages 1685–1712) is an excellent review of the fundamentals of cell biology. It is a meticulous but brief review of the genes and the way they code their information (DNA, RNA), the function of the noncoding DNA, transcription and posttranscription modifications, translation, and production of peptides (post-translational modifications). It explains chromosomes and alleles, mutations, DNA replication, prions, and genomic imprinting. The cell cycle is well described, and the differences between apoptosis and necrosis are explained. The immune system is quickly reviewed, as are the oncogenes and related issues. Finally, molecular techniques including in vitro diagnostics and therapeutics are analyzed. There is an interesting appendix to this chapter about what major properties of cells and what parameters of the human genome we have deciphered. The authors suggest review articles for further reading, 8 categories in all, including gene therapy and other topics. Finally, they provide a quick reference of 21 recent papers on this topic.

An excellent topic is the molecular imaging fundamentals (chapter 130). This discussion includes visualization, characterization, and quantification of biologic processes at the cellular and subcellular level both in vitro and in vivo and covers the topic appropriately. The basic sciences section includes 2 interesting new chapters, one on clinical decision making, which is an introductory quantitative approach to diagnostic investigation (chapter 132), and another on decision analysis fundamentals, which reviews the methods and applications to evaluate sensitivity, and specificity (chapter 133).

Conclusion: In brief, this is a book about the development of nuclear medicine, its basic principles, and current clinical applications. It embraces what is new but does not neglect what is old. This book contains most of the wisdom of the nuclear medicine–devoted people throughout the world and addresses the nuclear medicine practitioners, who will find in it a reference book with clinical, research, and future perspectives.

BOOK SUMMARIES

Basic Neurochemistry: Molecular, Cellular, and Medical Aspects. 7th ed. (with CD-ROM)

George J. Siegel, R. Wayne Albers, Scott T. Brady, Donald L. Price, eds. San Diego: Academic Press; 2006, 1016 pages, \$99.95.