

# A Clinician's Guide to Nuclear Oncology: Practical Molecular Imaging and Radionuclide Therapies

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This clinical guide on the rapidly developing field of nuclear oncology, which is revitalizing nuclear medicine, is well written, informative, easy to read and understand, practical, and concise. The book is a collaborative approach by physicians in the fields of nuclear medicine, medical oncology, and surgical oncology and encompasses clinical, molecular imaging, and therapeutic aspects of malignancies. This small volume includes a good deal of up-to-date information on the cancers encountered in medical practice today.

Presently,  $^{18}\text{F}$ -FDG PET/CT is the best-known and most frequently used diagnostic molecular imaging study in cancer, although other less well-known but useful diagnostic imaging options are available in some malignancies such as lymphoma, neuroendocrine tumors, and other tumors. Each chapter follows the same format, beginning with chapter highlights, epidemiology, available diagnostic molecular imaging, clinical staging, prognosis, and spread patterns of cancer. These sections are followed by diagnostic nuclear studies such as PET, PET/CT, and other relevant non-PET nuclear imaging studies; radiopharmaceuticals; patient preparation; report format; treatment options; benefits and side effects of chemotherapy and radiation therapy; and an "On the Horizon" feature describing future advances. Immunodiagnostic scans and immunotherapies including practical pointers to optimize imaging and therapy are included in the book. Chapters 2 through 19 deal with individual cancers, and the similar format in each makes it easier to navigate the book. These chapters end with 1 or 2 illustrative cases supplemented by good-quality PET, PET/CT, and other relevant imaging studies such as capromab pendetide (ProstaScint; EUSA Pharma), bone,  $^{131}\text{I}$ -metaiodobenzylguanidine (MIBG),  $^{131}\text{I}$  whole-body scans, and sentinel node lymphoscintigraphy. Adequate references and suggested further reading at the end of each chapter can expand the knowledge base gained from this book.

The first chapter is an overview of  $^{18}\text{F}$ -FDG PET and PET/CT molecular imaging—an appropriate way to begin this book given the sentinel importance of PET and PET/CT in molecular imaging today. Chapter 20 is on the comparative costs of diagnostic procedures, a helpful resource for residents and clinicians ordering molecular imaging studies in these days of cost constraints and awareness. Appendix 1 includes a good overview of the biologic effects of radiation, radiation toxicity, genetic and cancer risk from low-level radiation, pregnancy and radiation and discusses imaging systems such as SPECT, SPECT/CT, PET, and PET/CT. Appendix 2 describes specific radiopharmaceuticals and monoclonal antibodies used in cancer therapy, such as rituximab (Rituxan; Genentech),  $^{90}\text{Y}$ -monoclonal antibodies, and  $^{131}\text{I}$ -tositumomab in lymphomas.  $\beta$ -Emitters such as samarium and strontium for palliation of painful bone metastases,  $^{131}\text{I}$ -sodium iodide for well-differentiated thyroid cancer, and  $^{131}\text{I}$ -MIBG for certain neuroendocrine tumors are adequately described.

Overall, this slim guide, in an easy-to-read and digest format, gives useful clinical information, provides practical pointers, and discusses the role of and expectations from different nuclear oncology scans. The book meets the writers' stated intention of educating clinicians on molecular imaging and nuclear therapies.

A drawback is the book binding, which does not stand up to day-to-day handling (the cover comes apart because of poor gluing); this can be an issue with routine use of the book. Also, some of the cancer statistics may have changed since 2007. The melanoma chapter does not mention that PET/CT needs to be done from top of skull to toes. The importance of non-attenuation-corrected images, specifically in melanoma and generally in other malignancies, to resolve whether uptake is physiologic or malignant—for example, in the mediastinum—may be helpful information for younger readers.  $^{90}\text{Y}$  microsphere therapies are briefly mentioned in the section on colorectal cancer along with an illustrative image on their usefulness in treating hepatic metastasis (Fig. 5.1). But given the increasing use of these

therapies in many medical centers today, it would be useful to include them again in Appendix 2 to make the therapy section more comprehensive.

Though its name suggests that the book was written primarily for clinicians, its format and contents make it a useful, quick, and handy reference for nuclear medicine specialists and radiologists, and it will be a valuable addition to the textbook collection in many nuclear medicine departments. I highly recommend this book to medical oncology fellows, oncologists, and other clinicians who take

care of cancer patients. It will be equally helpful and useful for medical students, residents, and fellows in nuclear medicine and residents in radiology who are involved in performing and interpreting nuclear oncology studies.

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