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BOOK REVIEW

C. Tinoco Mesquita, M. F. Rezende: Nuclear Cardiology Basic and Advanced Concepts in Clinical Practice

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Fiorenzo Squame[1] · Luigi Mansi[2]

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Cardiology has been for many decades the main field of interest in nuclear medicine, before the arrival and the wide diffusion of PET/CT with FDG, mostly applied in oncology. Nevertheless, also at the present, radionuclide procedures remain a central component of the diagnostic paraphernalia, mainly useful in ischemic heart diseases, continuing to include a series of cost-effective procedures. Interestingly, although the advent of PET techniques, a major role is still occupied by SPECT, also using more performing technologies, allowing very fast procedures, further advantaged by a reliable and reproducible quantitative analysis. Therefore, we have at the same time a consolidation of the older techniques, mainly based on SPECT using flow radiotracers, together with a growing interest for newer application based either on technology, utilizing tools such as PET, hybrid machines, new detectors, and radiotracers giving information on metabolism, receptor state, and other physio-pathological issues. In this way, a wide and effective contribution may be achieved in diagnosis, prognosis, prevention, and treatment orientation. The central position of nuclear cardiology may be also understood from the major role in many of the most applied clinical guidelines, worldwide used mainly in ischemic heart diseases.

This is an extensive, virtually all-encompassing compendium of nearly 800 pages, enriched by 285 illustrations, also including tables and diagrams. An important addendum is given by the online files/update.

Both the editors are Brazilians, working in Rio de Janeiro: Claudio Tinoco Mesquita is a professor of radiology and nuclear medicine at the Hospital Universitário Antonio Pedro, while Maria Fernanda Rezende is a coordinator of the Nuclear Medicine Section at the Hospital Vitória. They were invited to collaborate not only with many of the most active and expert Brazilians operating in nuclear cardiology, but also some of the greatest international professionals, who gave an updated and critical contribution, already projected toward the near future.

More precisely, the book is structured in the following 33 chapters: 1. Cardiac PET procedure: perfusion, coronary flow, viability, inflammation, and PET/MR; 2. SPECT procedures; 3. Evaluation of myocardial blood flow and myocardial flow reserve by radionuclide imaging; 4. Radiation protection and exposure in nuclear cardiology; 5. Non-nuclear cardiac imaging modalities: CT and MRI; 6. Coronary physiology: from basic concepts to FFR and iFR; 7. Coronary artery calcium and hybrid imaging in ischemic heart disease; 8. Coronary blood flow reserve and myocardial ischemia; 9. Nuclear cardiology and coronavirus disease 2019 (COVID-19) pandemic; 10. Nuclear imaging in stable ischemic coronary disease; 11. Nuclear imaging in acute coronary syndromes; 12. Nuclear techniques before and after coronary revascularization; 13. Physiologic and/or anatomic assessment of CAD: Patient-centered approach; 14. Evidence-based and nuclear cardiology; 15. Pathophysiology, diagnosis, and management of heart failure; 16. PET and SPECT evaluation of viable dysfunctional myocardium; 17. Bone tracers for the diagnosis of cardiac amyloidosis; 18. Adrenergic nervous system imaging in HF management; 19. Takotsubo cardiomyopathy and nuclear imaging; 20. PET and SPECT in inflammatory diseases: sarcoidosis, myocarditis, and vasculitis; 21. Cardiovascular risk stratification prior to non-cardiac surgery; 22. Exercise and pharmacologic stress testing; 23. Evaluation of ventricular function by nuclear imaging; 24. 123 I-mIBG in the risk stratification of sudden cardiac death in chronic heart failure; 25. Nuclear image-guided methods for cardiac resynchronization therapy; 26. Nuclear imaging in the

✉ Luigi Mansi
Mansi.luigi@libero.it

[1] Nuclear Medicine Department, Ospedale del Mare, Naples, Italy

[2] Inter-University Research Center for Sustainability (CIRPS), Rome, Italy

management of infective endocarditis; 27. PET and SPECT in the evaluation of cardiac implantable electronic devices; 28. The clinical aspects of heart damage by chemotherapy and radiotherapy; 29. Nuclear medicine tools for cardiac damage diagnosis in oncology; 30. Acute coronary syndrome evaluation with nuclear medicine in the emergency; 31. Diagnosis of pulmonary embolism; 32. Deep learning and artificial intelligence in nuclear cardiology; 33. Programmes of the International Atomic Energy Agency for Nuclear Cardiology and Quality Management.

As it can be understood, this is a compendium that brings together the state of the art of nuclear cardiology in a systematic way, filtering the available experiences and extracting capabilities, scope, strength, and limitations of each diagnostic procedure. The book covers all the concepts relevant to nuclear cardiology, combining imaging techniques, and clinical data. The combination of clinical aspects and the critical comparison with alternative procedures gave evidence of the true and most effective position of nuclear medicine for the decision-making in clinical practice. In this way, favorable conditions in providing better outcomes for cardiac patients may be created. The whole scenario has been considered, including emergencies, rare diseases, and complex cardiac procedures, also based on alternative techniques, less clinically diffuse applications, as the evaluation of potentially heart-toxic anticancer therapies (cardio-oncology), arriving to mention and discuss COVID-19 pandemic in its cardiologic implications. At the same time, it is possible to achieve a wide and deep knowledge of new physio-pathological and methodological approaches based, for example, on metabolic and receptor radiotracers. In this way, the reader can get a documented and critical idea on coronary syndromes, cardiomyopathies and heart failure, inflammatory diseases, adrenergic innervation disorders, electrical conduction disorders, and even iatrogenic effects caused by the treatment of non-heart disease. Additionally, the book describes nuclear cardiology procedures and techniques, discusses key clinical indications and scenarios for each procedure, and presents new technological advances in the field (machine learning tools and artificial intelligence). As an editorial gem, videos from exams allowing the visualization of images in motion are also included.

As it can be understood, an updated virtually all-encompassing compendium of nearly 800 pages, having the possibility of an online files/update is a "fundamental" publication for professionals and residents involved in nuclear cardiology. But, in our opinion, this book may be suggested also to cardiologists, cardiac surgeons, and to all clinicians with a clinical interest in cardiology. More precisely, this publication may find a position in the library not only of the departments of diagnostic imaging, but also in clinical divisions, to better understand indications and information associated with modern nuclear cardiology.