

Review of 'PET and SPECT of Neurobiological Systems' guest-edited by Luiten, edited by Diercks, Otte, de Vries, and van Waarde.

Hongyoon Choi and Dong Soo Lee

To introduce enormous recent progress in molecular neurobiology and new tracers targeting neurobiological systems, the editors and the guest editor organized the chapters excellently to present the up-to-date PET and SPECT studies of neurotransmitters and pathologic markers. As this book contains mainly the information of radiotracers targeting neurotransmitters and their possible clinical uses, neuroscientists shall easily refer to the systems of interests and physicians shall efficiently find up-to-date molecular imaging for specific brain disorders.

This book was organized according to the targeting molecules in neurobiological systems. The first part presented basics of PET and SPECT imaging while focusing more on preclinical studies. Starting from animal models for neurologic and psychiatric disorders, fundamentals on small-animal PET and SPECT systems and protocols were covered. Emphasizing the capability of quantitation using PET and SPECT, this part help readers most who deal with animal studies. In the last chapter of this part, they included the influence of genetic polymorphism upon the PET and SPECT studies of several neuroreceptor molecules.

The second part covered PET and SPECT imaging of the specific systems. Except chapter 8 which presented PET tracers for beta-amyloid and other proteinopathies, all the other chapters covered specific neuroreceptors, transporters or neurotransmitters. Each chapter introduced biological functions of neurotransmitter systems and presented specific radioligands followed by preclinical/clinical studies. Detailed reviews for each system will be useful and attractive to any researchers studying specific systems. To explain why and how several radiotracers had been developed for each system, most chapters devoted detailed introduction of each system and the related radiopharmaceuticals. For example, endocannabinoid system chapter introduced physiology of cannabinoid receptors in a very concise and easy-to-understand manner and their related neuropsychiatric pathologies. After presenting radioligands for cannabinoid receptor subtypes, the chapter emphasized current imaging studies and potential applications. Despite holistic nature of the reviews for each system, contents of chapters did not lose consistency and look organized excellently.

Dopamine system chapter presented briefly the radioligands and imaging studies. Considering that this system had been most actively studied, we expected better description. The description of clinical use and its outcome in movement disorders or the findings and studies regarding receptor occupancy were insufficient. A chapter dealt with central benzodiazepine receptors, and it presented their possible usefulness in chronic cerebral ischemia skipping other applications, for example, epilepsy. Other chapter such as nicotinic acetylcholine receptor imaging presented comprehensive summary of the knowledge regarding previously released radio-pharmaceuticals and their image findings followed by up-

to-date disease applications. Opioid receptor imaging chapter presented historical development as well as the present wide use of a radioligand.

This book achieved never-an-easy job. The authors described most of the preclinical studies and updated information of radiotracer development of every neurobiological system. They rarely dealt with the fundamentals on tracer kinetics for each tracer and the radiochemistry issues especially for the neuroreceptors. If the readers plan to develop a new tracer to target neurotransmitter systems or to find its application, referring relevant chapters will be helpful as a starter to acquire the rounded knowledge in the specific field of science within an affordable time. Excellent job the all the three books. We really envy the editors' success to the future readers' benefit.