
Hongyoon Choi and Dong Soo Lee

This book aimed to introduce PET and SPECT studies while helping the readers to understand better the Geist of psychiatric disorders. As PET and SPECT provide information of neurochemical transmission as well as brain perfusion or metabolism, historically PET and SPECT had played a crucial role in disclosing the neurobiology and also was involved in the drug development for psychiatric disorders. This book helped us grasp the current status of psychiatric neuroimaging studies and the future direction of their use for clinical purposes.

The first part presented the basics of neuroimaging in psychiatry. The roles of PET in psychiatric drug development were introduced while explaining microdosing pharmacokinetics, receptor occupancy and imaging biomarkers. PET microdosing for new radioligand developments is recently introduced and requires the profound understanding of tracer kinetics and PET quantification, for example, ranging from compartment model of bolus-infusion, neurotransmitter level monitoring to the comparison study with microdialysis. Measurement of neurochemicals which can be manipulated by pharmacological and neurological interventions is very important in neuropsychiatry and explained in this book. P-glycoprotein story is another merit of this book since it had prevented the facilitated development of brain radio-chemicals.

The following chapters belonging to part 2-6 presented PET and SPECT studies in accordance with specific psychiatric disorders. In part 2, comprehensive reviews of neuroimaging were presented for depressive disorders divided into metabolism/blood flow, neurochemical systems of serotonin, dopamine and monoamine oxidase, and specific neuroimaging studies of depression including late-life depression, suicidal attempts and seasonal depression. Following chapters presented PET and SPECT studies focusing on psychiatric problems including depression observed in dementia disorders and Parkinson’s disease. Part 3 introduced anxiety disorders. The chapters summarized well the alteration in neurotransmission while explaining the pharmacological and pathophysiological background.

Following parts were composed the same way as for Depression. They presented PET and SPECT findings in psychosis, particularly in schizophrenia and delirium. Chapters described in too much detail the small numbers of PET and SPECT studies not to reveal any implication for the elucidation of their pathophysiology. Nevertheless, despite the limited small number of investigation, these chapters might be used to the readers’ benefit. How? PET and SPECT studies in personality disorders were comprehensive, PET and SPECT studies in drug addiction covered both preclinical and clinical studies and neurobiological background of addiction, and one can find the clinical overview of impulsivity and how we can image impulsivity targeting.
neurotransmission in the same chapter. As neuropsychiatric interventions can change brain metabolism and neurochemicals, the last chapter would be a great joy for obsessive readers like ourselves who reached the final pages of this book, which explained significant alterations in neuroimages after neurostimulation, behavior therapy and surgical treatment.

The contents of several chapters are overlapped either intentional or unintentionally, in terms of editing. Detailed reviews of neuroimaging of behavioral and psychological symptoms in dementia as well as preceding general description of dementia would have been better organized though we don’t know how. PET studies should have been explained better considering their clinical importance of explaining schizophrenia including their use to define endophenotypes.

Studying neurobiology and pathophysiology of psychiatric disorders is difficult because of the complexity and uniqueness of these disorders. From this book, the readers will be sure to have chances to better understand how the functional neuroimaging studies can be used to solve the fundamental questions of psychiatric diseases.