

Book Review

Neurochemical Aspects of Neurotraumatic and Neurodegenerative Diseases, by Akhlaq A. Farooqui, Springer Science+Business Media, 2010, ISBN 978-1-4419-6651-3.

Considerable progress has been made over the last two decades in the field of neurodegeneration. However, despite many advances, our understanding of the biochemical basis of neurotoxicity and neuronal damage is still in its infancy. It is becoming clear that neurotrauma and neurodegenerative diseases share common pathogenic mechanisms. Therefore, any book which attempts to integrate mechanisms of brain injury and disease pathogenesis, with the aim of informing researchers about major new targets for drug development, is welcome.

The book entitled “Neurochemical Aspects of Neurotraumatic and Neurodegenerative Diseases” by Akhlaq A. Farooqui is an ambitious attempt to bring together a large number of ideas and findings on neurodegeneration into a single volume. Readers will find the book to be an excellent source of information about neurochemical changes that occur in many brain diseases. The book is divided into ten chapters which cover a very broad range of neuropathological or neuropsychiatric disorders. The first chapter entitled “Neurodegeneration in Neural Trauma, Neurodegenerative Diseases, and Neuropsychiatric Disorders” provides an introduction and overview to the field. Subsequent chapters cover ischemic injury (Chapter 2), neuroprotective strategies for ischemic injury (Chapter 3), spinal cord injury (Chapter 4), neuroprotective strategies for spinal cord injury (Chapter 5), traumatic brain injury (Chapter 6), neuroprotective strategies for traumatic brain injury (Chapter 7), neurodegenerative diseases (Chapter 8), and therapeutic strategies for neurodegenerative diseases (Chapter 9). Chapters 8 and 9 cover Alzheimer’s disease, Parkinson’s disease, amyotrophic lateral sclerosis, Huntington’s disease, prion diseases, and mechanisms of apoptosis and neurodegeneration. The final Chapter (Chapter 10) aims to integrate all of the previous material and provide a perspective and some clues about potential future directions for research.

A major focus of the book is neurotrauma or ischemic injury, which is extensively covered in the first seven chapters. Therefore, the book is a particularly good source of material about neurochemical abnormalities that occur following brain or spinal cord injury. Neurodegenerative diseases receive less coverage. In the section on “Neurochemical Aspects of Alzheimer’s disease” (section 8.3), there is a description of the various changes in lipids, proteins, neurotrophins and other growth factors, gene expression, transcription factors and nucleic acids that occur in the disease. But it is not clear that the author successfully manages to integrate all of the material and to put it within the context of the molecular etiology of the disease. Nevertheless, as a source of information about the range of neurochemical abnormalities that can occur in various disease states, the book is comprehensive.

Not all of the neurochemical changes that occur in the brain will prove to be important for disease therapy. Drugs which target epiphenomena rather than causative factors would not be expected to provide therapeutic benefit. This particular point is made by the author, who highlights in the last chapter of the book the failure of many recent clinical trials. However, I found that the broad coverage of many different neurochemical abnormalities did not make it easy to identify those disease-specific abnormalities which the author considered to be the most important therapeutic targets.

The production quality of the book is reasonable. The use of tables is helpful, although it was disappointing that the references cited in the tables were often to review articles written by the author. In summary, I can recommend this book to those who work in the field of neurotrauma or to those who are looking for a source of information about the many different neurochemical abnormalities that occur in neurotrauma or in neurodegenerative diseases. The book is less suited for those

seeking an introduction to the field of neurodegeneration or to those who wish to learn the basics about the key causative elements or principles that underlie central nervous system diseases. Nevertheless, the book fills a major niche in this important area of research.

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