The Bipolar Brain: Integrating Neuroimaging and Genetics

edited by Stephen M. Strakowski, MD. New York, NY, Oxford University Press, 2012, 280 pages, $99.99 (hardcover).

Bipolar disorders are increasingly recognized as both common and treatable. It is estimated that the disability caused by this psychiatric disorder costs almost $50 billion annually due to work loss, treatment costs, and other costs (p ix). The psychiatric descriptions and definitions of this entity are uneven. Early descriptions by Falret[1] as well as brilliant overviews of the clinical syndromes and course by Kraepelin[2] are still useful, while the psychoanalytic explanations of manic depression by Cohen et al[3] are outmoded. This comprehensive review of the biological underpinnings of bipolar disorder focuses on useful probes that suggest it has a clear biological and genetic basis, if not significant contribution. The book is carefully and tightly edited, and it brings the reader up to date to its time of publication in 2012.

In its subtitle, the book sets forth an ambitious goal, to integrate neuroimaging with genetics, but indeed it succeeds by carefully explaining the methods of such probes and then the data currently available in bipolar patients. The first section of the volume, devoted to neuroimaging, opens with an overview of brain imaging techniques. Magnetic resonance imaging (MRI), positron emission tomography, and functional MRI are carefully explained in general and with specific attention to what they find in bipolar disorder. The next chapter reviews the structural brain abnormalities within bipolar disorder. Clinical variables such as medication status and genetic variables such as twin studies and family history are discussed in relationship to the structural abnormalities found in imaging studies (and defined in a previous chapter). From structural changes, the book moves on to the actual functional imaging features in bipolar disorder. The use of functional MRI to investigate emotional processing, reward paradigms, and attention in bipolar individuals in order to demonstrate their separation from groups of control subjects is discussed. Both memory and concentration variables are also included in this review. The next chapter focuses on neurochemical and metabolic imaging. The molecular biology within specific areas of the brain in bipolar cohorts is complemented by an entire chapter about mitochondrial function. The first section of the book also includes chapters that focus on neuroimaging data regarding young patients and compare imaging studies in bipolar and unipolar disorders. Extensive tables throughout the book allow quick review of the many studies and provide a useful approach to reviewing the literature.

The second section of the book is devoted to genetics. As with the imaging section, the introductory chapter of the second section provides an overview of genetic techniques with an excellent explanation of linkage studies in genomic sequencing. In a particularly useful chapter, Nurnberger reviews the general genetics of bipolar disorder. Subsequent chapters compare the genetics of bipolar disorder to those of schizophrenia, and the book closes with a focus on mitochondrial genetics and bipolar disorder, which strives to put together the biology as well as the structural changes within this disorder. The final chapters integrate the data from previous chapters. Drs Perlis and Blumberg coalesce the imaging and genetic data, and Dr Strakowski closes this outstanding volume by integrating all of the research discussed in the book. The book is remarkably comprehensive in that it combines Kraepelin's important work regarding the course of bipolar disorder with the latest imaging and genetic data to better elucidate both the nature and cause of this serious illness.

Understanding the structural and functional abnormalities within bipolar disease is an evolving process. This superb review will allow the reader to ascertain what is known up to 2012 and better integrate new findings that will be published. It is reasonably priced and beautifully produced and should be in all medical libraries, but also the library of any psychiatrist who works with many bipolar patients. It is quite a bargain and is certainly worthy of future editions.

References

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Thomas N. Wise, MD
thomas.wise@inova.org

Author affiliation: Johns Hopkins University School of Medicine, Baltimore, Maryland.
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