Central Nervous System Infections in Childhood

Children are particularly vulnerable to infections, and when involvement of the central nervous system (CNS) occurs, it can be devastating. Early recognition and treatment can alter the course of the illness. The clinical manifestations in children are also quite different and variable compared with adults. This book fulfills an important need in the field.

The book is organized into 22 chapters. It is authored by physicians from around the globe who have expertise in various infections. This is particularly important because infections of the CNS are distinct in different geographical regions, so physicians’ experience and expertise similarly varies. The editors have organized the book in a unique style. Instead of chapters on every organism, they have selected key pathogens of global importance and have taken a more practical approach to the organization of the remaining chapters that is more relevant to the practicing physician.

Chapter 1 discusses the epidemiology of these infections. It points out that accurate incidence is hard to obtain, but even for what is available, the burden of various infections in children is staggering. Chapter 2 discusses the pathophysiology of CNS infections. It includes sections on defense mechanisms within the brain, and how pathogens break these barriers and lead to CNS inflammation and damage. Chapter 3 discusses the principles of management of CNS infections. Major emphasis is on cerebrospinal fluid findings and acute management in an intensive care setting. Chapter 4 provides a collection of computed tomography (CT) and magnetic resonance imaging (MRI) scans of neurological infections and provides a detailed discussion of the findings and their evolution over time. Chapter 5 discusses the epidemiology, clinical manifestations, and management of the major congenital CNS infections. Chapter 6 discusses the definition, pathophysiology, management, and long-term outcome of febrile seizures. Chapter 7 provides a detailed account of encephalitis and meningitis caused by enteroviruses and arboviruses. Chapters 8–11 discuss individual pathogens and cover herpes simplex virus, Japanese encephalitis virus, rabies, and human immunodeficiency virus infection. Each chapter is organized into epidemiology, pathophysiology, clinical manifestations, and management. Where relevant, guidelines of the World Health Organization for case definition, diagnosis, and management are provided.

Chapters 12–14 cover bacterial infections. Chapter 12 provides a detailed account of acute bacterial meningitis that includes pathophysiology, long-term complications, and antimicrobial and supportive management. Chapter 13 covers brain abscess, epidural and subdural empyema, and venous phlebitis. Chapter 14 discusses the various manifestations of CNS tuberculosis. Chapters 15 and 16 cover the major fungal and parasitic infections, respectively. These include malaria, schistosomiasis, trichinosis, onchocerciasis, trypanosomiasis, echinococcus, and amebic brain abscess, which are found in geographically distinct regions. Neurocysticercosis is discussed in a separate chapter (chapter 17), and neuroborreliosis or Lyme disease and leptospirosis are included in chapter 18 on spirochetal infections. Chapter 19 is on Mycoplasma infections and includes a table describing the various clinical presentations, pathophysiological mechanisms, and investigative findings. Various types of rickettsial infections are described in chapter 20. Clinical syndromes due to bacterial toxins such as tetanus, botulism, and diphtheria are discussed in great detail in chapter 21. Chapter 22 describes the postinfectious disorders, including acute disseminated encephalomyelitis, transverse myelitis, Sydenham chorea, pediatric autoimmune neuropsychiatric disorders associated with streptococcal infections, and Guillain-Barré syndrome.

The book uses figures of MRI and CT scans liberally. Color plates are included in the end of the book. Much of the critical information is provided in multiple tables and figures, which makes it easy to follow and remember. Major emphasis is on clinical presentations, laboratory diagnosis, and management. Pathology is briefly mentioned, and photomicrographs of the histopathology are not included. The sections on management are very detailed, making this book of great practical importance and a must for all clinicians who are likely to encounter CNS infections.

Avindra Nath
Section of Infections of the Nervous System, National Institute of Neurological Disorders and Stroke, National Institutes of Health, Bethesda, Maryland

Clinical Infectious Diseases® 2015;61(8):1354
Published by Oxford University Press on behalf of the Infectious Diseases Society of America 2015. This work is written by (a) US Government employee(s) and is in the public domain in the US. DOI: 10.1093/cid/civ574