Candida and Candidiasis

Edited by Richard A. Calderone

The increasing incidence of nosocomial Candida infection and the increasing population of immunosuppressed patients make this book on Candida and candidiasis a timely addition to the medical literature. As is noted in the book, the number of publications about Candida infection and candidiasis increased from ~3000 in the early 1980s to almost 7000 by the end of the 1990s, which highlights the importance of and interest in this topic. The target audience includes clinicians who care for immunosuppressed patients, pathologists with an interest in mycology, diagnostic laboratory technicians, and medical microbiology students and researchers.

The book includes major sections on the history and general properties, virulence properties, cell biology, immunity, and genomics of Candida infection, the diseases and conditions caused by Candida species (e.g., mucocutaneous disease, candidemia, deep-seated infection, and the development of drug-resistance mechanisms), and the laboratory methodology for diagnosis of candidiasis. The opening chapter is of particular interest to the clinician, because the history of Candida infection and candidiasis is presented with the name of the researcher and the year of discovery. This chapter is especially useful for acquiring historical information for developing presentations about fungal infections and for understanding the challenges that were faced and overcome by the first figures in the field of candidiasis research.

The next 2 chapters are very detailed and were written with the researcher in mind, and they cover such topics as the taxonomy of Candida species and the biological and serological characteristics of Candida infection. Then follows a most interesting and pertinent chapter about the emergence of non-albicans species of Candida as pathogens. After the historical background and pathogenesis is presented, data about several species of Candida are reviewed—namely, Candida dubliniensis, Candida glabrata, Candida krusei, Candida parapsilosis, Candida tropicalis, and Candida lusitaniae. The biggest drawbacks of this chapter are the short section on susceptibility to antifungals and the failure to mention echinocandins, second-generation triazoles (such as voriconazole and posaconazole), and the lipid formulations of amphotericin B.

Chapters 5–21 are devoted to population genetics, virulence factors, morphology, cell biology, immunologic response and to host defense against candidiasis (vaginal, cutaneous, and invasive), and genomics. The topics are very technical and hold greater relevance for the researcher than for the clinician.

The clinically rich section about diseases caused by Candida species comes next. In the first chapter in this section, “Skin and Mucous Membrane Infections,” the author does a thorough job describing antifungal-resistant oral, esophageal, and vulvovaginal candidiasis. The information about treatment options is current. Disappointingly, the sections about skin manifestations and chronic mucocutaneous candidiasis were rather short and not as thorough as the rest of the section.

In this section’s second chapter, candidemia is described with emphasis on the high-risk populations of patients with cancer, solid-organ transplants, or HIV infection or who are treated in the intensive care unit. Signs, symptoms, diagnosis, therapy, outcome, and prevention are covered quite well. Although critical points are mentioned, such as the importance of removal of intravenous catheters and the role of lipid formulations of amphotericin B in the treatment of candidemia, several critical omissions remain. No mention is made of the role of echinocandins and second-generation triazoles for the treatment of candidemia. The importance of adding 5-fluorocytosine to amphotericin B when treating C. tropicalis candidemia in neutropenic patients is not mentioned.

In the third chapter in this section, deep-seated candidal infections are discussed, including infection of the urine, peritoneum, liver and spleen, heart, eye, CNS, lung, bones, and joints. These subsections are well written and are very useful and relevant to the clinician. However, information about the role of the aforementioned new antifungal agents was likewise missing.

The final chapter in the section about candidal diseases is comprehensive: it is 34 pages in length, and there are almost 300 references. Conventional and emerging antifungal agents are described, as are drug-resistance mechanisms. The treatment modalities are up-to-date—there is even mention of a recent abstract by Walsh et al. [1] about voriconazole versus AmBisome (Fujisawa USA) for empiric therapy for febrile neutropenia. This study was recently a lead article in The New England Journal of Medicine.

Finally, the laboratory methodology for diagnosis of candidiasis was outlined. Means of identification of Candida species using culture and nonculture techniques are documented. The nonculture methods discussed are detection of antibodies, antigens, or nonantigen components, and molecular-based methods of identification of Candida species.

In summary, Calderone’s book is comprehensive and, for the most part, up-to-

Permission to reprint a book review printed in this section may be obtained only from the author of the review.
date, and it contains a good mix of US and international authors. Most sections are written for the researcher. However, the clinician will find up-to-date and concisely packaged information that is useful for lectures, teaching, and improving the care of patients with Candida infection. Clinicians who care for patients with cancer, HIV infection, solid-organ transplants, or a critical illness will be most interested in adding this book to their collections of helpful reference materials.

John N. Greene
Medicine Section, Division of Infectious and Tropical Diseases, Moffitt Cancer Center, Tampa, Florida

Reference


Immunology of Infectious Diseases

Edited by Stefan H. E. Kaufmann, Alan Sher, and Rafi Ahmed

This new collection discusses the interactions between microbial pathogens and pathogenic mechanisms and host immunity towards these pathogens. This is an extremely timely topic, and the information contained in this book highly justifies its publication. During the past decade, the knowledge gathered regarding the immunobiologic characteristics of microbes has grown exponentially. This is especially true with respect to our recently improved understanding of innate immune activation by pathogens due to interactions with specific pattern-recognition receptors (Toll-like receptors [TLRs] and Nod1).

This book is organized into pertinent sections: "Pathogens," "Innate Immunity," "Acquired Immunity," "Pathology" and "Immune Evasion." Each of these sections is divided into chapters that discuss bacteria, fungi, parasites, and viruses. Other chapters interspersed in the sections describe aspects of immunology that are pertinent to the topics of microbial immunity, including mucosal immunology, the Th1-Th2 paradigm, immunogenetics, and evolution of anti-infective immunity. The discussion of topics in these chapters is extensive and more than adequate to attain the stated goal of this book: "to review not the monologues of, but the dialogue between pathogens and the host immune system" (p. xi). The editors are to be commended on the selection of chapter authors; all are noted experts in their selected fields and, therefore, should have access to and knowledge of the most up-to-date information for their chapters.

The repeated pattern of chapters in each section (each of which deals, in turn, with bacteria, fungi, parasites, and viruses) makes for a very systematic discussion of topics but, by its very structure, gives rise to much inherent redundancy that might have been corrected with some judicious editing. One instance is in the set of chapters on innate immunity. Innate immune functions for each set of microbes can be similar, and the discussion of many of these functions is repeated in each chapter: for example, there are 3 sections devoted specifically to complement. It would have been advantageous if there were a single section that discussed complement and complement-mediated functions associated with innate and acquired immunity, to which other chapters referred. Therefore, the book lacks consistency and may appear to be, essentially, separate review articles covering the topic announced in the title of each. This is not to say that this is a fatal flaw, because there is much significant information in each chapter, but, if a book is to be put together in such a fashion, coherence between chapters would be advantageous.

There is no mention for what group of readers the book is written. Many postdoctoral fellows and new investigators in the fields of microbiology, microbial pathogenesis, and infectious diseases would find this book helpful for quickly getting up-to-date in the various topics discussed. In addition, graduate students in microbial pathogenesis and immunology could take advantage of the information in this book to supplement their course work and research. However, many established investigators in the field might find this book slightly rudimentary, especially the basic immunology chapters.

There are 2 other drawbacks to this book that decrease its usefulness. There is a distinct lack of figures that would enhance the descriptions in the text. There are only 11 color figures included in the book. There are a few black and white figures included in most chapters, but a few chapters have no figures. This decreases the usefulness of the book as a reference that investigators can quickly consult for pertinent information and understanding. In addition, although this book was published this year, there are some subject areas about which up-to-date information is lacking. For example, pattern recognition receptors, TLRs, and Nod1, which are extremely important, are discussed on only 3 pages in total. TLRs have been shown to be essential in initiating innate immune responses to a large variety of pathogens, including bacteria, fungi, and viruses, and they also have been shown to be a link between innate and acquired immune responses to these pathogens. Pattern recognition of pathogen structures and its relationship to immune responses to these pathogens would seem to be an essential point of this book; therefore, the relative paucity of discussion about this topic is disappointing. Even with the lead time needed for publication of a book of this type, there is still much newer information regarding TLRs and the relationship to immune responses to pathogens that should have been included.

Overall, this is a fine book that can be