

HOSPITAL PHYSICIAN®

INFECTIOUS DISEASES BOARD REVIEW MANUAL

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Neutropenia in Cancer Patients With and Without Fever

Series Editor and Contributing Author:

Stephanie Nagy-Agren, MD

Assistant Professor of Internal Medicine, University of Virginia School of Medicine, Charlottesville, VA; Chief, Division of Infectious Diseases, Veterans Affairs Medical Center, Salem, VA

Contributing Author:

Circle S. Alcantara, MD

ITREID Fellow, Division of Geographic and International Medicine, University of Virginia School of Medicine, Charlottesville, VA

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ITREID Fellow

*Division of Geographic and International Medicine
University of Virginia School of Medicine
Charlottesville, VA*

I. INTRODUCTION

EPIDEMIOLOGY

The number of immunocompromised hosts in the general population has been increasing largely because of the growing use of chemotherapeutic agents that depress immune function and because of the widespread use of bone marrow and solid organ transplantation that necessitates administration of immunosuppressive drugs. One effect of this trend has been a concomitant increase in the number of cases of infection and neutropenia. Neutropenia has been documented in as many as 80% of cancer patients who are febrile, and up to 60% of neutropenic and febrile patients have an established or occult infection.¹

DEFINITIONS

Neutropenia is defined as an absolute neutrophil count (ANC) of either fewer than 500/mm³ or fewer than 1000/mm³ with a predicted decline to fewer than 500/mm³. Susceptibility to, frequency of, and severity of infection generally are inversely proportional to neutrophil count. *Fever* is defined as a single oral temperature greater than 101°F (38.3°C) or a temperature

greater than 100.4°F (38°C) for at least 1 hour.² Fever associated with neutropenia requires urgent and prompt empirical antimicrobial therapy, particularly in patients with an absolute neutrophil count below 500/mm³.³

ETIOLOGY

Risk for infection depends on the interaction between the defense mechanisms of the host and the microbial environment. The presence of cancer and the use of chemotherapeutic agents can compromise the humoral and cellular immunity of the host. More specifically, neutropenia and disruption of the integumentary system (ie, the skin and mucous membranes) induced by cytotoxic agents make the host vulnerable to microbial invasion.⁴ Because most bacterial infections arise from the patient's endogenous flora, the risk for infection in immunocompromised cancer patients is considerable.

Bacteremia in the neutropenic host usually is caused by aerobic gram-positive cocci (eg, coagulase-negative

DEDICATION

This volume of the *Infectious Diseases Board Review Manual* is dedicated to the memory of J. Boyd Francis, MD.