Infectious Disease Emergencies in Oncology Patients

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KEYWORDS

• Oncology • Infection • Neutropenic fever • Neutropenia • Pneumonia
• Catheter-related infections • Fungal infections

KEY POINTS

- Recognition of neutropenia in oncology patients is paramount in the evaluation and management of infectious disease pathology.
- Oncology patients, particularly neutropenic oncology patients, often present with subtle signs and symptoms of infectious pathology.
- Atypical infectious processes must be considered in the evaluation.
- It is always optimal to discuss the evaluation, management, and disposition with patients' oncologist.

INTRODUCTION

Patients with cancer represent a unique and vulnerable patient population seen in the emergency department (ED). Malignancies can impact oncology patients' immune defenses in numerous ways. For example, skin cancers resulting in epithelial breakdown provide access for the development of cellulitis. Mass lesions may cause obstruction of the airways, urinary system, or other organs, thus, interfering with normal emptying, a natural host defense.[1] Many leukemia's, T-cell lymphoma, and Hodgkin disease result in deficits of humoral immunity, cellular immunity, phagocytosis, or splenic clearance of microorganisms. Patients with certain hematologic malignancies may have had a splenectomy as part of their treatment, which increases susceptibility to encapsulated organisms and some protozoa (**Fig. 1**).[1]

However, by far the most significant threat to oncology patients is the development of neutropenia and the consequent increased risk from several infectious pathogens. Although many oncology patients develop neutropenia as a consequence of chemotherapy, some patients develop neutropenia as a consequence of their primary

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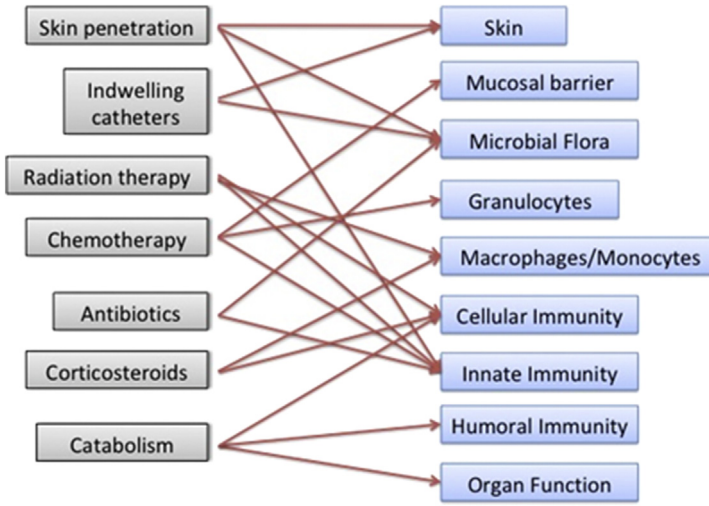

Fig. 1. Impairment of immune defense during treatment of malignancy.

malignancy (eg, leukemia). Patients with hematologic malignancies are more likely to be neutropenic than those with solid tumor malignancies.[2,3] As a result, patients with hematologic malignancies are often more susceptible to infections; thus, it is not unexpected that more than half of all deaths in hematologic malignancies are attributable to infectious disease complications.[4,5] As chemotherapy treatments become more intensive and more common, it should be expected that the incidence of neutropenia will also increase with a corresponding increase in the incidence of neutropenic fever. Therefore, neutropenic fever remains a condition that must be well understood by emergency providers (EPs), in addition to other infectious disease emergencies that may manifest in oncology patients.

NEUTROPENIC FEVER

Unfortunately, fever may be the only sign of infection in neutropenic patients because of a reduced ability to mount an inflammatory response. Consequently, it is common for the EP to be underwhelmed when evaluating patients with a neutropenic fever, as they often present well before they are septic. It is important to remember that any patient undergoing chemotherapy will have an oncologist who has given the patient detailed instructions on the dangers of fever during the course of chemotherapy. Thus, patients will take their temperatures at home often and will routinely present to the oncology clinic or the ED well before other systemic symptoms are evident. The danger lies in being falsely reassured by well-appearing patients with a neutropenic fever who has minimal host defenses to prevent the development of sepsis and associated morbidity and mortality. Fever in neutropenic patients is a medical emergency that needs to be quickly recognized, evaluated, and treated.[6] Broad-spectrum antibiotics covering both gram-positive and gram-negative pathogens are recommended within 1 hour of the identification of neutropenic fever.[7] If not treated promptly, oncology patients with a neutropenic fever can have mortality rates from 5% to 20% depending on coexisting infections and comorbidities. The mortality rate approaches 50% if neutropenic patients present in septic shock.[6]