

HOSPITAL PHYSICIAN®

CRITICAL CARE MEDICINE BOARD REVIEW MANUAL

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The *Hospital Physician Critical Care Medicine Board Review Manual* is a study guide for fellows and practicing physicians preparing for board examinations in critical care medicine. Each quarterly manual reviews a topic essential to the current practice of critical care medicine.

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Infectious Emergencies in Critically Ill Patients: Postsplenectomy Infection, Necrotizing Fasciitis, Sepsis

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Infectious Emergencies in Critically Ill Patients: Postsplenectomy Infection, Necrotizing Fasciitis, Sepsis

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INTRODUCTION

Medical and surgical emergencies involving infections place patients at high risk for morbidity and mortality while often presenting a diagnostic and therapeutic challenge to clinicians caring for critically ill patients. Infectious emergencies that arise because of the anatomic site of involvement (eg, the central nervous system, eye, cardiovascular system, upper airway) can lead to rapid localized fulmination and a poor prognosis, if untreated. Bacteremia, sepsis, and toxin-mediated infections (eg, toxic shock syndrome) also constitute infectious emergencies requiring prompt intervention with antibiotic therapy and other supportive management to avoid rapid multi-system dysfunction. Immunocompromised hosts are particularly susceptible to infections resulting in medical emergencies. Moreover, atypical presentations and rare or resistant organisms can create a clinical course in which the infectious emergency goes unrecognized.¹⁻³

Severe infections that constitute medical emergencies, including meningitis, epiglottitis, and neutropenic fever, necessitate rapid intervention with parenteral antibiotics soon after their presentation. In addition, many infectious emergencies, such as intraocular eye infection and epidural abscess, require prompt subspecialty surgical evaluation for definitive diagnosis and treatment.

This review focuses on 3 specific infectious diseases constituting medical emergencies seen in the intensive care unit (ICU)—postsplenectomy infection, necrotizing fasciitis (NF), and sepsis—using a case-based approach to illustrate important points.

POSTSPLENECTOMY INFECTION

CASE 1 PRESENTATION

A 30-year-old man who had a splenectomy 2 years ago comes to the emergency department (ED) report-

ing fever (temperature to 38.6°C [101.5°F]), headache, vomiting, and 3 episodes of loose stools. He received appropriate vaccinations (ie, pneumococcal, meningococcal, and *Haemophilus influenzae* type b [Hib]) preoperatively. He has not taken any antibiotic prophylaxis since the splenectomy. His condition deteriorates in the ED with hypotension, and he is transferred to the ICU.

- What is the most appropriate work-up and management of this patient's current condition?

OVERWHELMING POSTSPLENECTOMY INFECTION

General Considerations

Overwhelming postsplenectomy infection (OPSI), also known as *postsplenectomy sepsis syndrome*, is considered a major medical emergency with death rates in patients who have undergone splenectomy as much as 600 times greater than those in the general population.⁴ Fulminant, potentially life-threatening infection represents a major long-term risk after splenectomy. One reason is that, besides its other functions, the spleen plays a role in the phagocytosis and clearance of any unopsonized particulate matter, in the development of specific immune responses (including IgM production), and in the production and processing of opsonins. Consequently, splenectomized patients are at particular risk for infection with encapsulated bacteria.

Epidemiology

The precise incidence of OPSI remains controversial, and most published data antedate the widespread availability of pneumococcal and Hib vaccines. Children younger than 15 years have a greater risk for OPSI (8%) compared with adults (2%). The incidence and severity of OPSI is affected by underlying disease, as well as by patient age and the time interval since splenectomy. In trauma patients who undergo splenectomy, for example, the incidence of sepsis equals that of the general population but is 58 times more fatal.⁵