Management of Sepsis and Septic Shock for the Obstetrician–Gynecologist

Lauren A. Plante, MD, MPH

KEYWORDS

• Sepsis • Septic shock • Pregnancy • Puerperium

KEY POINTS

- Sepsis is a syndrome, not a disease, and no diagnostic test exists. Sepsis is defined as life-threatening organ dysfunction caused by a dysregulated host response to infection.
- The 2 categories are sepsis and septic shock. The clinical criteria is summarized in the quick Sequential Organ Failure Assessment score.
- Specific criteria for pregnancy should be developed; rates of sepsis in pregnancy are increasing, with approximately 10 cases per 10,000 deliveries.
- Early recognition, early antimicrobial treatment, and early correction of organ dysfunction are essential for optimizing outcomes.

INTRODUCTION

Despite an explosion of information about sepsis during the last 2 or 3 decades, much remains uncertain or evolving. Specific knowledge about sepsis in the particular setting of pregnancy and the puerperium still lags behind, although in recent years we have advanced, at least, from single-center case series and expert opinion; nevertheless, there is much still unknown and much work to do.

Sepsis must be understood as distinct from either infection or bacteremia. It is best conceptualized as a life-threatening condition in which the host's own response to an infectious insult results in damage to organs or tissues.[1] Furthermore, it must be appreciated as a syndrome rather than a disease. No diagnostic test exists.

Clinical criteria for sepsis have gone through several different iterations in the last few decades. In 1991, a consensus conference was convened by the American College of Chest Physicians and the Society of Critical Care Medicine in an effort to

Division of Maternal-Fetal Medicine, Department of Obstetrics & Gynecology, Drexel University College of Medicine, 245 North 15th Street, MS 495, Philadelphia, PA 19102, USA
E-mail address: Lauren.Plante@drexelmed.edu

Obstet Gynecol Clin N Am 43 (2016) 659–678
http://dx.doi.org/10.1016/j.ogc.2016.07.010 **obgyn.theclinics.com**

create a conceptual and practical framework to define the systemic inflammatory response to infection, a process that was subsumed under the generalized term "sepsis."[2] This represented the first attempt to categorize sepsis as a syndrome, and to distinguish it from both infection (defined as a microbial phenomenon characterized by an inflammatory response to microorganisms, or the invasion of normally sterile host tissue by such organisms) and bacteremia (defined as the presence of viable bacteria in blood). Four entities, along a progression of severity, were described (**Box 1**):

1. The systemic inflammatory response syndrome (SIRS), which may be produced by noninfectious causes (eg, burns, pancreatitis)
2. Sepsis (SIRS owing to infection)

Box 1
1991 definitions for sepsis

Systemic Inflammatory Response Syndrome

The systemic inflammatory response to certain clinical insults, not limited to infection (eg, burns, pancreatitis produce same response).

Manifested by 2 or more of the following:
- Temperature greater than 38°C or less than 36°C
- Heart rate greater than 90 bpm
- Respiratory rate greater than 20/min, or $Paco_2$ less than 32 torr
- WBC greater than 12,000 cells/mm^3 or less than 4000 cells/mm^3 or greater than 10% immature forms (bands)

Sepsis

The systemic response to infection. Manifested by 2 or more of the following as a result of infection:

Temperature greater than 38°C or less than 36°C

Heart rate greater than 90 bpm

Respiratory rate greater than 20/min, or $Paco_2$ less than 32 torr

WBC greater than 12,000 cells/mm^3 or less than 4000 cells/mm^3 or greater than 10% immature forms (bands)

Severe Sepsis

Sepsis associated with organ dysfunction, hypotension, or hypoperfusion (including lactic acidosis, oliguria, or acute change in mental status)

Septic shock

Sepsis with hypotension despite adequate fluid resuscitation, along with perfusion abnormalities such as lactic acidosis, oliguria, or acute change in mental status. (Note: patients on vasopressors may still exhibit hypoperfusion though hypotension is no longer present)

Adapted from Bone RC, Balk RA, Cerra FR, et al; Members of the American College of Chest Physicians/Society of Critical Care Medicine Consensus Conference Committee. American College of Chest Physicians/Society of Critical Care Medicine Consensus Conference: definitions for sepsis and organ failure and guidelines for the use of innovative therapies in sepsis. Crit Care Med 1992;101(6):1646; with permission.