

Defining the Systemic Inflammatory Response Syndrome in Equine Neonates



David M. Wong, DVM, MS^{a,*}, Pamela A. Wilkins, BS, DVM, MS, PhD^b

KEYWORDS

• SIRS • Sepsis • Organ dysfunction • Foal • Endotoxemia

KEY POINTS

- The systemic inflammatory response syndrome (SIRS) definition originated because of a need to improve recognition, diagnosis, monitoring, and treatment of sepsis and its sequelae (multiple organ dysfunction).
- SIRS is most commonly initiated by infection, but other disease processes, such as trauma, burns, sterile inflammatory conditions, severe hemorrhage, or surgery can also result in SIRS.
- The pathophysiology of SIRS is primarily mediated by cytokines and involves complex interactions involving the host's immune, hemostatic, cardiovascular, nervous, and endocrine systems.
- SIRS has been variably defined and applied in a limited number of equine studies. Defining specific SIRS criteria is vital to future investigations of disease processes, particularly sepsis, of both foals and adult horses in order to allow reasonable and accurate comparison of studies designed to improve veterinary care of these vulnerable patients.

The original intent for establishing the definition of the systemic inflammatory response syndrome (SIRS) along with sepsis, severe sepsis, and septic shock was to provide clinicians with a clinically relevant guide for identification, treatment, and monitoring of septic patients and to allow standardization of inclusion criteria for patients participating in research protocols and clinical trials. Essentially, definitions were developed to facilitate early identification of sepsis and to allow meaningful comparisons so that interventions could be appropriately judged by outcome

Disclosure: The authors have nothing to disclose.

^a Department of Veterinary Clinical Sciences, Lloyd Veterinary Medical Center, College of Veterinary Medicine, Iowa State University, Ames, IA 50036, USA; ^b Department of Veterinary Clinical Medicine, College of Veterinary Medicine, University of Illinois at Urbana-Champaign, Urbana, IL 61802, USA

* Corresponding author.

E-mail address: DWONG@IASTATE.EDU

Vet Clin Equine 31 (2015) 463–481
<http://dx.doi.org/10.1016/j.cveq.2015.08.001>

vetequine.theclinics.com

0749-0739/15/\$ – see front matter © 2015 Elsevier Inc. All rights reserved.

criteria. Since the published inception, the concept of SIRS has inundated the medical literature and has been commonly used in medical research and clinical practice, sometimes without regard for important species and age-related differences. However, as the SIRS concept evolved, it became apparent that the definition of both SIRS and sepsis needed refining. Furthermore, a specific definition of SIRS has not been established for equine medicine. This article outlines the history and pathophysiology of SIRS and suggests specific standardized parameters that can be used in foals.

HISTORY OF THE SYSTEMIC INFLAMMATORY RESPONSE SYNDROME

The general concept of articulating SIRS to describe the complex pathophysiologic proinflammatory response to a variety of insults originated from the 1991 Consensus Conference held by the American College of Chest Physicians and Society of Critical Care Medicine.¹ Infection was thought to be the primary initiator of SIRS, but alternative insults such as trauma, burns, sterile inflammatory processes (eg, pancreatitis), hemorrhagic shock, severe surgery, or other proinflammatory conditions were also thought to result in SIRS.^{1,2} The conference participants were charged with the task of establishing definitions that could be applied to patients with sepsis and its sequelae (eg, sepsis-associated organ dysfunction) and that would serve to improve the ability of clinicians to diagnose, monitor, and treat sepsis.¹ More specifically, the intent was to provide a conceptual and clinically practical framework to define progressive injury generally termed sepsis and sepsis-associated organ dysfunction.^{1,3} A further goal was to create an easily applied set of clinical parameters that would allow for early bedside detection of sepsis, thereby allowing early therapeutic intervention.¹ These definitions and clinical parameters were also intended to facilitate dissemination of applicable information garnered from clinical studies with more standardized research protocols, and allow early detection of potential candidates for clinical trials investigating therapeutic strategies for sepsis.^{1,4} As a result of that conference, broad definitions of sepsis, SIRS, and the physiologic parameters used to categorize patients was published. These definitions were widely incorporated into clinical practice, clinical trials, and medical research, and they remain clinically relevant (**Box 1**).

The definition of SIRS satisfied a clinical need for a diagnostic tool that could be applied by most hospitals, regardless of size or location. In light of this, the definition of SIRS did not require specific sophisticated or time-consuming diagnostic tests, but maintained a reasonable degree of certainty in identifying patients with possible sepsis.⁴ The SIRS parameters are sensitive, developed to include all potential patients with a proinflammatory response. However, the criteria lack specificity for a particular clinical disorder or the presence of infection and were viewed skeptically by some clinicians and researchers.^{5,6} In 2001, another consensus conference sponsored by several international intensive care societies revisited the 1991 consensus definitions with 3 specific goals: (1) to review strengths and weakness of the current definitions of sepsis and related conditions; (2) to identify ways to improve those definitions; and (3) to identify methodologies that improved the accuracy, reliability, and/or clinical utility for the diagnosis of sepsis.³ The members of the 2001 Consensus Conference stated that the SIRS concept is valid in the sense that systemic inflammation can be triggered by a variety of infectious and noninfectious conditions, but the definition of SIRS was overly sensitive and nonspecific to be useful in diagnosing a cause of the syndrome or identifying a distinct pattern of host response.^{3,6,7} Subsequently, conference members suggested that biochemical parameters and inflammatory mediators, such as

Download English Version:

<https://daneshyari.com/en/article/2458757>

Download Persian Version:

<https://daneshyari.com/article/2458757>

[Daneshyari.com](https://daneshyari.com)