Shifting Goal Posts in Sepsis Shoot Carefully.

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Editorial Note

Sepsis is a leading cause of mortality and critical illness worldwide. In recognising the significant disease burden, the World Health Assembly, the World Health Organisation's decision-making body, adopted a resolution on improving the diagnosis, management and prevention of sepsis in May 2017. To improve the diagnosis and classification of sepsis, a task force convened by the European Society of Intensive Care Medicine and the Society of Critical Care Medicine published new definitions for sepsis and septic shock (Sepsis-3). Based on the new definitions, sepsis is now defined as evidence of infection plus life-threatening organ dysfunction, clinically characterized by an acute change of two points or greater in the Sequential (Sepsis-related) Organ Failure Assessment score (SOFA). Septic shock refers to sepsis with hypotension unresponsive to fluid resuscitation, serum lactate level greater than 2 L, and the need for vasopressors to maintain mean arterial pressure of 65 mmHg or greater. In contrast, the older Sepsis-2 definitions employed the use of the systemic inflammatory response syndrome (SIRS) criteria, which include elements such as tachycardia, tachypnoea, hyperthermia or hypothermia, and abnormal peripheral white cell counts; sepsis was defined as SIRS associated with an infection, severe sepsis defined as sepsis complicated by organ dysfunction (including acute lung injury, acute oliguria or renal dysfunction, coagulopathy, ileus, hyperbilirubinaemia), and septic shock defined as severe sepsis with persistent hypotension and/or lactate level greater than 4 mmol despite adequate fluid resuscitation. Significantly, the new Sepsis-3 definitions have eliminated the use of the SIRS criteria, as well as abandoned the term "severe sepsis", incorporating the component of organ dysfunction under "sepsis" and according the latter greater emphasis and clinical importance.

Introduction

Proponents of the new definitions have argued that the use of SIRS in defining sepsis is not adequately specific for diagnosis, as features of SIRS are commonly seen in hospitalised patients, with or without infections. In one of the largest epidemiologic study by Kaukonen et al., the need for two or more SIRS criteria to define severe sepsis excluded 1 in 8 patients with infection, organ failure and substantial mortality and failed to define a transition point in the risk of death, challenging its sensitivity, face validity and construct validity. On the other hand, critics of the new Sepsis-3 definitions have several concerns with the clinical utility of the updated definitions.

One, the patient data on which the new definitions are based on are almost exclusively from high-income countries and primarily from the United States and thus, there are reservations with respect to the utility in other geographical regions and in resource-limited settings with lower levels of patient monitoring and supportive care, and in settings with limited access to serum lactate measurement in defining septic shock. More importantly, while the new definitions have better predictive ability for mortality than does infection with SIRS, data suggest that they do so by an increased specificity that comes at the cost of compromising sensitivity and hence early detection. This is especially pertinent as early recognition and initiation of treatment in sepsis are instrumental in reducing mortality.

Shankar-Hari et al. in their study, "Epidemiology of sepsis and septic shock in critical care units: comparison between sepsis-2 and sepsis-3 populations using a national critical care database" published in British Journal of Anaesthesia have advanced our understanding of this ongoing clinical controversy. This was a descriptive epidemiological study utilising a high-quality, national, intensive care unit (ICU) database of 654,918 consecutive admissions to 189 ICUs in England from January 2011 to December 2015. The authors tested the impact of the new Sepsis-3 definitions on epidemiology, comparing Sepsis-2 severe sepsis/septic shock and Sepsis-3 sepsis/septic shock populations identified from the same database following the first 24 hours of ICU admission.

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