Surviving sepsis: Raising awareness to reduce mortality

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Abstract: The sepsis is a life-threatening organ dysfunction caused by a dysregulated host response to infection. Septic shock and sepsis are key healthcare problems, impacting millions worldwide each year and killing statistically around one in three and one in six affected people. Sepsis outcomes could be improved by early identification and appropriate management in the initial hours after infection. Therefore, raising awareness for the clinician caring for adult patients with sepsis or septic shock is essential to reduce mortality caused by this disease.

Keywords: Sespsis; Septic Shock; Infection; Disease; Antimicrobials

1. Introduction

The symptoms and signs of sepsis are nonspecific and often look like multiple other diseases [1]. Because there is no standard test to diagnose sepsis, the doctor cannot have a differential diagnosis of sepsis alone in a patient with organ dysfunction. Indeed, a third or more of patients who are diagnosed with sepsis turn out to have noninfectious conditions [2,3]. The best practice is to continuously evaluate the patient to determine whether other diagnoses are less or more likely, especially since the patient's clinical course may evolve significantly after hospital admission, decreasing or increasing the likelihood of a diagnosis of sepsis. Considering this, significant decision-making challenges can be when reducing or stopping antimicrobials is appropriate [4].

Also, a significant challenge is implementing a system that reminds doctors and clinicians to focus on the fact that the patient still receives antimicrobials daily, mainly when medical staff rotates in and out of the care team. Systems that promote such reassessment with automatic stop orders, mandatory checklists, and electronic alerts seem helpful in theory. Still, each has disadvantages regarding provider buy-in or assurance that providers are carefully addressing the need for antimicrobials rather than checking a box in an

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electronic record or reflexively confirming the query without considering its main reason. Therefore, doctors and clinicians are encouraged to discontinue antimicrobials if a non-infectious syndrome is shown or is strongly suspected. Because this situation is not always obvious, continuous reassessment of the patient should optimize the chances that uninfected patients avoid therapy and that infected patients receive antimicrobial therapy [5].

2. Recommendations

Early administration and appropriate antimicrobials are among the most efficient interventions to reduce mortality in sepsis patients [6–8]. Delivering antimicrobials to patients with septic shock or sepsis should be treated as an emergency. It is essential to provide antimicrobials as early as possible. However, this must be balanced, considering the potential harms related to unnecessary treatment of patients without infection with antimicrobials [9]. These include a wide range of adverse cases such as kidney injury, allergic or hypersensitivity reactions, Clostridioides difficile infection, antimicrobial resistance, and thrombocytopenia [10–13]. Since first appear sepsis is a noninfectious condition, it is very challenging to accurately diagnose sepsis [14,15]. Assessment of the likelihood of infection and severity of illness for every patient with suspected sepsis should inform the urgency and necessity of using antimicrobials [9].

Limited data from the resource limited settings suggest that timely administration of antimicrobial agents in patients with septic shock and sepsis is potentially feasible and beneficial [16–19]. However, the availability and accessibility of a broad spectrum of antimicrobials in such settings can vary [20,21]. Availability and time for laboratory testing, imaging, rapid infectious diagnostics, etc., greatly depends on the region and environment. Therefore, the rapid assessment of infectious and non-infectious disease etiologies will vary by setting, depending on what is possible. Recent recommendations regarding the use of antimicrobial agents in patients with septic shock and sepsis in resource limited settings are consistent with current recommendations [17].

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Recommendations:

1. Septic shock and sepsis are medical emergencies, the recommendation is treatment and resuscitation begin immediately.

2. For patients with the septic shock of sepsis-induced hypoperfusion, the recommendation is at least 30 cm^3/kg of IV crystalloid fluid that should be given within the first three hours of resuscitation.

3. The recommendation for adults with septic shock or sepsis is to use dynamic measures to guide fluid resuscitation over physical examination/static parameters alone.

4. For adults with septic shock or sepsis, the recommendation is to guide resuscitation to decrease serum lactate in patients with elevated lactate levels over not using serum lactate.

5. For adults with septic shock, the recommendation is to use capillary refill time to guide resuscitation as an adjunct to the other perfusion measures.

6. For adults with suspected septic shock or sepsis but unconfirmed infection, the recommendation is to continuously search and re-evaluate for alternative diagnoses and discontinue empiric antimicrobials if an alternative cause of illness is strongly suspected or demonstrated.

7. For adults with a high likelihood of sepsis or a septic shock, the recommendation is to administer antimicrobials immediately, if possible, within one hour of recognition.

8. For adults with possible sepsis without sepsis shock, the recommendation is rapid assessment of the likelihood of infectious vs. non-infectious causes of the acute illness.

9. For adults with possible sepsis without sepsis shock, the recommendation is a time-limited course of the quick investigation. If concern for infection persists, the administration of antimicrobials within three hours from the time sepsis was first recognized.

10. For adults with a low likelihood of the infection and without sepsis shock, the recommendation is to postpone antimicrobials while continuing close monitoring of the patient [22].

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3. Conclusions

Overall, the mortality in patients with sepsis and septic shock is decreasing and now averages 30-40% (in the range of 10-90%, depending on patient diagnosis and characteristics). The poor outcomes often follow failure to initiate early aggressive therapy (e.g., within three to six hours of suspected diagnosis). When severe lactic acidosis with decompensated metabolic acidosis sets in, especially in combination with multiorgan failure, sepsis or septic shock is likely to be fatal and irreversible. Mortality can be assessed using various scores, including mortality in the emergency department sepsis. The multiple organ dysfunction score measures six organ systems' dysfunction and is strongly correlated with mortality risk.

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