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Sequential Extracorporeal Therapy in Sepsis

Sepsis and septic shock are significant causes of morbidity and mortality in critical care, with a complex and rapidly evolving clinical presentation. This involves microbial invasion, infection focus, immune response, circulating pathogen and pathogen products, immunodysregulation, organ damage, and multiple organ dysfunction. Extracorporeal therapies may be used to target specific molecules at different stages, including pathogen removal, endotoxin removal, cytokine removal, and organ support. However, clinical trials with specific endpoints other than mortality are needed to determine the best timing and approach for using extracorporeal therapy to achieve desired outcomes.

Sepsis is a series of biological events that result in organ dysfunction and offers specific therapeutic opportunities at different stages. Evidence-based strategies can be used in a sequence or individually based on the patient's pathophysiological status, as changes in pathophysiological parameters may indicate the need for different treatment approaches. By using this approach, various mediators and pathogen/pathogen products can be eliminated to improve outcomes.

Although there is strong scientific reasoning for using evidence-based practices (EBP) in sepsis, current evidence supporting its use is limited. Clinical experience and trials are the basis for EBP therapy, as there is no consensus on specific clinical criteria for initiating, monitoring, or discontinuing EBP. Additional biomarker studies may be necessary to determine which patients are suitable for bedside EBP therapy, and parameters for monitoring and discontinuing treatments need to be measured.

Although the understanding of human pathophysiology and host-microorganism interactions has led to the development of new extracorporeal devices for sepsis, the current evidence is insufficient to recommend their routine use in all eligible patients. Targeted patient selection for extracorporeal therapies based on objective measurements, including the timing of treatment initiation and patient inclusion criteria, is becoming increasingly clear and may lead to better outcomes if applied in future trials. Clinical trials for sepsis with endpoints other than mortality may be necessary to determine the sequence of events and the use of different techniques at different stages to achieve the desired action using extracorporeal therapy.

Source: Critical Care
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