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THE IMPORTANCE OF HYPERLACTATEMIA IN THE OUTCOME OF SEPSIS AND SEPTIC SHOCK

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Sepsis and septic shock are leading causes of morbidity and mortality in intensive care units worldwide. Hyperlactatemia, defined as elevated serum lactate levels, is frequently observed in these conditions and serves as both a biomarker and mediator of disease severity. Lactate accumulation reflects an imbalance between production and clearance, often indicating tissue hypoperfusion, mitochondrial dysfunction, and catecholamine-driven metabolic alterations. Understanding its pathophysiological role is crucial for prognosis and therapeutic management.

This abstract reviews current evidence on the mechanisms of hyperlactatemia in sepsis and septic shock, highlighting its clinical implications and impact on patient outcomes. Increased lactate production primarily occurs through anaerobic glycolysis caused by tissue hypoperfusion, while catecholamine-stimulated aerobic glycolysis may further elevate lactate levels. Impaired clearance, mainly due to hepatic and renal dysfunction, exacerbates accumulation. Inflammatory cytokines and mitochondrial impairment contribute to metabolic dysregulation.

Clinically, elevated lactate is strongly associated with organ dysfunction and increased mortality. Serial lactate measurements provide valuable information for guiding resuscitation and therapeutic interventions, including fluid management, vasopressor administration and optimization of tissue oxygen delivery. Early recognition of hyperlactatemia and targeted interventions based on lactate trends can improve outcomes, reduce complications, and support individualized critical care strategies.

In conclusion, hyperlactatemia is a key marker in the pathogenesis and progression of sepsis and septic shock. It reflects underlying metabolic derangements, tissue hypoxia and impaired oxygen utilization, contributing to multi-organ dysfunction. Monitoring lactate levels and promoting lactate clearance are essential for effective resuscitation and patient management. A comprehensive understanding of hyperlactatemia allows clinicians to implement timely interventions, optimize perfusion, and improve prognosis in critically ill patients.

Keywords: Hyperlactatemia, sepsis, septic shock, lactate clearance, prognosis.