Georgian Scientists
ქართველი მეცნიერები
Vol. 8 Issue 4(1), 2026
https://doi.org/10.52340/gs.2026.08.04(1).87



CONTEMPORARY APPROACHES TO FLUID RESUSCITATION IN SEPTIC SHOCK: THE USE OF CRYSTALLOIDS AND COLLOIDS

Mariam Kakhaberi[1], Koka Kacharava[1], Manana Gongadze[2]

[1]Caucasus International University, Faculty of Medicine, Tbilisi, Georgia

[2]Medical Pharmacology Department, Tbilisi State Medical University, Tbilisi, Georgia

Introduction and Aim: Fluid resuscitation is an essential component of hemodynamic stabilization in septic shock. Crystalloids are the first-line fluids, while adjunctive Colloids (albumin) may be considered in selected patients, particularly when large volumes of crystalloids are required. This study aims to describe the clinical course associated with the combined use of crystalloids and albumin in a patient with severe hypoalbuminemia.

Case Presentation: A 73-year-old patient was admitted with acute intestinal obstruction caused by a colonic tumor and generalized peritonitis. The clinical presentation was complicated by septic shock, tissue hypoperfusion, and metabolic acidosis. Initial laboratory and clinical findings included a lactate level of 10.79 mmol/L, pH of 7.30, HCO_3^- of 10.0 mmol/L, heart rate of 137 beats/min, procalcitonin of 3.00 ng/mL, and peak C-reactive protein (CRP) concentration of 257 mg/L. Hypoalbuminemia (20 g/L) and hypoproteinemia (44 g/L) were also identified.

Treatment: Emergency laparotomy, hemicolectomy, and transverse colostomy were performed. Antimicrobial therapy with meropenem and vancomycin was initiated. Fluid therapy included Ringer's solution and 20% albumin (100 mL). Furosemide was administered to facilitate fluid balance management.

Results: Following comprehensive treatment, the lactate level decreased to 1.10–1.49 mmol/L, while CRP declined to 35 mg/L. The white blood cell count ranged from 7.40 to 10.58 × 10^9/L during subsequent monitoring. A negative daily fluid balance was achieved, ranging from –900 to –2030 mL. The creatinine level was 65.1 μmol/L, pH was 7.37, and peripheral oxygen saturation (SpO_2) ranged from 94% to 98%.

Conclusion: In this case, comprehensive treatment involving crystalloids, albumin, and fluid balance monitoring was associated with improvements in tissue perfusion and inflammatory markers. This case highlights the importance of individualized fluid resuscitation and hemodynamic monitoring in septic shock. However, a single clinical case does not allow conclusions to be drawn regarding the independent efficacy of albumin.

Keywords: Septic shock; Crystalloids; Albumin; Fluid resuscitation; Hypoalbuminemia.