

BRIDGING THE KNOWLEDGE GAP BETWEEN SCIENTIFIC DISCOVERY AND CLINICAL APPLICATION: A CRUCIAL STEP FOR EFFECTIVE HEALTHCARE

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Introduction

Albumin finds widespread application in critical care and various conditions to augment plasma volume, replace losses, and restore serum albumin levels in hypoalbuminemic states [1-3]. This utility stems from the prevailing notion that albumin's oncotic pressure effects outweigh other biological, physiological, or clinical considerations. However, as a naturally occurring protein, albumin possesses additional vital biological properties beyond its oncotic and volume-expanding effects [4]. Recognizing these effects is crucial for clinicians to grasp the full scope of human albumin solution therapy's potential impacts.

Findings

The Saline vs. Albumin Fluid Evaluation (SAFE) study has shown that the use of albumin as an infusion solution in the field of volume therapy is safe almost everywhere, with the exception of hyponcotic albumin in craniocerebral trauma [5]. While there are clear indications for patients with liver cirrhosis, there is still a lack of large-scale studies for other areas of application that could unequivocally demonstrate a clinically relevant advantage beyond hemodynamic efficacy. In large-volume paracentesis, spontaneous bacterial peritonitis and hepatorenal syndrome, the use of albumin is clearly recommended and established in randomized controlled trials due to its clinical benefit. The use of albumin can be considered in septic shock [6,7]. For many applications in volume therapy, albumin can be used above all when other measures for hemodynamic stabilization have already been exhausted, both in hypovolemia and in conservative volume management. The question of whether the correction of pronounced hypoalbuminemia by administering exogenous albumin improves the poorer outcome is also the subject of ongoing studies. In the future, considering the functional properties of albumin beyond solely focusing on its concentration could have profound implications for clinical practice, shaping both diagnostic and therapeutic strategies, as we advance towards more personalized therapy.

Conclusion

The biological effects of albumin in critical illness are not fully understood, yet they may extend beyond its

role as an intravenous fluid. In this keynote lecture (Albumet Symposium), the evidence regarding albumin's biological and physiological impacts beyond its function in plasma volume expansion, and examine potential mechanistic effects of albumin as a disease modifier in critically ill patients will be outlined.

References

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