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Obesity and Sepsis Associated AKI

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The growing weight of obesity prevalence has been observed in intensive care units (ICUs) worldwide, and recent studies have reported that up to 20% of patients admitted to the ICU are obese. Obesity is associated with numerous comorbidities, including diabetes mellitus (DM) and chronic kidney disease (CKD). Despite its association with chronic diseases, obesity is a heterogeneous condition that often shows paradoxical clinical outcomes. Previous studies have reported that obesity was actually associated with improved survival in patients with chronic heart failure, those on dialysis, and the critically ill in the ICU. A meta-analysis of 22 studies showed that compared to normal weight patients, obese patients had a lower risk of hospital mortality. This so-called "obesity paradox" can be explained by several factors: obese patients have higher nutritional reserves that may contribute to improved survival, and high levels of cholesterol and lipoproteins can contribute to the removal of endotoxins. In sepsis, high lipid levels can provide the necessary precursors for adrenal steroid synthesis. However, the exact mechanisms behind the obesity paradox remain poorly understood, and the heterogeneous consequences of obesity confer difficulty in predicting clinical outcomes, especially in the context of critical illness.

Multiple studies have shown an association between obesity and the development of acute kidney injury (AKI) in critical illness. Sepsis is the most common cause of AKI in critically ill patients, and sepsis-associated AKI is strongly correlated with poor clinical outcomes including a higher risk of in-hospital mortality, longer hospital stays, and a greater chance of progression to CKD. Although the deleterious effects of AKI on clinical outcomes in patients with critical illness have been well investigated, the association between obesity and AKI incidence in the context of sepsis is less clear. Moreover, further studies are warranted to better understand the clinical outcomes of obese patients with sepsis who develop AKI, and to explore whether the obesity paradox still holds true in this specific subset of patients.