

LETTER TO THE EDITOR

Reevaluating the Impact of Obesity on Mortality in Venoarterial Extracorporeal Membrane Oxygenation Patients: A Review of Conflicting Evidence

To the Editor:

We read with interest the recently published article by McCloskey et al (1) in *Critical Care Medicine*. While the authors' findings are noteworthy, several considerations merit further discussion.

The study concludes that increased body mass index (BMI) in patients undergoing venoarterial extracorporeal membrane oxygenation (ECMO) is associated with higher all-cause mortality, as well as an increased occurrence of mechanical and renal complications. However, previously published studies suggest that obesity does not necessarily correlate with increased mortality in this patient population (2–5).

Gerard conducted an analysis of 150 patients and found no significant association between BMI and ICU mortality (adjusted odds ratio [aOR], 0.99; 95% CI, 0.92–1.07; $p = 0.8$). Furthermore, stratification by BMI categories suggested an increased mortality risk in underweight patients (aOR, 3.58; 95% CI, 0.82–19.6; $p = 0.11$) and class I obese patients (aOR, 2.39; 95% CI, 0.95–6.38; $p = 0.07$), although these findings did not reach statistical significance. Notably, no significant differences in complication rates were observed across BMI categories. The authors thus concluded that BMI alone should not serve as an exclusion criterion for venoarterial ECMO candidacy (2).

Similarly, Lu et al (3) analyzed 355 patients, with survival beyond 24 hours after ECMO decannulation without withdrawal of care designated as the primary outcome. Their analysis demonstrated no significant association between BMI and survival to ECMO decannulation (odds ratio [OR], 1.07 per 5-U increase in BMI; 95% CI, 0.86–1.33; $p = 0.57$), 30-day survival (OR, 0.91; 95% CI, 0.73–1.14; $p = 0.41$), or survival to hospital discharge (OR, 0.95; 95% CI, 0.75–1.20; $p = 0.66$). These findings further suggest that obesity alone should not preclude patients from being considered for venoarterial ECMO support (3).

In 2023, Heuts et al (4) evaluated 2046 patients and found no statistically significant association between BMI and in-hospital mortality after adjusting for comorbidities and intraoperative variables (class I: OR, 1.21; 95% CI, 0.88–1.65; class II: OR, 1.45; 95% CI, 0.86–2.45; and class III: OR, 1.43; 95% CI, 0.62–3.33). Multiple sensitivity analyses confirmed this result. Consequently, the authors concluded that BMI should not be incorporated into risk stratification models for postcardiotomy venoarterial ECMO. Notably, the senior author of a study by Lorusso et al (5) is also a key member of the Extracorporeal

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Life Support Organization registry, which conducted the study by McCloskey et al (1). This discrepancy in findings warrants further clarification.

Additionally, a meta-analysis by Huang and Lin (6) encompassing data from 21,361 patients undergoing ECMO (predominantly venoarterial ECMO) found no significant association between obesity and survival outcomes (OR, 0.91; 95% CI, 0.70–1.17; $p = 0.46$). Similarly, no significant differences were identified between obese and nonobese individuals in terms of ECMO duration (standardized mean difference [SMD], 0.07; 95% CI, –0.03 to 0.17), length of hospital stay (SMD, –0.03; 95% CI, –0.19 to 0.12), or duration of ventilatory support (SMD, –0.10; 95% CI, –0.44 to 0.24) (6).

Given these conflicting findings, the impact of obesity on mortality in patients undergoing venoarterial ECMO remains an unresolved question. To provide definitive conclusions, well-powered, randomized controlled trials are necessary.

Drs. Robert and Honore designed the article. All authors participated in drafting and reviewing. All authors read and approved the final version of the article.

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