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Obesity, Malnutrition, and the Response to Critical Illness

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Obesity; Critical Illness; Malnutrition

In a recent study, Robinson et al report (1) that nutrition status plays an integral role in determining outcomes in critically ill patients. We applaud the authors for their thorough and well-conducted study on an important topic. In particular, we were fascinated by the data demonstrating that obese patients with malnutrition have worse outcomes as compared to obese patients without malnutrition. Based on the results and conclusions presented, we have a few comments and questions for the authors.

First, both in this article and in the editorial by Lasocki (2), obese patients are portrayed as having a high prevalence of malnutrition, while the results of this study indicate that malnutrition is actually less common in obese than in regular-weight patients. This does not minimize any effect of malnutrition on outcomes, but the authors use numerous statistical descriptions to stress the importance of malnutrition rather than simply stating that malnutrition is less prevalent in the context of obesity. While this may have been unintentional, the multiple statements discussing the prevalence of malnutrition in obesity are misleading. Since malnutrition is more prevalent in regular-weight, and even more so in underweight patients, why were separate analyses (such as in Table 5) not conducted in these subsets of patients to determine the association of malnutrition with mortality?

Second, as Lasocki pointed out in his editorial (2), an important source of potential selection bias was the inclusion of only 6,518 out of a total of over 25,000 patients. While we realize that only those deemed at risk for malnutrition were formally evaluated by a dietitian, the inclusion of fewer than 30% of patients makes it difficult to know the real prevalence of malnutrition, as well as the contribution of malnutrition to outcomes in critically ill patients. It would have been helpful for the authors to address this in the limitations section.

Finally, why were trauma patients excluded from this study? They are listed in Table 1, but excluded from further analyses. Large recent studies indicate that obese patients have an

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increased mortality risk following trauma (3), so it would be interesting to compare differences between outcomes in trauma versus other critically ill patients who are obese, as these demographics would likely have disparate malnutrition profiles as well as a different burden of comorbid conditions. We have recently shown that following orthopedic trauma, obese rats have an increased risk of developing acute lung and kidney injury, and that these are mediated by exacerbated hyperglycemic, inflammatory, and oxidative stress responses in obese as compared to nonobese rodents (4, 5). Clinical studies have shown that these variables are also associated with poor outcomes in the critically ill. It is possible that malnutrition could have a significant effect on factors such as these in the setting of trauma and critical illness. This may help to explain the seemingly contradictory results in clinical studies regarding outcomes in obese versus nonobese patients, and in trauma versus other critically ill patients.

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