Size does really matter

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Central Message

Each individual BMI unit is an independent predictor of short- and long-term mortality after lung transplantation, and the patterns of this effect are not associated with predefined BMI categories.

See Article page 1871.

Lung transplantation is a critical therapy for patients with end-stage lung disease. Yet with poor long-term survival of approximately 50% at 5 years,^{1,2} lung transplant recipients have the worst long-term outcomes of all solid-organ transplant recipients. There are several commonly agreed on recipient risk factors that associate with poor outcomes, namely, advanced age, renal dysfunction, and severity of pretransplant lung dysfunction.³ The evidence is less clear for other risk factors, including body mass index (BMI).

Although an often studied risk factor, the evidence of the impact of BMI on survival is conflicting. Lederer and colleagues⁴ found an increased mortality risk in patients who were underweight, overweight, or obese. Conversely, when using the same United Network for Organ Sharing database as Lederer and colleagues,⁴ Singer and colleagues⁵ found overweight and class I obese patients to have similar mortality risk when compared with individuals of normal weight.⁵ Aside from a need to sort out conflicting data that included pre-Lung Allocation Score era recipients, a precise understanding of the association between BMI and survival is useful because, unlike the aforementioned risk factors that are generally not modifiable, BMI is one risk factor that can be changed. In the contemporary Lung Allocation Score era, it has the potential to be a key component to optimize management of these patients.

Fernandez and colleagues,⁶ from Northwestern University Feinberg School of Medicine, take a straightforward, precise approach to assess the risk. Rather than using predefined BMI categories (eg, BMI <18.5 kg/m²: below normal weight, BMI >18.5 kg/m² and <25 kg/m²: normal weight, BMI >25 kg/m² and <30 kg/m²: overweight, BMI >30 kg/m² and <35 kg/m²: class I obesity), they individualized each BMI unit to study the impact of BMI on survival at 90 days and 1 year. By using individual BMI units, they challenge the assumption that “normal weight” is associated with the best survivability post-transplant. Indeed, they demonstrate that BMIs of 25 and 26 kg/m² at the time of transplant were associated with the lowest

probability of death at 90 days and 1 year, respectively. Along those same lines, which ignore traditional predefined BMI categories, recipient BMI <20 and >28 kg/m² at the time of listing is an independently increased risk factor of both short- and long-term mortality. Furthermore, they found that each BMI unit has a unique risk for post-transplant mortality, suggesting that the patients within each BMI category are a heterogeneous group.

Improving lung transplant recipients' short- and long-term survival remains a challenging prospect. Assessing modifiable factors, like BMI, sheds light on recipient characteristics that can be a potential focus of intervention for preoperative candidate optimization. At the very least, it gives lung transplant clinicians another piece of data to have a more accurate expectation of survivability for their individual patients. Thus, size does really matter, and Fernandez and colleagues⁶ make the case that individualization of BMI units is “just right.”

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