Extended criteria donors: Closer to the truth

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In this study of 11,000 lung transplants from 2005 to 2012, Mulligan and colleagues¹ have provided greater clarity to the definition and significance of using lungs from an extended criteria donor (ECD). Typical criteria for an ECD have included age more than 55 years, partial pressure of oxygen/fraction of inspired oxygen ratio less than 300, abnormal radiographic findings, ischemic time more than 6 hours, smoking history more than 20 pack-years, chest trauma, abnormal bronchoscopic findings, and positive sputum microbiology.^{2,3} Some have shown that the use of lungs from ECDs is not associated with poorer outcomes,³ and others have found the reverse to be true.⁴

Now, we have more data about what constitutes an ECD for lung transplantation. In the study by Mulligan and colleagues,¹ the largest one examining this issue to date, 4 criteria decreased the 1-year survival after lung transplant: age 65 years or more, 20 pack-years or more smoking history, diabetes, and African-American race. Having at least 1 of these criteria led to significantly decreased 1-year survival in both low-risk (lung allocation score <70) and high-risk (lung allocation score >70) recipients, from 87.3% to 82% and 79.6% to 71.7%, respectively. Having 2 or more criteria further increased the hazard ratio of death.

This interaction between risk of the donor and risk of the recipient confirms what many would suspect, that high-risk patients who receive marginal lungs do poorly. Furthermore, a low-risk recipient who received an ECD lung had similar survival at 1 year as a high-risk recipient who received a lung from a standard donor. These findings give transplant pulmonologists and surgeons more information with which to base donor selection.

How, though, do we use this information? Do we shy away from using donors with these risk factors in low-risk recipients, high-recipients, neither, or both? A total of 35% of recipients during this time period received an ECD lung or lungs. This study did not compare the use of ECD lungs with no transplantation, but if we become

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Central Message

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more selective about which donors to use, it is likely that fewer patients will receive transplants and more patients will die on the waiting list. On the flip side, what is *not* on the list of risk factors also is important: The fact that Mulligan and colleagues¹ did not find radiologic, bronchoscopic, or laboratory criteria to confer worse survival perhaps suggests that we should give more consideration to donors for whom these studies are less than ideal.

Further questions arise: How does using a single lung from a standard donor compare with both lungs from an ECD? How about a single ECD lung versus bilateral ECD lungs? How does this interact with low-risk versus high-risk recipients? Are midterm and long-term allograft and patient survival affected by the use of ECD lungs by these criteria? Of note, this study also did not include recipients receiving donor after cardiac death lungs or recipients on extracorporeal membrane oxygenation, both increasingly common situations.

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