Commentary: A plea for a donor CT!

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Central Message

A routine application of computed tomography scans in lung transplant donors is recommended.

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I read with great interest the article published by Gauthier and colleagues in the latest issue of the *Journal*. This excellent work from the St. Louis group highlights the importance of donor CT scans in lung transplantation.¹

In most donor reports, information on the functional quality of lungs is limited to gas exchange parameters, a bronchoscopy report, and a chest radiograph. Available data often make it difficult to define the true organ quality and to decide on sending out a procurement team. For example, the interpretation of chest radiographs is highly subjective and atelectasis of the lower lobes can be easily mistaken for pneumonic changes.² In addition, poor gas exchange does not automatically define marginal lungs. Impaired blood gases can merely be a result of improper ventilation, mucus plugs, or substantial dorsobasal parenchymal atelectasis (commonly found in donors with a history of several days of intubation). Imagine a 65-year-old donor with a moderate smoking history of 30 pack-years and reported blood gases of 210 mmHg pO₂ and 49 mmHg pCO₂ at 1.0 inspired oxygen fraction. In such donors, a CT scan ruling out incipient emphysema would be extremely useful.

Organ procurement costs are high. According to a recent article by Chapman and colleagues,³ a hospital recovery in the United States costs on average \$35,000. On the other hand, the cost of a CT scan is in the range of \$1000. Gauthier and colleagues¹ described a 15% chance of detecting structural lung disease in their patient cohort. Extrapolating this 15% chance to the general donor pool, the implementation of routine donor CT scans would be highly cost-effective from a health economics point of view.

A simple chest radiographic image is insufficient to rule out structural lung disease. The article by Gauthier and colleagues¹ once more highlights the poor diagnostic yield of chest radiographic images. In a total of 177 donors, 19 had evidence of significant structural lung disease; however, only 2 of these cases were identified by chest radiographic images.

And there are several other arguments in favor of routine donor CTs: CT scans can detect anatomic variants/abnormalities in advance, precluding a donor lung from

transplantation. In addition, height, width, and depth of donor lungs can be easily measured. Currently, size matching is based on height/weight of the recipient and donor, predicted and real total lung capacity, as well as the recipient's underlying disease.⁴ Including CT-based measurements of chest dimensions could be especially useful for difficult size matches such as in lobar transplantations or pediatric recipients.^{5,6}

I would also like to add a word of caution: In the vast majority, donor CT scans also show nonspecific changes such as ground glass opacities or small inflammatory lesions. These changes could mislead less-experienced centers and liberal use of donor CTs might unintentionally decrease lung utilization rates.

In conclusion, there are numerous arguments for but hardly any argument against donor CT scans. A routine application in every donor is recommended to allow better judgment on donor organ quality.

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