Rothman and colleagues present potential future uses for their technique and endoaortal catheter. These include obtaining endothelial cells, as well as smooth muscle cells, from patients in order to study the role of vasoactive mediators in these disorders. Combining the results from pulmonary endoaortal biopsies with intravascular ultrasound imaging may also increase the “window” as we look further into the pulmonary vascular tree. Intravascular ultrasound may be useful in patients with various forms of pulmonary hypertension. Studies are underway using intravascular ultrasound in these patients to document changes with the acute administration of vasoactive agents, such as inhaled nitric oxide or IV prostacyclin, as well as serial changes with long-term therapeutic interventions, again, such as the prolonged IV infusion of prostacyclin.

Despite our enthusiasm for novel techniques to obtain biopsy specimens from the pulmonary vascular bed, we remain somewhat concerned regarding the safety of this present technique for unusual disorders, as well as for the more common pulmonary hypertensive vascular conditions. We have reservations regarding the safety of the biopsy of pulmonary vessels in particular because of the potential for rupture of these pulmonary vessels, resulting in hemorrhage. This is also of significant concern even in pulmonary arteries that “should” have thick muscular coats; some arteriolar vessels may have thin walls, such as those in patients who have pulmonary hypertension associated with an atrial septal defect. The authors note that methods will need to be developed to improve the safety profile of this technique in the future.

We anticipate that the information we can obtain by using pulmonary endoaortal biopsies in animal models of pulmonary hypertension, as well as possibly in clinical trials, will undoubtedly complement our other tools as we study “why” and “how” pulmonary vascular disease occurs.

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Cost vs Value in Vena Caval Filters

The article by Sing and colleagues in this issue of CHEST (see page 315) suggests an alternative technique for vena caval filter insertion in the ICU, one that utilizes bedside fluoroscopy. This approach is justified on the basis of cost reduction, but there
are obviously more significant advantages to a critically ill patient, particularly the trauma patient with attached hardware, in avoiding transfer to another area of the hospital. However, a true comparison of these benefits would require knowledge of the incidence of complications related to transfer, which remains unknown. Although cost is important, it is not the primary concern of the attending trauma physician considering filter insertion, who usually has reservations about the permanence of the device inserted and the young age of the recipients.  

The report by Sing and colleagues is also of interest because of the unusual finding of vena caval diameters in excess of 28 mm in 25% of the patients. Since this was observed only twice in our own series of 1,800 placements, it raises the question of potential magnification error, despite the use of a 28-mm marker. Indeed, the positioning of the marker may be responsible for this discrepancy. This determination is important, because it may lead to use of a less desirable filter device. Fortunately, the titanium Greenfield filter (Boston Scientific Corp; Natick, Mass) has a resting diameter of 36 mm and we have used it in vena cavas with diameters in excess of 28 mm.

In the current era, an analysis of cost effectiveness is an important measure of outcome and deserves the same rigorous approach as do scientific analyses. In this regard, the use of hospital charges no longer can be considered a reliable estimate, because they are unpredictably related to cost. Even with the intuitive advantage of performing a procedure in an ICU as opposed to a radiology or operating room suite, there should be an assessment of hidden costs due to the time and effort of a less experienced nursing staff, potential radiation exposure, medico-legal liability, and technologic limitations. Despite these caveats, there clearly is a role for a comparative study of bedside filter insertion and the utilization of alternative imaging modalities. In fact, some trauma surgeons are currently using bedside ultrasound for vena caval filter insertion to avoid radiation exposure. The continuing evolution of filter technology, which allowed the development of percutaneous techniques, must continue to take advantage of improved imaging technology to reach its optimal cost effectiveness.

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References