fluoroscopy had shown the bronchovascular markings being drawn quite far in the direction of the hilus. Immediately after tearing off the fragment, profuse bleeding had occurred. Aspiration and the "bleeding lung down" maneuver were able to handle the situation until the bleeding spontaneously subsided. Recovery was uneventful. In one case, microscopy showed a medium-sized pulmonary artery.

Life-threatening bleeding has been attributed to biopsy of a sizable pulmonary or bronchial artery. Although it has been stated that such an event is unpredictable, our experience shows that at least some of those bleedings can be avoided.

Transthoracic biopsy should be performed in the outer portion (cortex) of the lung parenchyma. Advancing the forceps too far can lead to severance of the pleura, resulting in pneumothorax; advancing the forceps not far enough can lead to biopsy of the larger bronchovascular bundles in the more central (medullary) part of the lung, resulting in severe bleeding. The resistance felt when withdrawing the forceps (which, of course, demands experience) and the fluoroscopic findings can give a warning sign that such an event could occur; it would then seem prudent to release the grasp of the forceps and to biopsy at another place. This could also be a reason for the routine use of fluoroscopy during transbronchial biopsy.

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Effect of Oxygen Therapy on Increasing PaO₂ in Hypoxemic Patients with Stable COPD While Breathing Ambient Air

To the Editor:

I read with great interest the article by Dr O'Donohue, which appeared in the October 1991 issue of Chest. Over the past 16 years, as director of the Pulmonary Medicine Department, I have followed up several hundred patients with severe chronic obstructive pulmonary disease and secondary cor pulmonale who were receiving supplemental oxygen. Like Dr O'Donohue, I have observed that the PaO₂ improves to adequate levels over a three- to six-month period in about 20 percent to 30 percent of patients. The improvement in oxygenation appears to be coincident with the objective improvement of the cor pulmonale, as evidenced by the resolution of peripheral edema and hepatomegaly. Because the bronchial veins, which drain the bronchi and bronchioles, enter the aygoses vein and then the vena cava, it seems reasonable to presume that the respiratory tree is edematous during the presence of the right-sided heart failure and that the edema improves as the cor pulmonale resolves, thereby improving ventilation. It has also been my experience that once a patient is able to discontinue the use of supplemental oxygen, barring an acute exacerbation of the obstructive lung disease, the hypoxemia and cor pulmonale do not recur. I therefore disagree with Dr O'Donohue's conclusion that the supplemental oxygen should not be discontinued when oxygenation improves.

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To the Editor:

We recently read the article by O'Donohue, describing the improvement in baseline arterial blood oxygenation in 20 patients receiving transtracheal oxygen therapy (TTOT). The author found an increase in PaO₂ and a reduction in alveolar-arterial oxygen gradient after six months of TTOT. The patients had previously been receiving oxygen by nasal cannula for at least six weeks.

We prospectively studied ten patients who were receiving chronic oxygen therapy (12 ± 6 months) by nasal prongs for 18 h a day and who accepted TTOT. The patients followed a rehabilitation program before placement of a transtracheal catheter (TTC), but were not permitted to participate in any other rehabilitation program during the one-year follow-up. As expected, pulmonary function test results did not improve, and some parameters even deteriorated. (The FEV₁ decreased from 0.78 to 0.62 L [p<0.01].) In our series, PaO₂ with the same oxygen flow through the TTC had increased from 66.8 to 71 mm Hg (p<0.04) at the end of the study.

Several mechanisms have been proposed to explain the clinical improvement observed in patients receiving TTOT, among them a positive end-expiratory pressure effect or decreased inspired minute ventilation. O'Donohue points out the possibility that uninterrupted oxygen therapy for 24 h a day may have additional therapeutic benefits. We have observed that nocturnal pulse oximetry values are more stable when patients are oxygenated through a TTC, and that sustained hemodynamic benefits are achieved when 24-h oxygen therapy is administered.

We agree with O'Donohue's hypothesis that improvement in PaO₂ after oxygen therapy may be due to the beneficial effects of oxygen therapy. Uninterrupted long-term oxygen therapy for 24 h a day can be accomplished only by TTC. Thus, this oxygen delivery device should probably be more frequently recommended.

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