Severity of Illness and Outcome in Patients With End-Stage Idiopathic Pulmonary Fibrosis Requiring Mechanical Ventilation

To the Editor:

We read with interest the article in CHEST by Fernández-Pérez and coworkers (May 2008),1 who retrospectively evaluated 94 patients with interstitial lung disease (ILD) requiring mechanical ventilation for acute respiratory failure (ARF). The median survival time was 75 days, with idiopathic pulmonary fibrosis (IPF) patients (30 individuals) having a not significantly different outcome. The authors conclude that both severity of illness and high positive end-expiratory pressure (PEEP) levels are associated with increased mortality rate in patients with ILD receiving mechanical ventilation.1 We concur with these findings, and we would like to make further observations.

We retrospectively analyzed 34 consecutive IPF patients undergoing mechanical ventilation for ARF.1 In-hospital and 1-year survival were analyzed as primary outcomes. Similar to Fernández-Pérez and coworkers, baseline demographic and clinical characteristics, lung histology, the last pulmonary function tests before ARF onset, the associated comorbidities, and the parameters of continuous ventilation at admission were evaluated. Severity of illness was calculated using the Acute Physiology and Chronic Health Evaluation II (APACHE II) score.

Five patients (15%) survived and were discharged; one patient was still alive after 1 year. The in-hospital mortality rate observed in our study was different than Fernández-Pérez and coworkers’ results (85% vs 60%), but consistent with previous observations.1,2

A possible explanation for the observed discrepancies could be found in the higher percentage of postoperative ARF reported by Fernández-Pérez et al (47% vs 3%); usually patients considered for surgical procedures have a better performance status and a more stable disease.3 We identified the APACHE score as the only factor associated with higher mortality rate: median 16, range 12 to 17 in survivors; and 20, range 11 to 32 in nonsurvivors; relative risk 1.64 (95% CI, 1.15-2.34) (Kaplan-Meier analysis median time = 0 to both groups, log-rank test P = .015). No statistical differences (Mann-Whitney U test) were observed between survivors and nonsurvivors in age (58 years, range 47-76 vs 62 years, range 40-80, respectively), PEEP values (6.5 mm Hg, range 4-10 vs 7 mm Hg, range 5-10, respectively) and baseline PaO2/FiO2 ratio (108, range 70-117 vs 100, range 49-190, respectively).

On the one hand, we agree with Fernandez-Perez and coworkers that patients with IPF have little or no recruitable lung and may be susceptible to overdistension of the relatively intact lung when high PEEP levels are used during mechanical ventilation, leading to ventilator-induced lung injury. On the other hand, in our study the use of PEEP values similar to those employed by Fernandez-Perez et al in the survivors group was associated with a poor prognosis (in-hospital mortality rate: 85%), suggesting that the severity of disease should be considered critical for the outcome.

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Response

To the Editor:

We appreciate the interest of Paone et al in our recent article in CHEST (May 2008),1 which aimed to describe the clinical course and outcome of patients with interstitial lung disease and acute respiratory failure in relation to ventilatory parameters. The inhospital mortality after acute respiratory worsening in patients with idiopathic pulmonary fibrosis (IPF) requiring mechanical ventilation in our study was high (60%), but not as high as that found in the study by Mollica et al (85%).

As pointed out, the difference is likely the result of systematic methodological differences (ie, higher number of postoperative respiratory failures, different patient inclusion criteria and study definitions).

The baseline severity of illness is the most important outcome determinant. Despite the poor hospital survival, some patients with IPF, especially postsurgical patients undergoing mechanical ventilation, can survive an acute exacerbation—thus the importance of identifying a treatable cause for the exacerbation.

Patients with IPF are clearly at increased risk for ventilator-induced lung injury.1 Our findings suggest that patients with fibrotic lung disease and especially those with advanced IPF may be harmed by lung recruitment maneuvers and high positive end-expiratory pressure commonly used to improve oxygenation. The determination of which patients are most likely to benefit from mechanical ventilation, as well as the optimal ventilatory strategy, awaits further investigation.

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