Preflight Evaluation

Patients and Methods

To the Editor:

Dr. Dillard and his colleagues have conferred in their article (CHEST 1995; 107:352-57) that a hypoxic inhalation test at sea level and hypobaric chamber exposure are compatible predictors for altitude hypoxemia. The two groups of COPD patients were different in their spirometric status (FEV1 for group 1 is 41±14% and that of group 3 being 31±10%); moreover, the presence of normocapnoea (PaCO2=38±4.7 mm Hg) in group 3 with FEV1 ≤1 L (0.97±0.32) appears physiologically difficult to appreciate when a rise in PaCO2 is likely.1 The authors have not mentioned how long group 3 patients were given hypobaric chamber exposure and have not qualified the reason for different periods of hypoxic inhalation/hypobaric exposure in subjects from groups 1 and 2 (15 and 30 min respectively). Furthermore, it is unclear at what point of time the arterial blood gas analysis was done to see altitude hypoxemia. An exposure of 15/30 min may be quite short to see the hypoxic effect to long air travel since this duration is an important determinant of hypoxemia.2 A subclassification of chronic obstructive airway disease patients into predominant bronchitis vs emphysema would have been better to understand the utility of such tests in these different classes of patients who, pathophysiologically, are distinct from each other.

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REFERENCES

To the Editor:

I appreciate the thoughtful comments of Drs. Bhattacharyya and Gupta concerning our recent article (CHEST 1995; 107:352-57). As noted, the two patient groups differed in FEV1% predicted, 41% vs 31%. The study found that a higher FEV1 gave a higher PaO2 at altitude. The lesser severity of group 1 permitted extension of analysis to a larger range of FEV1 values.

A second consideration consists of what PaCO2 values would be expected with an FEV1 of 0.97 L. The study selected ambulatory patients not on home oxygen. Most of such patients would not manifest resting hypercapnia with an FEV1 of 0.97, although the proportion would increase as FEV1 falls below this range. The study did analyze a subgroup with marked altitude hypoxemia and found mild hypercapnia and very severe reduction of FEV1.

Another consideration consists of how long the exposures lasted. The intervals at altitude, 30 and 45 min, were certainly sufficient to achieve mass equilibration, which was the desired end point in the compared groups. Longer term adaptation and biologic effects have received little study but appear to be no worse than acute effects in COPD patients.

Gong and co-workers2 previously recommended 10 to 15 min for the hypoxia inhalation test. The present study used the 15-min interval which should be sufficient. An earlier study found that mass equilibration was 78% complete within 4 min and 98% complete within 16 min after removal of 100% oxygen from COPD patients.3 Also, prolonged breathing on a mouthpiece becomes uncomfortable.

A final point consists of classifying patients in terms of chronic bronchitis vs emphysema. Mention of the subgroup analysis and patient selection was made above. Beyond this, no formal classification was planned. Although some authors question the value of this distinction, and it was not an issue for peer reviewers, this distinction may be of interest for future studies.

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REFERENCES

Volume Reduction Surgery

How Selective Should We Be?

To the Editor:

As centers establish inclusion and exclusion criteria for patients with COPD considering volume reduction surgery, many are relying on the material by Cooper and Trulock1 and The Washington University School of Medicine guidelines2 as a benchmark. Centers are tending to select only patients with reasonable pulmonary function (FEV1 >20% pred) and exclude patients who retain carbon dioxide (PaCO2 >55).

We have evaluated patients with extremely poor pulmonary function and who retain carbon dioxide and have proceeded to surgery in our program. We have been extremely gratified with the results of our most recent patient.

We evaluated a 67-year-old woman who was oxygen dependent, requiring 4 L/min at rest, sleep, and with activity. Her PaCO2 was 67 mm Hg and she had an FEV1 of 450 mL (17% pred) preoperatively. Following transsternal bilateral volume reduction surgery using pericardial strips, the patient recovered without incident. She was immediately postoperatively extubated. A small air leak was resolved by postoperative day 5. Chest tubes were removed on postoperative day 7. She was discharged home, ambulatory, on postop-