Noninvasive Ventilation and Intubation

To the Editor:

Poponick et al (CHEST; July 1999) propose in the clinical implications that if the patient’s condition fails to improve within 30 min after the initiation of noninvasive ventilation, intubation and mechanical ventilation are indicated.

We agree with them that the success of treatment with noninvasive bilevel pressure ventilation is difficult to predict using data such as age, gender, Glasgow coma scale, acute physiology and chronic health evaluation II, pH, and PaCO₂ obtained initially before treatment in the emergency department. We agree also that the improvement of blood gas tension is probably an important factor for predicting the successful use of bilevel pressure ventilation. In 1991, Meduri et al showed that improvement of PaCO₂ (>16% decrease) and arterial pH (from <7.30 to >7.30) after the first hour of noninvasive ventilation accurately identified those patients who were successfully treated by this modality.

It seems that this new work cannot propose the most favorable time for performing intubation in patients with an acute exacerbation of COPD. For example, what were the blood gases after 10 min or after 1 h?

In this retrospective study, how can it be possible to be sure that blood gas measurements were done exactly 30 min after the starting of the treatment? Perhaps, for the patient without improvement after 30 min, increasing the inspiratory pressure level to 20 cm H₂O would be more favorable. Presently, there is no consensus in the literature of the most favorable moment for intubation in patient with an acute exacerbation of COPD. Criteria for intubation like that proposed by Brochard et al could be used in clinical practice in the emergency department.

The aim of noninvasive ventilation includes not only the correction of hypoventilation but also the unloading of inspiratory muscles. It seems important to consider the evolution of the respiratory work during noninvasive ventilation. We think that the inspiratory behavior during noninvasive ventilation is different for each patient, and that an improvement of the blood gas tension could be obtained for some patients at the cost of an increased inspiratory work. The control of blood gases after 30 min is probably not sufficient to indicate intubation at that time.

Dominique Vanpee, MD
Luc Delaunois, MD, PhD, FCCP
Université Catholique de Louvain
Yvoir, Belgium

REFERENCES

1 Poponick JM, Renston JP, Bennett RP, et al. Use of a ventilatory support system (BiPAP) for acute respiratory failure in the emergency department. Chest 1999; 116:166–171