Noninvasive Ventilation in Patients With Acute Cardiogenic Pulmonary Edema With Acute Coronary Syndrome: Is the Debate Still?

To the Editor:
According to guidelines, noninvasive ventilation (NIV) is not recommended in patients with acute cardiogenic pulmonary edema (ACPE) with acute coronary syndrome, because clinical trials have excluded these patients.

However, there is a good evidence that NIV improves gas exchange and vital signs in patients with ACPE. At least 2 studies have observed that NIV [either pressure support ventilation (PSV) or positive end-expiratory pressure] or continuous positive airway pressure (CPAP) do not increase the myocardial infarction (MI) rate in patients with ACPE.1,2

Moreover, in a recent meta-analysis,3 the authors observed that the effect of NIV was more prominent among patients in whom MI or ischemia was the cause of pulmonary edema; in fact, use of CPAP, if compared with standard medical therapy, was associated with a significant reduction in hospital mortality among patients whose pulmonary edema was caused by acute MI (AMI) or ischemia. However, the number of patients studied was low and it was not clearly defined if NIV was efficacious in patients with ACPE secondary to AMI or ischemia.

Yamamoto et al4 made some interesting observations in their study. First, although it was a retrospective study, the authors selected a good sample of patients for whom the AMI criteria were well defined, and the inclusion and exclusion criteria for NIV treatment were acceptable; however, weaning from NIV was not clearly defined.

Second, when administered, bilevel ventilation was more similar to CPAP because the inspiratory positive pressure level was so low that, as a matter of fact, there were no great differences with CPAP (in the AMI group, pressure support effectively administered was 3 cm H2O). This observation may strengthen the hypothesis that is the rise in intrathoracic pressure and not the modality of ventilation (CPAP vs. PSV) that is important in ACPE patients.5,6

Third, several studies and meta-analyses have shown that NIV improves gas exchange and vital signs within 1 h; a skilled team may apply NIV even in AMI patients requiring PCI. The results from Yamamoto et al4 are very interesting and the observation that mortality rate did not differ between the 2 groups should stimulate a new randomized controlled trial in this subgroup of patients, although we should be very cautious in suggesting this approach routinely, because these patients are very unstable and may deteriorate rapidly.

Fourth, there are interesting observations about mortality: mortality in the cardiac care unit (CCU) was higher in the AMI group, although this difference was not significant and may be related to complications of MI and not to the severity of respiratory failure. Assessing the mortality rate as an endpoint in patients with ACPE treated with NIV may lead to many misunderstandings. As observed,7 patients with congestive heart failure with or without MI or ischemia may experience serious adverse events related to the disease itself. Mortality may be related to the underlying cardiac disease itself and treatment with NIV may affect only short-term mortality, but not CCU or overall hospital mortality.

Fifth, a significant difference was observed in intubation rate after weaning from NIV; this difference may not be referable to early weaning in this group or to NIV itself, but to complications described in AMI patients. However, the sample was too small to infer this data and to suggest NIV in patients with acute AMI and ACPE.

Sixth, as previously observed by Masip et al8 in the non-AMI group, lower initial systolic blood pressure was related to a higher intubation rate (<100 mm Hg, 25.0%; 100–140 mm Hg, 17.0%; >140 mm Hg, 8.0%); even if this trend was not statistically significant (P=0.088), we should use NIV in cautiously patients with low systolic blood pressure.

References

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