The Evolving Use of Non-Invasive Mechanical Ventilation in Chronic Obstructive Pulmonary Disease☆

Evolución temporal del uso de la ventilación mecánica no invasiva en la enfermedad pulmonar obstructiva crónica

To the Editor:

We read with interest an article by Carpe-Carpe et al.[1] published in your journal last August, analyzing the evolution of the use of non-invasive ventilation (NIV) in chronic obstructive pulmonary disease (COPD) in the region of Murcia between 1997 and 2010. The authors conclude that the introduction of this treatment has led to more patients receiving assisted ventilation, but that no improvement has been seen in terms of overall mortality or mean hospital stay.

At the beginning of the discussion, the authors claim that theirs is the first study to analyze (using clinical-administrative databases) the introduction of NIV into the routine clinical management of all patients treated for COPD exacerbation (more than 30 000 discharges) in all public hospitals of a geographical region (with 1 500 000 inhabitants) over a long period of time (14 years). They refer to only one similar study performed in COPD patients over a 10-year period (1998–2008) in a group of hospitals in the United States.[2]

However, studies investigating this topic using similar methodologies have been previously performed in Spain. In May 2013, our group published an article in which changes in incidence, comorbidity profile, duration of hospital stay, costs, and in-hospital mortality in patients admitted for an acute exacerbation of COPD over a 5-year period (2006–2010) were analyzed.[3] Data were retrieved from the Minimum Basic Data Set (CMBD) database which gathers information on all discharges from all hospitals in the Spanish National Health Network and from many private hospitals. We found a significant reduction over time in the incidence of hospital admissions for COPD exacerbations and a concomitant reduction in in-hospital mortality, despite the increase in comorbidities recorded during this period. No changes were found in length of hospital stay. With regard to treatment, in our study we found changes over time in the use of ventilatory support during the study period, with a significant increase in NIV and a parallel reduction in the application of invasive mechanical ventilation (IMV).

Similar studies have also been published in other European countries. For example, a French multicenter study performed in the intensive care setting analyzed data from patients admitted for COPD exacerbations between 1998 and 2010, reporting an increase in NIV use and a reduction in IMV.[4] The authors also found that the use of non-invasive ventilatory support was related with the numbers of cases seen in the unit, suggesting that more experienced centers favor NIV, and this in turn is associated with a strong downward trend in mortality.

Another study performed recently in Denmark between 2008 and 2011 assessed national and regional trends in mortality in patients admitted for COPD exacerbation who received ventilatory support following implementation of a national COPD quality program.[5] The authors reported an increase in the use of NIV, although regional variations persisted and no substantial improvement in mortality was achieved.

The differences in the results of the various studies are worth noting, particularly in light of the strong evidence that now suggests that non-invasive ventilation reduces mortality, the need for intubation and the length of hospital stay in patients with COPD exacerbations. It seems that additional efforts are needed to ensure the correct implementation and appropriate use of NIV in acute COPD exacerbations.

References

1. Carpe-Carpe B, Hernando-Arizaleta L, Ibáñez-Pérez MC, Palomar-Rodríguez JA, Esquinas-Rodríguez AM. Evolución del uso de la ventilación mecánica no invasiva en enfermedad pulmonar obstructiva crónica en una región española, 1997–2010. Arch Bronconeumol. 2013;48:330–6.
2. Chandra D, Stamm JA, Taylor B, Ramos RM, Satterwhite L, Krishnan JA, et al. Outcomes of noninvasive ventilation for acute exacerbations of chronic obstructive pulmonary disease in the United States, 1998–2008. Am J Respir Crit Care Med. 2012;185:152–9.
3. De Miguel-Díez J, Jiménez-García R, Hernández-Barrera V, Puente-Maestu L, Rodríguez-Rodríguez P, López de Andrés A, et al. Trends in hospital admissions for acute exacerbation of COPD in Spain from 2006 to 2010. Respir Med. 2012;107:717–23.
4. Dres M, Tran TC, Aegerter P, Rabbat A, Guidet B, Huchon G, et al. Influence of ICU case-volume on the management and hospital outcomes of acute exacerbations of chronic obstructive pulmonary disease. Crit Care Med. 2013;41:1884–92.
5. Tøttenborg SS, Johnsen SP, Thomsen RW, Nielsen H, Hansen EF, Lange P. Use of non-invasive ventilation is increasing in patients admitted with a chronic obstructive pulmonary disease exacerbation. Dan Med J. 2013;60:A4686.

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