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A multiple-center survey on the use in clinical practice of noninvasive ventilation as a first-line intervention for acute respiratory distress syndrome

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Abstract

Objective: In randomized studies of heterogeneous patients with hypoxemic acute respiratory failure, noninvasive positive pressure ventilation (NPPV) was associated with a significant reduction in endotracheal intubation. The role of NPPV in patients with acute respiratory distress syndrome (ARDS) is still unclear. The objective was to investigate the application of NPPV as a first-line intervention in patients with early ARDS, describing what happens in everyday clinical practice in centers having expertise with NPPV.

Design: Prospective, multiple-center cohort study.

Setting: Three European intensive care units having expertise with NPPV.

Patients: Between March 2002 and April 2004, 479 patients with ARDS were admitted to the intensive care units. Three hundred and thirty-two ARDS patients were already intubated, so 147 were eligible for the study.

Interventions: Application of NPPV.

Measurements and main results: NPPV improved gas exchange and avoided intubation in 79 patients (54%). Avoidance of intubation was associated with less ventilator-associated pneumonia (2% vs. 20%; $p < .001$) and a lower intensive care unit mortality rate (6% vs. 53%; $p < .001$). Intubation was more likely in patients who were older ($p = .02$), had a higher Simplified Acute Physiology Score (SAPS) II ($p < .001$), or needed a higher level of positive end-expiratory pressure ($p = .03$) and pressure support ventilation ($p = .02$). Only SAPS II >34 and a $Pao_2/Fio_2 < \text{or} = 175$ after 1 hr of NPPV were independently associated with NPPV failure and need for endotracheal intubation.

Conclusions: In expert centers, NPPV applied as first-line intervention in ARDS avoided intubation in 54% of treated patients. A SAPS II >34 and the inability to improve Pao_2/Fio_2 after 1 hr of NPPV were predictors of failure.

Comment in

Noninvasive ventilation for acute respiratory distress syndrome: breaking down the final frontier?

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