

A comparison of noninvasive positive-pressure ventilation and conventional mechanical ventilation in patients with acute respiratory failure.

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BACKGROUND AND METHODS: The role of noninvasive positive-pressure ventilation delivered through a face mask in patients with acute respiratory failure is uncertain. We conducted a prospective, randomized trial of noninvasive positive-pressure ventilation as compared with endotracheal intubation with conventional mechanical ventilation in 64 patients with hypoxemic acute respiratory failure who required mechanical ventilation. **RESULTS:** Within the first hour of ventilation, 20 of 32 patients (62 percent) in the noninvasive-ventilation group and 15 of 32 (47 percent) in the conventional-ventilation group had an improved ratio of the partial pressure of arterial oxygen to the fraction of inspired oxygen ($PaO_2:FiO_2$) ($P=0.21$). Ten patients in the noninvasive-ventilation group subsequently required endotracheal intubation. Seventeen patients in the conventional-ventilation group (53 percent) and 23 in the noninvasive-ventilation group (72 percent) survived their stay in the intensive care unit (odds ratio, 0.4; 95 percent confidence interval, 0.1 to 1.4; $P=0.19$); 16 patients in the conventional-ventilation group and 22 patients in the noninvasive-ventilation group were discharged from the hospital. More patients in the conventional-ventilation group had serious complications (66 percent vs. 38 percent, $P=0.02$) and had pneumonia or sinusitis related to the endotracheal tube (31 percent vs. 3 percent, $P=0.003$). Among the survivors, patients in the noninvasive-ventilation group had shorter periods of ventilation ($P=0.006$) and shorter stays in the intensive care unit ($P=0.002$). **CONCLUSIONS:** In patients with acute respiratory failure, noninvasive ventilation was as effective as conventional ventilation in improving gas exchange and was associated with fewer serious complications and shorter stays in the intensive care unit.

Publication Types:

- Clinical Trial
- Randomized Controlled Trial