Intrapulmonary percussive ventilation improves the outcome of patients with acute exacerbation of chronic obstructive pulmonary disease using a helmet.

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OBJECTIVE: To evaluate the effect of intrapulmonary percussive ventilation (IPV) by mouthpiece during noninvasive positive-pressure ventilation with helmet in patients with exacerbation of chronic obstructive pulmonary disease (COPD).

DESIGN: Randomized clinical trial. **SETTING:** General intensive care unit, university hospital.

PATIENTS: Forty patients with exacerbation of COPD ventilated with noninvasive positive-pressure ventilation by helmet were randomized to two different mucus clearance strategies: IPV (IPV group) vs. respiratory physiotherapy (Phys group). As historical control group, 40 patients receiving noninvasive positive pressure and ventilated by face mask treated with respiratory physiotherapy were studied. **INTERVENTIONS:** Two daily sessions of IPV (IPV group) or conventional respiratory physiotherapy (Phys group).

MEASUREMENTS AND MAIN RESULTS: Physiologic variables were measured at entry in the intensive care unit, before and after the first session of IPV, and at discharge from the intensive care unit. Outcome variables (need for intubation, ventilatory assistance, length of intensive care unit stay, and complications) were also measured. All physiologic variables improved after IPV. At discharge from the intensive care unit, $PaCO_2$ was lower in the IPV group compared with the Phys and control groups (mean +/- sd, 58 +/- 5.4 vs. 64 +/- 5.2 mmHg, 67.4 +/- 4.2 mmHg, $p < .01$). PaO_2/FiO_2 was higher in IPV (274 +/- 15) than the other groups (Phys, 218 +/- 34; control, 237 +/- 20; $p < .01$). In the IPV group, time of noninvasive ventilation (hrs) (median, 25th-75th percentile: 61, 60-71) and length of stay in the intensive care unit (days) (7, 6-8) were lower than other groups (Phys, 89, 82-96; control, 87, 75-91; $p < .01$; and Phys, 9, 8-9; control, 10, 9-11; $p < .01$).

CONCLUSIONS: IPV treatment was feasible for all patients. Noninvasive positive-pressure ventilation by helmet associated with IPV reduces the duration of ventilatory treatment and intensive care unit stay and improves gas exchange at discharge from intensive care unit in patients with severe exacerbation of COPD.PMID: 17075375 [PubMed - indexed for MEDLINE]

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