



Efficacy of short-term intrapulmonary percussive ventilation in patients with chronic obstructive pulmonary disease.

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ABSTRACT PURPOSE: We evaluated the effectiveness of intrapulmonary percussive ventilation (IPV) compared to traditional standard chest physical therapy (CPT) in patients with chronic obstructive pulmonary disease (COPD) and productive cough.

METHODS: We conducted a quasi-experimental clinical trial. Twenty patients, 40% female (mean \pm SD age: 70 ± 8 years), with COPD and productive cough received a multimodal respiratory treatment including IPV and CPT or a control intervention CPT for 10 days. Outcomes: $P_{I_{max}}$, $P_{E_{max}}$, heart rate, respiratory rate, SBP, DBP, Likert scale, Borg dyspnea scale and arterial blood gas analysis: PO_2 , PCO_2 , pH, HCO_3 and SpO_2 measurements. All measures were collected at baseline and at the end of the intervention. We used repeated ANOVA to examine the effects of interventions within groups, between-subjects and the within-subjects.

RESULTS: A significant effect of time interaction ($F = 7.27$; $p = 0.015$, $F = 6.16$; $p = 0.02$ and $F = 7.41$; $p = 0.014$) existed for PO_2 , SpO_2 and dyspnea over the moderate COPD and productive cough immediately after the intervention (all, $p < 0.02$). Both treatments are similarly effective in $P_{I_{max}}$ and $P_{E_{max}}$. No significant group effect or group-by-time interaction was detected for any of them, which suggests that both groups improved in the same way.

CONCLUSIONS: This study provides evidence that a short-term combination of IPV and CPT improves PO_2 , SpO_2 and perceived dyspnea than a traditional standard CPT in patients with COPD and productive cough. Implications for Rehabilitation We suggest that it could improve the oxygenation level on chronic obstructive pulmonary disease (COPD) patients. Beyond that, the intrapulmonary percussive ventilation (IPV) is a safety non-pharmacologic airway clearance therapy that can be used on patients with different sorts of respiratory diseases, and there are still questions to be answered, especially concerning the volume of secretion removed and its superiority when compared with other techniques.

KEYWORDS: Chest; chronic obstructive pulmonary disease; intrapulmonary percussive ventilation; physical therapy

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