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The intermittent intrapulmonary deflation technique for airway clearance in patients with cystic fibrosis: A randomized trial
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Abstract
Background: Cystic fibrosis (CF) is a muco-obstructive lung disease characterized by thick sputum with abnormal rheological properties. The intermittent intrapulmonary deflation (IID) is a new instrumental airway clearance technique (ACT) that aims to decrease the sputum viscoelastic properties. This study assessed the benefits of adding the IID technique to a conventional ACT in patients with CF hospitalized for intravenous antibiotic therapy. Methods: Participants with CF accustomed to autogenic drainage (AD) as their standard ACT received, in a randomized order, a 30-min session of either AD alone or AD combined with IID (AD+IID). Sputum was collected during each ACT regimens and for a 24-hour period following both sessions. Sputum wet weight, dry weight, solids content and rheological properties were analyzed. Cough events occurring during and over 2 h post ACT were compared between both regimens. Results: Seventeen patients with CF (aged 29 ± 11 years; FEV1%: 57.1 ± 20.1) were analysed. The sputum wet weight collected during AD alone was significantly higher than during AD+IID (8.11 ± 6.93 vs 5.40 ± 4.11 respectively, p = 0.01). The sputum rheological properties did not significantly differ between group. There were more cough episodes during AD alone compared to AD+IID (median [IQR]: 8 [5–15.5] vs 5 [3.5–11.0] respectively, p = 0.02). Conclusions: In participants with CF accustomed to AD, adding the IID technique in combination to AD does not confer a clear benefit on airway clearance in the short term. Clinical Trials register: NCT04157972 © 2024 SPLF and Elsevier Masson SAS

Author Keywords
Airway clearance technique; Cystic fibrosis; Intermittent intrapulmonary deflation; Mucus and sputum; Rheology; Simeox

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