326. Chest physiotherapy and breathing retraining

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Does manual therapy provide additional benefit to breathing retraining in the management of dysfunctional breathing? A randomised controlled trial
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Introduction: Dysfunctional breathing (DB) is a respiratory disorder associated with significant patient morbidity. It is characterized by unexplained breathlessness and an abnormal breathing pattern, with combinations of erratic breathing, episodic breath holding and sighing, or hyperventilation. Treatment involves breathing retraining through respiratory physiotherapy. Recently, manual therapy has been used as a treatment component; but no evidence exists to validate its use. We sought to investigate the effects of manual therapy in addition to breathing retraining in patients with DB.

Methods: 60 subjects with primary DB were randomised into either breathing retraining (standard treatment; n=30) or breathing retraining plus manual therapy (intervention; n=30). Both groups received standardised respiratory physiotherapy.

Table 1. Analysis of primary and secondary outcomes

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Treatment Effect (95% CI)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nijmegen score</td>
<td>2.8 (-1.1 to 6.6)</td>
<td>0.16</td>
</tr>
<tr>
<td>BADD Anxiety</td>
<td>0.6 (-0.8 to 2.0)</td>
<td>0.39</td>
</tr>
<tr>
<td>BADD Depression</td>
<td>0.3 (-0.6 to 1.2)</td>
<td>0.51</td>
</tr>
<tr>
<td>Breath hold</td>
<td>1.4 (-2.0 to 4.8)</td>
<td>0.41</td>
</tr>
<tr>
<td>FEV1</td>
<td>0.02 (-0.04 to 0.09)</td>
<td>0.45</td>
</tr>
<tr>
<td>FVC</td>
<td>0.01 (-0.09 to 0.1)</td>
<td>0.91</td>
</tr>
</tbody>
</table>

DB education; breathing retraining; home regime; audio disc. Subjects in the intervention group received additional manual therapy.

Results: No significant difference was found between groups for the primary outcome Nijmegen score or any secondary outcome measures (Table 1).

Conclusion: Breathing retraining is the primary management for patients with DB. Our results suggest the additional use of manual therapy provides no further benefit and cannot be recommended in clinical practice.

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Efficacy of airway clearance therapy with different autonomy degrees in nonCF-BE: Randomized cross-over trial
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Airways clearance techniques are an important part of chronic treatment of non-cystic fibrosis bronchiectasis (nonCF-BE). Notwithstanding, the literature supporting their clinical use is still poor.

Aim: To evaluate effectiveness in mucus clearance and tolerance of three respiratory techniques with different autonomy degrees: ELTGOL (physiotherapist-administered), Autogenic drainage (self-administered) and a temporary positive expiratory pressure device, named Uniko.

Design: Randomized crossover trial.

Population: Clinically stable adult non-CF-BE patients, sputum production ≥15ml/day.

Methods: Each technique is applied in 3 sessions on alternate days (1 week washout). Sputum was registered at the end session, after 1h and 24h.

Results: 7 patients were enrolled in the study (median age 69; mean FEV1 70.1%±16%). AD obtained the major short-time sputum production (mean values: ELTGOL 7gr; AD 15gr; Uniko 7gr). By contrast, Uniko and ELTGOL showed a higher sputum production at 24h (AD 9gr, Uniko 16gr, ELTGOL 17gr). The short-time sputum production slightly increased over time with ELTGOL (1st: 11gr; 2nd: 13gr; 3rd: 14gr), while the 24h sputum production increased with Uniko (1st: 14gr; 2nd: 17gr; 3rd: 17gr). AD was the favourite technique of 6 patients.

Conclusions: The 3 techniques were well tolerated and efficacious. AD was the most rapid in favouring expectoration. However, Uniko and ELTGOL were more effective at long-term, with an increasing trend for Uniko over time. The degree of patients’ autonomy for each technique, the compliance and personal preferences should be considered to select a treatment in order to individualize and optimize the respiratory therapy in non-CF-BE patients.

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Nebulised 7% hypertonic saline improves health related quality of life in patients with non-cystic fibrosis bronchiectasis
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Introduction: Cough and sputum have a significant impact on quality of life (QoL) in non-cystic fibrosis bronchiectasis (NCFBx). Nebulised 7% hypertonic saline (HTS) has previously been shown to improve airway clearance in NCFBx, and we hypothesised that it would also improve QoL in such patients.

Method: Patients with NCFBx referred for HTS over a 4 month period at Royal Brompton Hospital were included (N=22). Patients were assessed by the Leicester cough questionnaire (LCQ) as a marker for Health Related Quality of Life (HRQol), Visual Analogue Scale for ease of clearance (VASEoC) and FEV1 pre and post 1 month use of HTS. Results are expressed as median and interquartile range and Wilcoxon-signed Rank tests were used to assess the impact of the therapy.

Results: N=22 (Males=7), median age 64yrs (32-81), FEV1 1.59 (0.64-3.01). There was a significant improvement in LCQ 11.0 (9.2-14.7) to 16.7 (10.7-17.7) p=0.01 and VASEoC 7 (5.5-8) to 4.7 (3-7) p=0.002. There was no significant change in FEV1 (p=0.32). 4 patients (18%) constrected on challenge test, and were not included in analysis. No other adverse effects of the therapy were seen.

Conclusion: In addition to confirming that HTS improves airway clearance, we demonstrated for the first time that HTS also improves HRQol markers in patients with NCFBx. The minimal clinical significant difference in the LCQ is reported to be 1.3-2.7. There was therefore a statistically and clinically significant change in the total LCQ score, suggesting HRQol significantly improved with one month use of HTS. Further trials with HTS are needed to assess whether these improvements are sustained long term in such patients.
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Comparison of the efficacy of mobilization and active cycle of breathing technique in coronary artery bypass graft surgery
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Aim: The purpose of this study was to evaluate the efficacy of mobilization and active cycle of breathing techniques (ACBT) following coronary artery bypass graft (CABG) surgery.
Material and methods: Fifty patients (35-75 years) with CABG were included in this randomized study. Twenty-five patients (18 males, 7 females) underwent mobilization and 25 patients (21 males, 4 females) were applied ACBT combined with mobilization. Demographic variables were recorded. Patients were evaluated using pulmonary function testing, 6-minute walk test (6MWT), and respiratory muscle strength.
Results: Five days after surgery, pulmonary function variables were similarly but significantly decreased in both groups as compared to preoperative values (p<0.05). No significant difference was found in 6MWT distance obtained before and five days after surgery within and between the groups (15.7±2.9 vs. 6.1±5.9 m, p>0.05). Inspiratory and expiratory muscle strength values were statistically higher in ACBT group (6.0±1.8 vs. 5.0±1.7 cmH2O, P=0.05) than the control group. The control group performed better in terms of respiratory muscle strength.
Conclusion: Functional capacity preserved after short-term ACBT or mobilization intervention after CABG surgery. Improvement in respiratory muscle strength was faster in ACBT group.

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Addition of PEEPi/EPAP during nocturnal noninvasive ventilation in patients with severe restrictive disorders: Physiological effects and tolerance in a randomized pilot study
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Background: In patients with nocturnal hypventilation due to Severe Restrictive Disorders (SRD), sleep events defined as obstructive or central apnoeas/hypopneas, can be misinterpreted and lead to suboptimal ventilatory settings.
Objectives: To analyse the physiological effects of PEEPi/EPAP during sleep in patients with SRD under noninvasive mechanical ventilation (NIV).
Study design: A randomized prospective cross-over study was performed in 16 patients with a median age of 51.5 (39.7-64.7) years that included 13 neuromuscular and 3 kyphoscoliosis patients with a median FVC (% predicted) of 39.5 (29.4-60.3). They were instructed to breathe through a PEP device (PARI PEP S) according to calibrated resistances were used in a randomized crossover design. Continuous calibrated resistances were used in a randomized crossover design. Continuous
Results: No significant differences between two methods in sputum volume (ACBT, 25 vs. 15, P=0.022). They were instructed to breathe through a PEP device (PARI PEP S) according to calibrated resistances were used in a randomized crossover design. Continuous calibrated resistances were used in a randomized crossover design. Continuous
Conclusion: Functional capacity preserved after short-term ACBT or mobilization intervention after CABG surgery. Improvement in respiratory muscle strength was faster in ACBT group.

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Comparison of two physiotherapeutic methods in bronchiectasis: Active cycle breathing technique (ACBT) and oscillating physiotherapy device
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Background: Because of existence of various physiotherapeutic methods, selecting an effective and capable one is a major problem for the most of bronchiectasis patients. The aim of this study was comparison between two physiotherapeutic methods.
Materials and methods: In this cross-sectional study, 29 known bronchiectasis patients were selected. Each patient performed active cycle breathing technique (ACBT) method in one day and an oscillating physiotherapy device (RC-cornet®) method in the following day under supervision of a physiotherapist. Each physiotherapy session lasted for maximum of 30 minute and all expectorated sputum were collected for volume measurement. In addition, patients responded to 7 questions about each method satisfaction. Paired t test and McNemar test were used for comparison between two methods.
Results: The mean age of patients was 30 year and 16 (55%) were male. There were no significant differences between two methods in sputum volume (ACBT, 17.5±4 ml; RC-cornet, 18.6±4 ml, P=0.729). In addition, there were no significant differences between two methods in terms of understanding performing the method, expectorated sputum amount, time consuming, tedious, need of additional training session and overall satisfaction (P>0.05). However, patients believed that they can do physiotherapy with RC-cornet® method at home alone than ACBT method (25 vs. 15, P=0.022).
Conclusion: Our findings showed that use of RC-cornet® at home is preferred by most of the patients. Since this method was more acceptable and preferable than ACBT for home usage, we highly suggest use of such convenient methods.

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