primary studies - published RCT

Self-administered chest physiotherapy in cystic fibrosis: a comparative study of high-pressure PEP and autogenic drainage.

Code: PM1434782 **Year:** 1992 **Date:** 1992 **Author:** Pfleger A

Study design (if review, criteria of inclusion for studies)

Cross-over design. Randomised controlled trial.

Participants

15 participants (9 females, 1 unspecified); mean age 16 years, range 9.8 - 22.4 years; mean Schwachman score 62.2, range 26 - 90 points. Participants were excluded if unstable at the time of investigation (criteria unspecified). 6 months before the study, each participant was trained in the 2 self-administered techniques (PEP and AD). CF confirmed by repeat sweat tests, and sputum production of >20 ml per day.

Interventions

1. Hi-PEP intervention. Expiratory resistance chosen to increase the FVC to the greatest extent when performed through the PEP mask. Participants exhaled 8 - 10 times followed by a forced expiratory manoeuvre, all through the mask; 2. AD. Participants breathed at low lung volumes with progressive increases in the lung volume at which breathing was performed in response to evidence of secretion transport. Coughing and forced expiratory manoeuvres were avoided; 3. Hi-PEP for the first half of the session, followed by AD; 4. AD for the first half of the session, followed by Hi-PEP; 5. Control (CONT). Spontaneous coughing only. Each intervention session was equal to the time taken for the individual participant to clear their lungs using AD, as judged from pre-study experience.

Outcome measures

FEV1, FVC, RV, and TLC were measured at all PFT measurement points. Expectorated sputum weight during the complete (both halves) intervention period was also measured.

Main results

PEP produced the highest amount of sputum, followed by PEP-AD, AD-PEP, and AD; all 4 forms of PT produced significantly more sputum than coughing. Lung function improved significantly after PEP, AD, and PEP-AD, but PEP-induced changes did not exceed those after AD. Within the investigated group, the PEP-induced lung function improvement per milliliter of sputum produced was significantly lower for those patients with airway hyperreactivity. The fact that the highest sputum yield with PEP was not reflected in higher PEP-effected lung function changes might thus be explained by PEP-induced bronchospasm in patients with airway hyperreactivity. PEP clears more sputum than AD or combined techniques; patients with airway hyperreactivity, however, should either prefer AD or should take a bronchodilator premedication before PEP.

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See also

Lung. 1992;170(6):323-30.

Keywords

Adolescent; Adult; Airway clearance technique; Child; Drainage; non pharmacological intervention - devices OR physiotherapy; Postural Drainage; Respiratory Tract Diseases; Self-Management; Positive-Pressure Respiration- PEP- pep mask; Chest physiotherapy; Autogenic drainage;