primary studies - published RCT

Positive expiratory pressure changes aerosol distribution in patients with cystic fibrosis.

Code: PM16253150 **Year:** 2005 **Date:** 2005 **Author:** Laube BL

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

randomized trial

Participants

8 CF patients

Interventions

patients were randomized to one of 2 conditions. On one study day, patients inhaled saline aerosol containing 99m technetium generated by a Pari LC Plus nebulizer and exhaled through a Pari PEP device. On another day, the same patients exhaled through a low-resistance Pari filter (no PEP). Afterwards, they underwent gamma-camera lung imaging.

Outcome measures

Images were analyzed for lung deposition fraction, expressed as a percent of the initial nebulizer activity, and deposition pattern, expressed in terms of inner-outer and apical-basal ratios.

Main results

Lung deposition fraction was significantly lower with the Pari PEP device; the mean + SD deposition fraction was 6.10 + 3.05% (median 6.20%) with PEP, compared to 10.76 + 4.52% (median 10.32%) (p = 0.0078) without PEP. The inner-outer ratio was 2.01 + 0.69 (median 2.23) with PEP, which was significantly lower than without PEP (2.76 + 1.33, median 2.55) (p = 0.004). The apical-basal ratio was 0.82 + 0.31 (median 0.80) with PEP, which was not significantly different from no PEP (1.00 + 0.49, median 0.90).

Authors' conclusions

These results indicate that less aerosol is deposited in the lungs of patients with cystic fibrosis when the Pari LC Plus nebulizer is used with the Pari PEP device, as described in these experiments. Nevertheless, aerosol administration with this nebulizer and PEP device also results in a proportional redistribution of aerosol to the peripheral airways, compared to nebulization without the PEP device. The clinical relevance of this subtle redistribution of aerosol in cystic fibrosis patients will probably depend on the drug administered and disease severity.

http://www.rcjournal.com/contents/11.05/11.05.1438.pdf

See also

Respir Care. 2005 Nov;50(11):1438-44.

Keywords

Adolescent; Adult; Inhalation OR nebulised; nebuliser; non pharmacological intervention - devices OR physiotherapy; pharmacological_intervention; Positive-Pressure Respiration- PEP- pep mask; Airway clearance technique; Chest physiotherapy;