

Outcomes of High Frequency Chest Wall Oscillation (HFCWO) in COPD Patients without Bronchiectasis

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ABSTRACT

High Frequency Chest Wall Oscillation (HFCWO) vests have been used for airway clearance in bronchiectasis (BE), but there is limited information on the outcomes of this therapy in COPD patients without BE.

219 COPD patients without BE from a registry of adult respiratory patients using HFCWO were included in the study. Hospitalization patterns before and after initiation of HFCWO therapy as well as self-reported metrics of quality of life were evaluated.

When compared to the prior year, the rate of hospitalization fell sharply, an improvement that was sustained for up to two years. Similar improvements were seen in self-reported respiratory health and ability to clear mucus.

Objective

To measure self-reported hospitalization and quality of life of patients initiating HFCWO therapy

Questions Asked

- What changes occur to hospitalization, respiratory health, and ability to clear mucus compared to the prior year?
- For how long are these changes sustained?

METHODS

- Source: 17,625 records presently in a registry of adult respiratory patients using HFCWO therapy (InCourage system, RespirTech, Plymouth, MN).
- Patients with a diagnosis of COPD were extracted (ICD-9-CM 496 and ICD-10-CM J44.X) and patients with HRCT evidence of radiographic BE were excluded.
- Telephone survey
 - Initiation of therapy, 1, 3, 6, 12, and 24-month follow-up
 - Hospitalizations for respiratory causes one year prior to and after initiation of vest therapy
 - Self-reported quality of life metrics – Likert scale for “overall respiratory health” and “ability of clear lungs”
- All data were deidentified and informed consent was obtained from all patients.

RESULTS

- 219 patients met inclusion criteria (male/female 46%/54%, average age 65).
- After 12 months of HFCWO use:
 - 54.4% reduction in the annualized hospitalization rate for respiratory causes (1.32 vs. 0.6, p=0.005).
 - 24.9% increase in patients with zero hospitalizations for respiratory causes in the prior year (39.5% vs. 64.4%, p=0.005).
 - 20.1% decrease in patients with 3+ hospitalizations for respiratory causes in the prior year (28=9.0% vs. 8.9%, p=0.001).
 - 42.0% increase in patients with favorable rating for “overall respiratory health” (8.0% vs. 50.0%, p=0.018).
 - 51.9% increase in patients with favorable rating for “ability to clear lungs” (9.5% vs. 61.4%, p=0.137).

DISCUSSION

- There was a strong association of HFCWO with positive outcomes.
- The strength of the association was sustained for one year, while a (non-significant) trend continued for two years.
- The self-reported measure of hospitalization rate was consistent with self-reported quality of life measures.
- The improvement was rapid and corresponded to initiation of therapy.
- This study has limitations common to registry studies and cannot definitively assign causality.

CONCLUSION

- This study shows that outcomes in COPD patients without bronchiectasis, as measured by number of hospitalizations, self-reported respiratory health, and the ability to clear secretions, improved substantially after the initiation of HFCWO therapy. These improvements were sustained for at least two years.

