Registry Outcomes for HFCWO Vest Therapy in Adult Patients with Bronchiectasis

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ABSTRACT

While High-Frequency Chest Wall Oscillation (HFCWO) vests have long been used to treat patients who require airway clearance, few studies establish their long-term effectiveness for non-cystic fibrosis (non-CF) bronchiectasis.

2596 records extracted from a registry of adult bronchiectasis patients using HFCWO therapy allowed examination of hospitalization patterns before and after initiation of HFCWO therapy, as well as antibiotic use and self-reported metrics of quality of life.

When compared to the prior year, the rate of hospitalization fell sharply, an improvement that was sustained for up to one year. Similar improvements were seen in the rate of antibiotic use and self-reported respiratory health.

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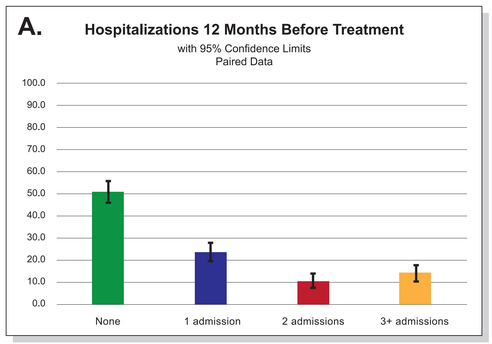
INTRODUCTION

High-Frequency Chest Wall Oscillation vests have long been used to assist in airway clearance for patients with cystic fibrosis and other diseases. Limited research establishes the outcomes for this device in treating adult patients with non-CF bronchiectasis.[1] In this study, we sought to evaluate the impact of HFCWO on hospitalizations and quality of life for adult non-CF bronchiectasis patients.

- 2596 records from a registry of adult bronchiectasis patients using HFCWO therapy (inCourage® system, RespirTech, St. Paul, MN).
- Telephone survey
  - Initiation of therapy, 1, 3, 6, and 12-month follow-up
  - Hospitalizations 1 year prior to and after initiation of vest therapy
  - Current antibiotic use
  - Quality of life metrics – Likert scale
    - Respiratory Health
    - Ability to clear lungs
- Data were deidentified and informed consent was obtained from all patients.



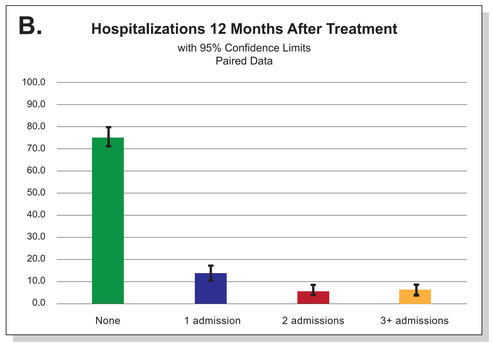


Figure 1. The proportion of patients who had none, 1, 2, or 3+ hospitalizations is the year before (A) and the year after (B) initiating HFCWO therapy. Error bars are 95% confidence limits.

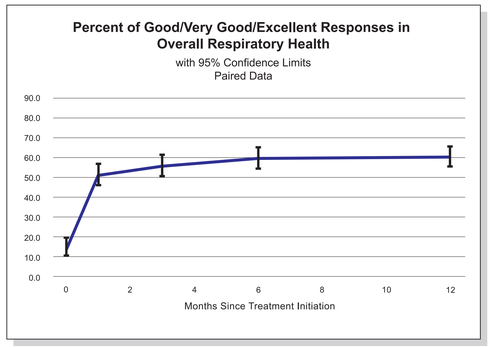


Figure 2. The proportion of patients who answered positively (good, very good, or excellent) to the question: How would you rate your overall respiratory health? The x-axis indicates months since initiating HFCWO therapy. Error bars are 95% confidence limits.

RESULTS

- Patients with no respiratory-related hospitalizations:
  > 50.9% one year prior vs. 76.0% one year after initiating therapy.
- Patients who required 3+ hospitalizations:
  > 14.3% one year prior vs. 5.6% one year after initiating therapy.
- Yearly rate of hospitalization dropped 30.3%.
- Patients who reported currently taking oral antibiotics
  > 57.7% upon initiation, 29.9% at one year (P-value < 0.0001).
- Overall respiratory health rating as good-excellent
  > 13.6% upon initiation, 60.5% at one year (P-value < 0.0001).
- Ability to clear your lungs rating as good-excellent
  > 13.9% upon initiation, 76.6% at one year (P-value < 0.0001).

DISCUSSION

- There was a strong association of HFCWO with positive outcomes.
- The strength of the association was sustained for one year.
- The objective measure of hospitalization rate was consistent with self-reported quality of life measures.
- The improvement was rapid and corresponded to initiation of therapy.
- HFCWO response was independent of practice patterns.
- This study has limitations common to registry studies and cannot definitively assign causality.

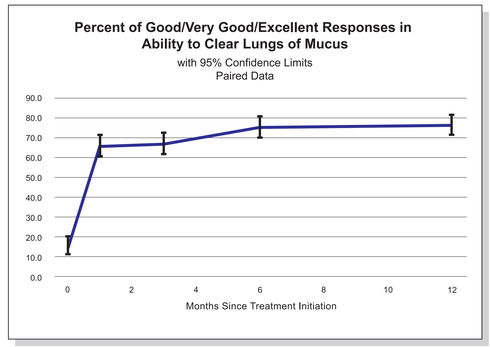


Figure 3. The proportion of patients who answered positively (good, very good, or excellent) to the question: How would you rate your ability to clear your lungs? The x-axis indicates months since initiating HFCWO therapy. Error bars are 95% confidence limits.

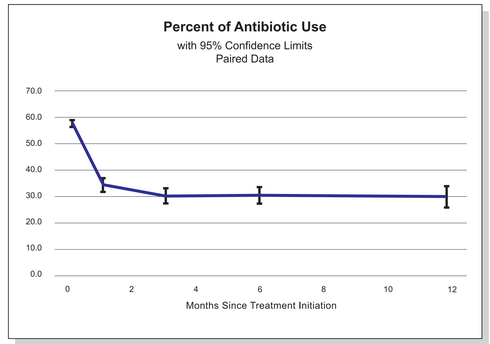


Figure 4. The proportion of patients who answered "yes" to the question: Are you presently using antibiotics for breathing problems? The x-axis indicates months since initiating HFCWO therapy. Error bars are 95% confidence limits.

CONCLUSIONS

This analysis of adult non-CF bronchiectasis patients showed improved self-reported outcomes associated with the initiation of HFCWO therapy as measured by number of hospitalizations, antibiotic use, and the subjective experience of airway clearance. The improvement was rapid and sustained for one year.

REFERENCES

1. Nicolini A, Cardini F, Landucci N, Lanata S, Ferrari-Bravo M, Barlascini C. Effectiveness of treatment with high-frequency chest wall oscillation in patients with bronchiectasis. *BMC Pulm Med*. 2013;13:21.