Management of a Patient with Bronchiectasis Using Pulmonary Rehabilitation and Balance Training: A Case Report

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Background

• Bronchiectasis is a chronic lung disease defined by permanent abnormal dilation of the bronchii.
• Bronchiectasis often includes airway infection and inflammation.
• Pulmonary rehabilitation including progressive gait training, stair climbing, and cycling is a standard guideline for the treatment of bronchiectasis symptoms and for symptoms of other chronic lung diseases.
• Little research has been conducted on the effectiveness of pulmonary rehabilitation for patients with bronchiectasis.

Purpose

The purpose of this case report is to examine physical therapy (PT) management, utilizing pulmonary rehabilitation with incorporated balance training, for a geriatric patient with bronchiectasis.

Case Description

• 91-year-old female seen by home health physical therapy twice a week for 4 weeks followed by once a week for 4 weeks in her third floor apartment of an assisted living facility
• Complex medical history including chronic bronchiectasis, chronic bronchitis, chronic respiratory failure, tremor, vascular disease, peripheral neuropathy, skin cancer, deep vein thrombosis, right femoral fracture with surgical repair, and low body mass index
• Healthy lifestyle which included daily exercise and a nutrient rich diet that excluded dairy, gluten, and added sugar
• Prescribed 2 liters/min oxygen through nasal cannula with orders to titrate as needed

Examination

<table>
<thead>
<tr>
<th>Tests and Measures</th>
<th>Initial Evaluation Results</th>
<th>Discharge Evaluation Results</th>
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</thead>
<tbody>
<tr>
<td>Light Touch Sensation</td>
<td>Normal, unimpaired</td>
<td>Normal, unimpaired</td>
</tr>
<tr>
<td>Vibratory Sensation</td>
<td>Absent vibratory sensation in bilateral distal L3, L5, and S1 dermatomes. Absent in left L4 dermatome and diminished in right L4 dermatome.</td>
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</tr>
<tr>
<td>Tinetti</td>
<td>14/28, high fall risk</td>
<td>23/28, moderate fall risk</td>
</tr>
<tr>
<td>TUG</td>
<td>17.33 seconds, high fall risk</td>
<td>10.26 seconds, not a fall risk</td>
</tr>
<tr>
<td>FSST</td>
<td>13.3 seconds with contact guard assist, not a fall risk</td>
<td>14.0 seconds with supervision, not a fall risk</td>
</tr>
<tr>
<td>FGA</td>
<td>12/30, fall risk</td>
<td>22/30, fall risk</td>
</tr>
</tbody>
</table>

TUG=Timed Up and Go, FSST= Four Square Step Test, FGA=Functional Gait Assessment

Outcomes

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<tr>
<th></th>
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<th>Four Square Step Test</th>
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<tbody>
<tr>
<td></td>
<td>Initial Evaluation</td>
<td>Discharge</td>
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Discussion

• Patient reported increased ability to participate in community, family, and exercise activities with less feeling of fatigue
• Upon discharge, patient was able to take long outdoor walks, on the sidewalk, with use of rolling oxygen cart and descend and ascend two flights of stairs with minimal use of bilateral hand rails
  - Patient remained dependent on supplemental oxygen, limiting her ability to fully meet goals of walking to the river and taking stairs to the first floor for meals
  - Back pack oxygen concentrator was being ordered to allow patient more independence

Conclusion

This case report suggests that pulmonary rehabilitation with incorporated balance training is beneficial for patients with bronchiectasis. Future research is needed to investigate the benefits of pulmonary rehabilitation in a larger population of patients with bronchiectasis.

References


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Michael Fillyaw, PT, MS for guidance with conceptualization of this manuscript and Barbara Jean Brown, PT, DPT, GCS for supervision and guidance during data collection and patient treatment. The author also acknowledges the patient for her participation in this case report.