Use of Complete Decongestive Therapy and a Task-oriented Approach in Treating Secondary Lymphedema and Improving Ambulation in a Patient Following a Stroke: A Case Report

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Background and Purpose
- Every year, approximately 795,000 people in the United States experience a new or recurrent stroke.
- More than 30% of the survivors cannot walk independently six months following a stroke.
- Of those who are able to walk independently, only a small proportion can walk with sufficient speed and endurance to be able to function within the community.
- Paralysis of the extremities leads to a decreased and ineffective muscle pumping action, resulting in lymph stasis.
- Lymphedema is the tissue fluid accumulation that arises due to impaired lymphatic drainage.
- Fluid accumulation further increases difficulty with ambulation post stroke.

Case Description
- 53 year old female developed lower extremity lymphedema following a CVA.
- Right sided hemiparesis, decreased range of motion and decreased strength in the right lower extremity, and increased tone and spasticity throughout the right upper and lower extremity.
- Decreased strength, impaired balance (Tinetti), and increased limb heaviness affected her ambulation and ADL's.

Interventions

Complete Decongestive Therapy (CDT):
1. Skin Care: Keeping the edematous limb clean, dry, and moisturized with a lotion of a neutral pH.
2. Compression: Application of compression bandages below the knee on the right consisting of tricofix, foam wrapping, and short stretch bandages (6.8, and 10 cm wide).
3. Manual Lymphatic Drainage: Deep cervical lymph nodes, axillary lymph nodes on the right, IA anastomosis, deep abdominal techniques, inguinal lymph node on the right, and pathways throughout the right LE.
4. Lymphedema Remedial Exercises
   Task Oriented-Approach:
   - Strength training and intensive mobility training
   - Intensive mobility training
     1) Graded strengthening
     2) Aerobic component
     3) Challenging walking activities with postural control demands

Outcomes

Circumference Measurements of the Right Lower Extremity

<table>
<thead>
<tr>
<th></th>
<th>Initial Evaluation</th>
<th>10th visit</th>
<th>20th visit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metatarsal</td>
<td>24.0</td>
<td>23.0</td>
<td>23.0</td>
</tr>
<tr>
<td>Figure 8</td>
<td>61.0</td>
<td>55.0</td>
<td>58.3</td>
</tr>
<tr>
<td>Malleolus</td>
<td>31.0</td>
<td>28.0</td>
<td>29.0</td>
</tr>
<tr>
<td>20 cm up from the ankle</td>
<td>39.5</td>
<td>32.6</td>
<td>34.1</td>
</tr>
<tr>
<td>30 cm up from the ankle</td>
<td>46.5</td>
<td>43.2</td>
<td>41.7</td>
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Tinetti Balance Assessment

<table>
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<tbody>
<tr>
<td>Balance Score</td>
<td>7</td>
<td>11</td>
<td>13</td>
</tr>
<tr>
<td>Gait Score</td>
<td>3</td>
<td>5</td>
<td>8</td>
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<tr>
<td>Total</td>
<td>10</td>
<td>16</td>
<td>21</td>
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<tr>
<td>% Disability</td>
<td>64%</td>
<td>43%</td>
<td>25%</td>
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<tr>
<td>Fall Risk</td>
<td>High</td>
<td>High</td>
<td>Moderate</td>
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Discussion
- Despite her chronicity post-stroke, the patient made improvements in balance, gait speed, and gait mechanics.
- CDT helped the patient experience a decrease in circumference measurements on the right.
- Decreased fall risk and decreased % disability per the Tinetti Balance Assessment.
- Further research is needed to explore the impact of lymphedema in patients following a stroke.

Acknowledgments
The patient signed an informed consent allowing the use of medical information for this report and received information on the institution's policies regarding the Health Insurance Portability and Accountability Act.

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References

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