Rehabilitation Modifications for a Patient with Parkinson's Disease Following a Suspected Case of Gilbert's Syndrome: A Case Study

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INTRODUCTION

- Studies have shown that high intensity exercise may be beneficial in slowing down the progression of Parkinson’s Disease (PD).
- There is limited information on how to regress these exercises in a high functioning patient that has another comorbidity limiting his activity level.
- Based on current research, trunk stability exercises has been shown to increase step-to-step symmetry in patients with PD.
- LSVT BIG interventions and dual-tasking have been shown to increase gait speed, endurance and improvements in UPDRS and TUG scores.
- Improvements in hand grip, pinch strength, and manual dexterity have been correlated with single-hand putty exercises.

PURPOSE

- To determine the effects of core stabilization exercises, balance training, agility ladder step drills, fine motor, and dual task training in the treatment of a high-functioning patient with Parkinson’s Disease and suspected Gilbert’s Syndrome.

CASE DESCRIPTION

Patient Profile

- 66 y/o male retired librarian with 7-year history of PD
- Taking Sinemet (2 tablets, 4 times a day)
- Suspected dx of Gilbert’s Syndrome

Body Structure/Function Impairments

- B upper extremity tremors and dyskinesia. L>R
- Gait instability and balance difficulties on uneven surfaces
- Mild Impairments in B appendicular coordination
- Mild rigidity in B UE/L.E. L>R
- Mild thoracic kyphosis and rounded shoulders which are more prominent when sitting

Activity Limitations

- Performing fine motor upper extremity tasks such as typing and buttoning shirt
- Walking long distances >1 mile without difficulty

Participation Restrictions

- Hiking
- Rock Steady Boxing

EXAMINATION FINDINGS

<table>
<thead>
<tr>
<th>Patient Reported Functional Limitations</th>
<th>Initial Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hiking</td>
<td>Unable to hike &gt; 1 miles without fatigue</td>
</tr>
<tr>
<td>Upper Extremity (UE) Dressing &amp; Grooming</td>
<td>Moderate limitation, requires assistance or greater time</td>
</tr>
<tr>
<td>Outcome Measures</td>
<td>Initial Evaluation</td>
</tr>
<tr>
<td>Timed Up and Go (TUG)</td>
<td>8.76 seconds</td>
</tr>
<tr>
<td>Timed Up and Go Cognitive (TUG-cog)</td>
<td>8.98 seconds</td>
</tr>
<tr>
<td>6MWT</td>
<td>406 m</td>
</tr>
<tr>
<td>Functional Gait Assessment (FGA)</td>
<td>24/30</td>
</tr>
<tr>
<td>Unified Parkinson Disease Rating Scale (UPDRS)</td>
<td>36/147</td>
</tr>
</tbody>
</table>

PLAN OF CARE

Frequency and Duration

- 1x/week for 4 weeks, 1 hour sessions

Interventions

- Balance Training
  - Single limb balance and tandem stance with multi-directional ball tosses to encourage dynamic balance
- Core Strengthening
  - Staggered stance push-pull core isometric exercise with one dowel and progression with two dowels
  - Placing the patient in a staggered stance places the patient in the functional position of terminal stance phase of gait. Activation of the core in this position helps maintain level pelvic obliquity in all planes.
  - Seated marching on swiss ball
- Agility Training
  - Large amplitude agility ladder drills emphasizing alternating UE movements
- Dual Task and Fine Motor Activities
  - Single hand putty exercises for manual dexterity
  - Marble Sorting with color cognitive challenge
  - Dual task mobility and coordination via buttoning of a donned flannel shirt while ambulating 10 m

OUTCOMES

- Mild improvements in activity limitations with most notable being being able to button a shirt with decreased time and assistance required
- Mild improvement body structure/function impairments with decreased LOB as evident during tandem walking in the FGA

<table>
<thead>
<tr>
<th>Patient Reported Functional Limitations</th>
<th>Initial</th>
<th>Post Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hiking</td>
<td>Unable to perform</td>
<td>Requires greater time/assistance with fatigue</td>
</tr>
<tr>
<td>UE Dressing &amp; Grooming</td>
<td>Moderate limitation, requires assistance or greater time</td>
<td>Less time/assistance required</td>
</tr>
<tr>
<td>Outcome Measure</td>
<td>Initial</td>
<td>Post Treatment</td>
</tr>
<tr>
<td>Timed Up and Go (TUG)</td>
<td>8.76 seconds</td>
<td>7.99 seconds</td>
</tr>
<tr>
<td>Timed Up and Go Cognitive (TUG-cog)</td>
<td>8.98 seconds</td>
<td>9.03 seconds</td>
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<tr>
<td>6MWT</td>
<td>406 m</td>
<td>475 m</td>
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<tr>
<td>Functional Gait Assessment (FGA)</td>
<td>24/30</td>
<td>28/30</td>
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<tr>
<td>Unified Parkinson Disease Rating Scale (UPDRS)</td>
<td>25/147</td>
<td></td>
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<tr>
<td>Marble Sorting Accuracy</td>
<td>Session 3 (7/29/19)</td>
<td>Session 4 (8/5/19)</td>
</tr>
<tr>
<td>R Hand</td>
<td>91%</td>
<td>66.9%</td>
</tr>
<tr>
<td>L Hand</td>
<td>89%</td>
<td>100%</td>
</tr>
<tr>
<td>Dual Task Mobility &amp; Coordination</td>
<td>14.28 seconds</td>
<td>10.93 seconds</td>
</tr>
<tr>
<td></td>
<td>3 buttons</td>
<td>3 buttons</td>
</tr>
</tbody>
</table>

CONCLUSION

- This case report suggests that a multimodal physical therapy treatment approach can be effective in the treatment of a patient with Parkinson’s Disease and suspected Gilbert’s Syndrome.
- Further studies should investigate the appropriate parameters of treatment for the management of PD in conjunction with other comorbidities that may be limiting patient activity level.

CLINICAL RELEVANCE

- Initial conservative treatment may be suitable for a high-functioning patient with Parkinson’s Disease and suspected Gilbert’s Syndrome to prevent regression of function and allow the patient to continue to work toward functional goals.
- An evidence-based, individualized physical therapy plan of care may help to slow down the degenerative process of Parkinson’s Disease.