Background

- Strokes are a leading cause of disability, and the fifth leading cause of death in the U.S.
- Brainstem strokes are much less common and have a higher mortality rate than cortical strokes.
- Brainstem strokes can lead to physical impairments including gaze palsies, quadriplegia, ataxia, or cranial nerve deficits, which effect balance and safety, decreasing independence.
- Repetitive task gait training has been shown to create improvements in patients with stroke.
- Non-specific gait training can have a transfer effect on gait for patients with stroke.
- There are fewer accounts of brainstem stroke rehabilitation than cortical stroke rehabilitation due to poor prognosis and high mortality rate associated with brainstem strokes.

Purpose

- To describe the physical therapy management of a patient with chronic brainstem stroke with the goal of increasing his functional mobility in both inpatient and outpatient settings.

Case Description

- 61 year old male with history of two brainstem infarctions.
- Complex medical history including:
  - Kidney cancer diagnosis following strokes
  - No ambulation following removal of kidney two years ago
  - Anxiety
  - Internuclear ophthalmoplegia
  - Abdominal aortic aneurysm
  - Aspiration pneumonia

Examination

<table>
<thead>
<tr>
<th>Tests and Measures</th>
<th>Initial Examination</th>
<th>Final Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>PASS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Score: 14/36</td>
<td>Maintaining Posture subset: 5/15</td>
<td>Maintaining Posture subset: 27/36</td>
</tr>
<tr>
<td></td>
<td>Changing Posture subset: 9/21</td>
<td>Changing Posture subset: 11/15</td>
</tr>
<tr>
<td></td>
<td>Sitting Static: good</td>
<td>Sitting Static: good +</td>
</tr>
<tr>
<td></td>
<td>Sitting Dynamic: good -</td>
<td>Sitting Dynamic: Dynamic: good</td>
</tr>
<tr>
<td></td>
<td>Standing Static: Max Assistance</td>
<td>Standing Static: fair +</td>
</tr>
<tr>
<td></td>
<td>Standing Dynamic: Max Assistance</td>
<td>Standing Dynamic: fair -</td>
</tr>
<tr>
<td></td>
<td>10 feet with Min Assist</td>
<td>25’ x 1, 37” x 1 with FWW and Contact Guard Assist</td>
</tr>
<tr>
<td></td>
<td>Zero-G with Bodyweight support set to 20%</td>
<td></td>
</tr>
<tr>
<td>Bed Mobility</td>
<td>Close Supervision to Contact Guard Assist</td>
<td>Modified Independent</td>
</tr>
<tr>
<td>Transfers</td>
<td>Sit to stand with Min Assistance</td>
<td>Sit to stand with Contact Guard Assist or Close Supervision</td>
</tr>
<tr>
<td></td>
<td>Stand step transfer with FWW and Contact Guard Assist to Close Supervision</td>
<td></td>
</tr>
</tbody>
</table>

Impairments:
- Decreased LE functional strength
- Visual deficits, including diplopia
- Decreased activity tolerance
- Standing balance deficits
- Lack of sensation in R LE and UE
- Proprioception deficits

Activity Limitations:
- Unable to ambulate
- Decreased independence with bed mobility
- Decreased independence with transfers
- Decreased independence with ADLs

Participation Restrictions:
- Unable to travel with wife
- Unable to independently participate in recreational activities

Goals:
- The goals of the patient and his wife included becoming more independent with bed mobility and transfers, and attempt ambulation training.

Interventions

- The patient participated in 3 outpatient visits and 3 weeks of daily inpatient visits

Outcomes

- After three outpatient PT sessions, a decline in health, then 19 subsequent days of inpatient PT, the patient made improvements in his bed mobility, balance, functional transfers, and ambulation.

Discussion

- The improvements in mobility, transfers, and ADLs indicate the combination of repetitive task training and non-specific gait training were beneficial to the patient.
- The patient made functional gains despite being more than two years past onset of stroke.
- Further research should investigate motor learning for patients with brainstem stroke.

References


Acknowledgements

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