Physical Therapy Management of a Patient with Chronic Brainstem Stroke Syndrome to Improve Functional Mobility: a Case Report

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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

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
  - Intermittent ophthalmoplegia
  - Abdominal aortic aneurysm
  - Aspiration pneumonia

Examination

<table>
<thead>
<tr>
<th>Tests and Measures</th>
<th>Initial Examination</th>
<th>Final Examination</th>
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| **PASS** | Total Score: 14/36  
Maintaining Posture subset: 5/15  
Changing Posture subset: 9/21 | Total Score: 27/36  
Maintaining Posture subset: 11/15  
Changing Posture subset: 16/21 |
| **Balance** | Sitting Static: good  
Sitting Dynamic: good  
Standing Static: Max Assistance  
Standing Dynamic: Max Assistance | Sitting Static: good +  
Sitting Dynamic: good +  
Standing Static: fair +  
Standing Dynamic: fair - |
| **Gait** | 10 feet with Min Assist  
Zero-G with Bodyweight support set to 20%  
25' x 1', 37' x 1' with FWW and Contact Guard Assist | Modified Independent  
Sit to stand with Contact Guard Assist or Close Supervision  
Stand step transfer with FWW and Contact Guard Assist to Close Supervision |
| **Bed Mobility** | Close Supervision to Contact Guard Assist | Max Assistance |
| **Transfers** | Sit to stand with Min Assistance | Sit to stand with Contact Guard Assist or Close Supervision |

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

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