

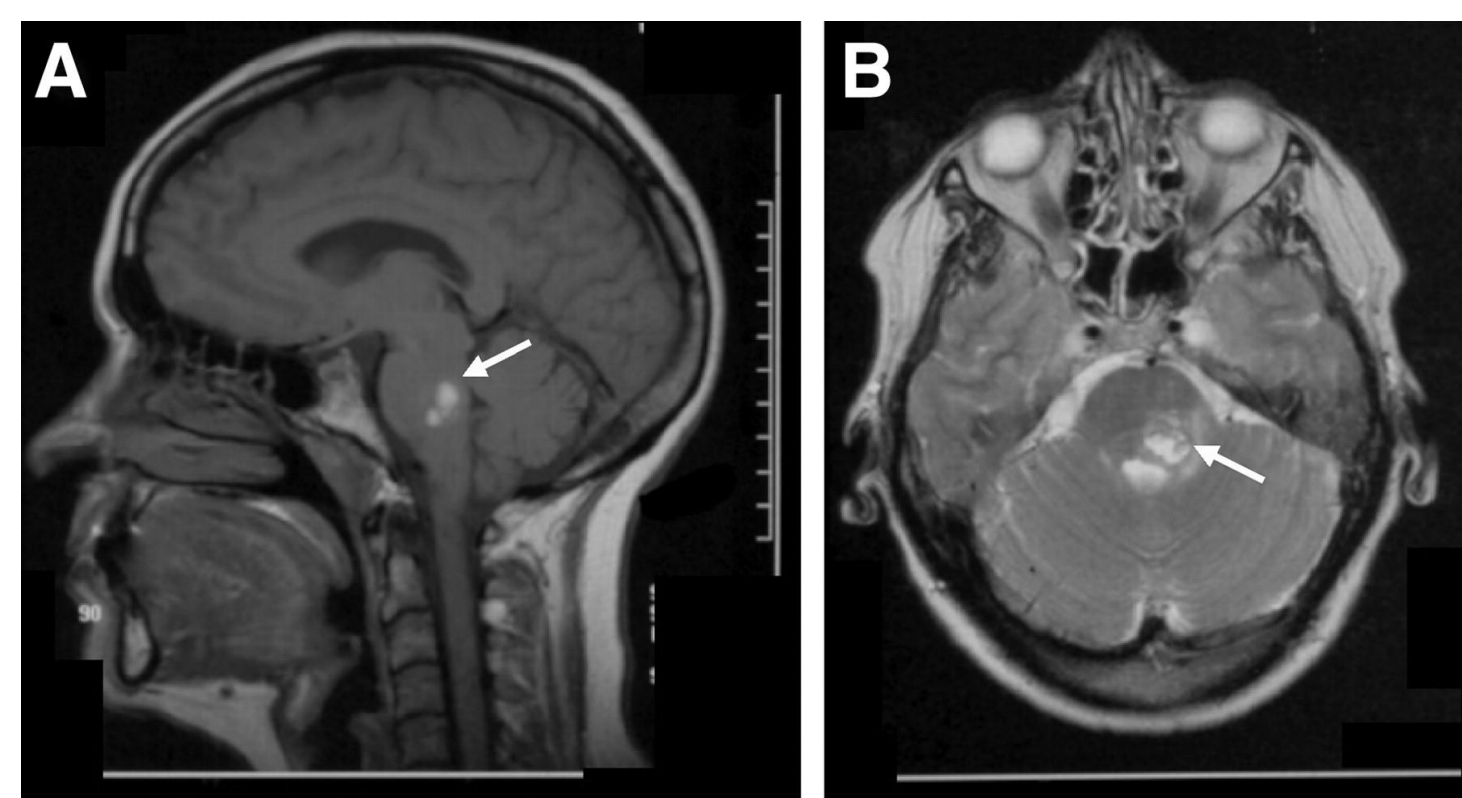
Physical Therapy Management of a Patient with Chronic Brainstem Stroke Syndrome to Improve Functional Mobility: a Case Report

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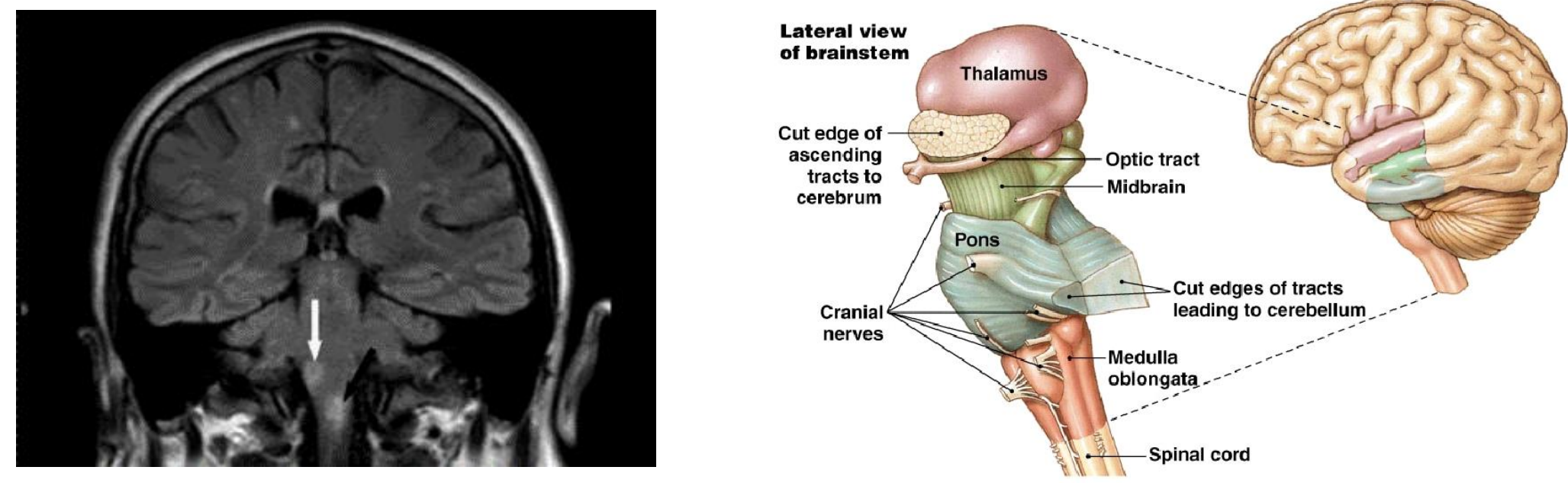
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Background

- 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



Depiction of pontine stroke. Picture from Google Images



Left: Depiction of left medullary stroke. Right: Model of brainstem. Pictures from Google Images

- 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

Tests and Measures	Initial Examination	Final Examination
PASS	<ul style="list-style-type: none"> • Total Score: 14/36 • Maintaining Posture subset: 5/15 • Changing Posture subset: 9/21 	<ul style="list-style-type: none"> • Total Score: 27/36 • Maintaining Posture subset: 11/15 • Changing Posture subset: 16/21
Balance	<ul style="list-style-type: none"> • Sitting Static: good • Sitting Dynamic: good - • Standing Static: Max Assistance • Standing Dynamic: Max Assistance 	<ul style="list-style-type: none"> • Sitting Static: good + • Sitting Dynamic: good • Standing Static: fair + • Standing Dynamic: fair -
Gait	<ul style="list-style-type: none"> • 10 feet with Min Assist • Zero-G with Bodyweight support set to 20% 	<ul style="list-style-type: none"> • 25' x 1, 37' x 1 with FWW and Contact Guard Assist
Bed Mobility	<ul style="list-style-type: none"> • Close Supervision to Contact Guard Assist 	<ul style="list-style-type: none"> • Modified Independent
Transfers	<ul style="list-style-type: none"> • Sit to stand with Min Assistance 	<ul style="list-style-type: none"> • Sit to stand with Contact Guard Assist or Close Supervision • Stand step transfer with FWW and Contact Guard Assist to Close Supervision

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



Therapeutic Exercise:

- ROM
- Seated Exercises
- Activity Tolerance



Therapeutic Activities:

- Bed mobility
- Transfer training
- Patient education



Neuromuscular Re-education:

- Balance and proprioception training
- Bodyweight support posture training



Gait Training:

- Bodyweight support training with Zero-G
- Overground gait training



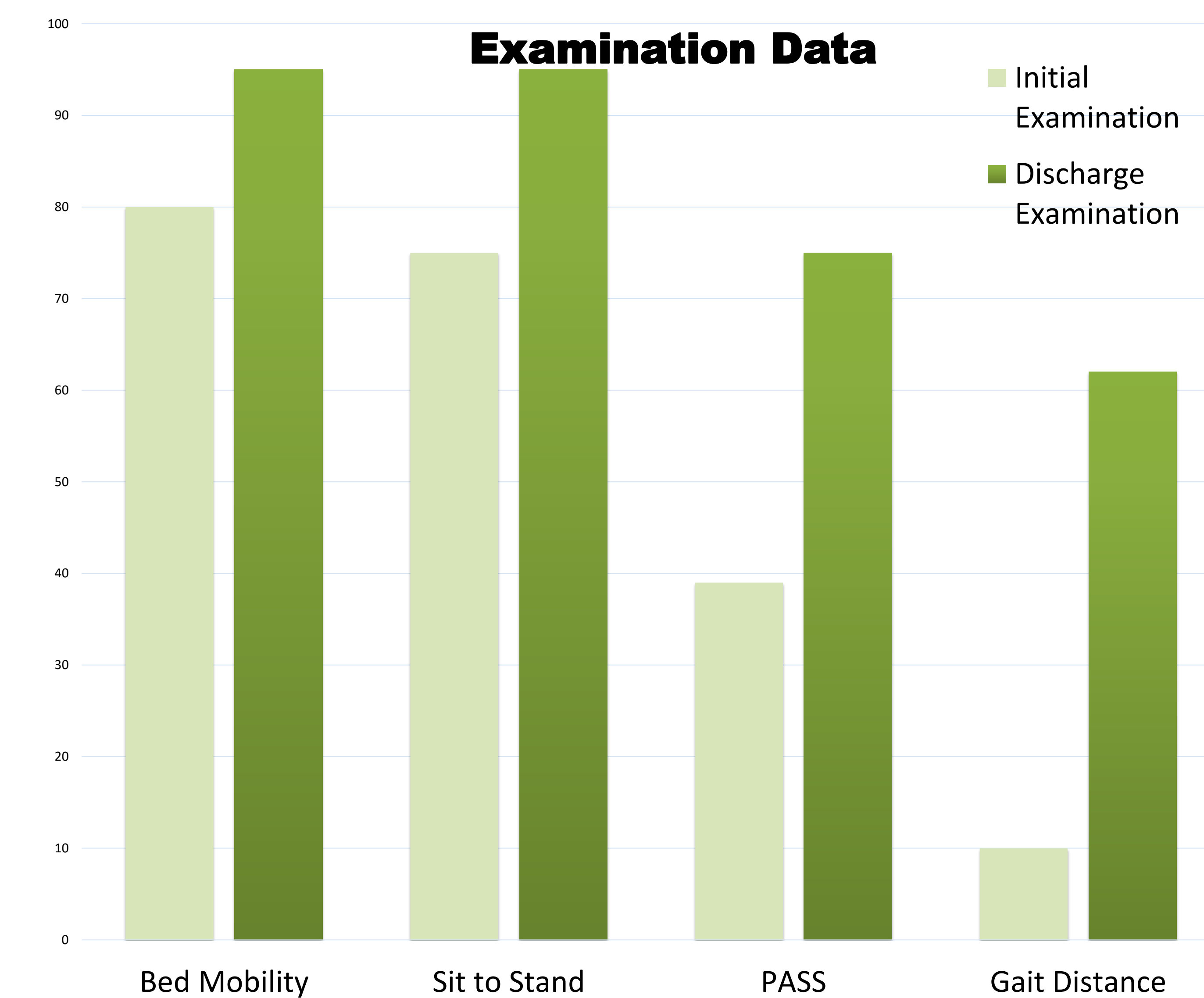
Aquatic Therapy:

- Balance and weightshifting

Pictures from Google Images

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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