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A Single-Case Design on Hemiplegic Shoulder Pain Post-Stroke

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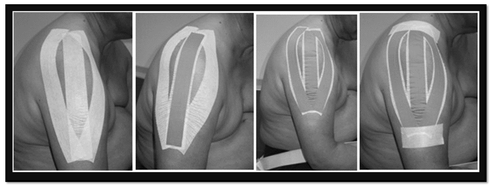

Hemiplegic Shoulder Pain Post Stroke: A Single-Case Design

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Introduction

Background

- Approximately 50% to 80% of stroke patients develop impairment and pain of the hemiplegic shoulder (Lindgren et al., 2018). Hemiplegic shoulder pain has been shown to significantly affect the functional recovery of stroke patients due to reduced activity and functionality (Lindgren et al., 2018; Walsh, 2001).
- California Tri-Pull Taping (CTPT)
  - Hayner (2012) studied the efficacy of the CTPT method to reduce inferior subluxation of the affected upper extremity (UE) post stroke and found an incr. increased affected UE active range of motion and activities of daily living function (Hayner, 2012).
- Mental Practice/Motor Imagery
  - Studies have shown that guided mental imagery and meditative practices further reduce hemiplegic shoulder pain.
  - In their systematic review, Nilsen et al., (2015) found that mental practice, a training method utilizing cognitive rehearsal of motor movements, coupled with traditional OT had positive findings related to UE function (Nilsen et al., 2015).

Purpose

The purpose of this study is to examine the efficacy a treatment protocol combining CTPT with mental practice/motor imagery.

Methods

Study Design

- A single-case design involving a program implementation to one individual over a period of 12- weeks.
- Approved by the A.T. Still University Institutional Review Board
- **Study Participant**

A 74-year-old female with chronic left side hemiplegia secondary to a right CVA in 2018. She was selected because she met the inclusion criteria of UE weakness with shoulder subluxation secondary to hemiplegic stroke. Primary concerns are impairments with independent management of ADLs, IADLs, and leisure activities. Patient has decreased functional mobility, functional strength, activity tolerance, and AROM of left UE.

Instruments

- The Barthel Index; Fugl-Meyer Assessment – Upper Extremity (FMA-UE); Pain Scale

Treatment Development

CTPT with mental practice/motor imagery

- Approximately 30 minutes was given for motor imagery with the patient in a relaxed position. The motor imagery script began with a body scan, revolving her consciousness throughout her whole body as what was described as a wave of relaxation. Following the wave of relaxation, the patient would be guided through diaphragmatic breathing.
- CTPT method us applied in the beginning of OT session and worn in for approximately 5 days until removed to provide her skin 2 days of a break and then re-applied at following OT session.
- Plan of Care: 2x a week for 12 weeks

SAMPLE SCRIPT

Developed by Kristen Mills

As you continue to focus on your breathing, we will begin to move through these motions we just imagined of grasping the spoon to facilitate movements in your hand, elbow, and shoulder to scoop up a delicious spoonful of pudding. I want you to tell your mind to move the muscles in your arm to enable these movements to occur. I will be assisting you as needed. As you are sitting in the black cushioned chair. Feel your body sink into the chair. Let your body become in a relaxed state while sitting in the chair. Now, lift your left arm reaching out for the spoon placed on the table in front of you. Open your hand, your fingers, to be placed onto the spoon and grasp your fingers surrounding the spoon. As you feel the spoon in the palm of your hand, orient the spoon so that you can take a delicious spoonful of chocolate mousse pudding. Feel your fingers grasping the spoon. Feel your wrist, elbow, and shoulder move to facilitate bringing the delicious scoop of pudding to your mouth.

Variables	Intake	12-week
Barthel Index Score	76/100	89/100
Reported Pain	8/10	0/10
FMA-UE		
UE	10/36	13/36
Wrist	0/10	0/10
Hand	4/14	5/14
Coordination/Speed	0/6	0/6
Total (motor function)	15/66	18/66
Sensation	12/12	12/12
Passive Joint Motion	21/24	24/24
Joint Pain	18/24	20/24

Active Range of Motion

	Intake	12-weeks
Shoulder		
Flexion	10°	15°
Abduction	0°	5°
Elbow		
Flexion	50°	55°
Supination	0°	0°
Pronation	0°	5°
Wrist		
Extension	0°	0°
Flexion	0°	5°

Manual Muscle Testing

	Intake	12-weeks
Shoulder		
Flexion	2-/5	2-/5
Abduction	1/5	2-/5
External Rotation	1+/5	2-/5
Elbow		
Flexion	2-/5	2+/5
Extension	2-/5	2-/5
Wrist		
Flexion	0/5	1+/5
Extension	0/5	1/5

Discussion

OT Implications

- The CTPT method reduces subluxation with the secondary effects to reduce pain. OTs can provide the use of motor imagery to further enhance treatment in decreased pain and motor relearning.
- In chronic stroke, once pain has been addressed, the motor imagery can be useful for late improvements.
- Combining the interventions has the potential to improvement functional ADLs and increased the autonomy of stroke patients.

Future Research

- Results of support the need for future research in the combination of mental imagery with other interventions to improve evidence-based practice.
- This single-case design shows promising results for future research to further assess the effectiveness of the CTPT method combined with motor imagery/mental practice for stroke patients at any stage of their individual recovery.

References

References available on request