USE OF LITEGAIT AND FES TO IMPROVE FUNCTIONAL OUTCOMES IN AN INPATIENT ACUTE REHAB SETTING – A CASE STUDY

Jenny Chang, PT, DPT, GCS, CEEAA

Patient information

- 72 year old female admitted to ARU four days after sustaining a pontine and right basal ganglia infarct
- Past medical history
  - Cerebral pontine angle meningioma resection in 2008
  - Left pontine stroke in 9/2014 (but was able to return to indep level)
  - Hypertension
  - Hyperlipidemia
- Active problems
  - Right hemiparesis
  - Impaired cognition
  - Spasticity
  - Risk of falls, DVTs, seizures, recurrent stroke, contracture

Patient's mobility at I.E.

- Functional Independence Measure (FIM)
  - Transfer = 3, mod A
  - Gait = 2 – 50 feet with mod A, without AD, increased lateral trunk sway, absent R DF and heel strike, R knee hyperextension noted, reached out for external support
  - Stair = 2 – mod A
- Standing balance – pt with decreased upright posture and decreased weight bearing to R side
- TUG - 48 seconds
- Berg – 12/56 – high risk for fall
- Gait speed = 0.28 m/s

Goals

- Pt's goal: to walk without assistance, and to be able to use her R arm again
- Functional goals:
  - To be able to perform sit <> stand with supervision
  - To be able to ambulate x 300 feet with LRAD vs no AD with nuetral heel strike with RLE with SBA
  - To be able to climb a flight of stairs with unilateral railing with supervision
  - To be able to perform TUG under 30 seconds to decrease risk for fall
  - To increase gait speed to > 0.4 m/s

Problem Identification

- 1) Impaired gait
  - absent dorsiflexion leading to poor R foot clearance, impaired reciprocal pattern, also knee hyperextension during stance phase
- 2) Impaired postural control
  - Impaired static and dynamic balance
- 3) Fear of falling
- 4) impaired cognition and memory

Interventions with LG

- Why LG?
  - Provides postural stability
  - Decrease energy consumption
  - provides a safe environment
- R LE strengthening
- Standing dynamic balance
- Gait training

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  - one therapist provides manual assist to hemiparetic limb during swing and loading phase
  - Another therapist for trunk control

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- Modification:
  - Use of LG + FES (Bioness)
    - Dorsiflexion assist
    - Preventing R knee hyperextension during stance



- (video)

Benefits of LG + FES

- Therapist specific
  - Decrease number of therapists needed
  - Less manual assistance is needed
    - Therapist endurance



- Patient specific
  - Facilitate motor recruitment and recovery
  - Increased sensory and proprioceptive inputs
  - Increase patient motivation

Case Limitations

- Insurance coverage resulted short stay
- Pt's cognition and memory

Outcome

	Pre-treatment	At discharge
Bed mobility	Supervision	Mod I
Sit <> stand	Mod A (3)	Supervision (5)
Gait	No AD, 50 feet, Mod A, decreased postural control, R toe drag, R knee hyperextension, unsteady (2)	SPC, 300 feet, min A, R AFO, improved trunk control, improved R foot clearance, R knee hyperextension 25% of the time, steadier (4)
Stairs	4 steps with mod A (2)	One flight with CGA (4)
Standing balance	UE support needed, decreased weight bearing to RLE	No UE support, able to stand with supervision
TUG	48 seconds	37 seconds
Berg	12/56	22/56
Gait Speed	0.28 m/s	0.32 m/s

Summary

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- ELECTRIC STIMULATION = motor recruitment, modify neuromuscular activity and produce human movement
- LG + E-STIM = optimal functional outcome

Questions?

