E-Poster

EP-727

Individualized Therapeutic Project in a Post-Stroke Hemiplegic Patient: The Role of Assisted Rehabilitation Alter-G, Ankle-Foot Orthosis, and Botulinum Toxin Injections

Topic: Health Conditions (Nervous System, Musculoskeletal System, Cardiopulmonary System)

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BACKGROUND

Spastic hemiplegia is a common sequela of stroke, significantly impairing motor function and gait. The therapeutic approach relies on a multidisciplinary strategy combining motor rehabilitation, orthotic devices, and medical treatments to reduce spasticity and optimize functional recovery . Quantitative gait analysis (QGA) provides an objective assessment of functional progression and helps adapt therapeutic strategies accordingly.

CASE DESCRIPTION

We report the case of a 53-year-old male patient with no notable medical history, who suffered an ischemic stroke three years ago, resulting in right spastic hemiplegia. Initial clinical evaluation showed muscle strength of 4/5 in the right upper limb and 5/5 in the right lower limb, preserved joint range of motion, and significant spasticity of the elbow flexors and triceps surae, associated with clonus. The patient exhibited right-sided foot drop, altering gait patterns.

The management included intensive motor rehabilitation, an ankle-foot orthosis, botulinum toxin injections, and assisted gait training with an Alter-G treadmill. A pre- and post-treatment quantitative gait analysis objectively assessed functional progression. Improvement was marked by increased muscle strength and reduced spasticity, notably a decrease in triceps surae spasticity from 3 to 1 on the Ashworth scale after botulinum toxin injection, as well as a significant improvement in gait pattern.

DISCUSSION

The optimization of post-stroke rehabilitation requires a multimodal approach aimed at improving functional autonomy and gait quality. Assisted rehabilitation, particularly using Alter-G therapy, allows weight reduction, promotes locomotor recovery, and minimizes musculoskeletal constraints. Ankle-foot orthoses (AFOs) play a crucial role in compensating for foot drop, facilitating dorsiflexion, and reducing fall risk. Additionally, botulinum toxin injections effectively decrease spasticity and enhance movement kinematics.

Quantitative gait analysis (QGA) is an essential tool for objectively assessing motor deficits and evaluating the effectiveness of therapeutic interventions. Recent studies emphasize that integrating robotic rehabilitation and functional stimulation into post-stroke care accelerates motor recovery and improves postural control.

CONCLUSION

The combination of assisted rehabilitation, ankle-foot orthosis, and botulinum toxin injections significantly enhances post-stroke motor recovery. Quantitative gait analysis helps personalize treatment strategies. A multidisciplinary and tailored approach promotes autonomy restoration, reduces spasticity, and improves the patient's quality of life.

Statement of Disclosures

None

Doi: 10.5606/archisprm.2026.EP-727

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