DALFAMPRIDINE COMBINED WITH PHYSICAL THERAPY MAY IMPROVE TREATMENT EFFECTS IN DALFAMPRIDINE NON-RESPONDERS WITH MULTIPLE SCLEROSIS: A CASE STUDY

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Introduction: Dalfampridine extended-release (Ampyra ®) (D-ER) is a pharmacological treatment commonly prescribed to individuals with multiple sclerosis (MS) to improve walking speed. However, 60% of people who take D-ER do not demonstrate clinically relevant improvement, defined as ≥ 20% improvement in gait speed; these people are considered non-responders. There are currently no published studies examining the potential of physical therapy (PT) to augment the treatment effects of D-ER.

Objective: The purpose of this study was to examine the effects of D-ER combined with PT (D-ER + PT), after a period of D-ER alone, on gait speed, dual-task performance, balance, cognition, fatigue, and patient-reported outcomes related to disability and walking impairment.

Methods: The participant was a 59 year-old female with a 6-year history of relapsing-remitting MS who was prescribed D-ER by her neurologist. An initial evaluation was conducted prior to commencing D-ER therapy (10 mg, 2x/day), followed by a second evaluation 2 weeks after initiation of D-ER therapy. The participant then commenced PT treatment consisting of 2, 40-minute sessions/week for 6 weeks while continuing D-ER. PT focused on gait, balance, coordination, functional strengthening, and dual task performance. Outcome measures included the Timed 25-Foot Walk (T25FW), dual-task assessment (walking while performing clock task), Mini BESTest, Four Square Step Test (FSST), Activities-Specific Balance Confidence Scale (ABC), Fatigue Severity Scale (FSS), MS Impact Scale (MSIS-29), 12-Item MS Walking Scale (MSWS-12), and Symbol Digit Modality Test (SDMT). A post-assessment was conducted after 6 weeks of PT, and at 3-week follow up to assess retention.

Results: The participant demonstrated a 7% improvement in gait speed (T25FW) following two weeks of D-ER treatment, indicating that she is a non-responder. After 6 weeks of D-ER + PT, she demonstrated clinically significant improvements on the T25FW (21% gait speed increase), single-task and dual-task gait speeds, ABC, MSIS-29, MSWS-12, and FSST, all of which were maintained at follow up. Conversely, the participant showed greater improvement in dual-task interference on cognitive processing speed (reaction time while walking) during the D-ER only phase, indicating a greater effect from D-ER than from D-ER + PT.

Conclusions: Combining PT with D-ER may improve gait speed, dual-task performance, and perceived disease impact in individuals with MS who have experienced a sub-meaningful response to D-ER. The results suggest that further investigation of the combination of PT and D-ER in people with MS is warranted, as well as examination of whether PT (without D-ER) is an effective alternative to D-ER in those who are non-responders to the pharmacological intervention.