Exercise Therapy for a Patient With Parkinson Disease and Back Pain: A Case Report

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ABSTRACT

Objective: The purpose of this report is to describe an exercise intervention for an elderly patient with Parkinson disease with a chief complaint of lower back pain.

Clinical Features: The patient was an 85-year-old man who had been diagnosed with Parkinson disease and kyphosis. Back pain was preventing him from carrying out activities of daily living. He was referred for physical therapy for treatment to reduce lower back pain and increase function. An initial examination consisted of testing flexibility and range of motion and administering a pain severity scale and a Lower Extremity Functional Index (LEFI); the patient's initial LEFI score was 14/80.

Intervention and Outcome: Clinical observation was made during each of the patient's physical therapy sessions. After 5 weeks, the patient's LEFI score improved to 30/80. The patient reported that he had no more reoccurring back pain, was able to move much easier, and was able walk more efficiently and with better posture.

Conclusion: The patient in this case responded positively to a 5-week course of physical therapy that included exercise therapy. His back pain diminished and his function increased after the course of care. (J Chiropr Med 2018;17:72-74)

Key Indexing Terms: *Exercise; Parkinson Disease; Low Back Pain*

INTRODUCTION

Parkinson disease (PD) is a neurologic disease caused by a lack of dopamine to the midbrain. Parkinson disease reflects its primary symptoms as tremors, muscle rigidity, difficulty with coordination, bradykinesia, decreased stride length, and a slow, shuffling gait. Parkinson disease is a growing subject when it comes to exercise treatment. Pharmaceutical treatments are usually available, but exercise can also help with the troubling symptoms that arise from having PD. Evidence has indicated that exercise is beneficial for bradykinesia, postural balance, and quality of life in patients with PD.¹

Lower back pain (LBP) can have many causes, such as disease, injury, or a health condition. Exercise treatment has been reported to improve symptoms of both PD and LBP in many studies. There are different types of exercise (eg, resistance training, flexibility, coordination), but aerobic exercise training has been the most studied and has been

reported to produce health benefits.² Numerous treatments are available for both PD and LBP, yet the type of treatment focused on in this case study was physical activity/therapy.

The purpose of this study was to describe an exercise intervention for an elderly patient with PD with a chief complaint of LBP.

CASE STUDY

An 85-year-old man previously diagnosed with PD reported to a physical therapist with back pain and difficulty walking. He had a recent history of falls since December 2015. He was referred to physical therapy to increase function and decrease pain. The initial diagnosis for this patient was lumbosacral strain/sprain with a secondary diagnosis of lumbar spondylosis, idiopathic scoliosis in the thoracolumbar region curving to the right, PD, and a precaution of osteoporosis. The patient's goals by the end of a course of treatment were to eliminate pain when moving from sitting to standing and while sleeping.

Clinical Evaluation/Goals

The initial physical therapy evaluation included left LBP and radicular symptoms extending into left lower extremity occasionally, with a score of 6 of 10 on a numeric pain scale. The patient was given a Lower Extremity Functional

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Paper submitted September 2, 2016; in revised form October 25, 2017; accepted October 26, 2017. 1556-3707

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<https://doi.org/10.1016/j.jcm.2017.10.008>

Index (LEFI) test during his initial examination and scored a 14/80. The patient noted extreme difficulty and inability to perform activity for 11 of 20 actions. His response to the LEFI was moderate difficulty (score of 2) for the following actions: rolling over in bed, sitting for 1 hour, and walking in between rooms. The patient's wife stated that he had fallen about 6 or 7 times since December 2015. During his falls, he hit his back and head. After this, he started to use a rolling walker to ambulate. Pain in his lower back occurred unexpectedly. His main goals were to walk and function without pain. According to the physical therapist, the patient was ambulating with a rolling walker and exhibited symptoms of PD, including a shuffling gait. The goals developed by the physical therapist and patient included reducing pain and increasing function to enable the patient to stand, sit, sleep, lift, and walk.

Exercise Therapy

Functional and aerobic exercises were used in the therapeutic treatment for this patient. Each exercise session included recumbent bike cycling for a 10-minute warmup (accompanied with lumbar hot pack on the lower back). To assist in strengthening the shoulders and back, the following supervised exercises were performed: scapular retractions with and without yellow Thera-Band 10 × 5-second hold and standing scapular retractions with and without yellow Thera-Band 10 × 5-second hold. To assist in decreasing LBP, the following supervised exercises were performed: double knee to chest stretch 2 × 10-second hold, single knee to chest stretch 2 × 10-second hold, lateral trunk rotation 2 × 10-second hold, pelvic tilt 15/20 × 5-second hold, supine posterior pelvic tilt 20 × 5-second hold, and bridges 10 × 5-second hold. To assist in strengthening patient's lower extremity, the following supervised exercises were performed: short arc quad 10 × 5-second hold, long arc quad 10 × 5-second hold, sitting marches 5 times, seated hip abduction 10 × 5-second hold, seated hip adduction 10 × 5-second hold, walking, toe taps (with and without weight shift) on 4-inch step 10 × bilaterally, sit to stand 10 times, squats (with upper extremity support) 5 × 5-second hold, and standing single leg knee extension isometrics 3 sets of 10 × 10-second hold. Lower extremity exercise has been recommended as a therapy for PD.³ Home-based exercises were assigned, which included the following: pelvic tilt 10 sessions daily 10 × 5-second hold, bridges to repeat 20 times daily, knee to chest stretch repeat 10 times per set and hold for 10 seconds 2 to 3 times daily, angry cat stretch 20 times per set, and opposite knee to chest while in supine position—repeat 2 to 3 times daily and hold for 10 seconds.

After his initial evaluation, he performed activities in a supine position with applied moist heat to the lower back. The therapy session included stretching and an initial phase of low back strengthening (ie, single knee to chest stretch, double

knee to chest stretch, lateral trunk rotations, pelvic tilts, and bridges). In the instance of changing position, the patient needed great assistance when maneuvering positions from supine to sit. Two weeks later, he progressed to walking laps around the gym; he was able to complete 2 laps with his single-point cane instead of his regular rolling walker.

Four weeks after the initial therapy session, he tolerated a new exercise, lateral taps on a 4-inch platform, with cueing his posture. During the fifth week, he reported better recovery and endurance with exercises compared with prior sessions. He was able to tolerate standing marches with a walker and accompanied by rest breaks between each repetition.

Over the course of care, the patient had improvement based on the modified Oswestry Low Back Pain Questionnaire and LEFI. After 3 weeks of care, he remarked that his back pain was mild and intermittent. He also noted that he did not experience any more pain while lying in bed. He was able to move more easily and to get up from sitting to a standing position without pain. His response to the LEFI was no difficulty (score of 4) for the following actions: rolling over in bed, sitting for 1 hour, and walking in between rooms. He scored 30/80, displaying a 20% improvement. His posture improved while both standing and sitting, and he was able to extend his back muscles to stand upright without any pain. He reported being able to navigate around his home and in the community with less pain and discomfort.

The exercise treatment challenged his cognition by forcing him to remember exercise names, sets, repetitions, and hold counts. His mood has also improved in being around an inviting and friendly atmosphere; even his confidence in movement improved. He started walking with his cane more often, and after each visit, he left walking with much better upright posture. His cognitive function and mood improved while receiving treatment at the facility. His wife claimed that he stated to her that he enjoyed going to physical therapy at the facility and wished to continue his exercise therapy. After the course of care, he reported that he had no more reoccurring back pain, was able to move much easier, and was able to carry out functional activities such as walking more efficiently and with better posture. The patient provided consent to have his information published in this report.

DISCUSSION

Exercise may be beneficial both physically and mentally, and exercise has been used as a form of treatment to assist patients with PD.⁴⁻¹² Although pharmaceutical treatments are available, exercise can also help with symptoms. Evidence has indicated that exercise is beneficial for bradykinesia, postural balance, and quality of life in patients with PD.¹ During exercise, the muscles are contracted, which helps strengthen muscles and gain more control in movements. It is hypothesized that when people

with PD strengthen their core spinal and lower extremity muscles, balance may be improved by being able to hold themselves better at their center of gravity and being able to increase their stride when walking, thus reducing their shuffling gate.

Physical activity has been studied to reduce the effects of PD through a number of different mechanisms.¹¹ Physical activity can reduce symptoms such as poor posture, shuffling steps, balance, and tremors by allowing the patient to increase muscle control and strength. For example, the patient performed long arc quads and short arc quads to increase leg strength.

Limitations

The patient was observed in an uncontrolled environment. There are numerous outside factors that could have influenced the patient's progression or regression such as lifestyle, exercise (performed outside of clinic), or a fall at home.

CONCLUSION

This case study describes the management of a patient with back pain and PD that resulted in a decrease in LBP and PD symptoms.

ACKNOWLEDGMENT

The author thanks Aisha Lord Ryan, MSPT, DPT, for allowing her to record this case report. She was the physical therapist who treated the patient and allowed the author to conduct this case study while interning at her facility.

FUNDING SOURCES AND CONFLICTS OF INTEREST

No funding sources or conflicts of interest were reported for this study.

CONTRIBUTORSHIP INFORMATION

Concept development (provided idea for the research): C.R.
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Critical review (revised manuscript for intellectual content, this does not relate to spelling and grammar checking): C.R.

Practical Applications

- The patient's symptoms of PD seemed to decrease after exercises performed in therapy sessions.
- The patient's function increased and pain levels decreased.

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