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CASE STUDY: EFFECTIVENESS OF TELEREHABILITATION ON THE EPISODE OF EXACERBATION OF RHEUMATOID ARTHRITIS DURING COVID-19 LOCKDOWN

Physiotherapy

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ABSTRACT

Background: Telerehabilitation became the mainstay of treatment during COVID- 19 lockdown for the health care professionals as providing services with safety measures was needed for the extraordinary situation. Patient compliance plays an important role for the success of telerehabilitation. **Study Design:** The case study was used to highlight the role of telerehabilitation for the treatment of Rheumatoid Arthritis flare during COVID-19 lockdown. **Case Description:** A 55 year old female with an episode of acute exacerbation of Rheumatoid Arthritis (RA) was referred to physiotherapy telerehabilitation in the month of June 2020. She complained of pain in bilateral knee joints, right wrist joint and right ring finger proximal interphalangeal (PIP) joint. Along with pain she reported difficulty in standing and walking. She used a wheelchair to protect her painful and swollen weight bearing joints. She was a diagnosed case of RA for the last 8 years. Her surgical history includes hysterectomy 20 years back, cystectomy 18 years back, and arthroscopy for right knee 8 years back. She is currently on medications to manage her RA, hypertension and hypothyroidism. **Management and outcomes:** The patient received physical therapy sessions three times per week for 12 weeks. It included supervised online exercise programs. At the end of 12th week, the patient reported relief of pain, stiffness and improved functional capacity. **Discussion:** This case study underlined the effectiveness of technology in the assessment and treatment during COVID-19 lockdown.

KEYWORDS

Telerehabilitation, Rheumatoid Arthritis, Joint protection, Exercise therapy

INTRODUCTION

Rheumatoid Arthritis (RA) is an auto-immune disorder of unknown etiology characterised by symmetric erosive synovitis and causes extra-articular involvement. Most patients experience a chronic fluctuating course of disease that despite therapy may result in progressive joint destruction, deformity, disability and even premature death. [1]

Therapeutic exercises along with medical care form the mainstay of the management for the patients with RA. The prescription of exercise program varies with the stage of the disease, manifestations and the purpose of the exercise. Aims of exercises in RA patients are to improve range of motion, muscle strength, endurance and aerobic capacity. The overall effect of the exercise program helps to improve functional performance and psychological well-being. Telerehabilitation was the means of providing personalized exercise sessions for most of the patients during COVID-19 lockdown. [2-4] Delivering rehabilitation services at a distance using communication technologies is a new and developing field known as telerehabilitation. This became an important asset during COVID-19 lockdown declared owing to the pandemic worldwide. The Centers for disease control and prevention (CDC) offered guidance for promoting use of telerehabilitation as a method of care delivery to mitigate the risk of exposure to COVID-19, as well as potentially reduce the number of patients who might otherwise seek care in physical therapy rehabilitation outpatient services. The American Physical Therapy Association's house of delegates recognises telerehabilitation as a well-defined and established method of health services delivery that enhances patient and client interactions to telerehabilitation during COVID-19 lockdown.[5-7]

METHOD

Case presentation: A 55-year-old female with an episode of acute exacerbation of Rheumatoid Arthritis (RA), a primary school teacher was referred to physical therapy telerehabilitation during COVID-19 lockdown in the month of June 2020. She complained of pain in bilateral knee joints, right wrist joint and right ring finger PIP joint. Along with pain she reported difficulty from sitting to standing and walking a few steps. She temporarily adapted to a wheelchair to protect her painful and swollen weight bearing joints. She was a diagnosed case of RA for the last 8 years. Her surgical history includes hysterectomy 20 years back, cystectomy 18 years back, and arthroscopy for right knee 8 years back. She is currently on medications to manage her RA, hypertension and hypothyroidism.

During the first session of telerehabilitation, the patient rated her knee joint pain as 5/10 at rest. Her symptoms did appear to increase with an attempt to stand and walk upto 7/10. Patient complained of stiffness and pain in the anteromedial aspect of bilateral knee joints. At rest, she reported 3/10 pain in the right wrist joint and right ring finger PIP joint that would increase to 5/10 during activities of daily living.

Alignment and movement analysis: [8]
Lower extremity: On observation during the video call and the analysis of photos and videos sent by the patient, following impairments were noted: In supine lying, bilateral hips were in abduction and external rotation. Bilateral hip and knee joints were in flexion attitude. Right side was more affected compared to the left. Bilateral ankle joints were in plantar flexion and in inversion.

The patient had kyphotic posture and she continued to walk with the flexion attitude in both hips and knees with the walker. Lateral lurch was observed mainly on the right as compared to the left. Heel- to- toe gait pattern was absent. The patient took 1 minute 20 seconds to walk 6 meters. From sit to stand with arm rest support, her hips tend to move in adduction and medial rotation.

Upper extremity: On observation, there was slight radial deviation of right wrist joint, ulnar deviation of all MCP joints and PIP flexion of ring finger. She had insufficient abduction and opposition of right thumb. She had difficulty holding a coffee mug and a glass full of water. She had difficulty holding a pen and writing for more than a page.

Treatment goals set for rehabilitation were:
- Reduce pain
- Increase Range of motion of affected joints
- Improve gait pattern and functional activities
- Build on her endurance

Management strategies:The goal of patient education was to emphasize on protection of joints, correction of impaired postural

habits and movements. She was instructed to take adequate rest, respect her pain and pace her activities of daily living. She was asked to avoid sustained positions for a long period of time and avoid positions of deformity. She was also recommended to change activities from one group of joints to other and use the largest joints whenever possible. Energy conservation techniques were taught to improve her functional activities that enhanced her quality of life. She was advised to use assistive devices and shoes. Adapted cutlery was incorporated in her daily routine including lightweight utensils, large handled, insulated mugs, large-handled swivel blade peelers, bottle openers and modified pen. [2, 3, 9] These important changes ensured her to take control over various aspects of life and helped her develop coping strategies. Ice fomentation was advised for pain reduction following that she was given an active range of motion exercises for all the joints within pain-limits. [2, 3, 9] Later it was progressed to multiple angle isometrics along with holds. Exercises were made challenging with the use of weights as the pain reduced further. Rubber bands, smiley balls and dough were used for training hand muscles. Further training of hand muscles was added by giving time bound small writing assignments.

Patient was suggested to use a portable foot pedal exerciser to improve exercise tolerance and motor control for functional activities. She was encouraged to implement corrective strategies while standing, walking and sit-to-stand activities. [10] Exercises to improve joint proprioception and balance were incorporated gradually in her daily regime. Physical therapy sessions were delivered 3 times a week for 12 weeks. By the end of 12 weeks, the patient rated her pain as 2/10 at rest and 4/10 on activities. At rest, she reported 1/10 pain in the right wrist and right ring finger PIP joint and 2/10 while using her upper extremity. Patient was able to walk with a cane by the end of 8 weeks and then joined back at her workplace by the end of 10 th week with minimal walking assistance. She could discard that by the end of 12 weeks. She could walk 6 meters in 15 seconds. Writing speed improved and discomfort reduced.

RESULT

Table no 1: Objective measures pre and post rehabilitation

Pain measurement/ Functional tasks	Pre- rehabilitation	Post-rehabilitation
Numerical Pain Rating Scale	Knee: At rest 5/10, On activity 7/10 Wrist: At rest 3/10, On activity 5/10	Knee: At rest 2/10, On activity 4/10 Wrist: At rest 1/10, On activity 2/10
Walking speed (Distance/ time)	0.075 m/s	0.3 m/s
Sit to stand (seconds)	55 seconds	15 seconds
Writing speed per page (duration)	8 minutes 15 seconds	3 minutes 25 seconds

CONCLUSION

Patient education, individualized exercise plan along with medical care and patient compliance were favourable for overall positive outcomes in the management of exacerbative episode of Rheumatoid Arthritis. Her adherence to the rehabilitation program was the cornerstone of the success of telerehabilitation.

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