INTRODUCTION

Complex Regional Pain Syndrome (CRPS) is a rare condition with no known gold-standard for treatment. It is hypothesized to arise from a combination of maladaptive pro-inflammatory responses, disturbances in sympathetic vasomotor control, and maladaptive peripheral and central neuronal plasticity. There are two main presentations for CRPS: Type I develops following a non-direct injury to the nerve and surrounding tissues, while Type II pertains to CRPS symptoms following a nerve injury.1 Evidence supports various treatments to decrease pain and improve function in patients with CRPS, including the use of pain exposure physical therapy (PEPT) which encourages the use of the affected limb despite complaints of pain.2 Because CRPS is thought to be closely intertwined with the central nervous system, encouraging patients to push through perceived “danger” signals from their body will stop the reinforcing belief that use of the affected limb is “bad.” Education on pain science and the function of pain as a “false alarm” in the case of CRPS is also thought to help reduce pain.4 Due to the lack of evidence supporting any one treatment for CRPS, a multidisciplinary treatment in combination with the principles of PEPT was employed in this case.

CASE DESCRIPTION

The patient was a 32 year old female who sustained a right inversion ankle sprain 7 months prior to examination. Persistent symptoms pain resulting in a diagnosis of CRPS-Type 1. The patient had been non-weight bearing with walking boot and bilateral axillary crutches for 7 months. This case report focused on the use of PEPT in combination with manual therapy, electrotherapeutic modalities, temporal agents, and traditional therapeutic exercise techniques in the treatment of CRPS in a 32-year-old woman. Data was analyzed retrospectively.

RESULTS

In addition to the ankle injury, patient reported a history of anxiety and depression, as well as chronic low back pain and degenerative disc disease, 2 pre-existing conditions known to increase the incidence of developing CRPS-I after an acute injury.1 Patient reported significant decreased function and quality of life due her conditions, with limitations reported with ambulation, standing, activities of daily living (ADLs), stair negotiation, and effects on sleep, driving, and housework. Testing included range of motion (ROM), strength, balance, limb circumference, sensation, and a variety of functional outcome measures (Tables 2 & 3). Sensation testing revealed impaired light touch below the right knee as well as diminished 2-point discrimination.2 The patient ambulated 100 ft at 0.73 m/s with a right walking boot and bilateral axillary crutches, demonstrating touch-down weight bearing and a swing through gait pattern.

DISCUSSION

A multimodal approach for a patient with CRPS-Type I resulted in improvements in impairments and function. Lower extremity strength and ROM improved due to the strengthening and stretching interventions described in Table 1. Although dorsiflexion did not reach the level of minimal detectable change of 8 degrees,2 the patient was able to move past neutral, helping to normalize gait mechanics and functional activities such as squatting. Limb circumference of the calf increased 0.25 cm, most likely due to the beginning of muscle hypertrophy from strengthening activities and increased use, but did not yet match the contralateral side due to insufficient time elapsed to produce substantial muscle enlargement.9 Distance ambulated increased compared to the initial evaluation, most likely due to decreased limb sensitivity and pain, denoting progress toward the long-term goal of full community ambulation. Brown et al identified full community ambulation for adults to be 304 meters (1,000 ft).10 Although gait speed decreased at re-evaluation, the devices used were less restrictive and the quality of the movement pattern improved. Both the LIFS and OMSQ scores improved, with the decreased OMSQ score falling under the cut-off for moderate risk for missing work and increased in injured workers.9 Research shows relatively low evidence for a range of physical therapy treatments in the treatment of CRPS, with PEPT and pain science education as the most promising of the new-developing treatments. Similar to this case, education on the symptoms of CRPS and mechanisms of pain, treatment rationale, and progression of the syndrome combined with PEPT resulted in significant improvements in a randomized-control trial comparing PEPT and conventional physical therapy treatment.4

CONCLUSION

Multimodal physical therapy in combination with PEPT tailored to an individual patient may be an effective way to treat CRPS. Pain science education and exposure principles of PEPT may also be important aspects of pain management.

REFERENCES