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Exercise Based Rehabilitation Following CAR-T Therapy: A Case Report

Background:
Chimeric Antigen Receptor T-cell (CAR-T) therapy is an advanced treatment for hematologic malignancies, often associated with significant physical deconditioning, functional decline, and long-term complications. Evidence regarding rehabilitation following CAR-T remains limited.
Case Presentation:
A 26-year-old woman with relapsed disease underwent multiple chemotherapy treatments, followed by CAR-T therapy (August 2020). She completing treatment in March 2021. Her condition deteriorated significantly, including six months of wheelchair dependency, severe dyspnea, generalized weakness, and part dependency in activities of daily living. Additional complications included osteoporosis in hips and lumbar spine 1-4, peripheral neuropathy, fatigue, and weight gain. At initial assessment (May 2022), she required assistance for ambulation, stair negotiation, and personal care. Handgrip strength was 20.7 kg (right) and 20.0 kg (left), and she completed 14 repetitions in the 30-second sit-to-stand test. She also reported recurrent falls and impaired hand function.
Intervention:
The patient completed a 9-month multidisciplinary rehabilitation program including weekly physiotherapy, hydrotherapy, and community-based physical activity. The intervention incorporated progressive resistance training, aerobic conditioning, balance training, and functional exercises, alongside patient education. Resistance loads increased substantially (deadlift: 4 kg to 42 kg; shoulder press: 2 kg to 10.5 kg).
Results:
By February 2023, the patient achieved full independence in daily activities and returned to regular physical activity. Handgrip strength improved to 29.4 kg (right) and 22.6 kg (left), and sit-to-stand performance increased to 27 repetitions. Her osteoporosis has improved to normal for her age, fatigue, dyspnea, and pain significantly decreased.
Conclusion:
Structured, progressive exercise-based rehabilitation following CAR-T therapy may restore functional capacity, improve strength, and reverse treatment-related complications, supporting its integration into survivorship care.

Keywords

CAR-T therapy; Exercise oncology; Rehabilitation; Functional recovery

Conflict of Interest & Ethical Approval

yes

Abstract submitters declaration

yes

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