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Role of Neuromuscular Electrical Stimulation and Physiotherapy in Managing Hirayama Disease: A Case Report

Nikhil Choudhary [1*], Priya Rawat [2]

[1] Government Physiotherapy College (Dr. S.N. Medical College), Jhalamand Jodhpur 342005, Rajasthan, India
[2] Shree IG Hospital & Active Health Centre, A-14 Krishna Nagar, Jodhpur 342005, Rajasthan, India

Abstract

Background: Hirayama disease (HD) causes progressive weakness and atrophy in forearm and hand muscles on one side without sensory disturbances. There are no studies exploring the role of neuromuscular electrical stimulation (NMES) of intrinsic muscles of hand and physiotherapy in managing HD. In this report, we present a case of HD affecting the right arm and referred for physiotherapy.

Case Report: A 17-year-old male with right-hand weakness was diagnosed with HD. Initially, he experienced weakness in his middle and little fingers and muscle twitching in his forearm. The diagnosis was confirmed through a flexion-extension MRI of the C-spine, which revealed abnormalities in the laminodural space between C3 and C6. Physiotherapy was recommended to treat the condition. The patient showed muscle atrophy in the intrinsic muscles of the hand and underwent a 6-week physiotherapy program involving NMES and hand exercises. This stimulation was given at extensor digitorum, abductor pollicis longus and brevis, abductor digiti minimi, dorsal and palmar interossei. 50 contractions were given at each point. The patient also underwent gripping and prehension exercises with theraputty and theraweb. Hand function was assessed using Disability of the Arm, Shoulder, and Hand (DASH) questionnaire and Nine-Hole Peg Test (NHPT). The patient's DASH score improved by 10 points and was clinically significant.

Address for correspondence: Nikhil Choudhary*, C -172 Krishna Nagar, Pali Road, Jodhpur 342005, Rajasthan, India. E-mail: pt.nikhil@gmail.com

Conclusion: NMES and Physiotherapy can be useful for hand function in HD.

Keywords: Hirayama disease, Physiotherapy, Therapeutic electrical stimulation