



Efficacy of Lymphedema Rehabilitation in a Patient with Neurofibromatosis : A Case Report

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INTRODUCTION

- Neurofibromatosis (NF) is a genetic disorder characterized by the growth of tumors along the nervous system, which can lead to various complications, including lymphedema.
- While lymphedema in patients with NF is an uncommon presentation, it can result in significant morbidity and reduced quality of life. Lymphedema management primarily focuses on reducing swelling and preventing complications, typically through a combination of compression therapy, manual lymph drainage, and exercise.
- However, the efficacy of rehabilitation therapies in NF-related lymphedema remains underexplored in the literature. In this study, we report the case of a patient with NF and lymphedema who demonstrated significant improvement following two months of rehabilitation therapy.

CASE REPORT

History and progress

A 26-year-old female

- NF1, History of multiple NF on his skins
- Progressive Lt lower extremity swelling
- Not previously be treated for lymphedema

Physical Exam :

- Marked Right lower leg swelling
- Weakness (MMT G3~4)
- Restricted mobility due to the edema (Fig.1)

EMG :

- Old right sciatic neuropathy, peroneal & tibial both, but peroneal more involved

- Rehabilitation program :

Complete decongestive therapy (CDT), Manual lymphatic drainage (MLD), compression therapy using multilayer bandaging, and personalized exercise program

- Therapy was administered over a period of two months, with regular follow-up assessments every 1 months.

- At the end of the two-month rehabilitation period : Showed notable improvement of swelling, decreased significantly, as measured by limb circumference reduction(Fig.2), and improvement in mobility.

Fig.1



Fig.2

Leg circumference	1st visit	1 months later	2 months later
Inguinal area	79	76	75
above knee(+15cm)	71.3	66	64
above knee(+10cm)	52	50	49
knee	38	38	37
below knee(10cm)	43	42	40
below knee(15cm)	41.5	39	38.8
ankle	37.5	35	34.5

DISCUSSION

Pathophysiology of Lymphedema in NF patients, is not yet fully understood. Hypotheses suggest that tumor infiltration, lymphatic vessel dysplasia, or external compression by neurofibromas may contribute to lymphatic obstruction, leading to fluid accumulation. Unlike primary and secondary lymphedema, NF-associated lymphedema lacks specific management protocols. Previous studies on lymphedema rehabilitation have demonstrated that CDT, including MLD, compression therapy, and exercise, is effective in reducing limb volume and improving quality of life in primary and secondary lymphedema cases. Our case suggests that similar principles can be applied to NF-associated lymphedema, yielding favorable outcomes.

CONCLUSION

This case highlights that lymphedema rehabilitation therapy can be an effective intervention for NF-associated lymphedema. But, further studies are needed to establish evidence-based guidelines for treating NF-associated lymphedema.