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Physical Therapy Management of Acute Polymyositis: A Case Report

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Abstract

Introduction*:* Polymyosits (PM) is a rare systemic disease, which is typically a diagnosis of exclusion. Due to the rarity of this disease, there is little published research regarding the physical therapy management of this condition, particularly during the acute stages. This case report outlines one approach taken during the management of a patient with PM in an inpatient rehabilitation facility (IPR) and documents his steps towards functional improvement during his stay. **Patient History:** A 41-year-old African American man presenting with the diagnosis of PM with reports of progressive weakness and an inability to fully lift his head or ambulate independently. He also suffered from frequent falls, one of which resulted in an emergency department visit, where his episode of care began. **Diagnoses*:*** Rheumatology diagnosed this patient with PM based on: elevated creatine kinase levels in his blood; electromyography showed irritative myopathy; observed symmetric proximal muscle weakness and absence of a skin rash. Muscle biopsy results were pending during his entire episode of care. **Interventions*:*** Intense physical therapy interventions were focused on regaining function, building strength, and reducing secondary complications of hospitalization. **Outcomes:** After 25 days in inpatient rehabilitation, the patient demonstrated improvements in the five times sit to stand test, lateral reach test, and manual muscle testing. The patient also demonstrated reduced burden of care and improved functional mobility*.* **Discussion:** This case presented therapeutic challenges for the rehabilitation staff due to the severity and acuity of the disease process. This case report provides one example of the safe use of intense physical therapy interventions for the rehabilitation of a severe, acute case of PM. This case report suggests physical therapy interventions may improve functional mobility even in this acute stage of the disease.

Keywords: Acute polymyositis; neurology; physical therapy; rehabilitation

Introduction

Polymyositis (PM) belongs to a group of diseases collectively termed idiopathic inflammatory myopathies (M. C. Dalakas, 2011). These diseases are characterized by progressive and severe muscle weakness with inflammation appearing on a muscle biopsy (M. C. Dalakas, 2011). PM separates itself from the other diseases in this group based upon distinct features first classified by Bohan and Peter in 1975 (Findlay, Goyal, & Mozaffar, 2015). These features include symmetric, proximal muscle weakness and elevated skeletal muscle enzymes, specifically creatine kinase (CK) (Greenburg, 2008). These levels can reach 50 times the normal value in some cases (Malik, Hayat, Kalia & Guzman, 2016). The final characteristics include abnormal electromyography (EMG) results, inflammation shown in muscle biopsy, and the absence of a skin rash (Findlay et al., 2015). Although proximal muscle weakness is a hallmark of PM, other muscles including respiratory muscles and neck extensors can be affected (Finsterer, Frank, & Krexner, 2010; Varjú, Pethö, Kutas, & Czirják, 2003). PM is extremely devastating to muscle function, but it rarely impacts sensation leaving patients with potentially severe myalgia (Marinos C. Dalakas, 1991).

PM is currently found to impact between 3.8 and 9.7 persons per 100,000 persons; however, according to Malik, this number might be over-exaggerated due to over-diagnosing (2016). PM, typically, occurs in females more than males and in the African American population more than any other ethnic group (Findlay et al., 2015). PM almost never occurs in adolescents and is most commonly diagnosed after the age of 30 (M. C. Dalakas, 2011; Findlay et al., 2015). The diagnosis of PM has been shown to increase health care expenses from $5,210 to $15,339 per person annually in part due to secondary complications. PM currently has a 10-year survival rate of only 60%, and many of those deaths were attributed to pulmonary infections, intestinal tract infection, or cardiac complications. Accordingly, any interventions which have the potential to reduce secondary complications, have the potential to reduce cost burden in addition to improving health and patients' longevity. Currently, only 20% of patients who receive corticosteroid treatments, the current gold standard for treatment, achieve remission; the remaining 80% of patient suffer from a chronic disease process requiring immunosuppression medication (Findlay et al., 2015).

The current literature regarding physical therapy management of PM is insufficient. The concept of improving strength in patients with chronic PM is clear in the literature; however, interventions specifically targeting patients with acute PM are less clear. Varjú utilized relaxation techniques, stretching, and isotonic exercises five days per week for three weeks to achieve improved functional independence and functional vital capacity. Varjú also reported improved proximal muscle strength in patients in acute stages of PM 2-3 weeks after stable CK levels were reached (2003). However, the patient in this case report did not have stable CK levels at the time of admission to inpatient rehabilitation, thus was not in the same stage of PM as the patients in the previously listed study. Research addressing physical interventions at this stage of the disease process are relatively untouched by current literature.

Thus, the purpose of this case report is to detail a physical therapy episode of care for a patient with acute polymyositis during his time at inpatient rehabilitation. The interventions described below are patient-specific and directed towards the functional recovery of the patient. This case report will summarize information regarding patient history, each week of treatment, outcome measures, discharge considerations, and lessons learned.

History

The patient is a 41-year-old African American male who presented to IPR with the diagnosis of acute polymyositis. Initially, he presented to the emergency room via ambulance after a fall from a bus

occurring after his legs buckled. He presented with generalized weakness of his head and neck with chest pain. He stated that he had been experiencing muscle wasting in his chest musculature, frequent falls, and generalized weakness worsening over the past two months. He also stated that he was recently needing physical assistance to walk and get out of a chair due to his weakness and increased leg swelling. The patient reported gaining over twenty pounds within the past two months, which he stated was related to the edema present in his lower extremities. He reported severe myalgia which felt were similar to “growing pains”. He was previously independent with all mobility prior to the onset of weakness two months ago. Shortly after his admission into the hospital, he was found to have significantly elevated troponin and CK levels.

The patient was admitted to the hospital where he was then diagnosed with acute polymyositis by a rheumatologist. The patient stated that he was on bed rest for three days after his admission due to the hospital staff’s fear of exacerbating his inflammatory state. The patient was then cleared to work with physical therapy, but due to his severe debility, physical therapy in the hospital consisted of passive range of motion, stretching, and dependent transfers to the chair. Upon his arrival to IPR, it was unclear whether the inflammation would increase, but after consulting with physicians, the risk of not performing physical interventions was more detrimental than the risk of causing more inflammation.

Evaluation

At the initial physical therapy evaluation, the patient was alert and oriented, but had not been in a standing position since arriving to the hospital ten days prior. He was severely limited in his gross upper and lower extremity muscle strength; with greater deficits in his proximal muscle groups compared to his distal muscle groups (see Table 1). Due to the severity of his weakness, all manual muscle testing was performed in supine to minimize fatigue before additional therapy. He also had limitations in his passive range of motion, attributed primarily to the edema in his lower extremities and soft tissue tightness from decreased weight bearing through his lower extremities for the past ten days (Table 2).

Table 1. Initial and final gross strength assessment using manual muscle testing.

	Right Initial Evaluation	**Left Initial Evaluation**	**Right Final Evaluation**	**Left Final Evaluation**
Hip Flexion	1+/5	1+/5	2+/5	2+/5
Hip Extension	2/5	2/5	3/5	3/5
Hip Abduction	2/5	2/5	3/5	3/5
Hip Adduction	2/5	2/5	3/5	3/5
Knee Flexion	2/5	2/5	2+/5	2+/5
Knee Extension	3/5	3/5	4/5	4/5
Ankle Dorsiflexion	4/5	4/5	5/5	5/5
Ankle Plantarflexion	4/5	4/5	5/5	5/5
Shoulder Flexion	2/5	2/5	2+/5	2+/5
Shoulder Extension	2/5	2/5	2/5	2/5
Elbow Flexion	3/5	3/5	4/5	4/5
Elbow Extension	1/5	1/5	2+/5	2+/5

Table 2. Lower extremity passive range of motion.

	Knee Joint Initial	Ankle Joint Initial
Left	0-108 degrees	-5-10 degrees
Right	0-108 degrees	-8-10 degrees

The patient also presented with impaired trunk and core strength, which was noted with 2/5 gross flexion and 2/5 gross extension strength tested in static sitting. He required maximal assistance to maintain static sitting posture without upper extremity support. He maintained a forward slouched posture in sitting, which he was unable to correct independently. The patient had a significant head drop, which limited his ability to take deep breaths and look upwards while in a sitting posture.

He had no noticeable loss of light touch sensation, proprioception, or deep pressure sense. The patient was also evaluated using a mobility grid as shown in Table 3. The mobility grid is a test comprising of functional tasks performed at initial evaluation and again at final evaluation to show progress with functional ability. Each of the tasks below were performed unless deemed unsafe by the clinician's clinical judgment; that task was then labeled as "unable". In addition to the mobility grid, patient progress was monitored using the Functional Independence Measure (FIM), with possible scores ranging from 1 to 7 including a category of "does not occur" for tasks that were deemed unsafe to perform (see Table 4).

Table 3. Mobility grid values at initial and final evaluation.

Mobility Task	**Initial Evaluation**	**Final Evaluation**
Roll Left & Right	Moderate assistance	Minimal assistance
Supine to Sit	Moderate assistance	Moderate assistance
Sit to Supine	Maximal assistance	Minimal assistance
Sit to Stand	Maximal assistance	Moderate assistance
Stand to Sit	Moderate assistance	Supervision
Transfer Bed (supine to sit to chair)	Maximal assistance	Moderate assistance
Toilet Transfer	Unable	Moderate assistance
Floor Recovery	Unable	Unable
Car Transfer	Unable	Moderate assistance
Walk 10'	Unable	Minimal assistance
Walk 50' w/ two turns	Unable	Minimal assistance
Walk 150'	Unable	Minimal assistance
Walk 10' on uneven surfaces	Unable	Unable
1 Step (curb)	Unable	Minimal assistance
4 Steps	Unable	Moderate assistance
12 Steps	Unable	Unable
Picking up an object	Unable	Modified independent
Manual wheelchair 50' w/ two turns	Total assistance	Total assistance
Motorized wheelchair 50' w/ two turns	Unable	Modified independent
Manual wheelchair 150'	Dependent	Total assistance
Motorized wheelchair 150'	Unable	Modified independent

Table 4. Overview of FIM scores and initial and final evaluation.

FIM Catergory	Initial Evaluation	Final Evaluation
Transfers (bed/chair/WC/toilet)	1 (total assistance)	3 (moderate assistance)
Walking	1 (total assistance)	4 (minimal contact assistance)
Wheelchair mobility	1 (total assistance)	6 (modified independent)
Stairs	Does Not Occur	2 (maximal assistance)

Interventions

The patient was seen by physical therapy one session per day lasting 60 minutes each. The patient participated in a total of 17 sessions spanning over 25 calendar days. Treatments were initially performed at bedside and within parallel bars for maximal support but progressed to functional strengthening using a single exercise bar for support. The patient was able to use exercise equipment to improve strength and perform basic ambulation with a four-wheeled walker by the end of his time at IPR.

The initial approach to improving the functional mobility of this patient was to reduce swelling, allow his body to adjust to an upright position preventing orthostatic hypotension, begin light activity and strengthening of his lower extremity muscles in a functional manner. As his swelling improved, we began to focus on improving his functional mobility including transfers, ambulation, and other daily tasks to allow him the most successful transition home as possible. The weekly account of activities is summarized below. To ease the reader's comprehension of the treatment flow, the weeks are labeled as time following his initial evaluation.

Several intervention tools were used during his course of care that may not be commonly recognized including a frictionless sheet, EasyStand Evolv, and the Moveo. A frictionless sheet is a large, slippery sheet placed between the patient and the surface below. The frictionless sheet allows the patient to expel less energy to perform transfers, bed mobility, and supine exercises/active range of motion. The EasyStand Evolv is a device that allows clinicians to transfer a patient from a seated position into a safe, supported standing position, where vitals can be easily monitored. The Moveo is a machine that allows the patient to lie on his/her back and perform partial body weight squats. The machine is powered by the patient and the resistance is adjusted by tilting the machine up or down to increase or decrease the resistance measured in percentage of bodyweight the patient is squatting. These tools were particularly helpful in the early mobility of this patient as they served to reduce the burden of care placed on the hospital staff allowing the patient to perform tasks (i.e. standing, squatting, bed mobility), which would have been impossible for the patient to perform otherwise.

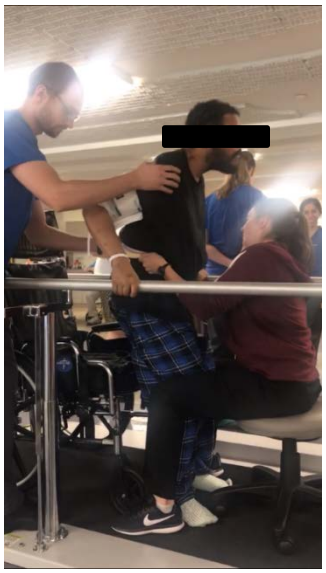

Figure 1. Initial trial of standing with patient including high-back wheelchair, parallel bars, and second person for assist with trunk

Week 1

The first session worked to improve standing tolerance by utilizing the EasyStand Evolv. Due to this being the patient's first time in a standing position since being admitted to the hospital, vitals and orthostatic symptoms were closely monitored, and the patient's mental status was checked frequently. While the patient was limited by his symptoms including dizziness and general fatigue, he was able to perform two repetitions of standing with his systolic blood pressure maintained above 90 mmHg. Other transfer tasks performed at the first visit included a partial stand pivot transfer, requiring maximal assistance to

transfer from the EasyStand Evolv back into his wheelchair and sit to stand transfers using parallel bars, requiring two-person assistance (see Figure 1). The patient was easily fatigued and required rest breaks between transfers.

The rest of the first week continued to focus on transfer training, with the addition of bed mobility training involving part-whole practice using the log roll technique to ease getting in and out of bed, as well as upper extremity stretching to address delayed onset muscle soreness, likely resulting from the increased activity during the first few treatment sessions. The stretches were also paired with resisted breathing activities to improve quality and depth of breaths. Static standing using the EasyStand Evolv was continued and used to build tolerance to an upright posture. The patient's blood pressure response improved, allowing him to stand for ten minutes before becoming fatigued or dizzy. To work on dynamic sitting and preliminary sit to stand transfers, the patient performed anterior and posterior leans in a sitting position requiring assistance to return to an upright posture.

Week 2

A metabolic blood panel revealed decreases in creatine kinase values, which was encouraging and demonstrated that there was no evident increase in muscle breakdown after performing functional training in week 1. Swelling was decreased throughout his lower extremities at the start of week 2, and the patient reported his legs felt less heavy. The patient continued to show increased independence with transferring; he was now able to transfer into a wheelchair using a partial stand-pivot transfer with moderate assistance from one person. The patient still required maximal assistance with supine to sit transfers but was showing carry-over with the log roll technique.

Transfer training in week 2 progressed to include repetitive supine to sit and sit to supine transfers, with lateral scooting on the edge of bed in between the transfers. He was able to bear weight through his legs long enough to scoot his body weight laterally on the edge of bed using a frictionless sheet and moderate physical assistance for balance. He was showing improved technique with bed mobility, but he was still unable to achieve active hip flexion or trunk flexion during bed mobility. Strengthening exercises were added, including two sets of 15 repetitions each of ankle dorsiflexion/plantarflexion, hip flexion, knee extension, and hip abduction in a supine position. The patient initially needed physical assistance to achieve full range of motion with the exercises, but progressively was able to perform them through a larger range of motion with less assistance.

Figure 2. Demonstrating patient progress to standard walker for support during sit to stand transfer

Dynamic sitting balance was beginning to improve near the end of week 2. The patient was able to sit edge of bed without support, but he still maintained an overall kyphotic posture with limited cervical extension. He was able to perform lateral, anterior, and posterior leans and return to upright position independently. He utilized the frictionless sheets to perform lateral scooting on the edge of bed, which was performed without direct physical assistance, and he was demonstrating improved dynamic balance during the task. The frictionless sheets were used to promote lower extremity strengthening as well. The sheets were placed under his legs in supine and the patient was able to perform independent hip flexion, hip abduction, and hip adduction, but fatigued extremely quickly.

The patient began to show improvement in functional strength noted by increased independence with sit to stand transfers. He was able to perform transfers using a standard walker and

one-person support mainly needed to achieve full trunk and cervical extension once standing (Figure 2). He tolerated standing from a raised surface well, but still struggled standing from a standard height surface. His mobility began to improve towards the end of week two, and the patient was taking steps within the parallel bars with a close wheelchair follow. He tolerated nearly 20 feet of walking before fatiguing, but he maintained a posterior lean, wide base of support, and extremely low foot clearance during ambulation. This gait was not a functional gait as any external force would cause the patient to lose his balance, but he could begin to safely perform standing transfers to and from a wheelchair with minimal assistance. It was at this time that the process of ordering an electric wheelchair was began as ambulation in standing was deemed non-functional for this patient, especially longer distances.

The final improvement noted during week 2 came by beginning lower extremity strengthening using the Moveo. The patient initially was able to perform only 25% of his bodyweight needing assistance during the concentric phase of the partial squat. He progressed within the session to needing only verbal cuing and tactile cuing to achieve the full squat. The patient responded well to muscle tapping to emphasize correct muscle activation during the exercise. After performing three sets of 10 partial squats, the patient reported fatigued and shaking legs. He did have delayed onset muscle soreness over the next two days, and no therapeutic interventions targeting strengthening were performed on those day to allow time for the muscles to recover.

Week 3

The patient was showing improvement in delayed onset muscle soreness at the beginning of this week and was ecstatic about his progress thus far. The patient's functional mobility continued to improve during the beginning of this week. He was now able to stand from a raised surface with a standard walker and no physical assistance required. His bed mobility was improving, needing only moderate assistance due to his hip flexor and trunk flexion weakness, but he could verbally cue the caregiver to provide the physical assistance required. He was also showing improved dynamic sitting balance and was able to fully rest his elbow laterally on the mat table and then return to an upright posture without physical assistance. However, his slouched sitting posture and head drop did not show improvements.

Figure 3. Patient performing lateral weight shifting in unsupported standing.

The therapy sessions in week 3 addressed functional mobility, strengthening, sitting balance, and standing balance. The patient performed standing balance at a single exercise bar. The patient was able to laterally step with upper extremity support, which was a significant challenge for the patient. He was also able to perform lateral, anterior, and posterior weight shifts in standing without needing support. He kept a wide base of support and his limits of stability were small during the task as shown in Figure 3.

Sitting balance was addressed heavily during week 3. The patient was able to perform lateral scooting on the edge of bed without the need for the frictionless sheet. He tolerated weight shifting forwards, backwards, and laterally well without needing assistance to return to an upright posture. His functional mobility was challenged by donning and doffing his shorts in sitting to simulate the steps of toileting once home. The patient was able to laterally weigh shift but was unable to fully lift the opposite hip off the mat. He required minimal assistance for this task initially. With daily practice during week 3, the patient was able to fully don and doff his undergarments to toilet himself.

Ambulation began to improve, and the patient required a less restrictive assistive device. The patient began with ambulating using the parallel bars for support and needing significant assistance, but he progressed to using a two-wheeled walker during this week. He was able to maintain a safe gait while still having a posterior lean, wide base of support, and minimal foot clearance. However, the patient felt it was hard to change directions when ambulating with the two-wheeled walker and requested using a four-wheeled walker. The patient demonstrated safety while ambulating over smooth surfaces with the four-wheeled walker, which was then used for ambulation and transferring tasks throughout the rest of his therapy course.

Lower extremity strengthening was made more challenging, with 45%-55% of his bodyweight during squats on the Moveo, and the addition of ankle plantarflexion strengthening. Supported standing exercises were added to his therapy session consisting of mini-squats, hip abduction, hip flexion, and knee flexion. He was unable to achieve full range of motion during these activities and needed physical assistance to lift his foot during hip flexion exercise. To address functional mobility with strengthening, the patient began to perform forward toe taps onto a 2-inch box. He initially required assistance to complete the task by assisting with hip flexion, but after two sessions of practice, he was able to place his toes fully onto the 2-inch step.

The final task addressed during week 3 was transferring. The patient performed numerous stand pivot transfers to and from different surfaces. These surfaces included the wheelchair, bedside commode, mat table, standard height bed, standard height couch, standard height chair, and toilet with elevated toilet seat. The patient needed between contact guard assistance and moderate assistance to perform the transfers using the four-wheeled walker. These tasks were performed over three sessions, and each transfer was fatiguing to the patient.

Week 4

Over the course of week 4, the patient made tremendous improvements in his ambulation, transfers, functional strength, and functional mobility attributed to near complete resolution of noticeable leg swelling. Treatments focused on preparing for a safe discharge home with caregiver assistance. He was fully trained in maneuvering and managing his electric wheelchair and was able to independently place his feet on the footplate and adjusting the armrests for transferring. He was trained on this mobility device because the ambulation he has been performing during his therapy would not be functional due to his inability to safely adjusted to normal environmental barriers such as change in surface, elevation changes, and external forces. We received the results from another metabolic blood panel revealing even lower CK levels assuring us that the therapy he was receiving was not causing his muscles any obvious harm.

Ambulation was progressing in terms of quality instead of distance. The patient was using the four-wheeled walker for ambulation tasks and was being challenged by completing obstacle courses, retro walking, pivoting around household objects, and maneuvering the four-wheeled walker in tight spaces such as the bathroom. He demonstrated increased difficulty with gait tasks that challenged him outside his base of support, but was able to maintain a safe and stable gait pattern with smooth, flat surface ambulation even in tight spaces. The clinicians declined to attempt any uneven surface ambulation due to safety concerns.

Step-ups onto a 4-inch and 6-inch step were added to progress lower extremity strengthening. The patient used the parallel bars for support and was able to perform three sets of 10 steps-ups before fatiguing. The quality of the step-up was poor needing assistance to place foot onto step, but the patient was able to raise himself onto the step without assistance. He also performed standing exercises targeting single limb support. He tolerated standing on one leg with upper extremity support for only a

few seconds but was able to improve his tolerance to five seconds of quality supported single limb standing within three sessions.

To challenge his dynamic standing balance, we placed an elastic band around the patient's waist as shown in Figure 4, while performing balance exercises. The patient performed lateral stepping with external weight shifts laterally, anterior, and posterior. He struggled to maintain his balance with an anterior external weight shift due to his extremely weakened trunk extensors. The clinician provided a force laterally, anteriorly, or posteriorly directed, and the patient was able to maintain an upright standing posture in unsupported standing. However, the resistance mainly came from his shoulders leaning against the force instead of core activation.

Figure 4. Patient performing lateral stepping unsupported with lateral external weight shift

The final task required for the patient to go home safely was preparing meals and carrying objects around his home environment. He performed several functional tasks in the mock-kitchen including boiling water, carrying glasses of milk on his four-wheeled walker, cleaning dishes, and carrying a food plate to the table with his four-wheeled walker. He required physical assistance for balance and overall safety, but he was able to complete each of the above tasks with minimal caregiver assistance.

For safe discharge, his family was instructed to build or rent a wheelchair ramp, provide an elevated bed for easier transfers, a raised toilet seat, and 24-hour supervision for the patient. The family was complaint with the above requirements and the patient was discharged from IPR with an electric wheelchair with a custom seat, tilt in space capabilities, and a support for his head. He was given a home exercise program consisting of the exercises described previously, and the recommendation for home physical therapy services to continue to build strength and address remaining mobility concerns.

Table 5. Outcome measures at final evaluation.

	Right	Left	Forward
Sitting Functional Reach	4"	5"	7"
Standing Funtional Reach	6"	7"	6"
Five Times Sit to Stand	01:21:00		

Outcomes

The patient's final evaluation outcomes are listed in Table 1 and Table 2 above where comparison to initial evaluation values can be easily performed. The patient showed improvements on nearly every functional outcome measure utilized. During the final evaluation, two functional outcomes measures were performed. The functional reach test and the five times sit to stand test were completed and the values are found in Table 5.

Discussion

The purpose of this case report is to describe the therapeutic interventions and clinical reasoning utilized with a patient sufferieng from acute PM. This care report hightlights one patient's

journey from start to finish at an IPR facility. Initially, the clinicians involved in the case had not heard of this condition and were unfamiliar with how to create a safe plan of care. We reseached the condition and determined physical activity would likely be safe and began trialing different interventions as the patient progressed. The initial interventions were aimed at improving upright tolerance and determining the patient's reponsed to low level functional strengthening. As the patient's tolerance to activity increased, exercise and interventions were introduced to be challenging yet safe for the patient.

The patient also made large improvements in function and strength during his stay at IPR including improved independence with functional mobility tasks, increased functional reach tests, reduced burden of care as shown by improved FIM scores. However, these improvement were made in an ideal situation on flat, clean, hazard-free envirnments. The transfers were performed with ideal chair positioning and ability to adjust the height of the surfaces to improve patient success. All of which are not present in a realistc situation. Even though the patient was ambulating nearly 100 feet with the four-wheeled walker, he was instructed to only ambulate with the assistance of another person and during transfers due to the risk of becoming unsteady or tripping over a hazardous surface. It was important to include education regarding potential hazards at home and in the community as part of therapeutic intervention as the patient tended to over-estimate his safety and functional mobility during therapy sessions.

Functional mobility was the most important issue keeping the patient from returning home. It was decided that by providing an electric wheelchair the patient could remain as independent as possble while allowing him to return to the community easily. Other functional mobiltiy goals included basic activities of daily life consisting of getting in and out of bed, getting to and from the toilet, and moving around his home. Once these goals were established, interventions were chosen based on their ability to help the patient achieve those goals. However, there was the challenge of maintaining the patient's motivation during therapy sessions. The repetitive nature of the interventions required to build muscle memory and endurance also challenged the patient's attention span and motivation to participate in therapy. Also, due to the patient's limited use of his upper extremities, variations in the type of exercise was difficult to achieve.

The patient had some significant concerns regarding his social support and living conditions which played a role in his physical therapy goals and discharge planning including his past medical history significant for schizophrenia. His living situation was less than ideal consisting of a mattress on the floor, damaged furniture, and large stairs leading into his home. In addition, we had to assume there was some lack of insight from the patient based on the two-month period he endured the devastating symptoms of PM before seeking medical attention. This led to some concerns regarding safety once the patient is home. Therefore, 24-hour caregiver presence was required for a safe home discharge.

There are also some limitations to this case report. This patient represents a rare diagnosis in which there is a wide range of patient presentations. This therapy plan outline may not directly apply to other patients with the same diagnosis. Also, due to the limited functional mobility of the patient during the initial evaluation, there are no beginning scores to compare to the final five times sit to stand and functional reach scores obtained during the final evaluation. However, while these cannot be directly compared to minimally clinically important differences suggested in the literature, the simple fact that he was completely unable to perform these tasks initially supports that a meaningful improvement was observed. Also, the tools described above are not necessarily available to every clinician working with patients in the IPR setting, however, the approach of using gradual and graded increases in exercise intensity, while closely monitoring his tolerance, is applicable no matter the equipment available. While limiting the generalizability of the specific treatments described above, it may be that other forms of reduced weight bearing or reduced friction during gravity eliminated exercises may be useful.

In conclusion, this case report provides an account detailing the acute rehabilitation of a patient with a rare disorder, polymyositis. Using gradually progressing functional and strengthening interventions, the patient showed improved functional strength and mobility. He was safely discharged home where integration into the community could occur. The interventions listed above showed no evident signs of further inflammation or muscle damage. This case report shows that for a patient with acute polymyositis strengthening and functional mobility interventions can be safe and effective.

References

Dalakas, M. C. (1991). Polymyositis, Dermatomyositis, and Inclusion-Body Myositis. *New England Journal of Medicine, 325*(21), 1487-1498. doi:10.1056/NEJM199111213252107

Dalakas, M. C. (2011). Review: An update on inflammatory and autoimmune myopathies. *Neuropathology and Applied Neurobiology, 37*(3), 226-242. doi:doi:10.1111/j.1365-2990.2010.01153.x

Findlay, A. R., Goyal, N. A., & Mozaffar, T. (2015). An overview of polymyositis and dermatomyositis. *Muscle and Nerve, 51*(5), 638-656. doi:doi:10.1002/mus.24566

Finsterer, J., Frank, M., & Krexner, E. (2010). Steroid-responsive dropped-head-syndrome due to polymyositis. *Joint, Bone, Spine: Revue du Rhumatisme, 77*(5), 485-486. doi:10.1016/j.jbspin.2010.02.028

Greenberg, S. A. (2008). Inflammatory myopathies: evaluation and management. *Seminars in Neurology, 28*(2), 241-249. doi:10.1055/s-2008-1062267

Malik, A., Hayat, G., Kalia, J. S., & Guzman, M. A. (2016). Idiopathic Inflammatory Myopathies: Clinical Approach and Management. *Frontiers in Neurology, 7*, 64. doi:10.3389/fneur.2016.00064

Varjú, C., Pethö, E., Kutas, R., & Czirják, L. (2003). The effect of physical exercise following acute disease exacerbation in patients with dermato/polymyositis. *Clinical Rehabilitation, 17*(1), 83-87. doi:10.1191/0269215503cr572oa