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Difficulty in Obtaining Functional Mobility Gains with Physical and Occupational Therapy in a Malnourished Patient: A Case Report

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Abstract

Background: Nutritional anemia is due to deficiency of one or more nutrients required for hematopoiesis. It can be reversed by increasing the amount of deficit nutrients consumed. The role that nutritional anemia can play in physical therapy is not well studied. **Purpose:** The purpose of this case report is to describe poor functional mobility progression observed in one patient that had several co-morbidities, including nutritional anemia in an inpatient rehabilitation setting. **Patient History:** The patient is a 37-year-old female reporting to an inpatient rehabilitation facility after an acute hospital stay following her diagnosis of hypokalemia, severe protein malnutrition, and hypovolemic shock. The patient had difficulty keeping her food down prior to hospital admission. Upon admission to inpatient rehabilitation, she had a BMI of 15.85. **Intervention:** The patient received 15 days of physical and occupational therapy for a total of three hours per day, five days a week. Physical therapy consisted of lower extremity strengthening, endurance, and core exercises, all focusing on functional mobility. **Outcome Measures:** Manual muscle test results and Functional Index Measures (FIM scores) were used to monitor this patient's progress in addition to her lab values. More objective outcome measures such as the Five Times Sit to Stand, Timed Up and Go, and Handheld Dynamometry would have been beneficial to measure on this patient due to her deficits. **Discussion:** This patient's lack of significant progress during rehabilitation was likely due to her medical status. Her low nutrient consumption, hypotension, and edema impacted her functional abilities and strength. Had the patient received formal nutrition education, motivational interviewing, and/or mental health therapy these other effects may have been minimized and she may have returned home sooner with improved lab values and health status. Therefore, this case suggests that nutritional status is one additional factor that therapists may need to consider when treating patients.

Keywords: Nutritional anemia; physical therapy; muscle weakness; protein malnutrition; rehabilitation; mobility

Introduction

5.6% of the United States population meets the criteria for anemia, with the frequency of anemia occurring twice as much in women as in men (Hong Le, 2016). The World Health Organization defines anemia in women as a hemoglobin concentration less than 12 g/dl (Kim, et. al, 2019). Many women are vulnerable to developing anemia during their reproductive years (ages 15-49 years) often due to low iron intake, heavy menstrual cycles, or malabsorption (Kim, et al. 2019). When a patient has less than 12 g/dl of hemoglobin, their tissues are not getting adequate oxygenation which can cause a variety of side effects such as mobility difficulty, fatigue, decline in muscle density and strength, depression, and an increased risk for chronic disease (Kim, et al., 2019 and Penninx, et al., 2003).

Nutritional anemia is described as a condition where the hemoglobin level of a patient is below what is considered normal, due to deficiency of one or more nutrients required for hematopoiesis, and in which the patient's hemoglobin concentration can be improved by increasing the amount of nutrients consumed (Seshadri, 2011). Nutritional anemia is relatively common around the world and is often overlooked in developed countries like the United States due to assumed access to an assortment of foods in stores across the country. However, access to a variety of foods does not ensure enough nutrients to sustain our body's needs for function and well-being (Giles, 2018).

There is a small body of research that shows handgrip strength and academic performance are negatively affected by poor nutrition (Flood, 2014, Florence, 2008, and Pieterse, 2004) No research has yet looked at the impact nutritional anemia has on physical therapy effectiveness or how physical therapy can help or hinder a patient lacking adequate nutritional intake. Therefore, the purpose of this case report is to describe poor functional mobility progression observed in one patient that had several co-morbidities, including nutritional anemia in an inpatient rehabilitation setting.

Patient History:

A 37-year-old female patient was admitted to an inpatient rehabilitation facility following an acute hospital stay for severe hypotension, protein malnourishment, and extreme unexpected weight loss. The patient likely became deconditioned from a lack of nutritional intake and/or inactivity and was taken to the emergency department after she was found hardly able to move during a welfare check. The patient reported that she has one child and that her husband physically abuses her. Her past medical history includes epilepsy, anxiety, depression, and sepsis due to a urinary tract infection. Prior to her acute hospitalization, she was a smoker with an unknown pack history.

The patient had difficulty keeping food down for approximately ten days before she sought out the advice and care of a doctor. She reported her physician indicated the problem was acid reflux and that she should avoid eating spicy foods to alleviate this. Per hospital admission notes, her body continued to not absorb food appropriately, instead sending it straight into her bowel movements or coming out as emesis. The patient stated that she had become too weak to make it to her phone or car to revisit the doctor.

Upon admission to the emergency department, the patient had a blood pressure of 66/44 mm Hg, a potassium level of 2.2 mmol/L, making her hypokalemic, and a hemoglobin concentration of 3.6 grams percent. Her hemoglobin was documented in grams percent because she was hypovolemic so her hemoglobin concentration would have appeared falsely high if it was recorded in normal units of mg/dl. She was given one unit of blood in the emergency department and diagnosed with protein calorie malnutrition and hypovolemic shock. Her physician noted that these extremely low lab values put her at a high mortality risk at the time of her admission. She was hospitalized and when she was deemed medically stable, the patient was transferred to an inpatient rehabilitation facility (IP rehab).

Her IP rehab admission weight was 89.5 pounds, giving her a body mass index (BMI) value of 15.85. According to the Center for Disease Control and Prevention (CDC), an adult BMI less than 18 is considered underweight (CDC, 2017), so this patient was not only medically diagnosed as underweight but also looked physically underweight as well. She had no muscle mass on her arms, legs, or abdomen and had significant hair loss compared to pictures she had prior to the onset of her symptoms.

Patient Evaluation:

The patient was evaluated by physical and occupational therapy disciplines on her first full day in IP rehab, which was day two of her stay. She presented with bilateral lower extremity edema and tenderness, severe muscle weakness both in her upper extremities and lower extremities, and tremendous mobility deficits. She was unable to walk more than 30 feet, even with moderate assistance of one nor perform any bed mobility independently and required maximum assistance of one to rise from a seated position. She was given thrombo-embolic deterrent stockings (TED hose) to aide in edema reduction, but they were reported to be too painful to don. At rest her heart rate was 85 beats per minute (bpm), her respiratory rate was 17 breaths per minute, and her blood pressure was 100/68 mm Hg. Her BMI had dropped slightly from 15.85 at intake to 15.23 the day of therapy evaluation, with a body weight of 86 pounds.

The patient also presented with documented abnormal eating habits and mental illness behaviors. She disallowed IP rehab hospital staff to be in the bathroom with her or to see what was in the toilet before she flushed, which was standard practice at this hospital to document bowel and bladder function. She was given both entrée options every day for each meal. Upon food tray pickup by nursing staff, one plate would always be missing, making it appear to the dietician like she had eaten all her food. In addition, the patient was very private about her home life, opting out of providing any home life information or emergency contacts to either therapy discipline or the case manager. Frequently, she commented about the IP rehab facility being her new home, stating she had finally moved in completely, however the next day she'd ask when she could leave the facility. She was given a 35/35 for her cognitive functional index measure (FIM) scores by both therapy disciplines and a motor FIM score of 35/70 (Three FIM categories were not included; see Table 2). Her manual muscle tests were rated as 3+ or 4-/5 for all muscle groups tested, indicating fair muscle strength.

Interventions:

Throughout her time at the inpatient rehabilitation facility, the patient was progressed through strengthening exercises for both the upper and lower extremities by physical and occupational therapy staff as well as had her lab values routinely taken and monitored by nursing staff (Table 1). Physical therapy focused on lower extremity strengthening, endurance, and gait as well as core strengthening to improve functional abilities. The biggest goals the patient and physical therapists had were for her to be able to rise from a seated position with only contact guard assist or supervision and to be able to ascend and descend stairs with the use of a railing in order for her to be able to move around in her home upon discharge.

Table 1: Patient Complete Blood Count Values Obtained*

	Norms	**Day 2**/16	**Day 4**/16	**Day 8**/16	**Day 12**/16	**Day 16**/16
BMI (kg/m^2)	*18-24*	15.23	15.46		16.86	18.07
Weight (lbs)	*108-136*	86.1	89	89.4	95.2	102
HR (bpm)	*60-100*	85	98	110	115	106
BP (mm Hg)	*110-120/65-80*	100/68	104/55	102/62	107/59	110/69
RR (breaths/min)	*12-20*	17	18	17	16	16
HgB (g/dl)	*12-16*	8.7	8.3	8.5	8	8.8
WBC (K/uL)	*4.8-10.8x10^9*	4.1x10^9	4.1x10^9		5.2 x10^9	4.9 x10^9
RBC (cells/uL)	*3.92-5.13x10^{12}*		2.43x10^{12}	2.41x10^{12}	2.3 x10^{12}	2.61 x10^{12}
Hematocrit (%)	*36-48*	28.1			26.6	29.3

Platelets ($x10^9$)	*150-400*	370			435	576
BUN (mg/dl)	*7-20*	6	9	9	11	11
Protein (g/dl)	*6.4-8.3*	2.2	2.4	2.7	3.9	4.1
Na (mmol/L)	*135-145*	143	146		142	143
K (mmol/L)	*3.5-5.0*	3.6	3.4	3.4	3.7	3.9
Cl (mmol/L)	*96-106*	106			105	105
CO_2 (mmol/L)	*20-29*	33	31		32	32
Ca (mg/dl)	*8.5-10.2*	7.3	7.3		7.9	8.0
Creatinine (mg/dl)	*0.5-1.2*	0.38		0.36		0.32
Glucose (mg/dl)	*70-100*	68	69	69	76	75
Edema	*0*	1+ bilateral lower extremities	2+ bilateral lower extremities	4+ bilateral lower extremities	3+ bilateral lower extremities	3+ naval & bilateral lower extremities

*Lab values reported are only those from days on which a complete blood count workup was obtained. All other days' values have been left out of this case study for consolidation purposes.
**Norms listed are the normative values of one midwestern IP rehab hospital so may vary slightly from other institutions
***BMI: body mass index, HR: heart rate, BP: blood pressure, RR: respiratory rate, HgB: hemoglobin, WBC: white blood cell count, RBC: red blood cell count, BUN: blood urea nitrogen, Na: sodium, K: potassium, Cl: chloride, CO_2 : carbon dioxide, Ca: calcium

Physical therapy exercises began with exercises in supine, with motions such as hip abduction and adduction, gluteal sets, bridges, sit ups, and quad sets. Once these proved to be less of a challenge to the patient, exercises were progressed to ones in a seated position, such as marches performed in a wheelchair or on the edge of the bed and posture exercises to work on core strengthening. Seated exercises became standing exercises as the patient showed some improvement, the patient's pain became more tolerable to her, and with the discovery that her most limiting factor to functional mobility was hip weakness. Emphasis was then placed on hip strengthening exercises, which were best completed in a standing position to get the effect of full weight bearing status on the hips, such as hip abduction, flexion, and extension with repetitions containing both knee flexion and extension throughout the exercises. Other functional tasks were practiced in therapy as well, such as car transfers, balance training, stair climbing, outdoor mobility, and cooking for standing tolerance and upper extremity dexterity. The patient was typically seen twice a day by physical therapy and twice a day by occupational therapy, with each session lasting 45 minutes. The patient would routinely fatigue, regardless of the task, by the end of the session resulting in the need for her to sit and rest her legs.

One physical therapy exercise that was found to be advantageous in aiding the patient's ability to ambulate up and down stairs was cone taps. Cone taps trained her hips to flex far enough to reach a higher surface as well as improved her single leg stance balance abilities. After many repetitions of cone taps over multiple therapy sessions, the patient no longer circumducted her lower extremities to ascend the stairs, which was her form of compensation up until week two of her IP rehab stay. Another physical therapy activity noted to be beneficial in increasing the patient's functional mobility was practicing the sit to stand motion from a variety of surfaces. By the time of discharge, the patient had completed multiple repetitions of rising up from a wheelchair, bed, kitchen table chair, couch, recliner, waiting room chair without armrests, and a physical therapy mat table. While rising from lower surfaces, such as a couch or kitchen table chair, still proved to be a challenge for the patient upon discharge, her

ability to get up from these surfaces was much improved from maximal assistance of one person to contact guard assistance or minimal assistance of one, depending on the surface and time of day the task was practiced.

In addition to intensive physical and occupational therapy, the patient received psychological and dietary care. Her blood count lab values were routinely taken to monitor her nutrients and hemoglobin levels and she was encouraged to eat as much as she wanted whenever she wanted in hopes of increasing her protein levels as she gained more weight. Protein levels were monitored closely because she came into the hospital with an abnormally low protein value and because protein intake is critical for maintenance of lean muscle mass (Granic, et al, 2017), which the patient greatly lacked.

Outcome Measures:

The IP rehab facility which the patient was at uses two main outcome measures. The primary outcome measures assessed included manual muscle testing and Functional Independence Measure (FIM) scores to mark changes in strength and functional gains. As can be seen by the patient's manual muscle testing (table 2), the patient did not gain as much strength as would be expected from a 16-day inpatient rehabilitation stay based on the intensity of therapy provided and the patient's age. According to the rehabilitation physician, her stagnant muscle weakness was due to a lack of protein nourishment. The rehabilitation physician stated that when her protein levels return back within the normal range, which was 6.4-8.3 G/dl at this hospital, the patient would start to see larger gains in strength. Physical therapists believed her manual muscle test results may also have been slightly skewed by her lower extremity edema as the edema made her legs heavier to lift and stiffer than normal. The patient suffered from lower extremity pitting edema throughout her stay which, by the end, was up to her navel, despite rigorous use of TED hose and sequential compression devices (SCDs). In fact, the patient had 4+ on the pitting edema scale for days 7-10 of her stay, indicating the edema had a rebound time of greater than 20 seconds and a pit of greater than six millimeters in depth.

The patient's FIM scores (table 3) showed improvement in activities of daily living (ADLs) but little to no improvement in mobility-related categories other than bed transfers. Despite lack of change in some individual category scores, the patient's total motor score surpassed the minimal clinically important difference of 17 for motor FIM values, with an increase of 23 from evaluation to discharge (Beninato, et al, 2006). Once her nutritional status improved, the patient's strength was likely to increase allowing her lower motor FIM scores, like stairs and gait, to increase as well as her manual muscle test results.

Table 2: Manual Muscle Test (MMT) Scores, out of 5, for patient at evaluation, prior to team conference where all disciplines involved with patient met, and at therapy discharge.

	Therapy Evaluation (day 2)	Prior to team conference (day 7)	Therapy Discharge (day 16)
Shoulder Flexion	3+ Bilaterally	3+ Bilaterally	3+ Bilaterally
Shoulder Extension	4- Bilaterally		4 Bilaterally**
Shoulder Abd/Add	3+ Bilaterally	3+ Bilaterally	3+ Bilaterally
Shoulder ER/IR	3+ Bilaterally		3+ Bilaterally
Elbow Flexion	3+ Bilaterally	3+ Bilaterally	4- Left, 3+ Right
Elbow Extension	4- Bilaterally	4 Bilaterally	4 Bilaterally
Hip Flexion	3+ Bilaterally	4- Left, 3+ Right	4- Left, 3+ Right
Hip Abd/Add	4+ Bilaterally		4+ Bilaterally
Knee Flexion	Too painful to test	3+ Bilaterally	3+ Bilaterally
Knee Extension	Too painful to test	3+ Bilaterally	3+ Bilaterally
Ankle Dorsiflexion	4- Bilaterally	4- Bilaterally	4 Bilaterally

*Abd/Add: Abduction and Adduction, ER/IR: External Rotation and Internal Rotation

** Highlighted values show improvement in MMT score since prior testing session

As a result of her nutritional status, these outcomes measures were not the most appropriate to measure functional change for this patient. It would have been more beneficial for this case to measure her scores on the Five Times Sit to Stand, the Timed Up and Go (TUG), and/or a handheld dynamometer grip strength test. These three outcome measures would have been more functional and appropriate outcome measures for this patient. This is because they directly relate to her deficits and could give a more objective picture of her improvement over the course of her IP rehabilitation stay, especially since her MMT scores did not change much, despite the patient gaining enough strength to perform some functional tasks she could not demonstrate at initial evaluation.

Table 3: FIM scores (out of 7 for each category) for patient at evaluation and discharge from physical & occupational therapy.

	Evaluation (day 2)	Discharge (day 16)
Eating	5	7
Grooming	4	7
Bathing	4	5
UE Dressing	5	7
LE Dressing	2	7
Toileting	4	6
Bed Transfer	1	6
Toilet Transfer	3	6
Gait	5	5
Stairs	2	2
Comprehension	7	7
Expression	7	7
Social Interaction	7	7
Problem Solving	7	7
Memory	7	7
Motor Score*: Cognitive Score:	35/70 35/35	58/70 35/35

* Shower Transfer, Bladder Management, and Bowel Management not assessed due to her FIM scores for these 3 categories being in nursing documentation that was inaccessible to case report author.
** UE: Upper Extremity, LE: Lower Extremity

The Five Times Sit to Stand measures lower extremity strength by timing how fast a patient can rise up and sit back down in a chair five times (Shirley Ryan Ability Lab). The patient greatly suffered from weak lower extremities, resulting in the inability to rise from a seated position independently for 12 of her 16 days. Using the Five Times Sit to Stand would have aided in marking improvements in her leg strength via faster times on a functional task she greatly struggled with. Additionally, Ramsey, et. al found that malnutrition has a negative effect on knee extension strength (Ramsey, et. al, 2019). Knee extension strength is important, along with hip extension strength, for performing sit to stands so her muscle strength as well as her nutritional state could have been effectively measured via the Five Times Sit to Stand.

The TUG involves rising from a chair, walking 10 feet, turning around, walking back to the chair, and sitting back down. It assesses mobility, balance, walking ability, and fall risk (Shirley Ryan Ability Lab). These are all pertinent measures to the patient in this case because she experienced two falls during the course of IP rehab, had limited walking abilities due to her legs being weak and fatigued, and had difficulty balancing without upper extremity support. This test, like the Five Times Sit to Stand, would have given her practice at the sit to stand and stand to sit transition as well.

A handheld dynamometer assesses grip strength in each hand which is calculated by averaging three trials of each hand squeezing the dynamometer as hard as the patient can (Shirley Ryan Ability Lab). While the patient did experience grip strength weakness, which was one of the many focuses of her occupational therapy sessions, handheld dynamometry could have provided a more objective and measurable increase in her strength compared to manual muscle tests. Handheld dynamometry would have been a beneficial outcome measure for physical therapy, as well, to compare this patient's grip strength and overall strength values to past research studies that have addressed nutritional status and its relationship to grip strength. It also

would have aided in attending to her nutritional status as the Academy of Nutrition and Dietetics/ American Society for Parenteral and Enteral Nutrition lists handgrip strength as one of the six characteristics in their recommendations for diagnosing adult malnutrition (Kuczmarski, 2018). In addition, women with higher values for handgrip strength had better physical performance on the Five Times Sit to Stand than women with minimal handgrip strength (Kuczmarski, 2018). Therefore, her handgrip strength may have coincided with her Five Times Sit to Stand performance, had either of these two measures been assessed.

Discussion:

Common symptoms of anemia are fatigue and muscle weakness (Hong Le, 2016, Pennix, et. al, 2003, and Cesari, et. al, 2004), both of which limit physical functioning and quality of life. Fatigue and muscle weakness are due to the decreased oxygenation of tissues that occurs with anemia (Cesari, 2004). The patient in this case study experienced both symptoms likely associated with her anemic lab values. She required a rest period to sit or lay down after all therapy sessions, despite her motivation to get better, due to fatigue.

Additionally, there is typically a 15% increase in strength after two weeks of exercising (Allen, 2014). According to a study by Haruhiko Sato, et. al, a manual must test rating of fair for knee extensors is about 5% of “normal” strength in young adults. The normal strength compared to was that of twenty physical therapy students whose mean peak torque on an isokinetic dynamometer at 60 degrees per second and 180 degrees per second was taken as “normal” (Sato, 1999). Therefore, a 15% increase in strength typically seen over a two-week period is much higher than a fair grade on a manual muscle test. According to this patient’s manual muscle tests, her strength was rated as fair at evaluation, and stayed at fair, even at discharge, demonstrating muscle weakness likely associated with anemia due to the lack of improvement.

After her stay in an IP rehab facility, the patient was better able to perform ADLs such as bathing and grooming but continued to greatly struggle with functional mobility such as gait for distances longer than 110 feet, which is necessary for community ambulation. This can likely be attributed to two main factors. One is her consistently low hemoglobin levels over the course of her acute hospitalization and IP rehab stay. Low hemoglobin has been reported to contribute to lower handgrip strength values regardless of age of the subject (Kuczmarski, 2018). The patient’s lack of ability to perform tasks that required upper extremity strength, such as carrying a laundry basket full of clothes, along with her low hemoglobin values seem to match this finding. However, since handgrip strength was not measured for this patient, it is uncertain whether her handgrip strength was truly attributed to her hemoglobin deficits or was a weakness prior to this medical incident. Additionally, low blood pressure evokes an increase in sympathetic activity through baroreceptors. This increase in sympathetic activity reduces renal blood flow and activates the renin angiotensin aldosterone axis resulting in salt and water retention. Once red blood cell levels increase, hemoglobin concentration can be restored causing the reversal of salt and water retention (Anand, et al., 1993). This patient experienced water retention evidenced by the edema in her lower extremities throughout the duration of her stay. Based on an article written by Anand, et al, a reduction in edema is associated with a substantial decrease in total body water and extracellular volume, and an increase in blood flow and glomerular filtration rate (Anand, et al., 1993). These positive effects were not seen by this patient due to her high edema levels but were assumed to have occurred, with time, upon patient’s return home. An eventual reduction in water volume and increase in blood flow will aide her in returning to her prior level of function as less stagnant and more mobile blood is able to reach her muscles allowing them to contract more efficiently. A follow up visit would have solidified this potential finding.

The other factor likely affecting her functional mobility was the patient’s eating habits while at the hospital. No matter what treatments, both pharmacological and non-pharmacological, were provided to the patient, her lab values did not improve significantly over the sixteen days. In addition, she only made substantial progress with small tasks in occupational and physical therapies instead of larger, more functional tasks such as ambulation endurance. It would be expected that with the well-balanced

meals provided by the facility and three hours of therapy five days a week, the patient would have gained muscle mass and an adequate amount of protein, carbohydrates, and fats to help build her system back up close to its prior functioning levels. This leaves room for suspicion regarding food consumption as all other aspects of her stay were highly regulated or monitored. The patient was originally admitted to the emergency department with hypovolemic shock. Hypovolemia can be caused by dehydration from vomiting (Giles, 2018), which the patient did at least twice when emesis was found in her trash can, per nursing reports. She may have been doing this more frequently in the bathroom than was noted in documentation, which could have been the reason for her not letting staff see what was in the toilet each time she went to the bathroom. The patient's hypovolemic status never went away during her stay, leading therapists and nurses to believe that nutritional intake was at the root of her impairments. A healthy diet is associated with muscle strength and physical performance (Kuczmarski, 2018). If the patient was not ingesting a healthy and adequate diet, her strength would not increase, which was seen with this patient as previously mentioned with her MMT scores and inability to rise from lower surfaces. The patient improved by a half grade or not at all on all manual muscle tests over the course of her sixteen days in inpatient rehabilitation, supporting the hypothesis that the nutritional intake of the patient greatly influenced her inability to recover but more importantly, the impact that poor nutritional status has on strength and mobility and how additional resources such as education, motivational interviewing, or mental health therapy could have played a role in reducing this impact.

The patient was never educated on how proper nutrition coincides with her physical and mental functioning and was never provided with mental health support for her likely eating disorder. Educating patients on nutrition and its role in their health and functioning in everyday life is important as is motivational interviewing to get the patient to change on their own. Had this patient received nutritional counseling or some formal education by therapists or nurses, she may have understood how lack of food consumption was influencing her physical status, inhibiting her from making more functional gains during her stay. Combining education with motivational interviewing, the patient may have learned to acknowledge her nutrition as an important change to make in her life and taken steps towards altering her eating habits and mindset. With the assistance of mental health therapy, she may have also learned healthier ways to cope with life stressors, such as her abusive husband. Had the patient received a combination of formal nutrition education, motivational interviewing, and/or mental health therapy, it may have allowed her to take better control of her health, potentially preventing another incident like this one from happening again, and she may have returned home sooner with improved lab values and health status.

Therefore, more research is needed on the effect poor nutritional status, can have on functional mobility in a rehabilitation setting. This way, patients with nutritional deficits can be better served in the inpatient rehabilitation setting instead of being overlooked as patients who have plateaued in regard to therapy. More research on the effect nutritional status has on functional mobility in an inpatient rehabilitation facility may also provide patients with a more individualized approach to their care that can be addressed from the multitude of disciplines of healthcare practitioners already serving patients in this setting. Patients could receive the specialty services they need to recover both physically and mentally. As a result, this case suggests that while some improvement was observed, nutritional status is one additional factor that therapists need to be aware of when treating patients as it may negatively impact their rehabilitation progression.

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