

Enhancement of Recovery with Physical Therapy Management in Patient of Rare Variety of Gullain Barre Syndrome: A Case Report

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Abstract

Guillain-Barré Syndrome (GBS) is an immune mediated peripheral neuropathy as it is caused by the body's immune system mistakenly attacking the peripheral nerves and damaging their myelin insulation. Sometimes this immune dysfunction is triggered by an infection primarily characterized by rapidly evolving symmetrical limb weakness. The weakness can be variable, from minimal lower extremity weakness to total paralysis of all extremities and trunk. Symptoms become more severe until they reach maximum expression, called the nadir; a plateau phase of 2-4 weeks follows, and recovers completely within 1 month after the onset. But in rare cases there is a gradual resolution of the paralysis that can last 1-2 years and the patient recovers within a period of 6 months to 2 years. The patient being reported in this case study is a 40 year old male diagnosed with GBS and reached a plateau phase within a month and recovery is not complete even after 6 months (till today). The aim of this study was to report the effect of Physical therapy management for enhancement of recovery in patient with rare variety of Gullain Barre Syndrome. 40 year old patient diagnosed as a case of GBS was referred to Physiotherapy, Vikhe Patil Memorial Hospital, Ahmednagar 6 months back. It was expected that recovery would occur within a period of maximum 12 weeks. The patient was received Proprioceptive Neuromuscular Reeducation, Therapeutic Exercises in supine and Sitting, Electrical Muscle stimulation (Faradic stimulation to Quads and IG to intrinsic muscles of hand and foot) and bed mobility training. Outcome measures were MMT, Barthel Index, and Functional Independence Measure and DeMorton Mobility Index. The result of case report showed that there was statistically significant improvement in all outcome measures which includes MMT, Barthel Index, and Functional Independence Measure and DeMorton Mobility Index. Hence, the study concluded that the recovery in patients with GBS may be delayed in contrast to the reported literature and may take more than 6 months as in the present case.

Keywords: Gullain barre syndrome; Proprioceptive neuromuscular re-education; Manual muscle testing; Functional independence measure; DeMorton mobility index

Introduction

Guillain-Barré Syndrome (GBS) is an immune mediated peripheral neuropathy primarily characterized by rapidly evolving symmetrical limb weakness [1]. The weakness can be variable, from minimal lower extremity weakness to total paralysis of all extremities and trunk. Symptoms become more severe until they reach maximum expression, called the nadir; a plateau phase of 2-4 weeks follows, and recovers completely within 1 month after the onset. But in rare cases there is a gradual resolution of the paralysis that can last 1-2 years and the patient recovers within a period of 6 months to 2 years [2]. The patient being reported in this case study is a 40 year old male diagnosed with GBS and reached a plateau phase within a month and recovery is not complete even after 5 months (till today).

Purpose

The purpose of this report is to find out enhancement of recovery with Physical therapy Management in patient of rare variety of Gullain Barre Syndrome. Patient was admitted to Vikhe Patil Memorial Hospital on June 30th, 2015 and was seen for physical therapy evaluation the following day, 1st July, 2015. He is a 40 year old Labourer male standing 5'8" tall and weighing 64 kg on admission. His past history had not been significant for hypertension, asthma, and diabetes mellitus. But, History of viral fever with cough and cold in the month of March before onset of present condition. The patient does have a history of tobacco chewing 1 packet/day since 20 years but denies any current smoking or illicit drugs and admits to occasional alcohol of approximately 1-2

drinks per week. Family history was not significant. Patient is married and reports living with his wife and two children. Systems review upon admission indicated the patient denied any headache, vision or hearing changes, dysphagia, nasal discharge, chest pain, shortness of breath, productive cough, palpitations, abdominal pain, nausea, vomiting, diarrhea, melena, urinary changes of any sort, unintentional weight gain or loss, subjective fevers or chills or hot or cold intolerances. At admission, patient alert and oriented \times 3 [3,4], pleasant, with no limitations to communication ability. Current medications included Neurobion Forte, Pantosec. The preceding information was provided through chart review and patient interview. History of current condition was obtained directly from patient interview and is as follows: On April 29, 2015 patient indicates had slight increase in temperature. On next day morning the patient experienced left upper extremity weakness while having his food and dropped food items due to weakness. The following day he noted difficulty walking including weakness, shuffling and a general unsteadiness. So, his relatives took him to a hospital in Nashik. On next day morning there was no movements in bilateral upper and lower extremities and lost his ability

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to sit upright by his own. CSF Examination was done which shows increased CPK level indicates GBS. GBS have an elevated cerebrospinal fluid (CSF) protein level (>400 mg/L), with normal CSF cell counts. As over there he received 8 settings of plasmapheresis and physical therapy management comprised of passive movements. He was subsequently transferred to Vikhe patil Memorial Hospital for a higher level of care and physiotherapy management.

Patient stated that his goal for therapy was to walk without the use of an assistive device and be able to carry basic activities of daily living s/a independent with showering and toileting.

Intervention

The plan of care for patient's included PT 6 days per week with 1 hours of therapy twice a day which include: Individual Joint compression to finger and wrist to UE and fingers and ankle to LE., standing on a tilt table with support × 15 mins, Faradic re-education to Bilateral quadriceps × 5 mins, EMS on IG to bilateral adductor pollicis, 1st dorsal interossei, tibialis anterior and extensor hallucis muscles × 45 contractions to each, Proprioceptive Neuromuscular Re education includes: D1 and D2 flexion and extension pattern for UE (Timing for Emphasis), Rhythmic stabilization for pelvis and scapula, D2 Extension pattern for LE (Timing for Emphasis), Bed mobility training, safety education, Therapeutic interventions included exercises in supine: bridging (with and without a ball between knees for adduction, and with and without DF upon elevation); quad sets initially with advancement to short arc quads; heel slides; practice supine ↔ sit and rolling activities with verbal cues for technique and safety to increase functional mobility. Seated therapeutic activities including marching in place (hip flexion); knee flexion; heel/toe raises; hip ab/adduction; sit to stands and glut sets. Pain relief modalities (MHT) to bilateral shoulders (Figures 1-6).



Figure 1: UE D1 flexion.



Figure 2: UE D2 extension.



Figure 3: LE D1 flexion.



Figure 4: Functional reeducation from side lying to sitting.



Figure 5: Rhythmic stabilization to scapula.



Figure 6: Rhythmic stabilization to improve rolling.

Evaluation

Evaluation of results can be seen in Tables 1 and 2.

Results

The result of case report showed that there was statistically significant improvement in all outcome measures which includes MMT, Barthel Index, Functional Independence Measure and DeMorton Mobility Index. Pre MMT mean score (0.43 + 1.134) and Post MMT mean score (3.149 + 1.58) ($p < 0.0020$). Initially the Barthel Index score was 4/20 which was improved to 10/20. The initial FIM score was 41 out of 126 which was improved to 69 (there was more improvement in mobility component of FIM). The DeMorton Mobility Index score showed significant improvement as initially it was 0/100, which was improved to 39/100 (Figures 7-9).

Test and Measures	Tone	DTR	MMT	Bartel Index	FIM	DeMorton Mobility Index
At initial examination	Flaccidity (Grade 0)	0 X 4 Extremities	Weakness distal \geq proximal	4/20 (Complete Dependent)	41/126 (Complete Dependence)	0/100 (Complete Dependent Mobility)
At Present	Hypotonia (Grade 1 ⁺)	1 ⁺ X 4 Extremities	Predominately distal weakness only	10/20 (Moderately Dependent)	69/126 (Moderate Dependence)	39/100 (Moderate Dependent Mobility)

Table 1: Test and measurement of DTR, MMT, Bartel index, FIM, DeMorton mobility index.

Manual Muscle Test	LEFT		RIGHT	
	Initial Examination	At Present	Initial Examination	At Present
Scapular Protractors	Poor	Good	Poor	Good
Scapular Retractors	Poor	Good	Poor	Good
Scapular Elevators	Poor	Good	Poor	Good
Scapular Depressors	Poor	Good	Poor	Good
Neck Flexors		3		5
Neck Extensors		3		5
Neck Lateral Flexors	3	5	3	5
Neck Rotators	3	5	3	5
Shoulder Flexors	0	5	0	5
Shoulder Extensors	0	5	0	3
Shoulder Abductors	0	5	0	5
Shoulder Internal Rotators	0	5	0	5
Shoulder External Rotators	0	5	0	5
Elbow Flexors	0	4	0	4
Elbow Extensors	0	4	0	4
Forearm Supinators	0	4	0	4
Forearm Pronators	0	4	0	4
Wrist Flexors	0	2	0	2
Wrist Extensors	0	1	0	1
Wrist Ulnar Deviators	0	2	0	2
Wrist Radial Deviators	0	1	0	1
Finger Flexors	0	2	0	2
Finger Extensors	0	1	0	1
Hip Flexors	0	3	0	3
Hip Extensors	0	3	0	3
Hip Abductors	0	3	0	3
Hip Internal Rotators	0	3	0	3
Hip External Rotators	0	3	0	3
Knee Flexors	0	3	0	3
Knee Extensors	0	3	0	3
Ankle Dorsiflexors	0	1	0	1
Ankle Plantarflexors	0	3	0	3

Table 2: Manual measuring test.

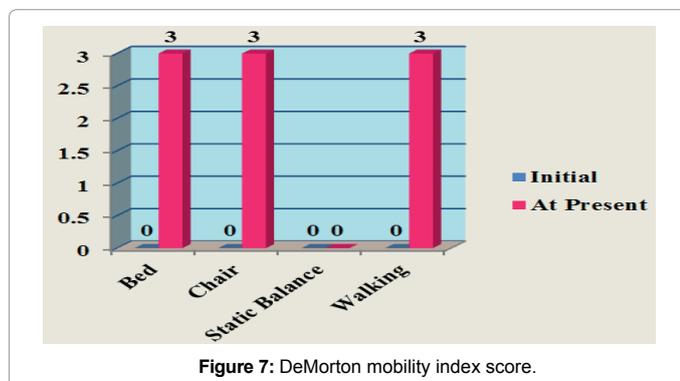


Figure 7: DeMorton mobility index score.

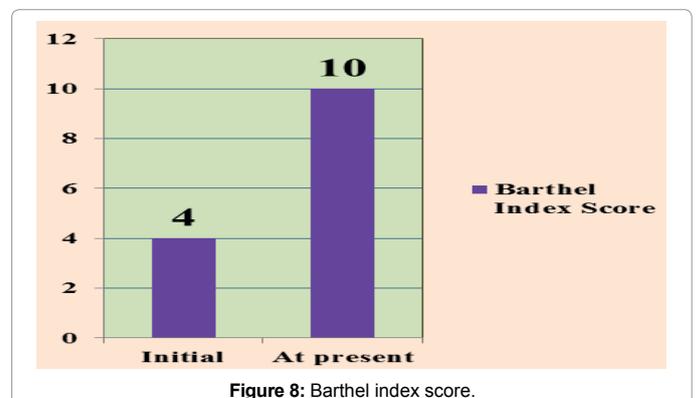


Figure 8: Barthel index score.

Discussion

The significance of this case report was the rare opportunity to document the outcome of a PT intervention for rare condition of GBS.

At the present the patient achieved good bed mobility and transfer and will able to return to his prior functional status within few weeks. Therefore, the use of PT intervention is beneficial for enhancement of

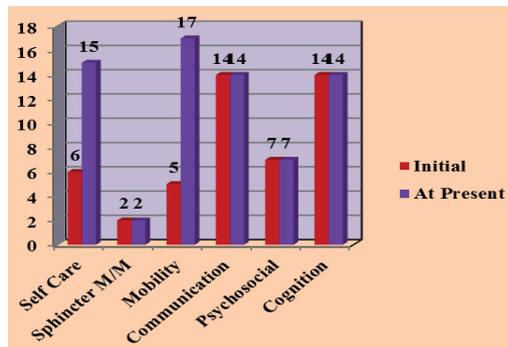


Figure 9: FIM score.

recovery in rare variety of GBS. Future work in this area could compare and contrast the outcomes of other PT intervention for enhancement of recovery in rare variety of GBS.

Conclusion

Recovery in patients with GBS may be delayed in contrast to the reported literature and may take more than 6 months as in the present case.

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