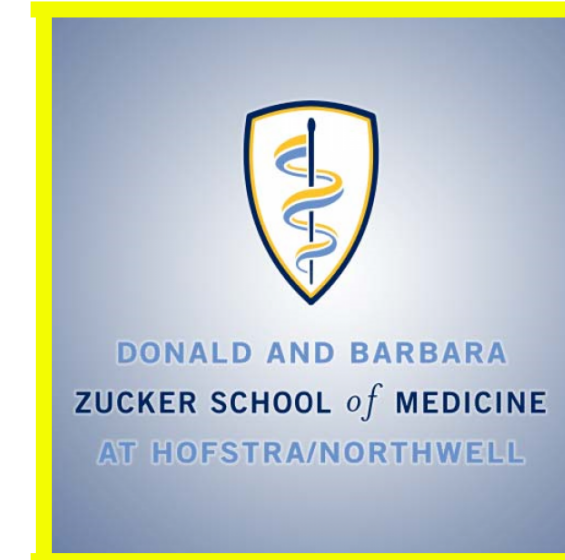


The Benefits of an Intensive Multidisciplinary Inpatient Rehabilitation Program in Guillain-Barre Syndrome

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Case Diagnosis:

Guillain-Barre Syndrome (GBS) is a rare acute post infectious immune mediated demyelinating disease that affects the peripheral nervous system. Typically it presents as a symmetric ascending paralysis with limb weakness (mainly lower extremity) and areflexia. Since antecedent infections occur in about 70% of GBS cases, the pathophysiology likely involves molecular mimicry where the host immune system recognizes self peptides as foreign antigen thereby activating antibodies or T cells which contributes to the destruction of the myelin sheath and Schwann cells of the motor and sensory nerves in GBS. In the acute care setting, there are two main treatment options utilized: Intravenous Immunoglobulin (IVIG) and Plasma Exchange (PLEX) which are thought to hasten the recovery period.

Description:

We present a 70 year old male with no past medical history who initially presented to the acute care hospital for lower extremity weakness after a recent travel history to Alaska 3-4 weeks prior to his admission. He initially went to his PCP and was prescribed physical therapy for ongoing hip pain. His symptoms quickly worsened eventually needing a cane and then requiring a walker for ambulation. He was admitted with workup including lumbar puncture and EMG supporting the diagnosis of GBS. The patient was treated with 7 days of IVIG and PLEX.

Upon admission to the rehab unit, the patient's motor strength on his bilateral lower extremity was 1/5 throughout with preserved upper extremity strength and intact sensation. Initially in his rehab course, the patient was non-ambulatory and was a max assist with 2 people for sliding board transfers. The patient participated in a multidisciplinary inpatient rehabilitation program consisting of 2 hours of physical therapy and 1 hour of occupational therapy.

The exercises employed were done in a progressive manner where the intensity, frequency and load were increased as tolerated in order to avoid paradoxical weakening. The therapy sessions were aimed at addressing the patient's gait training, endurance, balance, lower extremity strengthening and functional mobility. Aerobic activity exercises were stressed throughout the course of his rehab in order to promote lower extremity strengthening and improve endurance and prevent fatigue by the use of stationary bikes. Exercises such as repeat sit to stand, seated hip abduction, hip adduction, knee flexion and side lying hip abduction were done daily in order to improve lower extremity strength and control. The use of the G-EO robotic machine was utilized to provide gait training and increase mobility in a controlled safe environment. With trials of ambulation, the patient was provided with verbal feedback on his gait mechanics.



Description (continued):

In addition to the exercises, techniques involving conservation of energy and activity pacing were addressed to avoid fatigue burnout which is prevalent in GBS. Occupational therapy sessions involved the practice of daily activities such as grooming and dressing, as well as the use of assisted devices (grabbers, sock donners, etc.) in order to promote functional independence and manage fatigue. Passive range of motion exercises such as hamstring and piriformis stretches were done to prevent muscle contracture which can occur in GBS.

Results:

During the first 3 weeks of rehab the patient was non ambulatory with lower extremity strength improving slightly to 2/5. He was a max assist to 4 people on sit to stand transfers and moderate assist of 2 people with the beasy transfer board from bed to chair. His functional goals were originally set to focus on transfers and for wheelchair mobility. However, he began to show significant improvement by week 4 where he was now able to ambulate with assistance. To preserve the momentum of his improved function his acute inpatient rehabilitation stay was extended to 7 weeks total. By the time of his discharge his lower extremity strength was improved to 4/5 bilaterally and he was a close supervision with his transfers, stairs and ambulation where he walked 130 feet with a rollator.

Discussion:

Although the majority of patients with GBS regain the ability to walk and make a full neurological recovery, GBS patients still have other factors decreasing their quality of life after their illness such as an increase in fatigue, pain, anxiety and depression. Inpatient rehabilitation thus aims to maximize patient function thereby reducing the associated burden of care upon discharge which can have a significant psychosocial impact. For our patient, he came into our rehab unit non ambulatory needing a sliding board for transfers and left our rehab unit as a supervision for transfers and stairs, walking 130 feet with a rollator after 7 weeks of inpatient multidisciplinary rehabilitation. He continued his outpatient therapy and followed up with us 6 months later with close to baseline lower extremity strength and was cleared to resume work again. Although we do not know the type of extent rehabilitation has had vs. the natural progression and recovery of the disease during his inpatient stay, we do know that his rehabilitation course could have only helped him.

Although there are sparse high quality research studies out there identifying the type of setting, level of intensity and different types of physical intervention needed to rehabilitate these patients right after their acute medical care, it is supported that rehabilitation plays a significant role in improving the functional outcomes of these patients. The RCT done by Khan et al. which took place at outpatient facilities showed that high intensity rehabilitation reduced disability compared to lesser intense rehabilitation in chronic phase GBS patients. There is also evidence showing the benefits of physical exercise with cycling being the most effective in increasing physical strength and reducing fatigue.

Conclusion:

Although limited by the small amount of high quality studies done on this topic, our case as well as other studies have shown the positive effects of a multidisciplinary intensive rehabilitation program regarding disability and quality of life. Further studies specifically focusing on the inpatient rehabilitation program of these patients after their acute care would be highly beneficial.

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