ORIGINAL ARTICLE

Observational study of functional gains in patients with Guillain-Barre syndrome

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ABSTRACT

Guillain-Barre Syndrome is a disease of low incidence but with sudden onset and disturbing in its acute phase. Even though it is a disease of spontaneous remission, therapies for motor functional recovery have been prescribed by physicians since its onset. Rehabilitation seeks to make the patient independent in his daily life activities-this is the initial goal of the multidisciplinary team, and to regain the gait is always the greatest desire of the patient and his family. **Objective:** The objective of this study was to evaluate the role of rehabilitation in the form of hospitalization, in which the patient receives a large quantity of stimuli during a period of stabilization of the clinical presentation. **Method:** 27 patients diagnosed with Guillain-Barre Syndrome were evaluated while being treated at the *Hospital de Reabilitação e Readaptação Dr. Henrique Santillo*, in the period between July 2008 and July 2013. **Results:** Twenty-seven patients were analyzed with a mean age of 39.4 years, who were admitted for rehabilitation after 47.8 days of clinical presentation and remained hospitalized an average of 43.8 days. Comparing gait recovery in relation to age, no differences in gain were observed among young people or adults. As for the Functional Independence Measure (FIM) the average on admission was 75.2, which increased to 109.1 at discharge. One of the main factors that contributed to this increase in the FIM value was that, in the gait factor, 11 patients were able to ambulate at admission and at discharge that number had risen to 23 ($p < 0.001$). **Conclusion:** In this study, a significant relationship was found in gait between admission and discharge, evidenced by a significant increase in the values of FIM during this period. We found no relationship of improvement between the use of immunoglobulin and improved motor skills.

Keywords: Guillain-Barre Syndrome, Gait, Rehabilitation

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INTRODUCTION

The Guillain-Barré Syndrome (GBS) is an acute inflammatory polyradiculoneuropathy with immunomediated characteristics. It is the leading cause of generalized flaccid paralysis in the world. Clinically, it is presented under the form of areflexia and acute ascending flaccid paralysis with impairment of the myelin in the proximal portion of the peripheral nerves. The annual incidence is estimated at 1-2 cases per 100,000 habitants,[1] and in cases of children this proportion is smaller, with 0.5-1.5 cases per 100,000 habitants.[2] There are no specific epidemiological data for Brazil.

There is predominance of male patients at a ratio of ten for every five females aged between 30 and 78 years.[2] More than 60% of the patients presented some type of infection in the weeks before the syndrome.[2] Respiratory infections were predominant, followed by gastrointestinal.[1] Its etiology is associated especially with infections caused by such things as *Campylobacter jejuni*, cytomegalovirus, Epstein Barr virus, in addition to metabolic causes such as diabetes mellitus and alcohol abuse, by exogenous intoxication due to heavy metals and systemic diseases such as lupus erythematosus, sarcoidosis, and Hodgkin's disease. Other precipitating factors of less incidence are surgery, immunization, and pregnancy.[3]

The most common form of the Guillain-Barré Syndrome is the acute inflammatory demyelinating polyradiculoneuropathy. Other subtypes are: acute motor axonal neuropathy, acute motor sensory axonal neuropathy, and Miller-Fisher syndrome.[3]

Acute motor sensory axonal neuropathy starts with sensory abnormalities in the extremities of the body and a generalized weakness, which evolves rapidly. The prognosis is worse than that of GBS and most cases have a slow and incomplete motor recovery. Due to the impossibility of clinical differentiation, both are treated in a similar way.

The acute motor axonal neuropathy starts abruptly with generalized weakness, with the distal muscles being more severely affected than the proximal ones. Sensory symptoms are absent and tendinous reflexes may be normal. Patients experience good recovery within the first year, but a residual distal weakness is common.

The Miller-Fisher syndrome is characterized by the ataxia, areflexia, and ophthalmoparesis triad. The general recovery occurs after two weeks of the first symptoms with favorable evolution after 3-5 months.[3]

The evolution of the disease is generally favorable, depending on the nature of the pathological process (either axonal or demyelinating). Recovery occurs between the second and fourth week of the onset of the pathology. Approximately 10% of the patients remain with severe residual disability for little or no recovery occurs after two years of the onset; 2 to 5% of the patients die in the initial phases due to complications such as dysautonomia or organ failure in the later phases, which are related to prolonged immobilization and bacterial infections. Alterations in the vesical sensitivity or vesical areflexia are developed by 30% of the patients, 20% maintain some deficit after 12 months,[4] and 3% present recurrence of the syndrome.[2]

Plasmapheresis is considered the first treatment for the Guillain-Barré syndrome. If done within seven days of the onset of symptoms, the patient will reach a functional level more rapidly with fewer recurrences.[3] There may be complications such as hypertension, venous line infection and, less frequently, hemolysis and embolism.[2] When used in children, it has a good prognosis of improvement in 85% of the cases.[5]

OBJECTIVE

This study sought to evaluate patients diagnosed with GBS and hospitalized in a rehabilitation center to establish the degree of improvement of those patients on functionality scales.

METHOD

The data contained in the GBS patients' medical records were analyzed retrospectively at the Dr. Henrique Santillo Rehabilitation and Readaptation Center (CRER) in the period between July of 2008 and July of 2013. The inclusion criteria demanded a firm diagnosis and that those patients had received medical monitoring and the care of a multiprofessional team directed toward their rehabilitation. The patients who did not have all the necessary data were excluded from the study. Microsoft® Excel 2007 was used to tabulate the data and the statistical analysis was made with the SPSS® program for Windows®, version 16.0, with a significance level of 5% ($p < 0.05$).

RESULTS

A total of 27 patients were analyzed for plasmapheresis or immunoglobulin during the course of the disease along with the following factors at their admission and at their discharge: gait, Functional Independence Measure (FIM), and the presence of dysphagia. All the patients were hospitalized for rehabilitation. Therefore, these patients remained hospitalized under the care of a physiatrist and a multiprofessional team that included physiotherapists, occupational therapists, speech therapists, psychologists, nurses, nutritionists, and social workers.

The sample included 27 people who were admitted on average 47.8 days after the onset (with a standard deviation of 31.8 days, with the earliest at five days and the latest at 120 days after the onset). As for their time spent in rehabilitation, the average was 43.8 days (standard deviation of 27.9) with the age average of 39.4 years, ranging between 8 and 74 years of age.

Among the 27 people in the study, 14 were males and 13 were females, divided by age bracket into three groups (less than 30 years old, between 30 and 40 years old, and more than 40 years old) with a $p = 0.348$, showing no significance of patient's age in the sample. The same groups were evaluated for gait at admission and at discharge from the rehabilitation center ($p = 0.233$ and $p = 0.199$ respectively), showing that in terms of gait improvement age was not a factor.

Of the 27 patients, 16 (59.3%) had no gait at admission and 23 (85.2%) patients showed improvement at discharge with $p < 0.001$ (analyzed by the McNemar test). In an effort to make an association between improved gait (patients who did not ambulate at admission, but who did at discharge) and the use of immunoglobulin, it was observed that 11 patients did improve their gait, and, of those, six (54.5%) received immunoglobulin and five did not, but with a significance of $p = 0.231$ (Fischer test), it was not possible to affirm that the use of immunoglobulin was related to the improvement in the patients' gait.

In the comparison of the Functional Independence Measure (FIM), 23 patients had an FIM rating at admission, but only 18 were FIM rated at discharge; therefore, only those who had FIM at both times were considered for calculation. The FIM value varied between 18 and 126. The FIM average at admission was

75.2 (with standard deviation of 26.7), while the FIM at discharge was on average 109.1 with a standard deviation of 22.2. The change in the FIM (discharge minus admission) averaged 32.4 (with a variation from 1 to 81).

A linear regression was done to evaluate the FIM variation over the time of hospitalization, but since $p = 0.256$ was found, it was not possible to infer that the longer the rehabilitation time, the greater the FIM gain. A comparison between the FIM variation and the use of immunoglobulin was made with significance $p = 0.777$.

In the analyses evaluated, the use of immunoglobulin was only statistically significant when comparing the arrival time at the CRER, that is, in the relation between stabilization of the clinical presentation in order to initiate the therapies.

It was not possible to establish any relationship with the use of plasmapheresis, since only two patients (7%) were submitted to this procedure.

As for vesical continence, only one patient was incontinent and was discharged with the same sphincter control pattern they had at admission.

DISCUSSION

GBS is an immunomediated disease with spontaneous remission and may leave some residual disability. In the hospitalization for rehabilitation, these patients were submitted to an average of 12.3 sessions/week of physiotherapy, 11.7 sessions of occupational therapy, and 6.6 sessions of speech therapy per week. These patients were admitted in the acute phase of the clinical presentation to receive either functional motor or cognitive recovery from the beginning. In this way, the patient feels less of the impact of the clinical condition of the disease.

The initial evaluation includes establishing the degree of physical activity to which the patient can be submitted, because in hospitalization, the number of daily therapies increases the cardiac load and the respiratory frequency of the patient, which may worsen the clinical condition. Therefore, the type and level of exertion to which the patient will be submitted is evaluated individually. During the hospitalization, dysphagia and tracheostomy are evaluated. In the present study, seven patients had dysphagia and three had tracheostomy. In the first case, the work of a speech therapist and a nutritionist are important, and in the second case, a respiratory physiotherapist. Care with the cannula is necessary to prevent fistulas and tracheal stenosis.

Prophylaxis for deep venous thrombosis (DVT) is recommended for patients in rehabilitation through the use of anticoagulants and compression stockings. Our institution (CRER) offers a DVT and pulmonary thromboembolism prevention protocol so as to prevent clinical worsening caused by the immobility syndrome caused at the beginning of the clinical presentation. These include identifying the high, average, and low risk groups, and every group will receive a type of prophylaxis.[6]

Symptoms such as muscle pain, depression, and fatigue are common. The continuous evaluation by the team is important not to associate factors that may impede the improvement of the patient, when necessary, using treatments such as occupational therapy, antidepressants, analgesics, TENS.[3]

The Functional Independence Measure (FIM) is defined as an instrument to evaluate the disability of the patient with functional restrictions and to quantify the capacity of a person to execute a series of daily life motor and cognitive tasks such as self-care, transferences, locomotion, sphincter control, communication and social cognition, which includes memory, social interaction, and problem solving. Each one of these activities is evaluated and receives a score that ranges from 1 (total dependence) to 7 (complete independence), and thus the total score varies from 18 to 126. Two domains are described in the FIM - the motor and the cognitive.[7]

In the case of GBS patients, the FIM stays at higher values, for it is a motor alteration disease, that is, the cognitive part score is always full. Consequently, the FIM variation between admission and discharge is more significant, for it only indicates motor gains. The patients analyzed had a FIM increase from 75.2 to 109.1, with nine patients obtaining values between 120 and 126, and of those, four obtained the maximum value. This shows that they were discharged with total functional independence.

Independent gait is considered, even if the patient needs auxiliary means. In the present study, it was possible to verify a significant gain between the patient's admission and discharge with the increase in the number of walking frames from 11 to 23. Comparing only the gait at discharge with that at arrival at the CRER, $p = 0.02$ was found, since those who were able to ambulate were admitted with an average of 41.7 days after onset, while those who were not able to ambulate arrived at the Institution after 80.7 days. It is then understood that the sooner the therapies are initiated, the better will be the prognosis for the gait.

CONCLUSION

It was not possible to establish any relationship between the use of immunoglobulin and functional improvement, nor between the gait improvement with FIM improvement, which may be caused by the size of the sample available for the study or by the difficulty to obtain secondary data, or even due to incomplete information in the medical records.

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