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ORIGINAL ARTICLE

Frequency, Type and Severity of Fine Motor Impairments in Patients with Guillian Barre Syndrome

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ABSTRACT

Background Guillian Barre Syndrome (GBS) is an acute inflammatory demyelinating polyneuropathy that is characterized by progressive symmetric ascending muscle weakness, hyporeflexia with or without sensory or autonomic symptoms and paralysis; however, variants involving the cranial nerves or pure motor involvement are not uncommon. The main characteristic features of GBS is muscles weakness or paralysis.

Objective To evaluate the frequency, type and severity of fine motor impairments in patients with Guillian Barre Syndrome.

Methodology A cross sectional survey was conducted through questionnaire and manual ability assessment tool to find out the frequency, type and severity of fine motor impairments in patients with GBS.The data was collected from Occupational Therapy Department of Pakistan Society of Rehabilitation for Disabled (PSRD), Neuro ward of Lahore General Hospital, Jinnah Hospital and Children Hospital Lahore from July 2012 to December 2012.50 patients of 5-50 years old were selected through purposive sample technique. Patients of GBS with other diseases were excluded. The data was analysis with SPSS version 17.

Results According to the present study 5 (10%) patients were positive for gross motor impairments, 27 (54%) patients for fine motor impairments and 18 (36%) patients for both fine and gross motor impairments. Among these impairments 28(56%) Grasping, 27(54%) Release, 41(82%) Pinching and 23(46%) Reach. Autonomic system was involved in 30 out of 50 patients while 34 patients also presented with signs of cranial nerve involvement.

Conclusion It is concluded that the patients with Guillain Barre Syndrome mostly have fine motor impairments that affect activities of daily living (ADL's).

Key Words Guillain Barre Syndrome, Occupational Therapy, Fine Motor Impairments, Manual Ability Assessment, Activity of Daily Livings

INTRODUCTION

Guillain Barre Syndrom is an acute, immune-mediated disorder of spinal roots, peripheral nerves and cranial nerves, commonly characterized by a rapidly progressive, ascending weakness of the extremety, truncal, respiratory and facial musculature, with inconstant sensory and autonomic dysfunction. The main characteristic features of GBS is muscle weakness or paralysis.[1] The symptoms generally start in the feet and hands and may slowly make their way also along the limbs. At first there is symmetrical weakness in the lower limbs, which rapidly increase in an ascending pattern. Difficulty breathing and difficulty swallowing are the additional signs and symptoms of the condition.[2]

Impaired strength, endurance, speed, manual dexterity, coordination may result in need for alternative ways for access to academic activities for example writing , reading, test taking, note taking, and computing. Due to impaired mobility, there is use of aids such as walker, crutches, splints, wheel chair and communication devices. The use of these aids requires all environments be available.[3]

A learned series of movements is a motor skill which combines to produce a well ordered, smooth action in order to perform a specific task. Gross motor skill needs the use of large muscle groups to perform functions like crawling, walking, balancing. Fine motor skill needs the use of smaller muscle groups to perform specific tasks that are accurate in nature.[4]Mobility impairment means, a person is not able to use one or more extremities, or there is a lack of strength to grasp, lift objects or walk.[5]

Occupational therapists assess the effect of changes in motor function, coordination, sensation, cognition, visual perception, on ability of a person to manage daily life functions and activities. Next to the acute phase, treatment consists of rehabilitation in combination with the multidisciplinary team to emphasis on improving activities of daily living (ADLs). Occupational therapists may also advice and offer equipment (such as wheelchair and special cutlery) to make the patient independent in performing ADLs.[6]

Forsberg (2004) performed a prospective study. He concluded that after 2 years of onset of GBS, the patients had generally subnormal grip strength, muscle strength, and they were also not able to walk independently.[7] Treatment for those patients who are recovering from GBS and declared that GBS prognosis can be prolonged. The most common form of neuromuscular paralysis is GBS. It mostly affects young people and it can cause long-term residual disability that affects activities of daily livings. Early rehabilitation intervention makes sure medical strength, preventive measures and proper treatment to minimize long term complications.[8] Dimario et al., (2012) investigated connected incidence and degree of autonomic dysfunction in combination with the degree of motor impairment in children that were hospitalized with Guillain-Barre syndrome.[9]

My objective of this observational study was to determine the frequency, type and severity of fine motor impairments, to help the patient to achieve ADL independence. Occupational therapy focuses on activities to help you be as self-sufficient as possible in your daily life.

METHODOLOGY

A cross sectional survey was conducted to find out the frequency, type and severity of fine motor impairments. For this purpose 50 patients of sample were taken through purposive sample technique. Age range was between 5-50 years of old and all those were ready to participate. After the permission of institute, researcher explains the purpose of study to the participants and gets the verbal permission for data collection. The data was collected from Occupational Therapy Department of Pakistan Society of Rehabilitation for Disabled (PSRD), Neuro ward of Lahore General Hospital, Jinnah Hospital and Children Hospital Lahore from July 2012 to December 2012. The data collection instrument was the questionnaire developed from the literature review and expert's opinion and a standard tool manual ability assessment scale (MAAS)[10] has been used to find out the frequency, type and severity of fine motor impairments in patients with GBS.Male and female between the age ranges of 5-50 and already diagnosed patients with GBS from neurologists were included in inclusion criteria. Patients of GBS with other diseases were excluded. The data was analysis with SPSS (Statistical Package for the Social Sciences) version 17.

RESULTS

The study was based on 3 months' time period and 50 patients with GBS evaluated to find out the frequency, type and severity of fine motor impairments. It include frequency table of motor impairment, fine motor impairments and a standard tool manual assessment ability scale in patients with GBS. According to the present study 5 (10%) patients were positive for gross motor impairments, 27 (54%) patients for fine motor impairments and 18 (36%) patients for both fine and gross motor impairments. Among these impairments 28(56%) Grasping, 27(54%) Release, 41(82%) Pinching and 23(46%) Reach. Manual ability assessment scale was used to determine the severity of fine motor impairments. According to this scale manual ability skills are divided into 5 levels. The patients were assessed and 44% of patients had level 3, 22% had level 4 and 16% patients demonstrated level 5. Autonomic system was involved in 30 out of 50

Table 1: Frequency table of Motor impairment in GBS

Motor Impairments in GBS	Frequency	Percentage
Gross Motor Deficit	5	10.0%
Fine Motor Deficit	27	54.0%
Both Gross & Fine Motor Deficit	18	36.0%
Total	50	100.0%

patients while 34 patients also presented with signs of cranial nerve involvement.

Table 2: Frequency table of Fine motor impairments in GBS

Fine Motor Impairments	Yes	No	Impairment percentage
Grasp	28	22	56%
Release	27	23	54%
Pinch	41	9	82%
Reach	23	27	46%

Table 3: Frequency table of manual ability assessment scale

Manual Ability Assessment Scale	Frequency	Percentage
Level 1	0	0.0%
Level 2	9	18.0%
Level 3	22	44.0%
Level 4	11	22.0%
Level 5	8	16.0%
Total	50	100.0%

DISCUSSION

This study indicates the frequency, type and severity of motor impairments in patients with GBS. The finding suggested that patients with GBS mostly have fine motor impairments that make them dependent and make them restricted in performing their activities of daily livings. Forsberg, et al., (2004) performa prospective study to give a detailed description of impairment in patients with Guillain-Barre syndrome (GBS) in Sweden during the starting 2 years after onset of disease. There is 98%, 38% and 31% subnormal grip strength at 2 weeks, 1 year and 2 years respectively after onset of GBS.100%, 62% and 55% of patients had sub-maximal overall muscle strength. At the same time points, 62%, 10% and 7% of patients were not able to walk 10 m independently; and 93%, 55% and 52% have affected sensations. Recovery occurred during the first year after onset. At 2 years, sensory and motor impairments were still found in more than 50% of patients. He assumed that residual impairment is remarkable and likely persisten –. Like previous study our study had showed that there was motor impairments with increasing prevalence of fine motor impairments in patients with GBS. Soryal (1992) studied at three patients with Guillain-Barre syndrome and found remarkable residual impairment of joint mobility. Pain in the axial skeleton and extremities was a prominent early feature. Marked joint stiffness and contractures were developed in all three patients in spite of having physiotherapy. The major components of disability were the skeletal problems and their complications even though improving neurological status. Similarly our study also showed that there were marked motor impairments in GBS patients .

Rehabilitation treatment for patients who were recovering from GBS. He specified that prognosis of GBS can be prolonged. It mostly affects young people and can cause long-term residual disability. Early rehabilitation intervention makes sure to give medical constancy, preventive measures and suitable treatment to minimize long term complications. Longer-term issues comprise, return to work and driving, psychosocial alteration and continuation of the role within the family and community. In our study it was stated that there is prevalence of fine motor impairments that affect activities of daily living of the patients with GBS .

Dimario (2012) investigated associated incidence and degree of autonomic dysfunction in combination with the degree of motor impairment in children who were hospitalized with Guillain-Barre syndrome. Motor weakness can be different, as does the effect on autonomic function including vasomotor stability, continence, heart rate, sweating and blood pressure. There were 26 patients (12 boys), their mean age was 11 years (range, 6-17 years). 24 patients (92%) recovered by 2 to 6 months without any functional disability. Hypertension occurred in 18 of 26 (69%).There is increased proportion of children with hypertension and/or tachycardia, as did the motor disability grade. Multiple autonomic disturbances combine the development of childhood GBS .In our study there is marked fine motor impairments in patient having high motor disability grade with involvement of autonomic disturbances.

CONCLUSION

It was concluded that Guillain Barre Syndrome is associated with both gross and fine motor

impairments in patients with increasing prevalence for fine motor involvement that affects performing activities of daily living.

RECOMMENDATION

The purpose of this study was to describe the fine motor impairments in patients with GBS and to suggest them to take early rehabilitation intervention like occupational therapy and physiotherapy to ensures medical stability that minimize the long term complications so that they make their selves independent in the society.Individuals require occupational therapy on an inpatient as well as an outpatient basis.The main focus of physical and occupational therapy is to maximize functional capabilities. Occupational therapists teach individuals skills such as getting in and out of the shower, dressing, and preparing meals, and may order adaptive equipment or braces to make these tasks easier. For the betterment of the patients and to make them independent there should be rehabilitation centers where early intervention make them active healthy person of community and they can perform their ADLs independently.

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