

Observational Study on Symptoms in Patients with And Without Mechanical Ventilation in Gullian Barre Syndrome

A. Supraja Valli¹, M. Himaja², V. Srikumari³, K. Madhavi⁴

^{1,2}BPT Interns, COP, SVIMS, Tirupathi.

³Associate Professor, COP, SVIMS, Tirupathi.

⁴Professor, Principal, COP, SVIMS, Tirupathi.

ABSTRACT:

GBS is an immune mediated inflammatory polyradiculopathy, combined with symptoms include Quadriparesis, Paraesthesia and Respiratory insufficiency.⁽¹⁾

OBJECTIVE:

This study aimed to determine the clinical findings indicating patients with early symptoms involving with Respiratory insufficiency along Paraesthesia and Quadriparesis in ventilated and Non ventilated Patients. It was a prospective observational study. A total of 40 consecutive patients over a period of 4 months were included in this study. All patients were examined for limb weakness, respiratory involvement and paraesthesia followed by (8_12 days) of Hospitalization.

RESULTS:

Out of 40 patients 27 were males and 13 were females with median average age of 42 the patients includes with;

Respiratory Insufficiency	- 08 (20%)
Quadriparesis	- 38(95%)
Dysarthria	- 08 (20%)
Dysphagia	- 11 (27.5%)
Paraesthesia	- 25 (62.5%)
Facial palsy	- 14 (35.5%)
Ophthalmoplegia	- 13 (32.5%)

KEYWORDS: Gullian Barre Syndrome, Bulbar Palsy, Quadriparesis, Dysarthria, Dysphagia, Paraesthesia, Facial Palsy, Ophthalmoplegia

INTRODUCTION:

.GBS is an acute onset monophasic, immune mediated disorder of the PNS⁽²⁾. Gullian Barre Syndrome is most common cause of acute flaccid paralysis and it is immune mediated demyelinating disorder and severe gbs results in secondary axonal injury⁽³⁾. with about 100000 people developing disorder every year and world wide⁽⁴⁾. It is post infectious disease characterized by symmetrical weakness of extremities

and 25% patients develop respiratory insufficiency and many show autonomic dysfunction⁽⁵⁾. Electrophysiological study provide evidence of PNS dysfunction and distinguish between subtypes of gbs i.e.,(AIDP,AMAN and ASAN)⁽¹¹⁾. GBS occurs more frequently in males than in females and the incidence increases with age, although all age groups can be affected⁽⁹⁾.

Several factor have been identified as predictors of poor outcome .A shorter duration between the onset of weakness and the low MRC score attained along with the presence of facial weakness were the main predictors of mechanical ventilation. A worse prognosis has also been identified in patients with older age and in patients with severe deficits at the beginning⁽¹⁹⁾.The global incidence, approximately 10000 patients develop GBS each year and 20-30% of these patients may progress respiratory failure⁽⁴⁾.In Europe and North America reported annual incidence rates i.e.,between 0.8 and 1.91/100000. The incidence of GBS increased with age after 50 years from 1.7 per 100000 per years to 3.3 per 100000 per year⁽⁶⁾.High incidence 336.92% in young adults in total of 65 patients between age 18 to 29 years.In this 65 patients, 17 where acute demyelinating polyradiculopathy (26.15%),Axonal form 17(26.15%),Fisher syndrome 2(3.07%)and Ataxic variant 1(1.53%). The remaining 28(43.07%) were unclassified and 9 (13.8%) patients has recurrent GBS and only 5(7.7%) required Mechanical ventilation⁽⁷⁾.In this the prevalence and disability burden of GBS calculated by SDI.2019 there were 150,095(95%) total cases of GBS world wide which results in 44,407 years lived with disability.Gradually there was a 6.4 (95%) increase in the age standardised prevalence of GBS per 100000 population between 1990 and 2019⁽⁸⁾. Prevalence of GBS was 41.5% .Most cases were in the age range of 13-60 months. In these study, males (68.5%) were more affected than girls(31.5%)⁽⁸⁾.

Of the most recurrent microorganisms associated with infections prior to GBS is camphylo bacter jejuni⁽⁹⁾,that can show transient slowing of nerve conduction and mimicking demelination⁽¹⁷⁾

The camphylobacter jejuni infection is associated with an axonal onset variant affected patients commonly experience more rapid deterioration. Many other antecedent infectious agents have been recognised including the most recently identified zika virus⁽¹⁸⁾

The camphylobacter jejuni strains led to confirmation that anti ganglioside antibodies are pathogenic. (3).Molecular mimicry of pathogen antigens leading to generation of cross reactive antibodies that target gangliosides(5).Most recently in a case control study of zika virus epidemics in French Polynesia in 2013 where linked to increase individuals being diagnosed with GBS(10).It is triggered by most commonly infection with camphylobacter, a type of bacteria often found in undercooked poultry(9),Cytomegaloviral infection,Epstein-barr viral infection,Zika viral infection⁽⁹⁾,Hepatitis A,B,C and E

Signs and symptoms include a pins and needles sensation in fingers, toes, ankles or wrists,weakness in your legs that spreads to upper body,unsteady walking on inability to walk or climb stairs,double vision or inability to move the eyes,severe pain that may feel achy, shooting or cramplike and may be worse at night,rapid heart rate,low or high blood pressure,difficulty breathing⁽⁶⁾

AIM OF THE STUDY:

To determine the percentage of the symptoms (respiratory insufficiency,paresthesia and quadriparesis) in patients with and without mechanical ventilation in patients affected with GBS.

MATERIALS AND METHODS

It was a prospective observational study conducted in the Department of Neurology and emergency(RICU) from march 2023 To June(2023). A total of 40 patients were included in this study.The patients were physically examined for limb weakness by MRC grading,and HughesDisability grading score to evaluate functional status of the patients and WHO grading for paraesthesia.The patients were diagnosed based on NCV criteria who have been diagnosed by Neurologist .The data of the patients who fulfilled GBS diagnostic criteria were included in this study.In 1978,Hughes ,et al.proposed a disability scale which has been used widely till now for GBS diagnosis⁽²⁰⁾

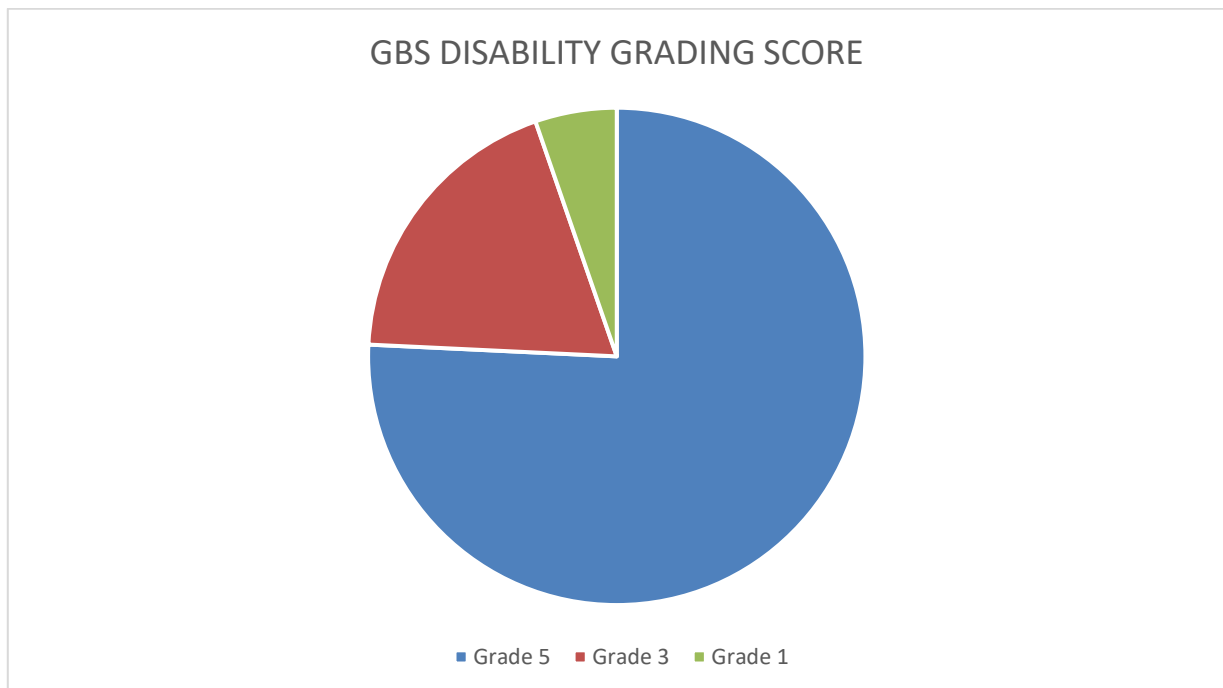
TheHughes disability grading scale is used on patients to evaluate the functional status of the patients of which 8 patients were graded (5) they are ventilator assisted and remaining 32 are graded (3) as they are able to walk 5m with help. Paraesthesia is based on WHO Grading of which 25 patients were graded between 2 and 3 (difficulty in walking and holding objects of painless swelling.For limb weakness MRC Grading scale were used and 38 patients were graded between 3 and 4.

OUTCOMES

1. Hughes GBS Disability grading score
2. Paraesthesia-WHO Rating scale
3. Limb weakness-MRC grading scale

In this study ,Hughes GBS disability grading score

- . 8 (20%) patients were graded 5 i.e., pt on required assisted ventilation.
- . 2 (5%) patients were graded 1 i.e., minor symptoms but capable of manual work
- . 30 (75%) patients were graded 3 i.e., able to walk 5m with assistance.

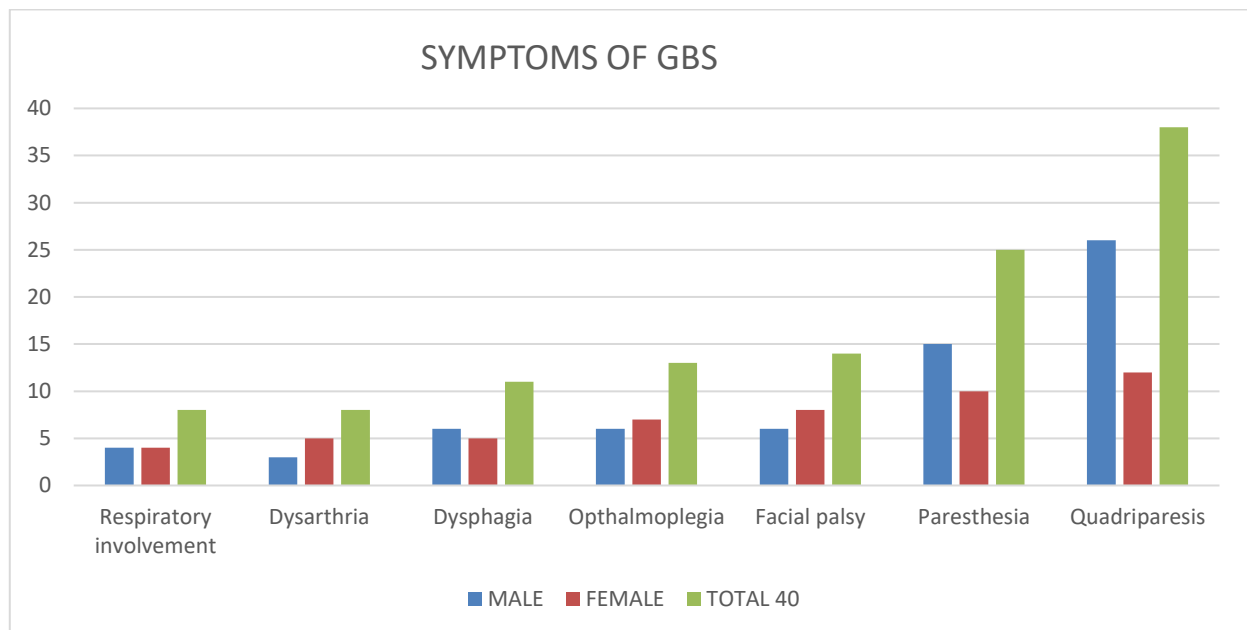


DATA ANALYSIS

Data were entered on tables by using Microsoft excel2016.Data entered on tables were to calculate the no.of patients and percentage of symptoms affected in them.

TABLE 01 (Total no of patients n=40)

	<i>FREQUENCY</i>	<i>PERCENTAGE</i>
Gender Distribution		
Male	27	67.5%
Female	13	32.5%
Symptoms of GBS		
Respiratory involvement	08	20%
Dysarthria	08	20%
Dysphagia	11	27.5%
Ophthalmoplegia	13	32.5%
Facial palsy	14	35.5%
Paraesthesia	25	62.5%
Quadriparesis	38	95.5%



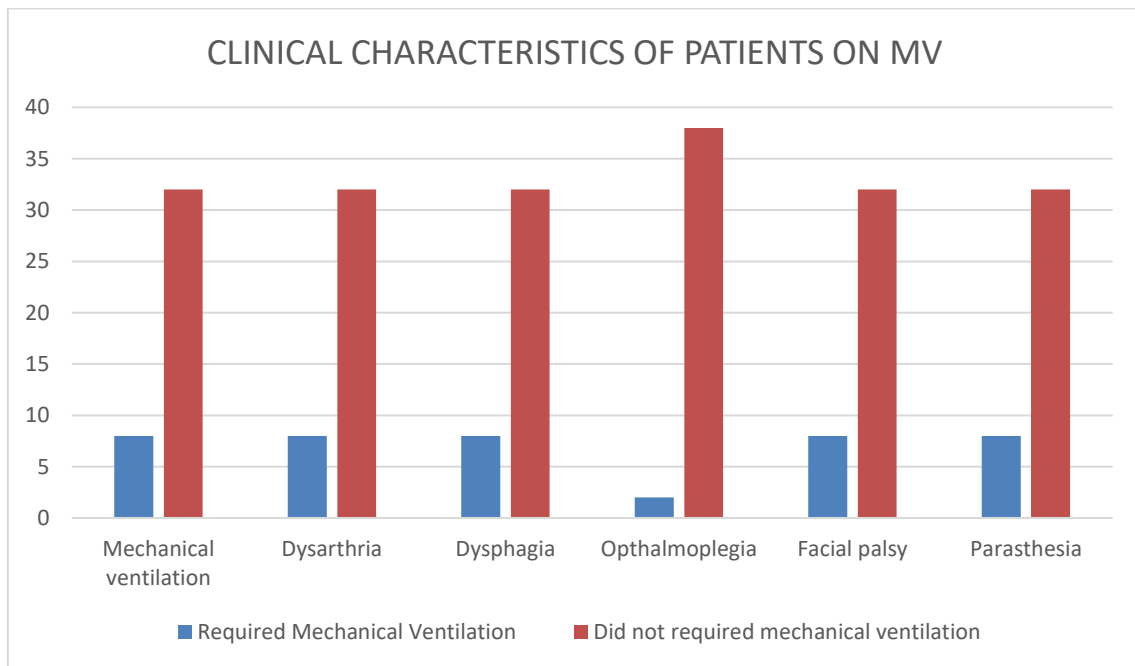
A Total of 40 patients were included in this study. The age of the patients ranged from 14 to 80 years and the average age of the patients was 42, of this 13(32.5%) were females and 27(67.5%) were males. The most common clinical features recorded from the above table was Limb weakness(95.5%), followed by paraesthesia(62.5%) and respiratory involvement(20%).

TABLE 2 CLINICAL PARAMETERS OF PATIENTS AMONG VENTILATED GROUP

(n=8)

Clinical presentation	Frequency	Percentage
GENDER		
MALES	3	37.5

FEMALES	5	62.5
CLINICAL PARAMETERS		
QUADRIPARESIS	8	100
DYSARTHRIA	8	100
DYSPHAGIA	8	100
OPHTHALMOPLÉGIA	8	100
FACIAL PALSY	2	25
PARAESTHESIA	8	100



Among those who require mechanical ventilation, at the time of presentation, all had limb weakness and paraesthesia, 2 out of 8 had facial weakness, all had dysarthria and dysphagia and ophthalmoplegia. Out of 8 ventilated patients 3 were males and 5 were females.

TABLE:3 Stratification of clinical presentation in patients of GBS who were not mechanically ventilated

Clinical presentation	Required mechanical ventilation	Did not
require mechanical ventilation		
Quadriparesis	yes=8	32
	No=0	0
Parasthesia	Yes=8	17
	No=0	15
Dysarthria	Yes=8	0
	No=0	32
Dysphagia	yes=8	3
	No=0	39

Ophthalmoplegia	yes=2	5
	No=0	27
Facial palsy	Yes=2	14
	No=0	24

DISCUSSION:

GBS is an acute ,progressive, symmetrical, ascending demyelinating polyneuropathy characterized by symmetrical limb weakness, and paraesthesia .

GBS is one of the most common causes of acute flaccid quadriplegia.It is also one of the most common causes of neuromuscular respiratory failure,with patients requiring MV⁽⁸⁾.Respiratory failure contributes to significant morbidity and mortality in patients with GBS and is linked to a worsening of outcomes and longterm functional prognosis⁽¹²⁾.

A total of 40 patients were included in this study with average age of the patients was 42,of this 13 were females and 27 were males.

Out of 40 patients ,8 patients were required mechanical ventilation, which is less comparison with other studies .Durand MC et al studied 154 patients and 22% required ventilator support⁽¹³⁾ and the study conducted by Paul et al,39% required Mechanical ventilation⁽¹⁴⁾.

In this observational study, aim to determine the percentage of people affected with the symptoms of this disease(GBS) and also to evaluate the symptoms present with patients on Mechanical ventilation and also the patients present with symptoms without mechanical ventilation.Most commonest symptoms that are affected in this disease.

Total 40 subjects were included in this study out of which 26 were males and 13were females . The primary outcomes were used to record the frequency of the symptoms which are affecting most with and without involvement of Mechanical ventilation.

The Hughes GBS Disability grading score is used to access the functional status of patients with GBS of which 8(20%)patients were with the score(5) i.e., ventilator assistance and 2(5%) patients with grade (1) and remaining 30(75%) were graded grade (3).

In our study 20% ,5% and 75% were graded 5,1 and 3 respectively,Which is similar to study done by Department of neurology,Beijing Tongren Hospital includes 82.3% -graded ≤ 3 and 17.7% - graded >3⁽¹⁵⁾ and 54.7%,16.4%,9.4% and 6.2% were graded 4,3,2and 1 respectively in the study done by Boostani R⁽¹⁶⁾

paraesthesia were graded based on WHO of which 25 were graded between 2and 3.Limb weakness is measured by MRC grading scale of which 38 were graded between 3 and 4 .

In This study the commonest symptom and the people affected mostly is with Limb weakness.Muscle weakness or paralysis can be one of the commonest symptoms of the disease if not treated properly in initial phase of GBS.Hence adequate treatment is to be given to maintain ROM and to strengthen muscle thus will decrease development of contractures.

CONCLUSION

In this study the commonest presentation of GBS with and without MV was limb weakness 95.5% and most of the symptoms affecting the patients on mechanical ventilation i.e., all symptoms has a percent of (100%)except for facial palsy has (20%).This information can gives us regarding the need for mechanical ventilation,which would be helpful in the early management of this patients by admitting

them in the Intensive care unit .along with limb weakness followed by paresthesia(62.5%),then with respiratory involvement(45%), facial palsy(35.5%), ophthalmoplegia (32.5%), dysphagia(27.5%) and the least commonest was Dysarthria(20%).

The study suggests that need for mechanical ventilation should be anticipated in patients who have limb weakness,parasthesia and respiratory insufficiency.

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