European Journal of Molecular & Clinical Medicine

ISSN 2515-8260 Volume 9, Issue 3, Winter 2022

## ORIGINAL RESEARCH

# Clinical profile, electrophysiological findings, treatment response of Guillain Barre Syndrome: A retrospective study from tertiary care centre in Central India

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**ABSTRACT**

**Introduction: Guillain–Barre Syndrome (GBS) is an acute, immune-mediated polyradiculoneuropathy with a diverse clinical course and outcome and is the most common cause of acute flaccid paralysis in the adult population.**

**Aim: To study the clinical profile, treatment response of GBS patients and to see their association with electrophysiological subtypes of GBS.**

**Materials and Methods: We conducted a retrospective study of patients with Guillain-Barre syndrome, presented at Sri Aurobindo Medical College and PG Institute, a tertiary care centre in Madhya Pradesh, Central India, from January 2013 to January 2020. All patients diagnosed with Guillain-Barre syndrome were included in this study. The handwritten case record files of the study population were retrieved from medical record section of the institute.**

**Results: There were 70 patients with a male to female ratio of 1.4:1 and 70 % of them were < 40 years of age. Antecedal infections were the preceding events in 31/70(44.3%). Cranial nerve involvement was found in 25/70(17.5 %), 36/70(25.2%) patients had dysautonomia and 17 (24.3%) cases requiring ventillatory support. The commonest sub-type was acute inflammatory polyradiculoneuropathy 40(57.1%). Fever was seen in more numbers of AIDP patients and preceeding GI symptoms were more seen in AMAN and AMSAN variants . Autonomic dysfunction and need of ventillatory support were more in axonal variants of GBS patients. High EGRIS score and long duration of hospital stay were seen in axonal variant of GBS. Shorter duration of illness, rapidly progressive motor weakness of the limbs, longer duration of hospital stay, cranial nerve involvement, bladder dysfunction ,autonomic involvement, low MRC score(≤ 30), high EGRIS score(> 4),high HDS score on admission were prone for ventillatory support. Age >40 years, non treatment with immunomodulators, higher mEGOS on admission were associated with poor outcome on discharge.**

**Conclusion: Early recognition of these risk factors helps in more vigilant management of patients associated with high morbidity who are eligible for additional treatment in future. AIDP variant is more common in our region and poor prognosis and long hospital stay for AMAN and AMSAN variants of GBS.**

**Keywords: Clinical profile, Electrophysiological findings, Treatment response, Guillain Barre Syndrome.**

## INTRODUCTION

Guillain Barre syndrome (GBS) is a heterogeneous condition associated with immune-mediated, reactive, self-limiting peripheral neuropathies. The underlying aetiopathogenesis of GBS is not completely understood, but it is thought to be an immune-mediated process, resulting from the generation of autoimmune antibodies and inflammatory cells that cross-react with epitopes on peripheral nerves and roots, leading to demyelination, axonal degeneration or both. In most of the cases GBS presents as an ascending paralytic pattern with initial involvement of lower limbs followed by upper limbs[1,2].

Electrophysiologically there are majorly 3 different variants of GBS, namely AIDP, AMAN, AMSAN contributing the major chunk of the affected population[3].

The clinical progression of GBS from the onset of illness extends for next 4 weeks. The diagnosis of GBS is based on the combination of clinical history supported by electrodiagnostics. The nerve conduction studies may not show any change during the initial week of onset, the earliest change being prolongation of F wave latencies. CSF analysis may show features of albumino cytological dissociation[4].

The treatment of GBS mainly targets at halting the progression of disease thereby minimising the disability to the patient. The available therapeutic options include IVIg and plasma pheresis. Despite the early initiation of therapy some patients show features of early improvement followed by worsening of clinical symptoms indicating the possibility of treatment related fluctuations[5,6].

This paper aims to study the outcome in patients diagnosed with GBS based on clinical profile, electrophysiological parameters and treatment response using modified Hughes grade, mEGOS score, EGRIS score and mRS scoring systems.

## MATERIALS AND METHODS

This retrospective study was carried out at a tertiary care Hospital in Central India. The study includes the data analysis of total 70 cases that satisfied the inclusion / exclusion criteria.We retrieved case record files of patients with the diagnosis of Guillain Barre Syndrome admitted from 1 JANUARY 2013 to 1 JANUARY 2020 from the records section after getting permission from the head of the concerned departments.The study was approved by the Institutional Ethics Committee approval was taken (IEC approval letter no. SAIMS/IEC/2021/22).

## INCLUSION CRITERIA

All patients of GBS treated in Neurology Department from January 2013 to January 2020.

## EXCLUSION CRITERIA

All patients of GBS who were not treated in Neurology department.

## STUDY PROCEDURE

We recorded the data regarding the epidemiology, clinical profile which include age, gender, antecedent infections (fever, diarrhea or symptoms of upper respiratory tract infection within the 4 weeks preceding the onset of weakness ),days from onset, date of admission and discharge, past medical history (hypertension, diabetes, any neurological ilness), smoking, alcohol consumption status ,pulse rate, blood pressure, measurement of peripheral saturation(SaO2), single breath count(SBC), breath holding time(BHT), chest expansion, tendon reflex, cranial nerve dysfunction, sensory deficits, requirement for mechanical ventilation, autonomic system involvement, baseline vital parameters, laboratory values, electrodiagnostic finding, CSF findings if available ,clinical diagnosis, treatment received, outcome status(routine discharge, LAMA, death/in hospital mortality) and assessment of

severity by Hughes Functional Grading Scale (HFGS) score[7] (on admission and at discharge), modified Erasmus GBS outcome score(mEGOS)[8](after 1 week) andErasmus GBS respiratory insufficiency score(EGRIS)[9](on admission). The MRC sum score[10]is defined as power assessment by the sum of MRC scores of 6 different muscles (deltoid, biceps, wrist extensor, iliopsoas, quadriceps, and tibialis anterior) with maximum score of 60 measured bilaterally. The GBS disability score is a widely accepted scale for assessing the functional status of patients with GBS, ranging from 0 (normal) to 6 (death). Patients were classified according to electrophysiological findings as acute inflammatory demyelinating polyneuropathy (AIDP), acute motor axonal neuropathy (AMAN),and acute motor sensory axonal neuropathy(AMSAN).The study protocol was approved by the Institutional Ethics Committee (IEC NO:SAIMS/IEC/2021/22).The functional outcome of the patients were assessed by comparing the Hughes motor scale at the time of admission and discharge and non improvement in Hughes score was considered as poor outcome.

## STATISTICAL ANALYSIS

The data was collected and entered into MS excel 2010.Statistical analysis was performed using the SPSS 26 trial version. The frequency and percentage were calculated for qualitative data. Mean and Standard Deviation were calculated for quantitative data.Chi square test was used for association between two variables.Ifpvalue <0.05 was considered as statistically significant.

## RESULTS

## DEMOGRAPHIC CHARACTERISTICS

During the study period of 7 years, 70 GBS patients were identified. The age of incidence ranged from 7 years to 70 years having a mean age of 32.81( ± 17.12 ) years ; 70% of patients were aged< 40 years. 41 (58.6%) were males. The male to female ratio was 1.4:1.Out of the total, 38 (54.3%) patients presented within 4 days of onset of illness, 17(24.3%) within 4 – 7 days, 15 (21.4%) cases after 1 week of illness.Comorbidities like hypertension was present in 3 cases,diabetes mellitus in 2 and recurrence of GBS in 2 cases.The demographic characteristics of various variables are shown in Table 1.

## CLINICAL CHARACTERISTICS & SEVERITY OF INVOLVEMENT

Pure motor quadriplegia/quadriparesis was the most common clinical variant 52(74.3%) followed by sensorimotor quadriparesis in 9(12.9%), Miller Fischer syndrome (MFS) in 5 (7.1%), paraplegia in 3 (4.3%) and pharyngeal-cervical-brachial variant in 1 (1.4%) case.51 (72.9%) had sensory symptoms in the form of feelings of tingling, pins and needles, and numbness over limbs.10 (14.285%) had bulbar palsy along with with paresis.Facial nerve involvement in 20 (28.57%) and autonomic disturbance was present in 36 (51.4%) .Early respiratory failure (Hughes grade 5A) was seen in 17 (24.3%)(Table2). It was found that among patients who had respiratory failure, 14 (82.4%) had low MRC score (≤ 30) indicating the severity of illness.There was statistically significant (p value- 0.020) relation between low MRC sum score (0-30) and respiratory failure on comparison with controls (non respiratory group).Several factors at admission are known to predict a need for invasive mechanical ventilation. These include shorter duration from onset of illness, days from onset to hospitalization, rapidly progressive motor weakness of the limbs, duration of hospital stay,cranial nerve involvement, bladder dysfunction ,autonomic involvement, low MRC score(≤ 30),high EGRIS score(> 4),high HDS score on admission (Table 6).Early recognition of these risk factors may help in identification of patients who would require ventillatory support.

Cerebrospinal fluid (CSF) analysis was done in 33 (47.14%) cases.In clinical and electrophysiologically proven GBS cases,4 (12.121.8%) patients had cell count above normal (>4 cells/$mm^3$).The maximum cell count in the sample was 12 cells/$mm^3$. 24 (72.727% ) cases had CSF protein of > 60 mg/dl and 16 (48.4848%) had protein value of >100 mg/dl. Mean CSF protein level was (n=33)142.52 ± 125.64 mg/dl(Table 3).The highest CSF protein (504 mg/dl) was recorded in the patient with recurrent GBS.

**TRIGGERING EVENTS**

GBS is described as a sporadic event without any seasonal predominance. Our study showed that 26 (37.1%) cases occurred in rainy season, followed by 21 (30.0%) cases during winter (December-February), 17(21.3%) in summer, 6(8.6%) during spring season, showing that there is seasonal predominanace.

In our study, 31(44.286 %) of patients had antecedent infection, isolated fever in 13(18.6%), followed by gastrointestinal infection in 11(15.7%) and respiratory infection in 7(10%).

**ELECTROPHYSIOLOGICAL CHARACTERISTICS**

Nerve conduction study was conducted in all cases. AIDP pattern was seen in 40(57.1%), Acute Motor Axonal Neuropathy (AMAN) in 21 (30%), Acute Motor Sensory Axonal Neuropathy (AMSAN) in 9 (12.9%).Overall demyelinating variant of GBS (AIDP) (57.1%) was more common than axonal type (AMAN+ AMSAN).Males (28)(70%) were predominantly affected in demyelinating form of GBS, whereas females (17)(56.7%) dominated in axonal form of GBS. Mean age was 32.46 ± 17.155 in axonal group and 33.865 ± 16.725 in demyelinating forms of GBS. Respiratory failure was noted in 11 (36.7%) cases of axonal form of GBS, only 6 (15%) developed respiratory failure in demyelinating form and the difference was statistically significant ( p value 0.036).The axonal variant also had female predominance, higher HFGS score on admission, autonomic involvement, bladder involvement, ventillatory requirement, lower MRC score(<30).Whereas demyelinating variant showed a male predominance with more cranial nerve involvement. All these variables were statistically significant(Table 4).

**TREATMENT & OUTCOME CHARACTERISTICS**

The outcome of patients were assessed at the time of discharge by the modified Hughes disability score .Out of 70 patients, 39 (55.7%) received Intravenous Immunoglobulin (IVIg) and 1 (1.7%) received plasmapharesis. Outcome was assessed at time of discharge.40 (57.14%) cases were able to walk with or without support at the time of discharge.Out of the 70 patients,39(55.7%) were discharged normally,30(42.9%) went LAMA and 1 (1.4%) succumbed. Most common cause of LAMA was financial constraints, not able to afford expenses of IVIg.

**PREDICTORS OF OUTCOME**

On statistical analysis, Age < 40 years, IVIg administration and low mEGOS score on admission were associated with favourable outcome/recovery at the time of discharge(Table 5).However there was no statistically significant difference in outcome on discharge between axonal and demyelinating variants of GBS.

**Table 1: Frequency and percentage of various demographic variables**

| Demographical variable | Categories | Number of patients (n=70) | Percent |
|---|---|---|---|
| Age | < 40 | 49 | 70.0 |
| | 40-60 | 16 | 22.9 |
| | > 60 | 5 | 7.1 |

| | | | |
|---|---|---|---|
| Gender | Female | 29 | 41.4 |
| | Male | 41 | 58.6 |
| Season | Rainy | 26 | 37.1 |
| | Spring | 6 | 8.6 |
| | Summer | 17 | 24.3 |
| | Winter | 21 | 30.0 |
| Duration of hospital stay | 1-7 | 41 | 58.6 |
| | 8-14 | 18 | 25.7 |
| | > 14 | 11 | 15.7 |
| Discharge/LAMA | Death | 1 | 1.4 |
| | Discharge | 39 | 55.7 |
| | LAMA | 30 | 42.9 |
| Days from onset to hospitalisation | < 4 | 38 | 54.3 |
| | 4-7 | 17 | 24.3 |
| | > 7 | 15 | 21.4 |

**Table 2: Frequency and percentage of various clinical variables**

| Clinical variable | Categories | Number of patients(n=70) | Percent |
|---|---|---|---|
| Clinical diagnosis | Miller fischer | 5 | 7.14 |
| | Paraparetic | 3 | 4.28 |
| | Pure motor quadriparesis | 52 | 74.3 |
| | Sensorimotor quadriparesis | 9 | 12.9 |
| | Pharyngeal-cervical-brachial | 1 | 1.4 |
| GBS EP subtype | AIDP | 40 | 57.1 |
| | AMAN | 21 | 30.0 |
| | AMSAN | 9 | 12.9 |
| Prodromal (n=31) | Fever | 13 | 18.6 |
| | GI | 11 | 15.7 |
| | RTI | 7 | 10.0 |
| Bladder dysfunction | | 23 | 32.9 |
| Bowel dysfunction | | 24 | 34.3 |
| Cranial nerve weakness | Eye | 9 | 12.9 |
| | Facial | 21 | 30 |
| | Bulbar | 10 | 14.3 |
| Ventillatory support | | 17 | 24.3 |
| Sensory complaints | | 51 | 72.9 |
| Autonomic involvement | | 36 | 51.4 |
| Treatment given | IVIG | 39 | 55.7 |
| | Nil | 30 | 42.9 |
| | Plasmapheresis | 1 | 1.4 |
| CSF PROTEIN (mg/dl) | Above 60 | 24 | 72.7 |
| | Above 100 | 16 | 48.5 |
| CSF pleocytosis | (>10cells) | 4 | 12.1 |
| Modified Hughes Disability Score on admission | 0,1,2 | 8 | 11.4 |
| | 3 | 20 | 28.6 |
| | 4 | 34 | 48.6 |

| | | | |
|---|---|---|---|
| | 5 | 8 | 11.4 |
| Hughes disability score | Improved (i) | 37 | 52.9 |
| | Worsened (W) | 33 | 47.1 |
| MRC | ≤ 30 | 35 | 50.0 |
| | 31-40 | 14 | 20.0 |
| | 41-50 | 16 | 22.9 |
| | 51-60 | 5 | 7.1 |
| mEGOS | 0-3 | 20 | 28.6 |
| | 4-6 | 40 | 57.1 |
| | 7-9 | 10 | 14.3 |
| EGRIS | 0-2 | 14 | 20.0 |
| | 3-4 | 28 | 40.0 |
| | 5-7 | 28 | 40.0 |

**Table 3: Descriptive statistics of various values**

| Variables | Mean ± SD |
|---|---|
| Age | 32.81 ± 17.12 |
| Duration of hospital stay | 8.89 ± 10.63 |
| Days from onset to hospitalisation | 5.23 ± 4.25 |
| CSF protein (n=33) | 142.52 ± 125.64 |
| MRC | 29.97 ± 16.38 |
| Megos | 4.69 ± 2.09 |
| EGRIS | 3.94 ± 1.84 |

**Table 4: Association between subtypes of GBS with clinical and demographic features**

| Variables | Categories | Subtype | | P-Value |
|---|---|---|---|---|
| | | AMAN & AMSAN (n=30) (%) | AIDP (n=40) (%) | |
| Age | < 40 | 22 (73.3%) | 27 (67.5%) | 0.458 |
| | 40-60 | 5 (16.7%) | 11 (27.5%) | |
| | > 60 | 3 (10%) | 2 (5%) | |
| Sex | Female | 17 (56.7%) | 12 (30%) | 0.025 |
| | Male | 13 (43.3%) | 28 (70%) | |
| Season | Rainy | 12 (40%) | 14 (35%) | 0.441 |
| | Spring | 1 (3.3%) | 5 (12.5%) | |
| | Summer | 9 (30%) | 8 (20%) | |
| | Winter | 8 (26.7%) | 13 (32.5%) | |
| Prodromal | Fever | 4 (13.3%) | 9 (22.5%) | 0.191 |
| | GI | 7 (23.3%) | 4 (10%) | |
| | RTI | 2 (6.7%) | 5 (12.5%) | |
| Bladder dysfunction | | 14 (46.7%) | 9 (22.5%) | 0.033 |
| Bowel dysfunction | | 15 (50%) | 9 (22.5%) | 0.017 |
| Autonomic involvement | | 21 (70%) | 15 (37.5%) | 0.007 |
| Cranial nerve weakness | | 10 (25%) | 15 (50%) | 0.031 |
| Sensory complaints | | 24 (80%) | 27 (67.5%) | 0.244 |
| Ventillatory support | | 11 (36.7%) | 6 (15%) | 0.036 |
| Hughes disability score | I | 13 (43.3%) | 24 (60%) | 0.167 |
| | W | 17 (56.7%) | 16 (40%) | |

| | | | | |
|---|---|---|---|---|
| MRC | ≤ 30 | 20 (66.7%) | 15 (37.5%) | 0.049 |
| | 31-40 | 5 (16.7%) | 9 (22.5%) | |
| | 41-50 | 5 (16.7%) | 11 (27.5%) | |
| | 51-60 | 0 (0%) | 5 (12.5%) | |
| mEGOS | 0-3 | 4 (13.3%) | 16 (40%) | 0.050 |
| | 4-6 | 21 (70%) | 19 (47.5%) | |
| | 7-9 | 5 (16.7%) | 5 (12.5%) | |
| EGRIS | 0-2 | 5 (16.7%) | 9 (22.5%) | 0.140 |
| | 3-4 | 9 (30%) | 19 (47.5%) | |
| | 5-7 | 16 (53.3%) | 12 (30%) | |
| HDS admission | 0,1,2 | 1 (3.3%) | 7 (17.5%) | 0.026 |
| | 3 | 5 (16.7%) | 15 (37.5%) | |
| | 4 | 19 (63.3%) | 15 (37.5%) | |
| | 5 | 5 (16.7%) | 3 (7.5%) | |
| Duration of hospital stay | 1-7 | 13 (43.33%) | 28 (70%) | 0.076 |
| | 8-14 | 11 (36.67%) | 7 (17.5%) | |
| | > 14 | 6(20%) | 5 (12.5%) | |
| Days from onset to hospitalisation | < 4 | 15 (50%) | 23 (57.5%) | 0.647 |
| | 4-7 | 7 (23.33%) | 10 (25%) | |
| | > 7 | 8 (26.67%) | 7 (17.5%) | |

**Table 5: Association between Hughes Disability Score with clinical and demographic features**

| Variable | Categories | Hughes disability score | | P-value |
|---|---|---|---|---|
| | | I (n=37) (%) | W (n=33) (%) | |
| Age | < 40 | 29 (78.4%) | 20 (60.6%) | 0.040 |
| | 40-60 | 8 (21.6%) | 8 (24.2%) | |
| | > 60 | 0 (0%) | 5 (15.2%) | |
| Gender | F | 15 (40.5%) | 14 (42.4%) | 0.873 |
| | M | 22 (59.5%) | 19 (57.6%) | |
| GBS EP subtype | AIDP | 24 (64.9%) | 16 (48.5%) | 0.122 |
| | AMAN | 11 (29.7%) | 10 (30.3%) | |
| | AMSAN | 2 (5.4%) | 7 (21.2%) | |
| Season | Rainy | 15 (40.5%) | 11 (33.3%) | 0.651 |
| | Spring | 4 (10.8%) | 2 (6.1%) | |
| | Summer | 7 (18.9%) | 10 (30.3%) | |
| | Winter | 11 (29.7%) | 10 (30.3%) | |
| Prodromal | Fever | 10 (27%) | 3 (9.1%) | 0.104 |
| | GI | 4 (10.8%) | 7 (21.2%) | |
| | RTI | 5 (13.5%) | 2 (6.1%) | |
| Duration of hospital stay | 1-7 | 15 (40.6%) | 26 (78.8%) | 0.005 |
| | 8-14 | 13 (35.1%) | 5 (15.2%) | |
| | > 14 | 9 (24.3%) | 2 (6.1%) | |
| Days from onset to hospitalisation | <4 | 20 (54.1%) | 18 (54.5%) | 0.764 |
| | 4-7 | 8 (21.6%) | 9 (27.3%) | |
| | > 7 | 9 (24.3%) | 6 (18.2%) | |
| Discharge/LAMA | Death | 0 (0%) | 1 (3%) | 0.001 |
| | Discharge | 33 (89.2%) | 6 (18.2%) | |

| | | | | |
|---|---|---|---|---|
| | LAMA | 4 (10.8%) | 26 (78.8%) | |
| Clinical diagnosis | Miller fischer | 4 (10.8%) | 1 (3%) | 0.623 |
| | Paraparetic | 2 (5.4%) | 2 (6.1%) | |
| | Pure motor | 27 (73%) | 25 (75.8%) | |
| | Sensorimotor | 4 (10.8%) | 5 (15.2%) | |
| Cranial nerve weakness | | 15 (40.5%) | 10 (30.3%) | 0.372 |
| Bladder dysfunction | | 10 (27%) | 13 (39.4%) | 0.271 |
| Bowel dysfunction | | 10 (27%) | 14 (42.4%) | 0.175 |
| Ventillatory support | | 7 (18.9%) | 10 (30.3%) | 0.268 |
| Sensory system upper limb | Normal | 12 (32.4%) | 7 (21.2%) | 0.292 |
| Autonomic involvement | | 16 (43.2%) | 20 (60.6%) | 0.147 |
| Treatment given | IVIg | 30 (81.1%) | 9 (27.3%) | 0.001 |
| | NIL | 6 (16.2%) | 24 (72.7%) | |
| | Plasmapheresis | 1 (2.7%) | 0 (0%) | |
| MRC | ≤ 30 | 17 (45.9%) | 18 (54.5%) | 0.171 |
| | 31-40 | 5 (13.5%) | 9 (27.3%) | |
| | 41-50 | 11 (29.7%) | 5 (15.2%) | |
| | 51-60 | 4 (10.8%) | 1 (3%) | |
| mEGOS | 0-3 | 15 (40.5%) | 5 (15.2%) | 0.039 |
| | 4-6 | 19 (51.4%) | 21 (63.6%) | |
| | 7-9 | 3 (8.1%) | 7 (21.2%) | |
| EGRIS | 0-2 | 10 (27%) | 4 (12.1%) | 0.287 |
| | 3-4 | 13 (35.1%) | 15 (45.5%) | |
| | 5-7 | 14 (37.8%) | 14 (42.4%) | |
| HDS admission | 0,1,2 | 5 (13.5%) | 3 (9.1%) | 0.466 |
| | 3 | 13 (35.1%) | 7 (21.2%) | |
| | 4 | 15 (40.5%) | 19 (57.6%) | |
| | 5 | 4 (10.8%) | 4 (12.1%) | |

**Table 6: Association between ventillatory requirement with clinical and demographic features**

| Variables | Categories | Ventillatory support | | P-value |
|---|---|---|---|---|
| | | NO (n=53) (%) | YES (n=17) (%) | |
| Age | < 40 | 37 (69.8%) | 12 (70.6%) | 0.096 |
| | 40-60 | 14 (26.4%) | 2 (11.8%) | |
| | > 60 | 2 (3.8%) | 3 (17.6%) | |
| Gender | Female | 21 (39.6%) | 8 (47.1%) | 0.588 |
| | Male | 32 (60.4%) | 9 (52.9%) | |
| Season | Rainy | 22 (41.5%) | 4 (23.5%) | 0.606 |
| | Spring | 4 (7.5%) | 2 (11.8%) | |
| | Summer | 12 (22.6%) | 5 (29.4%) | |
| | Winter | 15 (28.3%) | 6 (35.3%) | |
| Prodromal | Fever | 10 (18.9%) | 3 (17.6%) | 0.491 |
| | GI | 6 (11.3%) | 5 (29.4%) | |
| | RTI | 5 (9.4%) | 2 (11.8%) | |

| | | | | |
|---|---|---|---|---|
| Duration of hospital stay | 1-7 | 35 (66%) | 6 (35.3%) | 0.022 |
| | 8-14 | 13 (24.5%) | 5 (29.4%) | |
| | > 14 | 5 (9.4%) | 6 (35.3%) | |
| Days from onset to hospitalisation | < 4 | 25 (47.2%) | 13 (76.5%) | 0.033 |
| | 4-7 | 13 (24.5%) | 4 (23.5%) | |
| | > 7 | 15 (28.3%) | 0 (0%) | |
| Cranial nerve weakness | | 11 (20.8%) | 14 (82.4%) | 0.001 |
| Bladder dysfunction | | 11 (20.8%) | 12 (70.6%) | 0.001 |
| Bowel dysfunction | | 12 (22.6%) | 12 (70.6%) | 0.001 |
| Sensory complaints | | 36 (67.9%) | 15 (88.2%) | 0.101 |
| Autonomic involvement | | 21 (39.6%) | 15 (88.2%) | 0.001 |
| MRC | ≤ 30 | 21 (39.6%) | 14 (82.4%) | 0.020 |
| | 31-40 | 13 (24.5%) | 1 (5.9%) | |
| | 41-50 | 15 (28.3%) | 1 (5.9%) | |
| | 51-60 | 4 (7.5%) | 1 (5.9%) | |
| mEGOS | 0-3 | 18 (34%) | 2 (11.8%) | 0.151 |
| | 4-6 | 29 (54.7%) | 11 (64.7%) | |
| | 7-9 | 6 (11.3%) | 4 (23.5%) | |
| EGRIS | 0-2 | 14 (26.4%) | 0 (0%) | 0.001 |
| | 3-4 | 25 (47.2%) | 3 (17.6%) | |
| | 5-7 | 14 (26.4%) | 14 (82.4%) | |
| HDS admission | 0,1,2 | 7 (13.2%) | 1 (5.9%) | 0.001 |
| | 3 | 19 (35.8%) | 1 (5.9%) | |
| | 4 | 27 (50.9%) | 7 (41.2%) | |
| | 5 | 0 (0%) | 8 (47.1%) | |

## DISCUSSION

GBS is an immune mediated polyradiculoneuropathy causing acute flaccid paralysis. Our current study had a total of 70 patients with a mean age at presentation of 32.81(± 17.12).58.6% constituted male population, this predilection is reported to be same in other studies by Dhadke SV etaland Wu X etal[11,12].With increasing age the prognosis of GBS worsens, this is going in accordance with other studies done by Seneviratne U etal and Walgaard C etal [4,13].

Guillain-Barre syndrome is usually preceded by infection or other immune stimulation that induces an aberrant autoimmune response targeting peripheral nerves and their spinal roots[14,15].In our study, 23(44.9 %) of patients had antecedent infection.Isolated fever without any localisation was the most common symptom followed by loose stools and respiratory tract infections.Similar study was undertaken by Sarkar U K etal,and they found that respiratory tract infection was the most common symptom[16].

The study by Manorenj S etal did not find any association between antecedal infection and electrophysiological subtype[17].Our study was in congruous with this study . Another study by Wu X etal showed that those GBS patients with antecedal infection had a better prognosis[12].Our study did not predict any prognosis.

We found predominant incidence of GBS patients during rainy season(June – September) 26 (37.1%) ,followed by winter (December-February) 21(30%), eventhough it was considered that GBS is sporadic without seasonal preference. The findings of our study was contrary to other studies done by Emilia-Romagna Study Groupand Yakoob M Y etal in Italy and Pakistan respectively[18,19].

In the present study as per electro diagnostic studies, majority 40(57.1%) had AIDP, followed by 21 (30%) AMAN and 9 (12.9%) AMSAN.Previous studies also shows similar findings[20,21].

The short term prognosis was assessed by the modified Hughes Disability Scale. There was no significant difference between axonal and demyelinating groups in the severity of disease on admission and short term prognosis.The study done by Ye Y etal showed similar findings,but studies from South Chinaand Bangladesh showed significant correlation between axonal and demyelinating groups in the severity of disease on admission and short term prognosis[22,23,24].

Total CSF protein level suggests that the increased deposition of antibodies, complements and products of active myelin break down in inflammatory diseases of nervous system[25]. Previous studies on GBS revealed a mean CSF protein of36.7mg/dl and 80.27 mg/dl[13,17].But in our study the mean CSF protein was142.52 ± 125.64 mg/dl.

In the present study there was a significant association (p value 0.020) between low MRC sum score (0-30) on admission and respiratory failure. Low MRC sum score is an independent risk factor for development of respiratory failure and the need for mechanical ventilation.The findings of our study are in line with a similar study conducted by Wu X etal in China[12].

Treatment of GBS usually combines multidisciplinary supportive medical care and immunotherapy and should be started as soon as possible [26]. IVIg was administered in 32, plasmapheresis in 1, and no specific treatment could be offered to the remaining patients due to financial constraints.Our study revealed better prognosis in the treatment groups,so local government has to think about these patients and support them financially for treatment.

Cranial nerve involvement may affect airway maintenance, facial muscles, eye movements,and swallowing .All Guillain-Barre syndrome patients need meticulous monitoring and supportive care[27].A study by Wu X etal from China showed that 14.8 % GBS patients required ventillatory support[12]. Another study by Yakoob M Yetal from Pakistan revealed 55.9% patients required ventillatory support[19].In our study the requirement for ventillatory support was 24.3%.

On statistical analysis,those with shorter duration of illness, rapidly progressive motor weakness of the limbs, longer duration of hospital stay,cranial nerve involvement, bladder dysfunction ,autonomic involvement, low MRC score (≤ 30), high EGRIS score (> 4), high HDS score on admission were prone for ventillatory support.Early recognition of these risk factors helps in identification of patients who would require ventillatory support as well as those with poor prognosis.

In order to identify patients with poor outcome at an earlier stage ,we require a prognostic model.As per our study ,age >40 years,non treatment with immunomodulators,higher mEGOS on admission were associated with poor prognosis outcome on discharge. Prognostic models can also increase the power of therapeutic studies by adjusting for prognostic factors.

The study identifies patients with poor prognosis and this can be used for future therapeutic trials. Therefore, selective treatment trials should focus on a more homogeneous subgroup of patients with poor recovery despite current standard treatment.Poor functional outcome carries morbidity to the patient as well as financial burden to the health care system. It results in a significantly longer duration of hospital stay as compared to patients with good functional outcome.

## LIMITATION

Lack of follow up as it was a retrospective cross-sectional study, single centre-study,with limited number of patients.

## CONCLUSION

GBS was seen in all age groups with slight male predominance.Quadriparesis was the most common presentation.Seasonal occurrence predominantly in rainy season was noted. Demyelinating(AIDP) form dominated than axonal form (AMAN+ AMSAN) with significant number of patients having dysautonomia (51.4%) and requiring ventillatory support(24.3%). All poor prognostic factors should be kept in consideration to facilitate more vigilant management of patients associated with high morbidity.Early recognition of risk factors helps in identification of patients who would require ventillatory support as well as those with poor prognosis.Early determination of potential non responders to current treatment might alter their management.Further studies including a larger patient population combined with other biomarkers are needed for effective patient management in future.

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