

Original research article

Guillain–Barré syndrome in Southern India: Demographic and clinical profile of GB syndrome

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Abstract

Objective: To evaluate epidemiological, clinical profile of patients with Guillain Barre Syndrome.

Material and methods: A cross sectional study done on 164 patients with GBS admitted in a tertiary hospital in South India. Demography, prognostic factors, clinical profile of the patients done with Medical research council score, Hughes disability scale, nerve conduction study. Data analysed in percentages and chi-square.

Results: Of 164 patients with Guillain-Barre syndrome, the median age of patients was 32.84 years and at 2.8:1 Male and female ratio. The most common presenting symptom of study population was muscle weakness, absence of deep tendon reflexes (75.6%), facial palsy, pain and paraesthesia. Respiratory failure requiring mechanical ventilation occurred in only 3.6%.

Conclusion: In the southern part of India, GBS was mostly seen at younger age and in male population. Fever with respiratory and gastrointestinal infection was the most common antecedent illness. Cranial nerves involvement especially Facial nerve, muscle weakness, sensory symptom was the presenting feature.

Keywords: Clinical profile, Demography, Guillain-Barré syndrome, Facial nerve.

Introduction

The Guillain–Barre syndrome (GBS), described in 1916 is an acute, monophasic, symmetrically progressive, peripheral ascending demyelinating polyneuropathy characterized by rapidly evolving symmetrical limb weakness, areflexia, absent or mild sensory signs, and variable autonomic disturbances ^[1]. Since poliomyelitis has nearly been eliminated, the GBS is currently the most frequent cause of acute flaccid paralysis worldwide and constitutes one of the serious emergencies in neurology.

GBS is the major cause of acute neuromuscular paralysis, with global annual incidence of 1.3-2 per 100,000 worldwide ^[2]. In 2019, the global point prevalence of GBS (per 100,000) broadly showed an increase with advancing age. More specifically, the total number of cases was highest in the 5–9 year age group, but decreased from there to the 25-29 age group, then increased up to the 60–64 age group, before decreasing again to the oldest age group. Furthermore, the global point prevalence of GBS (per 100,000) was higher in males in all age groups, while the total number of cases was higher in males up to the 75–79 age group, after which the pattern was reversed ^[3]. In India Men are more commonly affected by approximately 1.5 times than women and occur at younger age ^[4, 5].

Approximately two-thirds of all GBS cases are preceded by an infection such as mild respiratory infection or diarrhea ^[7, 8].

GBS usually begins abruptly with distal, relatively symmetrical onset of paraesthesias and quickly followed by progressive limb weakness. Pain is prominent in 50% of patients. Neurological examination is characterized by distal and often proximal, relatively symmetrical, weakness. Facial nerve involvement occurs in up to 70% of cases; dysphagia in 40%; and rarely (5%) patients may develop ophthalmoplegia, ptosis. Approximately one third of hospitalized GBS patients require mechanical ventilation due to respiratory muscle or oropharyngeal weakness ^[5, 9]. Affected adult patients usually recover in longer time than children, while the mortality rate was reported at 3-5% ^[7]. However, the data regarding clinic epidemiological profile of the patients with GBS from developing countries are limited. Hence, we performed a prospective study to determine the natural history of GBS patients admitted in Gandhi Hospital.

Aims and objectives of the study

Aim of the study was to evaluate the epidemiological and clinical profile of Guillain Barre Syndrome.

Material and Methods

This Cross sectional study was done in the Department of Neurology, Gandhi Medical College. The patients included in the study were taken from the pool of inpatients admitted in from various medical wards and Neurology wards of Gandhi hospital.

A total of 164 GBS patients fulfilling the Cornblath criteria as modified by Asbury were included in the study. Institutional Ethics Committee approved the study protocol and written informed consent was taken from all relatives of participant. All patients were evaluated with clinical history and detailed neurological examination at admission. Baseline investigations, biochemical investigations including blood sugar, renal parameters, serum electrolytes, HIV, HBSAg were done in all patients.

Nerve conduction studies using a Nicolet Viasys machine were done. Motor and sensory nerves were evaluated and modified Asbury criteria are applied. Patients were admitted in critical care neurology ward which is well equipped with centralized oxygen, continuous multi-channel monitoring and good nursing care. All patients requiring ventilator support are managed in the respiratory intensive care unit. The disability and weakness are determined by GBS disability score (Hughes grading) and Medical Research Council (MRC) sum score.

GBS disability scale (Hughes grading) ^[10]

0. Healthy

1. Minor symptoms or signs of neuropathy but capable of manual work/capable of running

2. Able to walk without support of a stick (5m across an open space) but incapable of manual work/running

3. Able to walk with a stick, appliance or support (5m across an open space)

4. Confined to bed or chair bound

5. Requiring assisted ventilation (for any part of the day or night)

6. Death

GBS disability score- MRC Sum Score ^[11]

Total score is 60. Both sides were taken into account. For upper limb and lower limb it is 30 each.

- Shoulder-Abductors
- Elbow-Flexors
- Wrist-Extensors
- Hip-Flexors
- Knee-Extensors
- Ankle-Dorsiflexors

Statistical analysis was done using Microsoft excel version 2010 and SPSS version 23. Data was analysed in percentages and compared using chi square test for calculating p values.

Observations and results

Out of 164 GBS patients studied, the median age of patients with GBS symptoms was 32.84 years and sex ratio (Male: Female) was 2.8:1.

Majority of the patients were in the age group 21 - 30 Yrs i.e., 38.4% and with increasing age the prevalence of cases decreased. Male preponderance (73.78%) of GBS was seen. (Table 1) Statistically significant difference in the age and gender of cases with GBS was seen (Fig 1)

Table 1: Demographic distribution of study participants

Characteristics	Frequency	Percentage
Age group		
13-20 yrs	25	15.4%
21-30 yrs	63	38.4%
31-40 yrs	40	24.3%
41-50 yrs	23	14%
51-60 yrs	11	6.7%
> 60 yrs	2	1.2%
Gender		
Male	121	73.78%
Female	43	26.22%

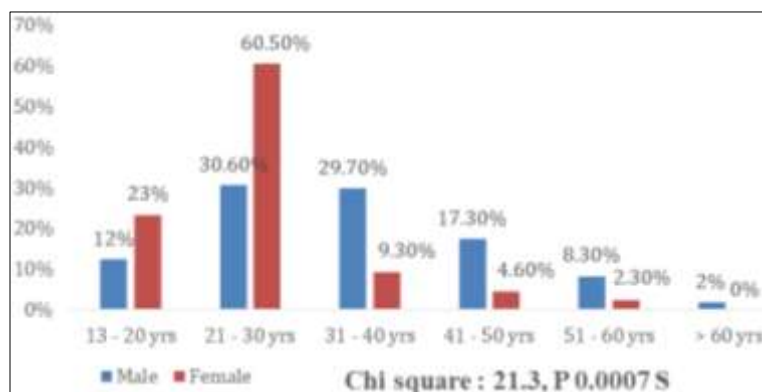


Fig 1: Age wise and gender wise distribution of cases:

Antecedent events

Various antecedent events in GBS patients were shown in Fig: 2. Antecedent events preceding the illness were found in 55 patients (33.5%). Fever accounts for majority of cases (49%). Diarrhoea was seen in 22%. Other antecedent events associated with GBS were pregnancy and post-partum cases in 12(21.8%) patients, upper respiratory tract infection in 7(12.7%) patients, chicken pox in 2 (3.6%) patients.

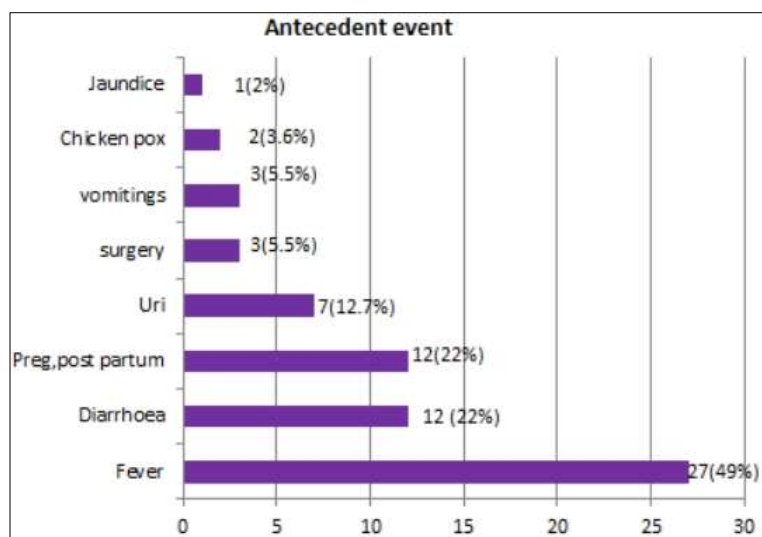


Fig 2: Antecedent events in GBS patients

Neuromuscular involvement

Cranial nerve palsies were noted in 16 patients (9.8%). Bilateral facial palsies were seen in 7 patients (44%) and Bilateral VII, IX, X CN palsies were seen in 4 patients (25%). Ophthalmoplegia was seen in 1 patient. Out of 164 patients 163 patients presented with muscle weakness. Only one patient presented without weakness (ophthalmoplegia). Neck muscle weakness was seen in 28 patients (17%). In majority of patients (56.7%) distal and proximal muscle weakness was equal. In 58 patients (35.36%) distal weakness was more than proximal muscle weakness. In 12 patients (7.3%) proximal weakness was more than distal muscle weakness. Different sensory symptoms were seen in 76 patients (46.3%). Pain was the only early manifestation in 16 patients (21%). Paraesthesia like tingling, numbness, pains of upper and lower limbs were seen in (79%). Among 164 GBS cases, 124 (75.6%) patients had absence of reflexes, sluggish with preservation of some Deep Tendon Reflexes seen in 39 patients (23.7%), 1 patient had normal reflexes. Among them knee jerk was seen in only 4 patients. Autonomic symptoms were seen in 11 patients (6.7%). Hypertension and fluctuating hypertension was seen in majority (72%). Other manifestations like tachycardia excessive sweating in 3 patients and abdominal distension in 2 patients were seen. Among 11 patients one postpartum woman presented with PRES (posterior reversible encephalopathy syndrome). She had altered sensorium (drowsiness), seizures, fluctuating hypertension, tachycardia, excessive sweating and transient urinary retention. Respiratory failure was seen in 7 patients and kept on ventilator. 5 patients recovered and 2 patients died. (Table 2) Majority of the GBS patients had mild muscle weakness (>30) according to MRC score (Fig 3).

Table 2: Neuromuscular manifestations in the participants

Neuromuscular manifestations	Number of patients	Percentage
Cranial nerve involvement	16	9.8%
Ophthalmoplegia	1	6.25%
Bilateral facial palsy	7	43.75%
Unilateral facial palsy	2	12.5%
Bilateral VII, IX, X CN palsies	4	25%
Bilateral IX, X CN palsies	2	12.5%
Muscle weakness	163	99.9%
Neck muscle	28	17%
Distal = Proximal	93	56.7%
Distal > Proximal	58	35.36%
Distal < Proximal	12	7.3%
Deep tendon reflexes	163	99.9%
Absent	124	75.6%
Sluggishly present	39	23.7%
Sensory symptoms	76	46.3%
Paraesthesia (Tingling, numbness)	60	79%
Pain	16	21%
Autonomic symptoms	11	6.7%
Hypertension	8	72.7%
Tachycardia, Excessive sweating	3	27.3%
Abdominal distension	2	18.2%
Respiratory failure	7	63.64%

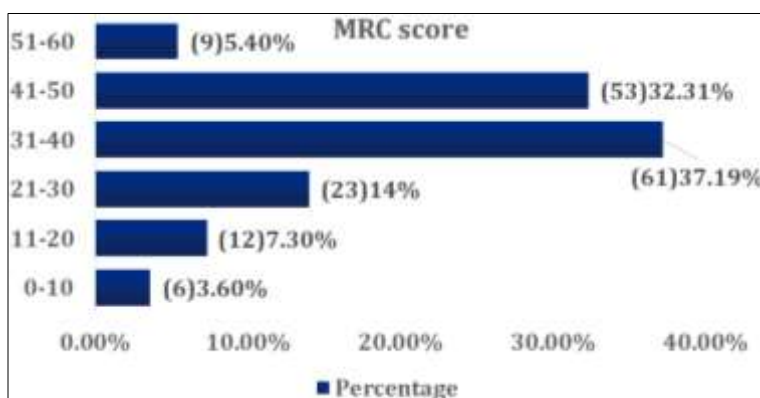


Fig 3: Shows MRC sum scores in GBS patients

Clinical profile

At the time of admission majority (n=88, 53.6%) of the patients were confined to bed according to Hughes grading of GBS, while 33.6% could walk with support and 8% without support. 3.6% of GBS patients were on ventilatory support due to respiratory failure. (Table 3) Paraparetic variant was seen in 15 (9.1%) patients, Miller fisher syndrome, bi brachial variant and GBS with PRES were seen one in each patient. Various GBS variants were shown in the fig: 4.

Table 3: Clinical profile of the participants at the time of admission

GBS disability score	No. Of patients	Percentage
1	2	1.2
2	13	8.0
3	55	33.6
4	88	53.6
5	6	3.6
6	0	0

Discussion

This study was aimed to evaluate the epidemiological, clinical profile and electro diagnostic feature of Guillain Barre Syndrome in patients admitted in a tertiary care hospital. Peak age of onset varied from third decade in India to fifth decade in the west. In present study majority (62.7%) of the cases were seen between 21-40 years with median age of 32.84 years. There was gradual decrease of cases with age in our study. Most of the studies done on GBS patients showed increased incidence after 40 yrs age^[7, 8]. Bimodal incidence of cases in less than 40 and more than 60 years was also noticed^[12]. In Indian population GBS incidence was seen more in less than 30 years as noticed in our study^[13]. Among the

GBS group, most of the earlier studies showed significant male sex preponderance^[7, 8]. In the present study also Male: Female ratio was 2.8:1. GBS affected female were more in younger age (<30yrs) and gradual decrease with age was seen as observed in other study done on children^[14, 15]. Antecedent events have been documented between 30% and 80% in various studies. In North India, Manju *et al.* reported antecedent events in 48% of patients^[7]. In this study, antecedent events reported were in 33.5% patients while more than > 50% seen in other studies^[8, 11]. The most common illness observed was respiratory infection as fever, flu like illness and gastrointestinal infection as diarrhoea which was similar to other studies^[7-15].

In the present study cranial nerves involved in only 9.8% which was far less than the other study findings. In this study the reason for less cranial nerve involvement may be due to more no. of patients with AMSAN and AMAN. Among the cranial nerves most commonly facial nerve palsy unilateral/bilateral (56.2%) was found in our study similar to other studies^[13]. The sensory symptoms in the form of tingling, numbness, and pains were seen in 76 patients (46.3%) in our study which was comparatively more compared to other studies^[7]. All our patients presented with limb weakness which was found by other studies too^[7, 13].

The incidence of autonomic dysfunction in GBS varied from 11 to 73% and in the present study it was seen in 11 patients (6.7%)^[7]. Hypertension and fluctuating hypertension was seen in majority (72%). Other manifestations like excessive sweating, tachycardia and abdominal distension were seen. Among the 164 GBS cases, 124 (75.6%) patients had absence of reflexes, sluggish with preservation of some DTR seen in 39 patients (23.7%), 1 patient had normal reflexes which was also found by Jain *et al.* in their study on GBS patients^[13].

Majority of our GBS patients (53.6%) were confined to bed at the time of presentation, followed by 33.5% who were able to walk with support/aid. In a study done in Gujarat by Patel *et al.* and others majority of the patients presented similarly at grade 4 at the time of admission^[11]. Contrast to our findings patients in Spain were able to walk without support at the time of admission^[18]. According to MRC score majority of the patients had mild motor deficit like other studies^[11].

Limitation of our study was the small sample and hospital based study. This may not reflect true incidence of disease in the community. Most of the times older people may not be brought to hospital for management. There might be slight under reporting of older people. Further studies are needed in this field as very few studies were done.

Conclusions

GBS was presented more at younger age though the literature says incidence at older age common. Male preponderance is seen. Antecedent events preceding the illness were found in 55 patients (33.5%). Fever accounts for majority of cases and also Upper respiratory and gastrointestinal infections seen. At the time of admission majority of the patients had motor deficit, absent reflexes, cranial nerve involvement especially facial nerve.

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Conflict of interest: None declared

Ethical approval: The study was approved by the institutional ethics committee

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