

Guillain-Barre Syndrome In Tamil Nadu, India- A Fifteen Years Retrospective Study In Patient's Perspectives

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Abstract— In this paper, it is discussed about an acute inflammatory disease, called Guillain-Barre Syndrome (GBS). It is a self-limited, autoimmune syndrome. It usually occurs at peripheral nervous scheme activated generally through a virus or a bacteria or any other forebear events. Here, it is considered the real data in Tamil Nadu, India for fifteen years. This disease results with huge damage of efficiency and problems to a human fitness due to its protracted morbidity. This study takes the insights of patient's perspective in Tamil Nadu, India for the past fifteen years 2005-2020.

Keywords— Guillain-Barre Syndrome (GBS), Morbidity, patient recovery, incidence, neuropathy, patient's perspective.

I. INTRODUCTION

Guillain-Barre syndrome (GBS) syndrome first reported in 1916 by Guillain-Barre, and Strohl, hence the name of the disease GBS. It is a severe self-limited polyneuropathy. GBS typically a post infectious autoimmune process characterized by monophasic, ascending and symmetrical paralysis with areflexia that progresses days to week. It usually occurs at peripheral nervous scheme activated generally through a virus or a bacteria or any other forebear events.

It affects 1 to 2 per one lakh populations in a year with worldwide distribution and a mild male dominance than female. At the end of treatment year five parentage of the patients had deceased and fifteen percentage are incapable to walk [16]. Hence, it results large damage of efficiency and problems the human health owing to its protracted morbidity.

GBS incidence an exponential upsurges in age, specific rates upsurging from 0.62 per one lakh populations among zero to nine year old to 2.66 per one lakh populations among elderly people aged 70 and above. The purpose of this study is to examine the cases of GBS, their epidemiology, clinical, and care profile after the treatment. The data about occurrence of GBS in emerging world comprising India is inadequate to describe the physical and economical problem of this sickness, and it still remains one of

the significant cause of acute flaccid paralysis. This investigation discloses perceptions of GBS patient's clinical experiences and post GBS consequences in their viewpoint.

II. LITERATURE REVIEW

The management of GBS mainly consist of supportive treatment. Since GBS may progress from mild muscle weakness to profound paralysis causing respiratory failure and cardiovascular complications all patients suspected to be having GBS should [8] ideally be hospitalized. Approximately 20-30% patients with GBS may require ICU

admission for assisted ventilation, others can be treated in neurological wards.

Acute or subacute progressive widespread muscle weakness of the upper and lower limbs with partial or total areflexia and limb paraesthesia characterizes the syndrome [7]. Infections with *Campylobacter jejuni*, Cytomegalovirus, Epstein–Barr virus, *Mycoplasma pneumonia*, and HIV [1, 2, 3, 13, 17, 23] might trigger the immune response because they cross-react with peripheral nerve components.

Immunization, trauma, bone marrow transplantation, and surgery are some of the triggering variables that may alter the development of GBS [1, 3, 6]. GBS has been shown to have seasonal variations, which may reflect seasonal changes in the maxima of predisposing factors such as infections, despite the fact that GBS can occur at any time [10, 20]. Seasonal prevalence has been found to peak in Asian nations over the summer season [13, 19, 25].

The findings of many research from various geographical regions (e.g., Chennai 2007-2008, Coimbatore 2016-2017, Tanjore 2017, and Chennai 2016) [5, 9, 16, 19] in Tamil Nadu have revealed significant causes and medical symptoms morbidity, as well as seasonal and age factor analysis.

The majority of GBS patients appear to recover completely or with little side effects [21]. Patients with severe GBS, on the other hand, frequently experience adverse long-term effects or even death [24]. Inadequate medical resources and a limited number of intensive care units are to blame for the high mortality rate. As a result, it's critical to identify individuals with severe GBS early on, as they require specialized care in a full-fledged hospital [14].

The period between the onset of symptoms and admission to the hospital, as well as MRC (Medical Research Council) scores at admission and at nadir, were linked to severe GBS. Furthermore, the severity of GBS was linked to older age, cranial nerve damage, and higher liver enzyme levels as important symptoms [11]. The mortality rates linked with severe conditions are still as high as 5%–10%. [4].

In expansion, indeed in patients who get treatment, roughly 20%–25% are cleared out with noteworthy horribleness within the frame of tireless incapacity [4]. A sixteen-year understudy at one tertiary clinic in UAE uncovers faces and stages of GBS patients as clinical characterization and results of GBS [15].

III. MATERIAL AND METHODS

A retrospective study of 205 patients over 15 years' period 2005-2020 in and around Tamil Nadu with Acute Guillain-Barre syndrome has been identified and include in this study. The cases have been identified through various modes without affecting the code of medical ethics and became tough to reach.

We used referral sampling techniques through well-known specialists. The patients have been contacted directly through various mode of approaches like in person, telephonic interview, and through video chat etc. Few deceased patients' information was collected from their close relatives who knows about the case better.

For our study we collected various parameters of data from patients like Patients' demographics including age, gender, date of admission and discharge were extracted. Importantly, we used some general questionnaire from all patients and some personal interviews too.

The patients are from all age groups and all areas of Tamil Nadu with both genders. For convenient purpose we have taken only four regions and took four seasons also. The sampling and sample collection was tedious and tiresome. As we used non-parametric sampling we limited with the number 205. The period taken 15 years is quite longer and we involved in collecting perceptions not just post hospitalization but in the long run too. Hence the period is observed 15 years to evaluate the patient's normal living condition after GBS. Also we collected family member's perception of the deceased cases due to GBS to understand better. The descriptive findings are tabulated for better understandings.

Male	Female	Total
112	93	205
55%	45%	%

Table-1 Gender Distribution

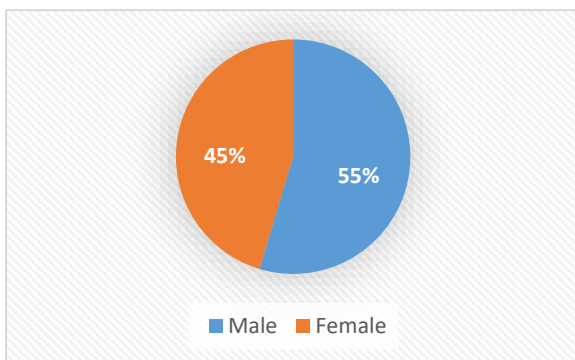


Fig. 1 Gender Distribution

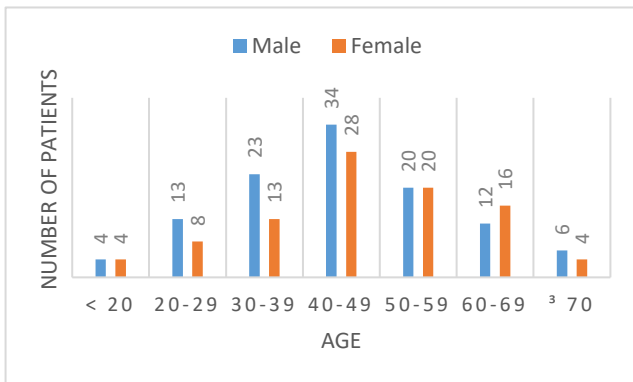
These numbers evidence a slight a male preponderance than female among GBS to cope up with worldwide distribution.

Age	Male	Female	Total
< 20	4	4	8
Above 20 and below 29	13	8	21

Above 30 and below 39	23	13	36
Above 40- and below 49	34	28	62
Above 50 and below 59	20	20	40
Above 60 and below 69	12	16	28
More than 70	6	4	10
Total	112	93	205

Table-2 The Study Profile

Fig 2: The Study Profile



Age	Male	Recovered	Deceased
< 20	4	3	1
20-29	13	12	1
30-39	23	22	1
40-49	34	30	4
50-59	20	17	3
60-69	12	9	3
≥70	6	3	3
Total	112	96	16

Table-3 (a) Recovery

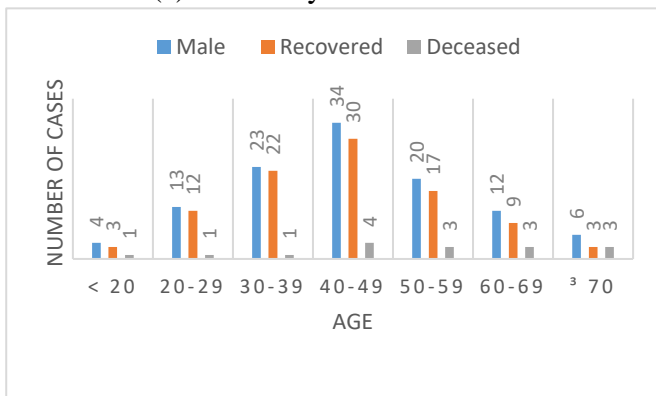


Fig 3: Male Patients V/s Recovered

Age	Female	Recovered	Deceased
< 20	4	2	2
20-29	8	7	1
30-39	13	12	1
40-49	28	26	2
50-59	20	18	2
60-69	16	12	4
≥ 70	4	2	2
Total	93	79	14

Table -3 (b) Recovery

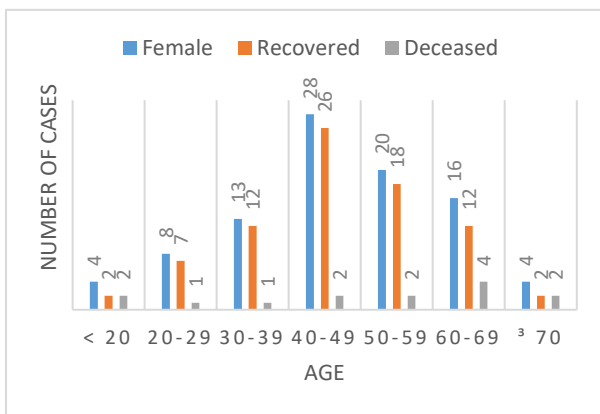


Fig. 3 (b) Female Patients V/s Recovered

The deceased cases are maximum happened during hospitalization and very few lost their breath as they brought home as helpless from hospital. The concerned family members acknowledged their medical report and further.

Age	Recovered	Deceased
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< 20	5	3
20-29	19	2
30-39	34	2
40-49	56	6
50-59	35	5
60-69	21	7
≥70	5	5
Total	175	30
%	85%	15%

Table-3 (c) Number Of Recovered And Deceased

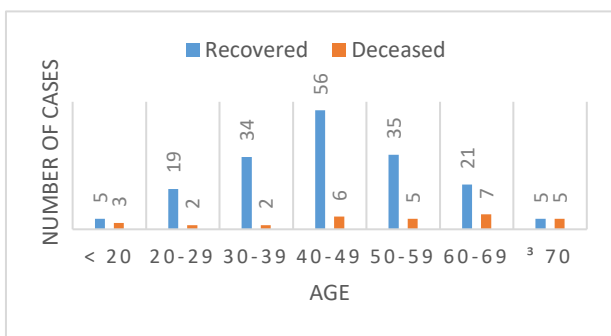


Fig 3 (c) Nnumber of Recovered and Deceased cases

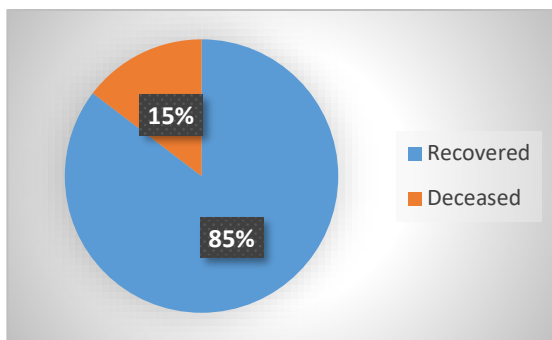


Fig 3 (d) Recovery rate.

Age	Deceased	< 24 hours	2nd day	3rd day	4th day	5ht day and after
< 20	3	-	-	1	1	1
20-29	2	-	1	-	-	1
30-39	2	-	1	1	-	-

40-49	6	-	2	3	1	-
50-59	5	1	-	2	-	2
60-69	7	2	2	1	1	1
≥70	5	2	1	2	-	-
Total	30	5	7	10	3	5

Table - 4 Deceased

Age	Recovered	>90%	80%-90%	70%-80%	60%-70%	Below 60%
< 20	5	5	-	-	-	-
20-29	19	18	1	-	-	-
30-39	34	32	1	1	-	-
40-49	56	48	3	1	2	2
50-59	35	28	3	1	2	1
60-69	21	15	4	2	-	-
≥70	5	1	1	1	1	1
Total	175	147	13	6	5	4
%		84%	7%	3%	3%	2%

Table -5 Recovery Rate

Regardless of the tendencies in GBS predictive investigations, inclusive of nerve conduction studies (NCSs), and remedy methodologies, like intravenous immunoglobulins or plasmapheresis, mortality ratios associated with this restrict retain to 5 to 10 percent. [4]. Furthermore, in remedy obtained patients, about twenty to 20 5 percent are left with noteworthy morbidity in phrases of obstinate disability [4, 15].

During diagnostic investigations Hughes grade scale for measuring functional motor deficits were used by the doctors ranging zero to six, where zero denotes healthy and six denotes death. The total Medical Research Council value varies between zero to 60, here zero denotes total paralysis and 60 denotes the normal strength. The score is the summation of the MRC score of 6 muscles (3 at the higher and 3 at the inferior limbs) on either of the sides, each muscle ordered from 0 to 5. (5 Normal strengths and 0 as no movement) [18].

Similarly, recovered patients are with significant morbidity and the morbidity rates are provided by the specialist and followed by physiotherapist. All discharged patients were suggested to undergo physiotherapy based on their discharge summary and recommendations. It is mandatory to retain their physical strength and activities.

The above table describes recovery rate of patients who was recovered from GBS followed by physiotherapy as advised. Many conditions prevail behind the recovery rate such as age of the patients, co morbidity, mental health, continuous physiotherapy and further observation by both specialists. Almost 84% of people recovered well and left with mild morbidity, and 2 to 3 percent of cases were with severe morbidity. Those 3% of people are ranging under middle age to older

Region	Location	# of Patients	Recovered	Deceased
North	Chennai and around	56	50	6
South	Madurai and down south	56	47	9
West	Coimbatore and around	60	48	12
East	Coastal and nearby (Behind Madurai)	33	30	3
Total		205	175	30

Table - 6 Demography

Season	Male	Female	Total
Spring	32	26	58
Summer	22	28	50
Winter	40	33	73
Rainy	18	6	24
Total	112	93	205

Table -7 Seasonal Description of Patients

In accordance with previous studies GBS does not make any significance with season and as well region.

Age	Total	Shifted from local hospital to Specialist	Direct admission and treated with Specialist

< 20	8	4	4
20-29	21	15	6
30-39	36	28	8
40-49	62	52	10
50-59	40	30	10
60-69	28	14	14
≥70	10	5	5
Total	205	148	57
%		72%	28%

Table-8 (a) Patients Admission History

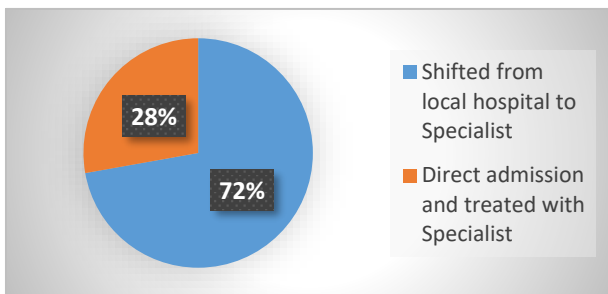


Fig.8: Patient admission rate

Age	Shifted from local hospital to Specialist	Recovered	Deceased
< 20	4	2	2
20-29	15	13	2
30-39	28	27	1
40-49	52	48	4
50-59	30	27	3
60-69	14	9	5
≥70	5	3	2
Total	148	129	19
%		87%	13%

Table -8 (b) Recovery

Age	Direct admission and treated with Specialist	Recovered	Deceased
< 20	4	3	1
20-29	6	6	0
30-39	8	7	1

40-49	10	8	2
50-59	10	8	2
60-69	14	12	2
≥70	5	3	2
Total	57	47	10
%		82%	18%

Table- 8 (c) Recovery

The slight lower number of recovery rate in hospitals, where patients got admitted and treated at the same hospital are due to other medical reasons only. No any complaints from the relatives of the deceased from both situations.

Age	Recovery	Days taken to shift				
	Shifted from local hospital to Specialist	Less than 24 hours	25-48 hours	49 to 72 hours	73-96 hours	More than 96 hours
< 20	4	-	-	2	2	-
20-29	15	1	11	2	1	-
30-39	28	3	19	6	-	-
40-49	52	3	40	3	6	-
50-59	30	1	25	2	1	1
60-69	14	2	10	1	1	-
≥70	5	2	2	1	-	-
Total	148	12	107	17	11	1
%		8%	72%	11%	7%	1%

Table-8 (d) Recovery and Days Taken to Shift

It is clear that almost 80% of the patients were shifted to local hospital to specialist hospital followed by 11% of people got shifted after third day of diagnostic. Only 8% of the people took longer period to move to specialized hospitals. The diagnosis and starting the right treatment saves life of the patient and helps the duration of stay in hospital, complications and recovery period and post GBS morbidity percentage. The early diagnostic and early treatment being the prime factor for GBS patients.

Clinical features	Number of cases	Male	Female
Lower limb Weakness	198	100	98
Upper limb weakness	182	102	80
Sensory Involvement	104	50	54
Cranial Nerve Involvement	22	10	12
Respiratory insufficiency	52	22	32

Table - 9 Clinical Presentation of Studied Cases

Age	# of Recovered	DAYS in (Average)		
		ICU	General ward	Total as Inpatient
< 20	5	5	8	13
20-29	19	7	12	19
30-39	34	8	14	22
40-49	56	9	14	23
50-59	35	13	12	25
60-69	21	15	15	30
≥70	5	15	16	31
Average		10.3	13.0	23.3

Table -10 Patients Recovery Period

Individual patient's recovery days were varying based on their health condition and severity. On the average, patients stay in ICU about 10.5 days and as in-patient about 24 days. In general, the young age patients' recovery is faster and the aged 60 and above take quite longer duration in hospital itself. Almost more than double the period of children and young adults.

Age	Under Physiotherapy		Average duration			
	# of Recovered	15 days	one month	2 Months	3 Months	More than 3 months
< 20	5	1	3	1	-	-
20- 29	19	-	10	6	3	-
30- 39	34	-	11	8	12	3
40- 49	56	-	6	16	22	12
50- 59	35	-	4	12	13	6
60- 69	21	-	-	10	5	6
≥70	5	-	-	-	2	3
Total	175	1	34	53	57	30
%		1%	19%	30%	33%	17%

Table-11 Under Physiotherapy - Average Duration

All recovered patients are undergone physiotherapy mandatorily for a significant period of time. In our observation only one young aged 13 recovered so quickly within 15 days of in house physiotherapy and continued regular exercises advised by the therapist for almost a year. Almost 82 % of patients able to overcome the impact of GBS within a period of three months' continuous rigorous exercises under the guidance of therapist. And only 17% people took longer period, among them 10% of the patients took almost six months to gain some motor power health.

Age	# of Recovered	One year	2 Years	3 years	More than 3 Years
< 20	5	1	3	1	-
20- 29	19	1	5	12	1
30- 39	34	-	3	18	13
40- 49	56	-	6	24	26
50- 59	35	-	2	18	15
60- 69	21	-	3	11	7

≥70	5	-	3	2	-
Total	175	2	25	86	62
	%	1.1%	14.3%	49.1%	35.4%

Table -12 Follow ups with Specialist.

GBS leaves the patients with certain degree of morbidity. Even after discharge from hospital followed by rigorous therapy patients are back to normal 100%. The trauma is such and they are under continuous observation periodically with specialist. Only 1% of the people were quite strong and confidently back to normal life. Almost 65% of people were took periodic follow-ups up to three years and 35% of patients continued further period also.

IV. DISCUSSION

This GBS lead to various unique case studies. Clinically it had gone deep analysis by many authors and specialists. Seasonally and/graphically GBS did not make any significance. But the triggering symptoms and clinical study has common features. Our study included some patient's personal interviews featuring their trauma and post GBS life style.

Some patients' personal opinion is provided in the following table for better understanding of the variability of GBS cases. Name of the patients and other identities are held per ethical consideration. Age and nearby city/region is provided for geographical variations only.

Age/Gender of Patients	First Incidence/ Hospital	Current situation
61, Female, Chennai (North)	Incidence at the age of 55, treated in Government Hospital	Able to walk with help within house only. Still under observation.
68, Male, Madurai	At the age of 62, treated in Private Hospital	Able to walk with the help of walker about 200 meters. Maximum
13, Female (Tirunelveli district) (feedback by parents)	Died on 4 th at private hospital	---

28, Female (Tirunelveli district) (feedback by parents)	At the age of 26, treated at private hospital outside Tamil Nadu	Able to walk up to 1km,
51, Male, Coimbatore	At the age of 40, treated in Govt. Hospital	Almost normal. Under continuous observation and medication
18, Male, Erode	At the age of 10, treated in Private Hospital	Back to Normal life, No significance.
36, Female, Ramanathapuram	At the age of 30, treated in Govt. Hospital	Almost normal, Gave birth of a new baby at the age of 34 with good health. Feeling tired ness time to time, Under observation periodically
36, Female, Tenaksi	Incidence at the age of 28, treated in Private Hospital	Married at the age of 31 and happily father of two kids. Mild weakness and left side neuro issues, under medications.
71, Male, Chennai	Died on 3 rd day of	---

	incidence, at private Hospital	
52, Female, Salem	Died on 5 rd day of incidence, at Govt. Hospital	---
33, Female, Coastal area	At the age of 25, Govt. Hospital	Partial paralysis at left side
10, Male, Hill Area	Incidence at the age of 7, treated in private hospital	Back to normal, under periodic observation
44, Female , Trichy	Incidence at the age of 40, Treated in Private Hospital	Weakness in limbs , under medication, normal life but using walker support
46, Male, Trichy	Incidence at the age of 40, Treated in Govt. Hospital	Weakness in limbs , under medication, normal life , Daily activities
74, Male, Chennai	Incidence at 70, Treated Govt. hospital	Able to walk with support up to 10 meters only
16, Female, Villupuram	Incidence at 12, Treated in Private Hospital	No significance. Under observation
36, Male, Nagercoil	Incidence at 33, treated private hospital	Back to normal life. No significance.

		Under observation.
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More commonly, patients are left with some morbidity and mostly with neuro issues and they were taking medications as prescribed. Interestingly, no any noticeable complaints with giving birth of baby by female patients and similarly no sexual debility complaints from male patients within the range of ages from 25 to 45. The patient recovery and leading normal life is in high rate with evidences of rigorous therapy and medications.

V. OBSERVATION

All clinical studies hold good. Our study involved non-clinical and patients' perspectives, found some observations. The age, season, race and other extraneous parameters are not significant with GBS incidences. We did not identify any monthly or periodical cases, and particular regional, race cases with significant incidences.

But the recovery, diagnostics and further hospital treatment, co-morbidly plays major role in patient's life. Importantly, there is no issues with pregnancy for female patients and sexual life with male patients. The trauma is persisting with patients and are scared with repetition. The residue paralysis is highly worried in Post GBS. Highly expensive at private hospitals and the recovery period including physiotherapy is too longer felt by almost all patients. Unlike other fatal diseases the pain patients suffer is highly frustrating.

The patients' mental health and support during the treatment period plays major role. Also their family member support during physiotherapy and post in house support a moral and boon to speedy recovery. Some of the deceased patients' family member does not even know the disease name as GBS and it was found by verifying their medical records only. In general, male patients are most affected and recovery arte also better for male than female patients. The cooperation during therapy was high with youngsters and middle age and from male patients.

More than fifty percenter of our patients experienced negative outcomes. The relatively high percentage of poor outcomes could be explained by a lack of long-term follow-up to identify individuals who restore their muscular ability after discharge from hospital, as the course of sickness can take at least four weeks to recover fully from the disease. [12, 22]. The study's shortcomings are due to its retrospective design, large geographic area as a densely populated state, referral sample method for identifying patients, and the time it took to obtain their experiences.

VI. CONCLUSION

The number of GBS patients in Tamil Nadu for the past two decades is a significant but lesser than global average. Our study involved all over Tamil Nadu about 205 patients including family member of the deceased. Their experiences as In-patient and post GBS therapy and further their routine normal life are collected and presented as descriptive study. Findings are holds well with all clinical studies and no deviation is found from the opinion of patients. The trauma is unforgettable and left all patients with morbidly and recovery was expensive too. This study delivered novel vision into the quantifiable trends

of GBS in Tamil Nadu in view of patients. The shortage of monitoring mechanism for some extra course of time compatible with the renowned natural antiquity of GBS. A male predominance, premorbid infections were usual, and two-sided Lower Limb weakness was the most recurrent pattern of presentation. National or even multinational forthcoming researches are necessary to establish the consequences regarding recognized or innovative risk aspects.

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