

**Study of Clinical Profile Prognostic Factors and Outcomes in Children with Diagnosed Gullain Barre Syndrome at Osmania General Hospital**Naveen Korivi<sup>1</sup>, N. Akhilesh Kumar<sup>2</sup>, A. Goutami Priyadarsani<sup>3</sup>, G. Sree Ranga Lakshmi<sup>4</sup><sup>1</sup>Postgraduate, Department of Neurology, Osmania Medical College / Osmania General Hospital, Hyderabad.<sup>2</sup>Associate Professor, Department of Neurology, Osmania Medical College / Osmania General Hospital, Hyderabad.<sup>3</sup>Assistant Professor, Department of Neurology, Osmania Medical College / Osmania General Hospital, Hyderabad.<sup>4</sup>Professor & HOD, Department of Neurology, Osmania Medical College / Osmania General Hospital, Hyderabad.

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Conflict of interest: Nil

**Abstract****Background:** Guillain-Barré Syndrome (GBS) is an acute, inflammatory, demyelinating disorder of the peripheral nervous system, often following a viral or bacterial infection. Although GBS is relatively rare in children, it is a serious condition that demands prompt recognition and treatment. The outcome of pediatric GBS can vary, and identifying clinical characteristics and prognostic factors is crucial for improving patient management and recovery. This study aims to evaluate the clinical profile and outcomes of children diagnosed with GBS at Osmania General Hospital, Hyderabad.**Objective:** To analyze the clinical features, treatment, and outcomes of children diagnosed with Guillain-Barré Syndrome at Osmania General Hospital, and to identify prognostic factors influencing recovery.**Methods:** A retrospective analysis was conducted on pediatric patients diagnosed with GBS between December 2022 to November 2024 at Osmania General Hospital. Clinical data, including age, gender, presenting symptoms, diagnostic tests, treatment protocols, and outcomes, were collected and analyzed. The primary outcomes measured were recovery time, functional status at discharge, and long-term prognosis.**Results:** A total No. of [157] pediatric patients were included in the study. The most common presenting symptoms included [100]. Prognostic factors identified in the study included which were associated with better or poorer outcomes.**Conclusion:** Pediatric GBS at Osmania General Hospital presents with a diverse clinical profile, and the outcomes are influenced by various factors such as [18%]. Early diagnosis, timely intervention, and appropriate treatment are critical to improving recovery. Further studies are recommended to explore the long-term follow-up of pediatric GBS patients and refine prognostic models.**Keywords:** GuillainBarre syndrome (GBS); Intravenous immunoglobulins (IVIG); Urinary tract infection (UTI); Central Nervous System (CNS).

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**Introduction**

Guillain-Barré Syndrome (GBS) is a rare, but serious neurological disorder that primarily affects the peripheral nervous system. It is characterized by rapid-onset muscle weakness, often following an infection, such as a viral or bacterial illness. While GBS can affect individuals of all ages, the clinical course and outcomes in children are often distinct from those in adults.

Understanding the clinical presentation, progression, and outcomes of GBS in pediatric

patients is crucial for effective diagnosis, management, and prognostication [1]. In pediatric patients, GBS is relatively rare, but it remains one of the leading causes of acute flaccid paralysis. The clinical manifestations in children may range from mild weakness to life-threatening respiratory failure, depending on the extent of nerve involvement. Early recognition of the syndrome and prompt treatment, such as intravenous

immunoglobulin (IVIg) or plasmapheresis, are critical to improving outcomes [2].

The prognosis of pediatric GBS varies significantly, and multiple factors influence recovery, including the severity of motor deficits at onset, age, the presence of antecedent infections, and the timeliness of treatment interventions. Prognostic factors, such as the degree of neurological impairment and the speed of clinical recovery, remain areas of significant clinical interest [3].

This study aims to explore the clinical profile and prognostic factors in pediatric patients with Guillain-Barré Syndrome. By examining the demographic characteristics, clinical presentation, associated comorbidities, and outcomes of treatment, this research seeks to improve the understanding of GBS in children and contribute to better clinical decision-making and patient management strategies. The findings may offer valuable insights for predicting the long-term recovery and quality of life in children who are affected by this challenging neurological disorder [4].

It's a polyradiculoneuropathy with an acute or sub-acute onset that usually occurs 10 to 14 days after an upper or lower respiratory illness or gastroenteritis. Approximately 70% of patients are aware of the previous disease, even if it is benign and may be overlooked or forgotten by the patient [5]. Cytomegalovirus, Mycoplasma pneumonia, Epstein-Barr virus, influenza A, Haemophilus influenza, Enterovirus, and Campylobacter jejuni are among the illnesses linked to GBS.

Antibodies to the Campylobacter antigen will be discovered in roughly 40% of patients, making it the most commonly recognised bacteria linked with GBS. It appears to be more prevalent following Zika virus infection.

**Aim of the Study:** The aim of this study is to analyze the clinical profile, management strategies, and prognostic factors of pediatric patients diagnosed with Guillain-Barré Syndrome (GBS).  
**Objectives:**

1. To describe the clinical features, including the onset, progression, and severity of symptoms, in children diagnosed with GBS.
2. To identify the common triggers and associated infections that may precede the onset of GBS in the pediatric population.

3. To evaluate the treatment protocols used, including the effectiveness of intravenous immunoglobulin (IVIg), plasmapheresis, and supportive care in the management of pediatric GBS.
4. To assess the prognostic factors that influence the recovery and long-term outcomes, including the age of onset, time to diagnosis, severity of initial symptoms, and complications such as respiratory failure.
5. To determine the relationship between the clinical presentation and the eventual prognosis, aiming to identify early indicators of poor or favorable outcomes.

**Material & Methods**

This is a retrospective / prospective observational study conducted in Department of Neurology at Osmania General Hospital/ Medical College, Hyderabad over a period of December 2022 to November 2024. The study aims to analyze the clinical profile, treatment modalities, and prognostic factors of pediatric patients diagnosed with Guillain-Barré Syndrome (GBS).

The study included children aged below 12 years who were diagnosed with Guillain-Barré Syndrome during the study period. Patients were identified through hospital records, and inclusion was based on a confirmed diagnosis of GBS, according to the criteria set by the World Health Organization (WHO) or the National Institute of Neurological Disorders and Stroke (NINDS).

**Inclusion Criteria:**

1. Children aged 12 years diagnosed with GBS, confirmed by clinical features and diagnostic criteria (such as lumbar puncture, nerve conduction studies, or MRI).
2. Patients who presented with symptoms within the first 3 weeks of illness.
3. Written informed consent obtained from the parents/guardians of the patients.

**Exclusion Criteria:**

1. Age below 1 year and above 12 years.
2. Quadriplegia due to other cause
3. Cases diagnosed as chronic inflammatory demyelinating polyneuropathy.
4. Patients who have presented with Fever and weakness at the time of admission.
5. Patients with predominant and persistent bladder symptoms.

**Results**

**Table 1: Distribution of participants according to age groups:**

Age groups	No of patients	Percentages
2-4years	36	36%
5-7years	26	26%
8-10years	28	28%
>10years	10	10%
Total	100	100%

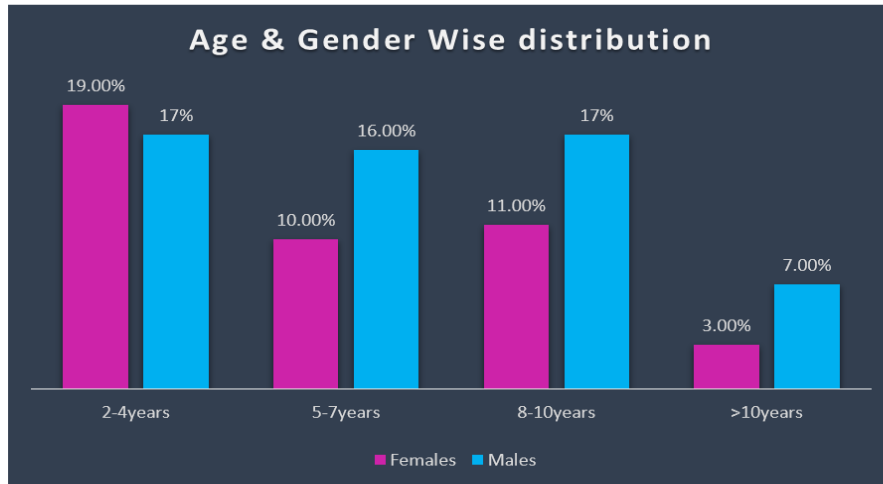


Figure 1: Distribution of age in relation to Gender

Table 2: Month of admission in the study population

Admission month	No of pts	Percentage
January	11	11%
February	4	4%
March	18	18%
April	7	7%
May	7	7%
June	9	9%
July	10	10%
August	10	10%
September	9	9%
October	4	4%
November	5	5%
December	6	6%
Total	100	100%

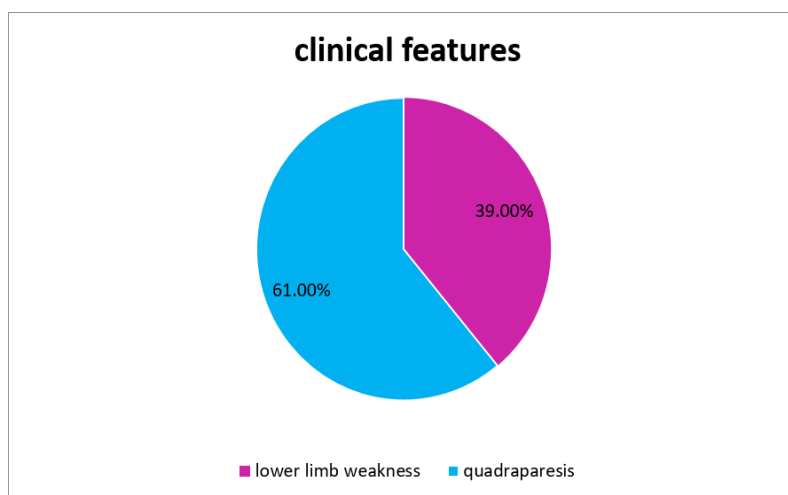


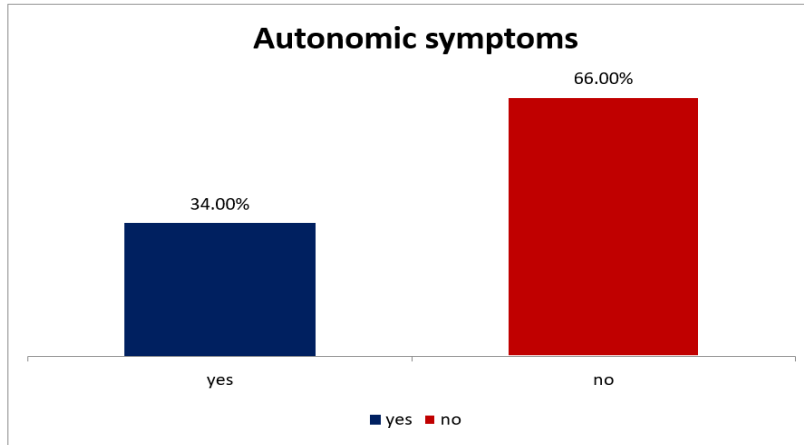
Figure 2: Distribution of study participants according to motor involvement:

Table 3: Distribution of patients according to other symptoms noted at admission:

Other symptoms noted	No of patients	Percentage
Difficulty in closing eyes	9	25.7%
Respiratory insufficiency	1	2.85%
Swallowing difficulty	25	71.4%
Total	35	100%

**Table 4: Distribution of patients according to which cranial nerves involved**

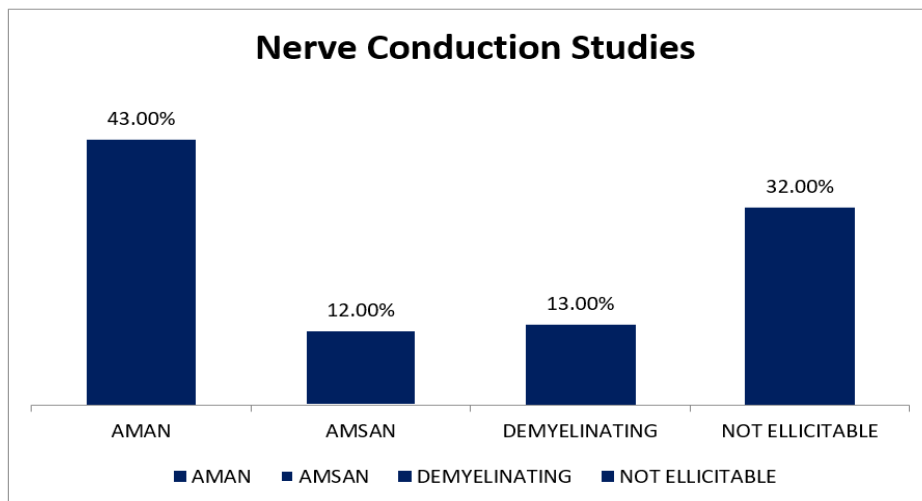
Cranial nerve involvement	No of patients	Percentage
7,9,10	18	52.9%
9,10	9	26.4%
Only 7	7	20.7%
Total	32	100%



**Figure 3: Autonomic Symptoms**

**Table 5: Distribution of patients according to antecedent features**

Antecedent features	No of patients	Percentage
Acute GE	21	21%
Fever only	29	29%
Fever with Rash	19	19%
URTI	25	25%
UTI	6	6%
Total	100	100%



**Figure 4: Distribution of patients according to Nerve conduction studies (NCS)**

**Table 6: Distribution of patients according to CSF Analysis**

CSF Analysis	No of patients	Percentage
Albumin cytological dissociation	33	33%
Normal	45	45%
Not done	32	32%
Total	100	100%

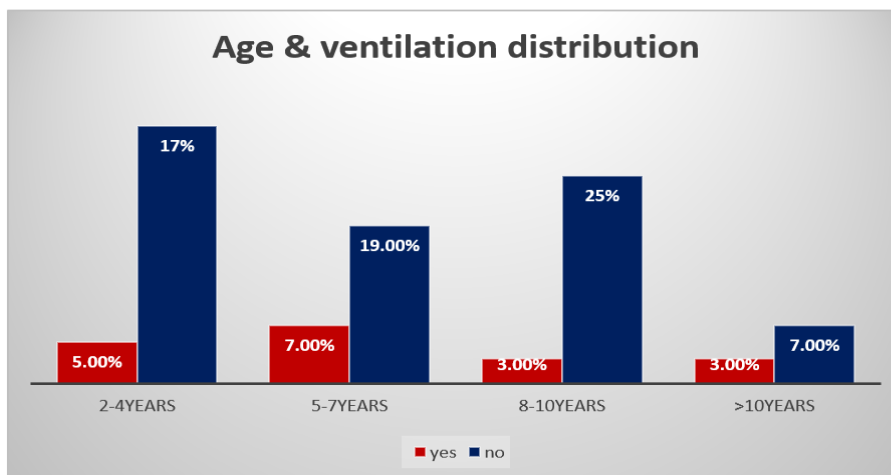


Figure 5: Distribution of participants according to age and ventilation

Table 7: Distribution according to Hughes scoring and ventilation:

Hughes	Ventilation		Total
	Yes	No	
<3	0%	29(29%)	29(29%)
>4	18(18%)	53(53%)	71(71%)
Total	18(18%)	82(82%)	100(100%)

Table 8: Distribution according to clinical features and ventilator requirement:

Clinical features	Ventilation		Total
	Yes	No	
Acute GE	3(3%)	18(18%)	21(21%)
Fever	3%	26(26%)	29(29%)
Fever with rash	4%	15(15%)	19(19%)
URTI	6%	19(19%)	25(25%)
UTI	2(2%)	4(4%)	6(6%)
Total	18(18%)	82(82%)	100(100%)

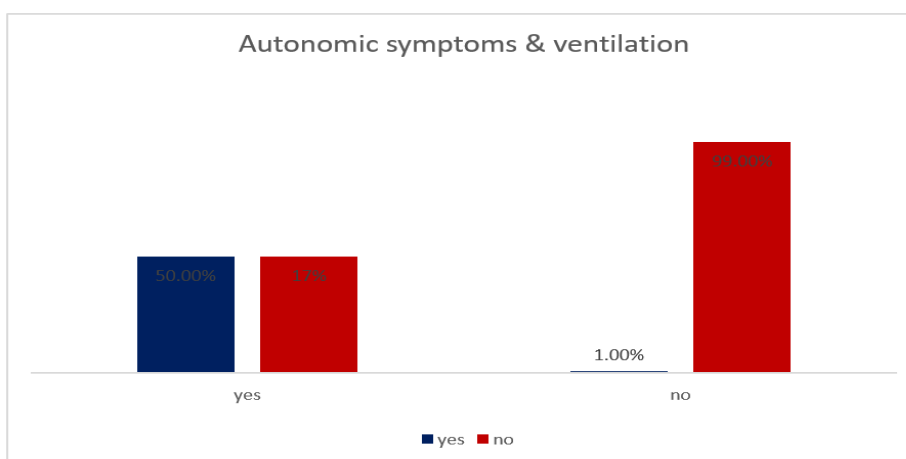


Figure 6: Distribution of participants according to Autonomic symptoms and ventilation

**Discussion**

In our study we observed the majority of children affected are under 2-4years (36%) followed by 8-10 years (28%).10% were among >10years of age and the mean age was found to be 6.21±2.9 years.

Male to female ratio was (1.3:1). In a study done by Rangan et al [6]. Western Maharashtra tertiary

hospital it was found that average age was 5.4years of which 21 were males and 9 were females which was similar to this study. Abebe et al [7] found that male to female ratio was 1.1:1 and 80% were between the age of 2 and 10 which was similar to this study. Nasiri et al [8] found that out of 57 children majority are under 1-3years, it was found that there were 61.4% males and 38.6% females

which was similar to this study. Kannan A et al [9] at NIMS found that male to female ratio = 2.1:1, which was similar to this study. Kalra et al [10] study found that among 52 children with a median age of 5 year the majority children were males. (75.4%) this is also similar to this study. Kalita et al [11] the mean age was 11 years.

In our study antecedent illness was fever in 29% followed by 25% with URTI, 21% had Acute GE, 19% had Fever with Rash and only 6% had UTI. Comparison of various studies in relation to antecedent illness, acute respiratory infection is the predominant antecedent illness in Manju et al [12], Sarkar et al [13], Dr Rajkumar et al [14] and Kannan et al studies. In our study, majority of patients presented with the fever which was similar to Rangan et al study.

In this study it was found that 18% of patients admitted in the month of March followed by 11% in January followed by 10% each during July August and least were admitted in October with 4%. Kannan et al study found that majority of patients were admitted in the month of September to October.

In our study it was found that motor weakness in the form of 61% of children had Quadraparesis, 39% had lower limb weakness. Other symptoms associated with weakness were swallowing difficulty, Respiratory insufficiency and difficulty in closing eyes. Among 100 children 36 had cranial nerve involvement. Out of 36 children. It was found that 50% of children had 7,9,10 cranial nerves involved followed by 28.1% children had 9 and 10 cranial nerves involvement and 7 patients (21.8%) had only 7<sup>th</sup> nerve involvement.

In our study, predominant motor weakness is quadraparesis in contrast to other studies and cranial nerve involvement and respiratory involvements is similar to Dr Rajkumar et al study, and autonomic involvement is similar to Manju et al study.

In our study it was found that 36 children had presented with the autonomic involvement. The autonomic manifestations are tachycardia (29%), orthostatic hypotension (8%), sweating (15%) and more than one feature (32.5%) is seen in our study. Kalita et al study the predominant autonomic manifestations are tachycardia and orthostatic hypotension are 7% each similar to this study.

In our study all patients received IVIG 2gm/kg over 5 days, there was improvement in Hughes score >1 in about 71% patients. AMAN type showed good improvement. The duration of improvement onset ranges from 3 days to 30 days. Multiple cranial nerve involvement with autonomic manifestations had rapid progression in spite of treatment. The mortality is more in ventilated patients. Kalita et al study with bulbar dysfunction and autonomic

manifestations worsened in spite of IVIG. Rangan et al study IVIG given in 27 (90%) patients. Only two required a second course of IVIG (given 2 weeks after the first course and both patients improved clinically and were discharged). 5 received IV (MPS). Three received both IVIG and MPS. In Kalita et al study there was complete recovery in (92.4%) children at 1 year similar to this study.

In this study it was found that among the participants 43% had shown AMAN followed by 12% with AMSAN, 13% had demyelination range and in 32% patients it was in-excitabile. Prognosis is worse in in-excitabile group of participants and majority of children required ventilator support and in AMAN group prognosis is good followed by AIDP. Abebe et al in their study it was found that AMAN was the most common subtype, accounting for 67/91 cases (73%) similar to this study. Dr. Rajkumar et al in their study found that AIDP was most commonly seen in their study. Kannan A et al in their study found that the AIDP in 21 (48.8%), AMAN in 19 (44.2%), and 3(6.9%) children were unclassified. Kalita et al study found out of 140 cases 95 were AIDP and (33) AMAN and 6 were AMSAN and 6 were unclassified contrast to this study.

In our study CSF analysis was done in 78 children and albumin-cytological dissociation was seen in 33 children and predominantly in AMAN sub type. In Kalita et al study albumin-cytological dissociation was seen predominantly in AIDP sub type contrast to this study.

In this study it was found that 18% required ventilator support of which 13% were males and 5% were females. Children with 7,9,10 cranial nerves involvement and autonomic manifestations required mechanical ventilation. Disability score is significantly high in patients on ventilator support. 50% who had autonomic symptoms required Ventilator support. Out of all sub types (32%) inexcitable subgroup predominantly required ventilator support and only 5% of AMAN subtype was in need of mechanical ventilation. URTI has high preponderance about 6% as antecedent illness. Rangan et al in their study found that the intensive care unit received a total of 16 patients, with 7 of them requiring mechanical ventilation. Dr. Rajkumar et al in their study found that the respiratory system was involved in 23.07% of the patients, and 9 of them (15.38%) required assisted ventilation which was also similar to this study. In Kannan et al study out of 43,4 required mechanical ventilation that is equally distributed among AIDP and AMAN sub types.

In this study the majority of patients had in excitable conduction (32%) all were required ventilator support and multiple cranial nerve

involvement, autonomic, involvement is associated with poor outcome and mortality rate was 18%. After duration month about 54% patients had attained power 5/5 and hughes grade was improved by atleast 1 (hughes grading) over 3-21 days of admission in about 82% and majority of the patients attained grade (3) Over all recovery was good with early intervention and management. Abebe et al found that the existence of dysautonomia and mechanical breathing associated with a poor functional outcome,  $P < 0.05$ . Manju et al found that male preponderance and motor weakness were the most common presenting illnesses in this study, with the majority of patients achieving full recovery similar to this study. Nasiri et al found out that 92.9% of patients had complete recovery. Dr. Rajkumar et al found that the respiratory system was involved in 23.07 % of the patients, and 9 of them (15.38 %) required assisted ventilation. Dysautonomic signs/symptoms were seen in 26.92% of patients, with 73.33 % having AIDP subtype and with 9.6% mortality. Kalra et al found that the necessity for artificial ventilation, in excitable nerves group and delayed independent walking were all related to poor outcomes similar to third study. In Rangan et al study out of 7 mechanically ventilated patients, 5 were discharged and 2 died. Kalita et al study, out of 140 patients 66 were completely recovered at 3 months of follow up.

### Conclusions

Guillain Barre Syndrome is a monophasic illness with variable severity and considerable mortality.

1. Among the participants studied 36% were found between age 2-4years followed by 28% in 8-10years and lowest of 10% were among >10years of age Mean age was found to be  $6.21 \pm 2.9$  years.
2. Out of total participants 57% were Males and 43% were Females.
3. Among study participants highest of 19% were females and 17.3% were males seen in age group of 2-4years and least was 7% males and 3% of females were seen in >10Years of age group and there was no correlation found as P value is 0.4 with chi-square value 2.47.
4. Patients presented predominantly with Quadripareisis (61%), 39% with paraparesis. Other symptoms were bulbar dysfunction seen in 27patients (79.3%) out of 34 patients. and 1patient had showed Respiratory insufficiency at admission, later 18 patients required mechanical ventilation predominantly with the bulbar dysfunction. Majority (50%) of Patients with autonomic manifestations required mechanical ventilation.
5. 36% of patients had shown cranial nerve involvement and 18 (52.9%) had 7,9,10 cranial nerves involved followed by (26.4%) 9 and 10

cranial nerves involved and 20.7% had only 7th nerve involvement.

6. 34% had autonomic symptoms, tachycardia present in 29% children and multiple autonomic symptoms seen in 32%.
7. 29% had an antecedent illness of Fever followed by 25% with URTI, 21% had Acute GE, 19% had fever with Rash and only 6% had UTI.
8. Among the participants 43% with AMAN followed by 12% with AMSAN, 13% had demyelination on nerve conduction studies and in 32% patients it was not elicitable.
9. Forty-five percent of patients had a normal CSF analysis, while only 33% showed albuminocytologic dissociation, which was predominantly associated with the A MAN subtype.
10. Among study participants 18% required ventilator support and there is no significant difference between both the groups as p value is 0.6 and most patients were in age group of 5-7years.
11. Among study participants 13% required ventilation among males and 5% in females and there is significant difference between both the groups as p value is 0.001.
12. Disability score is significantly high in Ventilated patients presented with multiple cranial nerve involvement and autonomic manifestations and this difference is found to be significant as P value is 0.01.
13. Among study participants only 5% who had AMAN require ventilator support and the difference is found to be significant as P value was 0.001.
14. Among study participants highest of 6% had h/o URTI followed by 4% with Fever with rash, 3% with Acute GE and fever and only 2% had UTI who required ventilator support and this difference was found to be significant as P value is 0.001.
15. 50% who had autonomic symptoms required ventilator support and this difference was found to be significant as P value is 0.001. Identification of these symptoms early in the disease course can help in triaging the cases.
16. IVIG was administered in all patients and there was good response. Improvement in Hughes score by >1. At 1 month follow up 54% patients shown power of grade 5.
17. The mortality rate in this study was found to be only 18%.

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