

Study of the various factors affecting the outcome of Guillain-Barre syndrome

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Abstract

Introduction: Guillain-Barre Syndrome (GBS) has an incidence of 0.4 to 1.9 per 100,000 populations. GBS can occur at any age. The male to female ratio is 3:2. It is characterized by an acute onset, relatively symmetric, predominantly motor, flaccid, areflexic paralysis which evolves over a period of up to 4 weeks. History of antecedent viral infection, vaccination or surgery may be obtained in 50 to 70% of cases. The optimistic view of complete recovery in majority of patients with GBS may not be true and patients with severe GBS are often left with significant residual deficits. **Aims and Objectives:** To study the various factors affecting outcome of Guillain-Barre Syndrome. **Methodology:** This is a retrospective study. All patients who were diagnosed as GBS fulfilling the diagnostic criteria as modified by Asbury, admitted into the pediatric wards of Bharati Hospital during a period of 24 months were included in this study. During the study period 31 patients who fulfilled the diagnostic criteria were identified and included in the study. A detailed history with particular attention to the date of onset of neuropathic symptoms and the tempo of the ensuing functional disability and time taken to reach clinical nadir was elicited. Any significant past history and a history of any preceding event within a period of one month prior to onset of symptoms was noted. **Results:** In this study mortality of the GBS patients found to be 6.66%. The factors significantly associated with the outcomes like Death or Partial Recovery Were Age ≥ 10 yrs. ($\chi^2 = 11.82$, $p < 0.00058$), Male Sex ($\chi^2 = 2.694$, $p < 0.05$), History of Fever ($\chi^2 = 7.42$, $p < 0.0064$), History of Cranial nerve Palsy ($\chi^2 = 7.42$, $p < 0.0064$), History of Respiratory Distress ($\chi^2 = 4.310$, $p < 0.05$), Treatment Received (IVIG) ($\chi^2 = 6.17$, $p < 0.01$). While power of the muscle during illness was not any significant co-relation with the Outcome ($\chi^2 = 6.17$, $p < 0.01$). **Conclusion:** Various factors like Age Sex, History of Fever, History of Cranial nerve Palsy, History of Respiratory Distress etc. should be considered for the management and better recovery of the patients.

Keywords: Guillain Barre Syndrome (GBS), Intravenous Immunoglobulin (IVIG).

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Received Date: 31/10/2015 Revised Date: 31/10/2015 Accepted Date: 02/11/2015

Access this article online

Quick Response Code:



Website:

www.statperson.com

DOI: 05 November
2015

INTRODUCTION

Guillain Barre Syndrome (GBS) has an incidence of 0.4 to 1.9 per 100,000 populations. GBS can occur at any age. The male to female ratio is 3:2. It is characterized by an acute onset, relatively symmetric, predominantly motor, flaccid, areflexic paralysis which evolves over a period of up to 4 weeks. History of antecedent viral infection, vaccination or surgery may be obtained in 50 to

70% of cases¹. The optimistic view of complete recovery in majority of patients with GBS may not be true and patients with severe GBS are often left with significant residual deficits.² The reported mortality varied between 2% and 18%, the lower mortality rates were in the treatment trials where patients with serious medical illness have been excluded. Inclusion of less severely affected patients may obscure the analysis of prognostic factors in the more severely ill.³ However, the reported mortality in ventilated patients was high, 20%-38.3%.^{4, 5} Apart from improvements in intensive care unit (ICU) care and newer immunomodulatory therapies, other factors that have been found to impact the outcome include age, antecedent events,⁶ rapid progressions of the disease,⁷ sensory disturbances, ventilatory requirement,⁸ bulbar dysfunction,⁹ low cerebrospinal fluid protein concentration,¹⁰ electrodiagnostic features suggestive of axonopathy.^{6, 11} In a disease, such as GBS with unpredictable and variable course, it will be prudent to

identify the factors that may help in assessing the prognosis of severe form of GBS. GBS variants include Miller Fisher syndrome, pure sensory syndrome, pandysautonomia, pure axonal form, and recurrent GBS. Cerebrospinal fluid (CSF) examination classically shows albuminocytological dissociation. Motor nerve conduction studies may reveal prolonged distal latency, reduced motor nerve conduction velocity, conduction block and prolonged or absent F waves in two or more nerves. Sensory conduction can be abnormal in 60% of cases. Immunomodulation with plasma exchange or Intravenous Immunoglobulin (IVIG) has been used to enhance recovery in selected group of patients.¹²

AIMS AND OBJECTIVE

To study the various factors affecting outcome of Guillain-Barre Syndrome.

MATERIAL AND METHODS

All patients who were diagnosed as GBS fulfilling the diagnostic criteria as modified by Asbury,¹ admitted into

the pediatric wards of a Bharati hospital deemed University medical College and Hospital during a period of 24 months were included in this study. During the study period 31 patients who fulfilled the diagnostic criteria were identified and included in the study. A detailed history with particular attention to the date of onset of neuropathic symptoms and the tempo of the ensuing functional disability and time taken to reach clinical nadir was elicited. Any significant past history and a history of any preceding event within a period of one month prior to onset of symptoms was noted. All patients were admitted and treated with intravenous immunoglobulin (IVIG) for 5 days or intravenous methylprednisolone for 5 days as per affordability and severity of the disease. Mechanical ventilation was provided when required. Time taken to reach peak deficit, latency period to start IVIG, duration of plateau phase, the requirement and duration of ventilatory support and nature of complications were noted. Chi-Square test used for Statistical analysis wherever necessary.

RESULTS

Table 1: Distribution of the Various Factors Associated with Outcome in GBS Syndrome

Factors	Characteristics	Recovery Status (n=31)			P-value
		Death	Partial	Complete	
Age	≤10	1	1	20	$\chi^2 = 11.82, p<0.00058^*$
	≥ 10	1	5	3	
Sex	Male	2	5	10	$\chi^2 = 2.694, p<0.05^*$
	Female	0	2	12	
H/O Fever	Yes	2	8	7	$\chi^2 = 8.95, P<0.005^*$
	No	0	1	13	
H/O Cranial nerve Palsy	Yes	2	10	4	$\chi^2 = 7.42, p<0.0064^*$
	No		1	13	
H/O Respiratory Distress	Yes	2	1	1	$\chi^2 = 4.310, p<0.05^*$
	No	0	4	21	
Respiratory Failure With Mechanical Ventilation	Yes	2	2	1	$\chi^2 = 8.30, p<0.004^*$
	No	0	4	20	
Power of Muscles	Grade0	1	1	0	$\chi^2 = 6.73, p>0.05$
	Grade1	1	1	1	
	Grade2	0	4	8	
	Grade3	0	1	12	
	Grade4	0	0	3	
Treatment Received	I.V Methyl Prednisolone	0	3	21	$\chi^2 = 6.17, p<0.01^*$
	Intravenous Immunoglobulins. (IVIG)	2	2	3	

*Significant

For the Analysis Purpose outcome like Deaths and Partial Recovery were merged Together,* Significantly Associated. From the Table 1. It is clear the factors significantly associated with the Outcomes like Death or Partial Recovery were Age ≥ 10 yrs. ($\chi^2 = 11.82, p<0.00058$), Male Sex ($\chi^2 = 2.694, p<0.05$), History of Fever ($\chi^2 = 8.95, p<0.005$), History of Cranial nerve Palsy ($\chi^2 = 7.42, p<0.0064$), History of Respiratory

Distress ($\chi^2 = 4.310, p<0.05$), Treatment Received (IVIG) ($\chi^2 = 6.17, p<0.01$). While Power of the Muscle during illness was not any significant co-relation with the Outcome ($\chi^2 = 6.73, p>0.05$). In this study it was observed; 2 deaths out of the 31 patients so mortality found to be 6.66%.

DISCUSSION

GBS is the most common cause of acute or sub-acute generalized paralysis in practice. GBS occurs in all parts of the world and in all seasons, affecting children and adults of all ages and both sexes. A mild respiratory or gastrointestinal infection or immunization precedes the neuropathic symptoms by 1 to 3 weeks in approximately 60 percent of cases. Typical is a nondescriptive upper respiratory infection but almost every known febrile infection and immunization has at one time or another been reported to precede GBS.³ In our study we found that Outcomes like Death or Partial Recovery Were associated with risk factors like; Age ≥ 10 yrs. ($\chi^2 = 11.82$, $p < 0.00058$). Male Sex ($\chi^2 = 2.694$, $p < 0.05$) Male sex is having poorer outcome as compared to female sex findings are in confirmative with Juby John *et al*¹³, History of Fever ($\chi^2 = 7.42$, $p < 0.0064$) was having significantly higher poorer outcome as compared to afebrile status. History of Cranial nerve Palsy ($\chi^2 = 7.42$, $p < 0.0064$) was having significantly higher chances of bad outcome as compared to not involvement, In the Spanish study by Sedano MJ *et al.*,¹⁴ 66.7% cases had sensory involvement, 43.5% had cranial nerve involvement and 42.1% had autonomic involvement. Facial palsy was found in 86.6% cases in the Spanish study., History of Respiratory Distress and Respiratory Failure requires mechanical ventilation it associated with the poorer outcome because this life-threatening scenario is complicated by other medical problems such as pneumonia, severe infections, blood clots in the lungs and bleeding in the digestive tract in 60% of those who require artificial ventilation.¹⁶ ($\chi^2 = 4.310$, $p < 0.05$). In our study we have observed that use of Intravenous Immunoglobulin's was significantly associated with higher risk of bad outcomes than methyl prednisolone, this can be explained by the fact that the serious patients are administered with IVIG. So naturally they were having poorer outcome than the immunoglobulin's itself but some studies also suggest potential complications associated with IVIG Dantal J *et al*¹⁵ observed, immunoglobulin's use is not without risk; occasionally it causes liver inflammation, or in rare cases, kidney failure. ($\chi^2 = 6.17$, $p < 0.01$). While Power of the Muscle during illness was not any significant co-relation with the Outcome ($\chi^2 = 6.17$, $p < 0.01$).

CONCLUSION

Various factors like Age Sex, History of Fever, and History of Cranial nerve Palsy, History of Respiratory Distress etc. Should be considered for the management and better recovery the patients.

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Source of Support: None Declared
Conflict of Interest: None Declared