Original Research Paper

Volume-9 | Issue-3 | March-2019 | PRINT ISSN - 2249-555X

Neurology

ANALYSIS AND INVESTIGATORY PROFILE IN THE MANAGEMENT AND OUTCOME OF GUILLIAN BARRE SYNDROME

Ganesa pandian D*

Assisstant Professor, Department of Neurology, Madurai Medical college, Goripalayam, Madurai, 625020*Corresponding Author

ABSTRACT

Introduction Guillain Barre syndrome or acute inflammatory demyelinating polyradiculoneuropathy is an acute onset demyelination of spinal nerve roots and peripheral nerves due to cross reaction between target antigen and myelin, axon or both. Typical clinical features are progressive symmetric muscle weakness associated with absent or depressed deep tendon reflexes. Although GBS has a benign prognosis,7% die and further 16% suffer from residual disability. This study was undertaken to study the clinical and investigatory profile of Guillian Barre symdrome in Rajiv Gandhi government general hospital , Chennai and in attempt to correlate certain clinical and electrophysiological features with prognosis, to identify a poor outcome group in the early stages.

Methods: All adult patients (>12yrs) with clinical diagnosis of Guillain Barre syndrome according to Asbury criteria were included. A total of 30 patients were studied, their clinical profile was analyzed and prognosis of these patients in relation to their clinical pattern of progression ,clinical symptoms and signs, cerebrospinal findings ,nerve conduction study were observed. Patients were analyzed using fisher's exact probability test with reference to various prognostic factors and their significance determined.

Results: Twenty five patients were followed up for prognostic factors in GBS at the end of 3 months, the rest 5 were lost to follow up. Patients were divided into two groups A good outcome group which had disability of grade 3 or less at the end of 3 months and a poor outcome group which had disability grade of greater than 3 at the end of 3 months. Eighteen (782%) patients were found to have a good outcome while 7 (28%) had a poor outcome. Delayed onset of recovery from paralysis, requirement of mechanical ventilator support are significant prognostic factors of outcome in GBS.

Conclusion: Delayed onset of recovery from paralysis, requirement of mechanical ventilator support are significant prognostic factors of outcome in GBS. The drawbacks of our study were incomplete follow up due to patient drop out.

KEYWORDS : Guillain Barre syndrome, prognostic outcomes

INTRODUCTION

Guillain Barre syndrome is a relatively symmetrical predominantly motor neuropathy frequently involving facial and other cranial motor nerves with partial or total areflexia ,commonly preceded by a viral infection. Octave landry is credited with the earliest description of GBS when he described a condition called 'acute ascending paralysis'. In 1916 Guillain Barre and Strohl reported on two soldiers an acute paralysis associated with loss of muscle stretch reflexes with elevation of CSF protein with a normal cell count(albuminocytological dissociation).The most prevalent form of GBS is acute inflammatory demyelinating polyneuropathy characterized pathologically by demyelination and macrophage clearance of myelin.A causal link between preceding infection and GBS has been constructed based on concept of molecular mimicry. An autoimmune response initially launched against the invading organism would secondarily produce damage to peripheral nerve.CSF studies shows albuminocytological dissociation. Abnormalities of nerve conduction are more specific laboratory findings in GBS. the characteristic presence of demyelination produces very slow nerve conduction velocities, dispersed compound muscle action potentials(CMAP) and multifocal conduction block. Treatment is with corticosteroids, plasma exchange and intravenous immunoglobulin.

Methodology

All adult patients (>12 yrs) diagnosed as Guillain Barre syndrome fulfilling the criteria as modified by Asbury, admitted in the medical wards of Rajiv Gandhi government general hospital ,Chennai from April 2013 to March 2014 were included in the study. The aim of the study was to analyze the clinical profile of GBS, to study the prognosis in GBS with respect to age, time taken to develop deficit, duration of plateau phase, time taken to onset of improvement, requirement of ventilator support, cerebrospinal fluid analysis and nerve conduction study.

A detailed history and repeat examinations of muscle power were performed on alternate days till discharge and follow up examination at the end of 3 months. Autonomic function tests were performed at admission and repeated at peak of disability. Bedside autonomic function tests –resting heart rate, resting blood pressure, postural hypotension, blood pressure changes at 1 and 3 minutes on standing from lying down position .Laboratory investigations were performed including hepatitis B serology and HIV serology.CSF examination and nerve conduction study were done in all cases.

All patients were treated conservatively with physiotherapy and mechanical ventilator assistance where required. Patients who deteriorated in hospital were treated with intravenous immunoglobulin at dose of 0.4g/kg for 5 days and some patients were treated with steroids and plasmaphersis based on availability of drug. Time taken to reach peak deficit .interval from maximal deficit to onset of improvement,duration of ventilator support were noted.

For analysis patients were divided into two groups; disability grades 0-3 at the end of 3 months were grouped as good outcome and disability grades 4-6 were taken as bad outcome .Frequency of various possible prognostic factors within two groups was then determined and the possible associations were tested. Statistical methods used to analyze results included mean + standard error of mean and fishers exact probability test. P values of <0.05 were considered significant.

Results

A total of 30 patients were studied. All patients were hospitalized and the average duration of hospital stay was 17.57 days. Twenty two patients (73.33%) were males and 8(26.67%) were females. The age of the patients ranged from 13 to 67 years (mean age 40.87) with maximum no of patients in age above 40. The least number of cases were seen in the months of April to June. Twenty (66.67%) patients had some antecedent event prior to the development of GBS. The most common antecedent illness were upper respiratory tract infection. The mean duration between onset of GBS and the preceding illness was 9.06 ± 4.21 days. Twenty two patients (73.33%) had ascending form of paralysis and 5 (16.67%) had descending type of paralysis and simultaneous involvement of all limbs in 3 (10%).Autonomic dysfunction was detected in 14 (46.67%) .Twenty patients (66.67%) showed albuminocytological dissociation. Sixteen (53.33%) patients were found to have reduced motor conduction velocities consistent with demyelinating neuropathy, seven (23.33%) patients had axonal pattern of neuropathy and three had mixed neuropathy. Four patients (13.33%) died in the study. All four patients developed respiratory failure and required assisted ventilation.

Twenty five patients were followed up for prognostic factors in GBS at the end of 3 months, the rest 5 were lost to follow up. Patients were divided into two groups. A good outcome group which had disability of grade 3 or less at the end of 3 months and a poor outcome group which had disability grade of greater than 3 at the end of 3 months. Eighteen (782%) patients were found to have a good outcome while 7 (28%) had a poor outcome.

Patients were grouped into two categories <40 years and >40 years, age >40 years was a poor prognostic sign. Patients were analyzed using fisher's exact probability test with reference to various prognostic factors and their significance determined. Critical time periods in relation to outcome at 3 months were studied (Table1).Other prognostic neurological signs were analyzed similarly (Table 2).The outcome at end of 3 months was correlated with the severity of paralysis (MRC grading) at plateau period. Seven patients had the power of 0-1, among whom 2 had good outcome and 5 had bad outcome. Eighteen patients had power of grade 2-4, among whom 16 had good outcome and 2 had poor outcome. On applying fisher's test , the difference in outcome in the two groups is found to be significant regarding the severity of paralysis and final outcome(p=0.006).the presence or absence of sensory findings were not statistically significant regarding prognosis. The presence or absence of bulbar, autonomic dysfunction did not affect the outcome.

Table 1: Critical time periods in relation to outcome (at 3 months follow up)

Critical time period	No of patients	Good outcome number	Bad outcome number	P value (Fisher's test)
Onset of peak paralysis				
Upto 1 week	7	3(42.86%)	4(57.14%)	0.042
>1 week	18	15(83.33%)	3(16.67%)	
Peak paralysis period(plateau)				
Upto 1 week	17	15(82.24%)	2(11.76%)	0.0016
>1 week	8	3(16.66%)	5(62.5%)	
Onset of recovery				
Upto 3 weeks	20	16(80%)	4(0%)	0.113
>3 weeks	5	2(40%)	3(60%)	

Table 2: Other possible prognostic neurological signs

Neurological sign	No of patients	Good outcome number	Bad outcome number	P value (Fisher's test)
Severity of paralysis				
Power grade 0-1	7	2(28.6%)	5(71.4%)	0.002
Power grade 2-4	18	16(88.9%)	2(11.1%)	
Sensory loss				
Present	3	3(100%)	-(0%)	0.354
Absent	22	15(68.1%)	7(31.9%)	
Sphincter dysfunction				
Present	4	2(50%)	2(50%)	0.306
Absent	21	16(76.2%)	5(23.8%)	
Bulbar paralysis				
Present	6	3(50%)	3(50%)	0.193
Absent	20	16(80%)	4(20%)	
Autonomic Dysfunction				
Present	13	8(61.5%)	5(38.5%)	0.223
Absent	12	10(83.3%)	2(16.7%)	

DISCUSSION

A number of studies have been conducted in an attempt to correlate particular clinical features of GBS with prognosis in order to be able to select only patients with a poor prognosis for costly treatment and subjecting to its complications .In this study, we analyzed 25 patients in relation to good outcome at the end of 3 months. Patients were divided into good outcome group and poor outcome group depending on their disability grade at the end of 3 months. In a study by J.B.Winer et al age greater than 40 years was found to be a significant prognostic factor. However in a previous study by the same author, age had not been found to significantly influence outcome. Similarly N K Singh et al also found that age did not affect outcome. In our study too age was not found to be a significant prognostic factor.

A poor prognosis has been observed in some studies, in patients having a rapid progression of weakness, a prolonged period of peak paralysis and a delayed onset of recovery, not commencing within 3 weeks of onset of weakness. Winner et al in a retrospective study of 71 patients, noted a plateau time and failure to improve within 3 weeks were associated with poor prognosis.

In another prospective study, it was found that patients who reached peak paralysis rapidly within 7 days had a poor prognosis. This study contradicted the previous study in that prolonged plateau period and a delayed onset of recovery were not found to be significant prognostic factors. The study by N K Singh et al found that all three time periods i.e .rapid progression to peak paralysis within seven days, prolonged plateau period, delayed onset of recovery greater than 3 weeks were significant prognostic factors. In our study rapid progression and prolonged plateau period were significant prognostic factors ,however delayed onset of recovery was not found to be a significant prognostic factor.

Mean CSF protein level in both good and poor outcome did not show marked difference indicating that CSF protein concentration did not influence the outcome. This is in accordance with majority of studies in literature which have failed to find any correlation. The need for assisted ventilation has also been found to be a significant prognostic factor in our study which is in accordance with prognostic studies of N K Singh et al and Winer et al. Other parameters such as severity of muscle weakness at peak, presence of objective sensory loss, sphincter disturbance cranial nerve paralysis and autonomic dysfunction were not found to be significant. The study by N K Singh et al showed similar results except bulbar paralysis had poor outcome.

In summary, delayed onset of recovery from paralysis, requirement of mechanical ventilator support are significant prognostic factors of outcome in GBS. The drawbacks of our study were incomplete follow up due to patient drop out.

Conclusion

GBS occurs in all age groups with a greater incidence in the older age group above 40 years .however age does not have any correlation with prognosis.GBS affects both sexes, males are affected more than females. Upto 66% of patients have an antecedent infection. Onset of GBS is heralded by sensory symptoms in majority, however objective sensory loss is present in only few patients. Ascending type of paralysis is most common with a predominant proximal weakness. Progression to may maximal deficit occurs within 2 weeks in 90% of patients. Respiratory failure occurs in 1/3rd of patients. Autonomic dysfunction is very common in GBS but has no correlation with prognosis. Cranial nerve dysfunction is common in 60% of patients with GBS. Albuminocytological dissociation is seen in majority of patients but has no prognostic value. Rapid progression, prolonged duration of peak paralysis, need for ventilator support and severity of paralysis are factors associated with poor prognosis in GBS. Nerve conduction studies with axonal and mixed pattern are associated with poor prognosis. Mortality in GBS is 13%.

REFERENCES:

1. Guillain G.Barre J A,Strohl A.Sur un stndrome de radiculoneuritc avce hyperalbuminsc du liquids cephalorachidicn sans reaction celtare, Bullern de la Societe de Medicine de L'hospital de Pan's(translation in archieves of neurology 1968,18,450-452)1916,40:1462-1470.
2. Haymaker W, Kernohan J W. The Landry-Guillain-Barre syndrome. A clinicopathologic report of fifty fatal cases and a critique of the literature. Medicine 1949;28: 59-141.
3. Asbury AK, Arnason BG, Adams RD. The inflammatory lesion in idiopathic polyneuritis.Medicine 1969; 48 :173-15.
4. Asbury AK, Cornblath DR. Assessment of current Diagnostic criteria for Guillain Barre syndrome. Ann Neurol 1990;7 (suppl)S21-24.
5. Winer JB, Hughes RAC, Greenwood RJ,et al: Prognosis in Guillain-Barre syndrome.Lancet,1985:1202-1203.
6. Singh NK, AK Jaiswal, S Misra, PK Srivastava: Prognostic factors in Guillain Barre syndrome. J Assossc Phys India 1994;42:777-779.
7. Chowdhury D, Rohatgi A, SNA Rizvi, NP Singh : Current concepts of diagnosis, management and Prognosis of Guillain-Barre syndrome.JAP1,1997;45:205-210.