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Medicine

CLINICAL AND ELECTRO – PHYSIOLOGICAL STUDY OF GUILLAIN BARRE SYNDROME WITH REFERENCE TO PROGNOSIS

Dr.D.Srinivasulu	MD., Assistant Professor of Medicine, Kurnool Medical College, Kurnool, Andhra Pradesh
Dr.P.S.Usha Rani MD	Assistant Professor of Medicine, Kurnool Medical College, Kurnool, Andhra Pradesh, *Correspondence Author
Dr.P.Sudhakar	MD., Professor & HOD of Medicine, Kurnool Medical College, Kurnool, Andhra Pradesh
Dr.T.Vinil	MD., Senior Resident of Medicine, Kurnool Medical College, Kurnool, Andhra Pradesh

ABSTRACT The purpose of the study is to analyse the clinical profile of GBS and to study the prognosis in GBS with reference to: Age, time taken to develop peak deficit from onset (in days), duration of plateau phase, time taken to onset of improvement, requirement of ventilatory support, cerebrospinal fluid protein level, nerve conduction studies.

KEYWORDS : Guillain Barre Syndrome, Nerve Conduction Studies

INTRODUCTION:

Guillain-Barre Syndrome (GBS) or Acute Polyradiculoneuritis is an acute, diffuse post-infective- disorder of the nervous system involving the spinal roots, the peripheral nerves and occasionally the cranial nerves. The aetiology is thought to be widespread demyelination of the spinal roots and the peripheral nerves due to a cross reaction between myelin and unconfirmed agents like viruses. GBS is a syndrome of acute areflexic motor paralysis. The disorder is heterogeneous and diverse in its antecedent events, clinical presentations and natural course, such that making the diagnosis is a challenge for most neurologists. Although GBS often has a benign prognosis, 7% of patients die and further 16% suffer residual disability. The modalities of treatment of GBS are physiotherapy, plasma exchange and of late intravenous immunoglobulins and in severly affected patients supportive ventilator management.

This study was undertaken to study the clinical profile of Guillain Barre Syndrome in our hospital and to attempt to correlate certain clinical and electrophysiological features with prognosis, to identify a poor outcome group in the early stages

MATERIALS AND METHODS

We studied 30patients, who were diagnosed as Guillain-Barre Syndrome (GBS) and admitted in the medical wards of NARAYANA MEDICAL COLLEGE &HOSPITAL, from August 2008 to March 2010.The inclusion and exclusion criteria for these patients is as follows:

INCLUSION CRITERIA:

1) Age more than 12 years.
2) Patients who were diagnosed as GB syndrome on the basis of modified Asbury criteria.

EXCLUSION CRITERIA:

1) Age < 12 years
2) Peripheral neuropathy other than GB syndrome.

A detailed history with particular attention to the date of onset of neuropathic signs and the tempo of ensuing functional disability was elicited and a clinical examination was performed at admission. 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 disability.

RESULTS

We studied 30 patients with GB syndrome; include 22 males, 8 females in the mean age group of 40.87 years (ranges from 13 to 67 years).Most of the patients(46.67%) were in the age group of above 40 years. All patients were hospitalized and the average duration of hospital stay was 17.57 days. The least number of cases were seen in the months of April to June.However no significant increased incidence in any particular season could beinferred. Twenty (66.67%) patients had some antecedent event prior to the development of GBS. The most common antecedent illness was upper respiratory tract infection. In patients with a history of preceding illness, the mean duration between onset of GBS and the preceding illness was 9.06 (± 4.21) days. The first symptom of the illness was in the form of motor weakness in 11(36.67%) patients and it was sensory in the form of pain, paraesthesiae or numbness in the remaining 19(63.33%) patients Twenty two (73.33%) patients experienced some sensory symptoms during thecourse of their illness mainly in the form of paraesthesiae in hands and feet. Eight(26.67%) patients did not have any sensory symptoms throughout the course of theirillness. Twenty two patients (73.33%) had ascending form of paralysis. Only 5(16.67%) patients had descending type of paralysis. Muscle weakness occurred in the proximal muscles initially and later progressed to the distal muscles in17 patients. Progression from distal to proximal muscles was seen in 9 patients. Three patients had simultaneous involvement of both proximal and distal muscle. Twelve patients (40%) took up to 1 weak to reach maximal weakness, 15 patients (50%) took up to 2 weeks, 2 patients (6.6%) took up to 3 weeks and 1 patient (3.3%) took longer than 3weeks (24 days). The maximum number of admitted patients (40%) reached grade 4disabilities at peak. Objective sensory loss was elicited in only 3(10%) out of the 30 patients. The sensory deficit was in the form of diminished touch, vibration and joint position sense, which occurred in a glove and stocking distribution. Eighteen patients (60%) had cranial nerve dysfunction. Seventeen patients had facial nerve palsy, among which 15 were bilateral. Six patients had involvement of 9th and 10th cranial nerves. Total external ophthalmoplegia was observed in one patient. This patient also had severe ataxia and weakness in the lower limbs. A diagnosis of Miller Fisher variant of GBS was made in this patient. Hypoglossal nerve was involved in one patient. One patient had left recurrent laryngeal nerve palsy. CSF was clear in all patients. CSF glucose was also normal (~ half the blood glucose level) in all patients.CSF protein concentration was raised above 50 mg% in 20 (66.67%) patients at one week. Three patients had lymphocytic pleocytosis of 20, 30 and 50 cells/cc. None of the remaining patients had CSF pleocytosis.

Nerve conduction studies (Table: 9) were conducted in all patients.

Sixteen patients (53.33%) were found to have reduced motor conduction velocities consistent with demyelinating neuropathy. Seven patients (23.33%) were found to have decreased amplitude of action potentials consistent with axonal pattern of neuropathy. Three patients (10%) had mixed pattern of neuropathy. The remaining 4 patients (13.33%) had normal conduction studies. All patients received physiotherapy and the 10 patients (33.3%) who developed respiratory failure were put on mechanical ventilation. Two patients (6.6%) received intravenous immunoglobulin in addition to conservative therapy. Both of them showed good response with arrest of progression of motor weakness by 2to 3 days. Three patients (10%) received plasmapheresis. Among them 2 patients responded well with arrest of progression of muscle weakness and one patient expired on ventilator. Three patients (10%) received intravenous methylprednisolone. Patients with intravenous steroids do not showed much benefit over supportive treatment. Twenty-five out of 30 patients were analyzed for prognostic factors in GBS at the end of 3 months. The rest 5 patients were lost to follow up. Patients were divided into two groups. A **'Good Outcome'** group which had a disability grade of 3 or less at the end of 3 months and a **'Poor Outcome'** group which had a disability grade of greater than 3 at end of 3 months. Eighteen (72%) patients were found to have a good outcome while 7 (28%) had a poor outcome.

DISCUSSION

We studied 30 patients in this prospective study, who were diagnosed as Guillain-Barre Syndrome (GBS) on the basis of modified Asbury criteria.[10] Our study included 22(73%) males, 8(27%) females in the mean age group of 40.87 years (ranges from 13 to 67 years). Winer et al.(1990)[202]observed mean age group of 41 years. In our study, most of the patients (46.67%) were in the age group of above 40 years. All 30 patients were hospitalized and the average duration of hospital stay was 17.57 days. But average length of hospital stay for acute cases was 34 days in Meythaler et al.1997 study[186]. In our study, among <40 years age group 26.6% of patients are poor prognosis; among >40 years age group 30% patients are poor prognostic factor, representing age was not significant a prognostic factor in contrast to Italian Guillain-Barre Study Group(1996)[192] and McKhann *et al* (1988)[137], where younger the age good prognosis and poor prognosis in older age patients to reflect poor axonal out growth and regeneration and less effective remyelination in elderly(Black and Lasek *et al*.1979; Pestronk *et al*.1980) No significant seasonal variation in incidence of GBS could be inferred from this study inconformity with Hughes and Rees *et a*l.(1997) Twenty (66.7%) of our patients had a definite antecedent event prior to onset of illness. The most common antecedent illness was upper respiratory tract infection (26.67%) while diarrheal illness was seen in only two patients (6.67%). Winer *et a*l[209](1988)reported that over half of GBS patients experience symptoms of viral respiratory or gastrointestinal infections. Ropper *et al* (1992) also reported a high incidence of (73%)antecedent event. In our study there was a mean interval of 9.06 (± 4.21) days between the prodrome and the onset of GBS. Kaur et al reported a mean interval of 9.2 days. In Italian Guillain-Barre Study Group[192] (1996)it was 12 days. Ascending paralysis was noted in 73.32 (22 patients) and descending paralysis in 16.67% (5 patients), while 10% (3 patients) had simultaneous involvement of all four limbs. According to description by Winer In 63.33% patients, the first symptom of illness was sensory in the form of paraesthesia (numbness or pain) in hands and feet, whereas motor weakness was the first symptom in 36.67% of patients. Benjamin. *et al* (1973)study revealed sensory involvement in 53% and motor symptoms in 97%. *et al*[209] (1988)that muscle weakness usually starts in legs and ascends to arms in most cases. We observed motor weakness symmetrically in all affected patients in our study. None of the patients had involvement of hands alone, which is similar to the observation of Winer *et al*[209](1988). this study 40% of patients reached peak deficit within 1 week of onset of illness, 90% by 2 weeks .While it was about 34% of patients reached maximal weakness by 1 week, 70% by 2 weeks, and 84% by 3 weeks in Winer *et al*(1973)[209] 60% of our patients had cranial nerve dysfunction. This is in conformity with the 50% incidence reported by Winer *et al*(1973)[209] and 60% in Allan H. Ropper's meta-analysis(1992), Kaur et al reported an incidence of 41% in her study from North India CSF protein was raised above 50mg% in 20 patients (66.6%). Winer *et al*[209] reported raised CSF protein in 80% patients while 90% was reported in Allan H.Ropper's meta-analysis.

SUMMARY

In this prospective study of 30 patients with GBS (based on Asbury's Criteria), it was found to be commonest in the above 40 years age group and there was a male preponderance.Consistent with the known features of GBS, no seasonal predilection was present and over two thirds of the patients gave a history of a definite antecedent illness prior to the onset of GBS. The most common antecedent illness was upper respiratory tract infection seen in 26.67% of our patients followed by a non descript fever in 23.33%. gastro-intestinal illness however was uncommon and seen in only3.33%. Areflexic symmetric motor paralysis was the presenting feature of all the patients with the majority showing ascending type of paralysis (73.33%). The onset of GBS was heralded by sensory symptoms in over half of our patients (63.33%) mainly in the form of paraesthesiae confined to the fingers and toes. In the rest of the patients, muscle weakness was the first symptom of the illness. Sensory symptoms were experienced by the majority of our patients (73.33%) at sometime during the course of illness. However, objective sensory loss was uncommon. Predominant proximal muscle weakness was most commonly seen (56.67%). Twenty two (73.33%) of our patients reached a bed bound state at the peak of their disability with 10 patients (33.33%) requiring ventilatory support. Forty percent of patients reached maximal disability by 1 week of illness, 90% by 2 weeks and 96.67%by 3 weeks of onset of illness. No progression of muscle weakness was seen beyond 4weeks.

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