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Original Article

Characteristics of patients with Guillain Barre Syndrome at a tertiary care centre in Pakistan, 1995-2003

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Abstract

Objective: To study the clinical presentation, hospital course and outcome of patients admitted with Guillain Barre Syndrome (GBS) to a tertiary care hospital in Karachi, Pakistan.

Methods: The charts of patients conforming to International Classification of Diseases (ICD) code 9.0, for GBS, from September 1995 to January 2003 were reviewed. Clinical data was recorded on a standardized questionnaire, which included patients' age, sex, antecedent events, neurological signs and symptoms and ventilation requirement. The hospital course was analyzed, including nosocomial infections, therapy given and the functional status of patients, using the Rankin scale (0-6). Standard SPSS 11.5 software (Windows) was used for data analysis.

Results: Thirty-four cases of GBS were admitted to the hospital during the study period, with an age range of 3 to 70 years. The mean age for disease onset was 35.2 years for female patients, compared to 30 years for males; the male/female ratio was 1.6:1.Gastrointestinal infections (12/22, 54.6%) were the most common antecedent event, followed by upper respiratory tract infections (9/22, 40.9%) and skin lesions (1/22, 4.5%). Most patients developed GBS within one month of the preceding infection. Cranial nerve abnormalities (30/34, 88.2%), autonomic dysfunction (21/34, 61.8%) and respiratory failure requiring intubation (19/34, 55.9%) were also common. The median Rankin score of patients at admission, and at 30 and 60 days thereafter was 5, 4 and 3.5 respectively. The in-patient mortality was 1 of 34 (2.4%).

Conclusion: We found that GBS occurred at all ages and was slightly more common in males. Majority of patients had an antecedent history of infection and had severe disease on presentation. The patients were treated with either plasmapheresis or intravenous immunoglobulins and there was no significant difference in outcome in the two groups. Despite severe persistent disability, in-hospital mortality was low (JPMA 55:493;2005).

Introduction

Guillain Barre Syndrome (GBS) is the leading cause of acute neuromuscular weakness in the developed world.[1] Different terminologies e.g. acute inflammatory demyelinating polyneuropathy (AIDP), acute motor axonal neuropathy (AMAN), acute motor-sensory axonal neuropathy (AMSAN) and Miller Fisher Syndrome, are all included under the rubric of GBS.[2]

GBS leads to a wide variety of deficits, characterized by rapidly evolving, symmetrical and often ascending limb weakness, loss of deep tendon reflexes, variable sensory signs and autonomic dysfunction.[3] Occurring worldwide, it affects people of all ages and both sexes. Studies on patients with GBS indicate that the disease is the result of aberrant immune responses against components of peripheral nerves. Auto-reactive T-lymphocytes and antibodies against myelin antigens (P0, P2), glycoproteins and glycolipids have been identified.[4] Other non-specific, pro-inflammatory mechanisms also contribute to nerve damage.[4]

The exact etiology of Guillain Barre Syndrome remains elusive and incompletely defined. It is generally considered to be a post-infectious disease, with almost two-third of patients reporting an infectious illness prior to the onset of symptoms.[5]

There is limited data on the characteristics of GBS in Pakistan and the inpatient mortality is not established. The purpose of this study was, therefore, to review the clinical course and outcome of patients with Guillain Barre Syndrome admitted to our hospital over a 9-year period from 1995 to 2003. Special emphasis was laid on the treatment given and the complications which developed during their hospital stay. The modified Rankin scale[6] was used to assess the functional status of patients on admission and at days 30 and 60 of presentation to our hospital.

Patients and Methods

The study was carried out at the Aga Khan University Hospital (AKUH), a 647-bed tertiary care referral centre in Karachi, Pakistan. The in-patient hospital Meditech (Magic) system over a 9-year period (from 1995 to 2003) identified 41 patients who were admitted to AKUH with the primary diagnosis of Guillain Barre Syndrome. Records of seven patients were not accessible at the time of

data collection; therefore, the final number of patients reviewed was 34. The final diagnosis of Guillain Barre Syndrome in these patients was made on the basis of clinical presentation, CSF findings, electromyography and nerve conduction studies.

A structured questionnaire was designed which documented age of the patient, antecedent history of infection, neurologic dysfunction and length of unit intensive care (ICU) and hospital stay. Patients' records were also used to note complications during hospital stay, management, and the treatment given. Rankin scale (0-6) was applied to assess the functional status of each patient at the time of admission, and again at 30 and 60 days of presentation. Clinical status on follow-up after day 60, where available, was recorded. All information was coded to retain patient confidentiality. Data collected was entered and analyzed using SPSS 11.5 (Windows). Fisher's Exact test was used to study the association between the treatment given and the response of the patient (at 30 and 60 days after the initial presentation). A P-value of less than 0.05 was considered statistically significant; the P-values were two-sided. Any change in the Rankin score (towards zero) was considered an improvement in the patient's condition.

Results

The study included 34 patients with GBS. The mean (SD) age was 32 (19.9) years (range 3 to 70 years), with ten (29.4%) patients less than 18 years of age. A total of 21 (61.8%) patients were male, with a male/female ratio of 1.6:1. Seasonal preponderance was found, with 11 (32.4%) patients developing the disease in spring (March to May), 11 (32.4%) in autumn (September to November) and nine (26.5%) in winter (December to February); seven (20.6%) patients presented in the month of October and five (14.7%) in the month of March. The average duration of hospital stay was 25.7 days (SD 25.2, range 8 to 141 days).

Twenty-two (64.7%) patients reported a history of infection within one month prior to onset of illness. Gastrointestinal infections were the most common (12/22, 54.6%), followed by upper respiratory tract (9/22, 40.9%) and skin infection (1/22, 4.5%). Sixteen (47.1%) of the 34 patients also had a concomitant history of fever.

All 34 patients had the initial symptoms of limb weakness and inability to walk (unaided ataxia). Another universal finding seen during the course of illness was reduced or absent deep tendon reflexes (DTR). Twenty-three (67.6%) patients had a Rankin score of 5 at admission, while nine (26.5%) had a score of 4, suggestive of severe disease.

Pain was the chief compliant in 26 (76.5%) of the 34 patients, the most common locations being the extremities (13/26, 50%) and the back (11/26, 42.3%). Other locations included the neck, chest, abdomen and shoulders, with three (11.5%) patients complaining of a generalized ache of the body. The frequency of other neurological signs and symptoms is shown in Table 1.

Table 1. Clinical features in 34 patients with GBS.

Clinical Features	Frequency	(%)
Sensory disturbance (numbness, dysthesias)	13/34	38.2
Cranial nerve involvement	30/34	88.2
Facial diaparesis	19/30	63.3
Dysphagia	15/30	50
Opthalmoplegia	7/30	23.3
Decreased gag reflex	6/30	20
Dysarthria	5/30	16.7
Ptosis	5/30	16.7
Deviated tongue	1/30	3.3
Difficulty shrugging shoulders	1/30	3.3
Slow reacting pupils	1/30	3.3
Respiratory failure requiring intubation	19/34	55.9
Autonomic dysfunction	21/34	61.8
Sinus tachycardia	10/21	47.6
Sinus bradycardia	3/21	14.3
Fluctuating B.P/ hypertension	16/21	76.2
Urinary dysfunction	6/21	28.6
Constipation	31/34	88.2

Table 2. Electromyographic (EMG) findings in patients with GBS.

Type of neuropathy	Frequency (%)
Demyelinating	14/34 (41.1)
Axonal	9/34 (26.4)
Undifferentiated	10/34 (29.4)
Unknown	1/34 (2.9)

The electromyographic and nerve conduction studies (33/34 patients) showed that demyelinating type of neuropathy was the predominant form of GBS in our patients (table 2). The mean cerebrospinal fluid glucose, protein and total leukocyte count were 76.8 g/dL, 93.3 mg/dL and 4 respectively.

The average duration of stay in the ICU was 18.6 days (SD=21.1, range 3 to 124). The most common ICU related complication seen was sepsis (n=14, 41.2%). Blood

cultures were positive in 14 (41.1%) patients. Staphylococcus aureus was the most common isolate (35.7%). Nineteen (55.9%) patients had to be intubated because of respiratory failure. Seventeen of the 19 intubated patients developed purulent respiratory secretions. Of these, eight had chest X-ray findings suggestive of pneumonia. The commonest isolate from tracheal secretions was Pseudomonas aeruginosa (41.2%) followed by Staphylococcus aureus (35.3%), Streptococcus pneumoniae (29.4%) and Hemophilus influenzae (23.5%). Eight of 34 patients (23.5%) developed bedsores during their hospital stay and one patient developed deep venous thrombosis (DVT) with subsequent pulmonary embolism.

The median Rankin score at the time of admission was 5, which decreased to 4 and 3.5 at 30 and 60 days of admission respectively (Figure). Majority of the patients exhibited a good recovery during the weeks following the hospital admission. In addition to supportive care, all 34 patients received specific treatment for GBS: 20 patients (58.8%) were managed with plasmapharesis, 12 (35.3%) received intravenous immunoglobulins (IVIG) and 2 patients were managed with sequential plasmapheresis and IVIG. A higher proportion of patients treated with plasmapheresis showed improvement at day 30 of presentation, compared to those who received intravenous immunoglobulins (P=0.418) with a similar trend at day 60 of presentation (P=1.000). Twenty three patients (74.2%) showed significant recovery at day 30. The rest of the patients continued to improve subsequently and only 2 patients (7.4%) remained with severe disability by day 60 of presentation. Only one patient died of cardiac arrest during admission to the hospital.

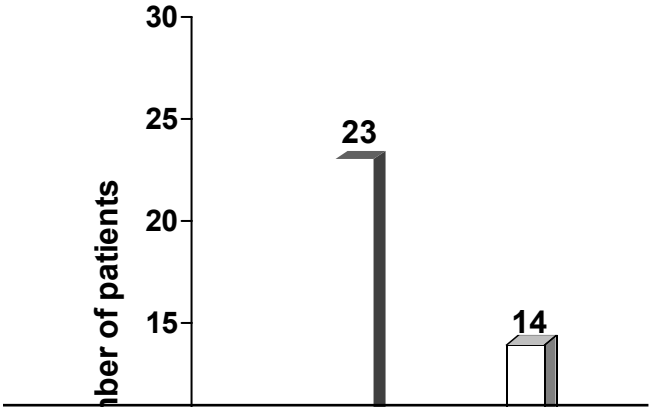

Figure. The Rankin score of patients at admission and at 30 and 60 days.

Discussion

Guillain Barre Syndrome (GBS) is a relatively common cause of neuromuscular weakness. Unfortunately, there is a paucity of published information on local incidence of the condition. Some of these are GBS in a case of aplastic anaemia following allogeneic hematopoietic stem cell transplantation[7], case series focusing on differential features of GBS (22 patients) and hypokalemic periodic paralysis[8] and electrodiagnostic features in 40 patients with GBS.[9] None of the previous studies describe the clinical features in addition to electrodiagnostic findings of GBS in Pakistani population. In the current study we collected data on GBS patients who were admitted to our hospital from 1995 to 2003.

In accordance with most Western and Asian studies, GBS was more common in the adult age group (>18 year, n=24, 70.6%). The male to female ratio of 1.6:1 in our patients was similar to that cited in other studies.[2,10-12]

Though seasonal trends were not seen in most series[13-15], a few report seasonal clustering in the autumn and winter months.[16,17] According to two studies conducted in Taiwan, one found seasonal preponderance in winter[11], while the other found it to be in spring.[12] In our study, we had a seasonal clustering in spring (March-May), autumn (September-November) and winter (December-February). Only three patients in our series presented in summer (June to August).

Most studies showed an antecedent history of infection in 50 to 71% of patients with GBS.[2,10-12,18] This is comparable to our findings. In most studies, non-specific upper respiratory tract infection was the most common preceding event[2,10-12,19] in contrast to our patients in whom history of preceding gastrointestinal infections was more frequent. The higher frequency of gastrointestinal infections in our series could probably be related to the higher prevalence of gut pathogens and poor hygienic standards in our part of the world as compared with the developed world.[20]

Occurrence of autonomic dysfunction in our patients was similar to that shown by various Chinese, Taiwanese and American studies.[2,10-12,19] Pain was an extremely common complaint in our patients (76.5%); this is much higher than that cited (13.8%) in another study.[12]

In our study, cranial nerve involvement was seen in 88.2% of patients, which is similar to that reported by Cheng[18] and Mckhann.[19]

Drowsiness and confusion during the early stage of the illness has been reported[21], along with ophthalmological signs of central origin such as mild ptosis, paralysis of upward gaze and horizontal dissociated nystagmus.[22,23] However, recent reviews suggest that patients with various eye movement disorders can be explained by cranial nerve involvement alone[13], and those patients who were drowsy initially, might have a disorder other than GBS.[24] None of our patients had confusion or signs and symptoms suggestive of encephalopathy.

The average duration of hospital stay in our patients was 25.7 days (range 8-141 days), which is comparable to that previously reported.[12] The number of patients requiring ventilatory assistance was higher in our study (55.9%) as compared to 21% to 43.1% reported in the literature.[3,5,10] Similarly, sepsis was much more common in our patients than that reported in other studies.[11,12,18] This may be related to the referral of the more seriously ill patients to our tertiary care facility. Ventilator-associated and intensive care-related complications also contributed to the high incidence of sepsis.

Almost all our patients had a Rankin score of 4 or 5 at initial admission and none of the patients presented with mild disease. This may be because of late presentation, late recognition or rapid progression of disease. The disease itself may be more severe and/or rapidly progressive in our population. Again, a referral bias may account for this finding.

Most of our patients had started recovering at the time of discharge, although this is not evident from the Rankin score at discharge. However, the patients were regaining their motor and neurological functions on clinical assessment. The mortality in our series is low (2.4%), which is comparable with that in another series.[12] Indefinite confinement to bed and/or prolonged ventilator dependence was seen in a few of our patients who eventually recovered.

Most of our patients had demyelinating neuropathy. However, fewer patients (42.4%) had demyelination as compared with 82.5% of cases due to demyelinating polyneuropathy reported in another Pakistani study.[9] All our patients who had prolonged recovery had either axonal or undifferentiated EMG changes.

Conclusion

In conclusion, GBS was seen in all age groups. Majority of the patients had an antecedent history of gastrointestinal infection. Rapid progression, severe disease necessitating ventilation, prolonged hospital stay and slow recovery were seen in most patients. There was no significant difference in disease outcome in patients treated with either plasmapheresis or intravenous immunoglobulins. Inpatient mortality was low and severe disease on presentation followed by protracted recovery was not associated with poor outcome.

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References

1. Fulgham JR, Wijdicks EF. Guillain-Barre syndrome. Crit Care Clin 1997;13:1-15.
2. Alam TA, Chaudhry V, Cornblath DR. Electrophysiological studies in the Guillain Barre Syndrome: distinguishing subtypes by published criteria. Muscle Nerve 1998;21:1275-9.
3. Hahn AF. Guillain Barre Syndrome. Lancet 1998;352:635-41.
4. Hartung HP, Pollard JD, Harvey GK, Toyka KV. Immunopathogenesis and treatment of the Guillain Barre Syndrome-part1. Muscle & Nerve 1995;18:137-53.
5. Jacobs BC, Rothbarth PH, Vandermeche FGA, Herbrink P, Schmitz PIM, Klerk MA, et al. The spectrum of antecedent infections in Guillain Barre Syndrome. Neurology 1998;51:1110-5.
6. Bonita R, Beaglehole R. Modification of Rankin Scale: Recovery of motor function after stroke. Stroke 1988;12:1497-500.
7. Khan B, Hashmi KU, Ahmed P, Raza S, Hussain I, Malik HS, et al. Posttranspalnt Guillain Barre Syndrome. J Coll Physicians Surg Pak 2005;15:117-8.
8. Shah FU, Salih M, Malik IA. Clinical evaluation of patients with acute flaccid motor weakness. Abstract. Pakistan J Med Res 2002;41:58-63.
9. Khan NZ, Nasrullah M. Electrodiagnostic Study of 40 Cases Presenting as Guillain-Barre Syndrome. Pakistan J Neurol 1998;4:50-4.
10. Mahalati K, Dawson RB, Collins JO, Lietman S, Pearlman S, Gulden D. Characteristics of 73 patients, 1984-1993, treated by plasma exchange for Guillain Barre Syndrome. J Clin Apheresis 1997;12:116-21.
11. Yuan CL, Tsou HK, Wang YJ, Tsai CP. Guillain-Barre syndrome: a retrospective, hospital-based study. Zhonghua Yi Xue Za Zhi (Taipei) 2002;65:540-7.
12. Lyu RK, Tang LM, Cheng SY, Hsu WC, Chen ST. Guillain-Barre syndrome in Taiwan: a clinical study of 167 patients. J Neurol Neurosurg Psychiatry 1997;63:494-500.
13. Ropper AH, Wijdicks EFM, Truax BT. Guillain-Barre syndrome. Philadelphia: FA Davis, 1991, pp. 113-21.
14. Sedano MJ, Calleja J, Canga E, Berciano J. Guillain Barre syndrome in Cantabria, Spain. An epidemiological and clinical study. Acta Neurol Scand 1994;89:287-92.
15. Massuci EF, Kurtzke JF. Diagnostic criteria for the Guillain Barre Syndrome. An analysis of 50 cases. J Neurol Sci 1971;13:483-501.
16. Larsen JP, Kvale G, Nyland H. Epidemiology of the Guillain Barre syndrome in the county of Hordaland, Western Norway. Acta Neurol Scand 1985; 71:43-7.
17. Boucquey D, Sindic CJM, Lamy M, Delmee M, Tomasi JP, Laterre EC. Clinical and serological studies in a series of 45 patients with Guillain Barre syndrome. J Neurol Sci 1991;104:56-63.
18. Cheng Q, Jiang GX, Press R, Andersson M, Ekstedt B, Vrethem M, et al. Clinical epidemiology of Guillain-Barre syndrome in adults in Sweden 1996-97: a prospective study. Eur J Neurol 2000;7:685-92.
19. Mckhann GM, Cornblath DR, Ho T, Li CY, Bai AY, Wu HS, et al. Clinical and electrophysiological aspects of acute paralytic disease of children and young adults in northern China. The Lancet 1991;338:593-97.
20. Du-Pont HL. Diarrheal diseases in the developing world. Infect Dis Clin North Am 1995;9:313-24.
21. Al-Din AN, Anderson M, Bickerstaff E, Harvey I. Brainstem encephalitis and the syndrome of Miller Fisher. A clinical study. Brain 1982;105:481-95.
22. Barontini F, Sita D. The nosological position of Fishers syndrome (ophthalmoplegia, ataxia, and areflexia). J Neurol Sci 1983;229:33-44.
23. Al-Din ASN, Anderson M, Eeg-Olofsson, Trontelj JV. Neuro-ophthalmic manifestations of the syndrome of opthalmoplegia, ataxia and areflexia. Acta Neurol Scand 1994;89:87-94.
24. Shuaib A, Becker WJ. Variants of Guillain Barre syndrome, Miller Fisher syndrome, facial diplegia and multiple cranial nerve palsies. Can J Neurol Sci 1987;14:611-6.