REHABILITATION OF THE GUILLAIN-BARRE SYNDROME AT THE DEPARTMENT OF REHABILITATION MEDICINE, TAN TOCK SENG HOSPITAL, SINGAPORE

P Doraisamy

SYNOPSIS

27 patients admitted to the Department of Rehabilitation Medicine, Tan Tock Seng Hospital, over a period of 8 years were studied. The management of these patients was discussed, and the results of rehabilitation analysed. Incidence was higher in males. There seemed to be a higher incidence among the Malays when compared to population figures. There was weakness of the legs in all 27 patients. 19 had involvement of the upper limbs. Independence in mobility was achieved in all 27 patients. 25 were independent in self-care activities. 78% returned to their previous employment and 15% were trained for more suitable jobs.

INTRODUCTION

The Guillain-Barre Syndrome is an acute diffuse post-infective disease of the nervous system, involving the spinal roots, and peripheral nerves and occasionally the cranial nerves. There is a symmetrical flaccid paralysis of all four limbs which may begin in the lower limbs and spread to the upper. Proximal muscles are involved as much as the distal. Muscles of the neck and trunk can be affected, and there may be facial paralysis, dysphagia due to pharyngeal paralysis and external ophthalmoplegia (1).

Rehabilitation signifies the whole process of restoring a disabled person to a condition in which he is able as early as possible to resume a normal life (2).

The rehabilitation of a patient with Guillain-Barre Syndrome is comprehensive, involving not only clinical management and the use of drugs, but also the management of the functional, social and psychological aspects of disability including the use of physical treatment, aids and appliances. Thus, there is a co-ordinated approach by the whole rehabilitation team, working together towards the total independence of the patient.

This paper outlines the management of the patient with Guillain-Barre Syndrome at the Department of Rehabilitation Medicine, and analyses the results of the rehabilitation of 27 patients with Guillain-Barre Syndrome over an eight year period.

Department of Rehabilitation Medicine
Tan Tock Seng Hospital,
Moulmein Road,
Singapore.

P Doraisamy, MBBS, D Med Rehab(UK)
Registrar

MATERIALS AND METHOD

There were 27 cases of Guillain Barre Syndrome admitted to the Department of Rehabilitation Medicine, Tan Tock Seng Hospital between January 1974 and December 1981. Patients were referred from the Departments of Medicine and Neurology, of the General Hospitals in Singapore. Diagnosis was made by the referring unit and medical treatment started. All patients were assessed to be medically fit for active physical therapy, by the Rehabilitation Physician, before transfer to this Department.

Details for the study were obtained by retrospective analysis, of summaries of case notes and of records of the Physiotherapy and Occupational Therapy Departments. Outpatient follow up records were also studied, including reports of the medical social worker.

RESULTS

1. There were 17 males and 10 females in the study. Table 1 shows the distribution among the ethnic groups, and the incidence in males and females.
2. All age groups were affected almost equally, as seen in Fig.1 . No patient below the age of 10 was admitted to this department and only 1 was referred by a Paediatric unit.
3. Table 2 shows the relation between duration of paralysis prior to admission to this department and the duration of stay here. 8 out of the 9 patients admitted within 4 weeks of onset, achieved independence within 4 weeks. 4 out of the 6 who came in after 10 weeks required more than 10 weeks of rehabilitation.
4. Distribution of muscle weakness can be seen in Table 3. In the limbs almost all patients had both distal and proximal muscle involvement. 8 patients with lower limb weakness recovered to Grade 5 power (MRCS). All 27 were independent in mobility and 1 needed a wheelchair.
5. Table 4 shows the mobility status of patients on discharge, and the use of walking aids. 5 patients needed bilateral short leg braces.
6. 10 out of 19 patients with upper limb weakness regained normal power. 81.5% were fully independent in self-care activities without any aids. 3 were independent with aids and 2 needed minimal assistance in self-care. Toilet commodes were used by 5 patients and 1 required a right quad utensil holder. 1 patient needed assistance in transfers.
7. Resettlement at work and at home is shown in Table 5. 4 patients were trained for more suitable jobs. They were:
   1. A mechanic and fitter who was trained to assemble screws and bolts.
   2. A caddy who was trained for electronic assembly.
   3. A National Serviceman who returned as a security guard.
   4. A National Serviceman with training as a mechanical engineer, who retrained as a draftsman.

TABLE 1

SEX AND ETHNIC GROUP DISTRIBUTION

Ethnic Group	Male	Female	Total	Percentage	Percentage Population Distribution (Census 1980)
Chinese	8	7	15	55.6	76.9
Malays	5	3	8	29.6	14.6
Indians	4	0	4	14.8	6.4
Eurasian/ Others	0	0	0	0	2.1
Total	**17**	**10**	**27**	**100**	**100**

FIGURE 1 AGE DISTRIBUTION

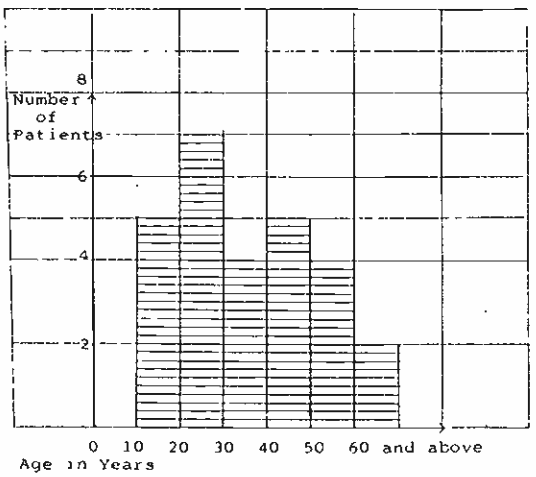

TABLE 2

RELATION BETWEEN DURATION OF PARALYSIS BEFORE ADMISSION AND DURATION OF STAY AT THE DEPARTMENT OF REHABILITATION MEDICINE

Duration of paralysis Before Admission	Number of Patients	Duration of stay at the Department of Rehabilitation Medicine
0-4 weeks	9	8 less than 4 weeks 1 more than 10 weeks (Schizophrenic)
4-6 weeks	6	5 less than 6 weeks 1 more than 10 weeks (Schizophrenic)
6-8 weeks	4	3 less than 4 weeks 1 more than 6 weeks
8-10 weeks	2	2 more than 4 weeks
Over 10 weeks	6	4 more than 10 weeks 2 less than 4 weeks

TABLE 3

DISTRIBUTION OF MUSCLE INVOLVEMENT

Muscles	Number of Patients	Number with Recovery to Normal Power/Function
Lower Limbs	27	8
Upper Limbs	19	10
Respiratory	2	2
Urinary Retention	6	4
Bulbar	3	3
Facial	2	
Extraoccular	1	

TABLE 4

MOBILITY STATUS ON DISCHARGE

Mobility Status		Number of Patients
Independent Ambulation	No Aids	11
Independent Ambulation	1 Walking stick	6
Independent Ambulation	2 Walking sticks	3
Independent Ambulation	1 Quadruped stick	2
Independent Ambulation	2 Quadruped sticks	3
Independent Ambulation	Reciprocal Frame	1
Independent Mobility in	Wheelchair	1
Total		**27**

TABLE 5

DISCHARGE AND RESETTLEMENT

Discharge	Employment	Number of Patients
Own homes	Original job	20
Own home	Original job (Hawker) assisted by wife	1
Own homes	Change of employment	4
Own home	Gave up work	1
Back to referring unit (no family)	Jobless (Schizophrenic)	1
Total		**27**

DISCUSSION

The Guillain-Barre Syndrome seems to occur more in males than in females. There was a high incidence among the Malays, when compared to population figures. Tong (3) reports similar findings, but shows an absence among Indians. In this study however, there were 4 Indian males.

Lower limb involvement was present in all 27 patients. All but one had both proximal and distal muscle involvement. 19 out of 27 had upper limb weakness, and in 17 weakness was both proximal and distal. Findings were consistent with other studies. The hands were frequently involved with clinical paralysis (4). Berman and Tom (5) in their series of 11 children reported 4 children with paralytic hand deficits, with poor intrinsic muscle function or weak thumb opposition. One patient required bilateral thumb opponensplasties. Gordon et al (6) reports 1 patient who required a opponensplasty and another who had a transfer of the brachioradialis to the wrist extensors.

4 out of the 6 patients who had bladder involvement regained spontaneous micturition. One had to void by compression and the other complained of incontinence. Although most authors attribute the voiding dysfunction in the Guillain-Barre Syndrome to disturbances of the vesical sphincter, urodynamic studies have shown (7) that a motor paralytic bladder may be present, and that it is primarily a vesical dysfunction. It is suggested that when recovery is slow, intermittent catheterisation should be used.

Most reviews of the Guillain-Barre Syndrome discuss diagnosis and management in the early stages of the disease. Few (8) (9) discuss the role of the physiatrist and the physical therapist. Wynn Parry (10) summarises the aims of treatment in the later stage as follows:

1. To maintain full range of movement in all joints.
2. To educate and improve general locomotor mobility.
3. Strengthen recovering muscles.
4. Functional splinting; drop foot appliances.
5. To restore hand function.
6. Restore balance and coordination.

The management of the patient with the Guillain-Barre Syndrome, at the Department of Rehabilitation Medicine, Tan Tock Seng Hospital, is discussed below.

Medical and Nursing Care

1. Care is taken to prevent and treat respiratory infections. A clear chest is maintained.
2. Pillows are positioned to prevent contractures and to support limbs.
3. Pressure sores are prevented by regular 2 hourly turning of the patient.
4. When urinary retention is present, infection is controlled and the patient bladder trained as soon as possible.

Physiotherapy

1. Regular breathing exercises.
2. Passive movements of paralysed limbs, to maintain a full range of movement.
3. Positioning of pillows and splinting e.g. at the ankles to prevent shortening of the tendo-achilles.
4. Muscle charting from grades 0 — 5 on the MRC Scale.
   Passive and active movements of all joints are also recorded on admission, at monthly intervals and at discharge.
5. Matwork, rolling from side to side, bridging, prone kneeling etc.
6. Muscle strengthening and balancing exercises.
7. Hydrotherapy.
8. Gait training and gait re-education.
9. Assessment, prescription and use of ambulation aids if necessary.

Occupational Therapy

1. Positioning and splinting of arms, wrists and fingers to prevent contractures and joint stiffness.
2. Passive movements to all joints of the arm, and fingers, and stretching of the thumb web. Maintaining range of movement in all joints, and prevention of contractures and muscle wasting.
3. Exercises to improve precision and power grip.
4. Restoration of hand function and strengthening of recovering muscles.
5. Functional assessment and training in self-care and activities of daily living.
6. Assessment and prescription of aids, appliances and wheelchairs when necessary.
7. Pre-vocational Assessment and Training.

Speech Therapy

In patients with facial and bulbar paralysis, orofacial stimulation is carried out, and difficulties in speech, feeding and swallowing are dealt with.

Medical Social Work

1. Domestic and welfare assessment.
2. Psychological support to the patient and the family.
3. Financial assistance when necessary.
4. To liaise with the Occupational Therapist and the Disabled Resettlement Officer regarding future employment.
5. Sexual Counselling together with the doctor.
6. Placement in Institutions or the Chronic Sick Unit when necessary.

Total independence in mobility was achieved by all 27 patients. Only one needed a wheelchair. 22 patients were fully independent without aids. 78% returned to their old jobs, and 15% were trained for other suitable jobs. Only 1 patient gave up working, and he was a rubber tapper who had schizophrenia.

The period of rehabilitation was shorter in those who came to the department early, before the onset of contractures, joint stiffness and pressure sores. Admission for rehabilitation however was delayed most often by respiratory complications.

Although full recovery occurs in many patients, those with residual paralysis can regain a normal way of life. Rehabilitation aims at minimising handicap, and returning to society a patient who is independent physically, socially and economically.

ACKNOWLEDGEMENT

I would like to thank Dr Nei I-Ping and Dr Robert G Don for their valuable advice. I would also like to thank the Director, Tan Tock Seng Hospital for permission to publish this paper.

I am grateful to the Ancillary Heads, and the Medical Social Worker, of the Department of Rehabilitation Medicine, Tan Tock Seng Hospital for their help, advice and access to their records.

REFERENCES

1. Brain and Walton: Diseases of the Nervous System. Seventh Edition. Oxford University Press. 1971. Page 814-5.
2. Report of the Committee of Enquiry on the Rehabilitation, Training and Resettlement of Disabled Persons 1956. Para 5. Chaired by the Rt. Hon. Lord Piercy. Cmd. 987. London HMSO.
3 Tong HI, Devathasan G, Wong PK: Guillain-Barre Syndrome in Singapore. Annals Academy of Medicine 1979; 8: 27-32.
4. Wynn Parry CB: Rehabilitation of the Hand. Third Edition. Butterworths. 1978. Page 178.
5. Berman AT, Tom L. The Guillain-Barre Syndrome in Children. Orthopaedic Management and Patterns of Recovery. Clin Orthop 1976; 116: 61-5.
6. Gordon SL, Morris WT, Stoner MA, Greer RB: Residua of Guillain-Barre Polyneuritis in Children. J Bone Joint Surg 1977; 59 193-7
7. Kogan BA, Solomon MH, Diokno AC: Urinary Retention Secondary to Landry-Guillain-Barre Syndrome. J of Urology 1981; 126: 643-4.
8 Conomy JP, Braatz J H: Guillain-Barre Syndrome: The Physical Therapist and Patient Care. Physical Therapy 1971: 51: 517-23.
9 Gashy F et al: Guillain-Barre Syndrome: Review of the Literature, Case Presentation and Physiatric Management. South Med J 1975; 68: 1524-8.
10. Wynn Parry CB: Disorders of Peripheral Nerves. In Nichols PJR: Rehabilitation Medicine. Second Edition. Butterworths Page 151-2.