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Case Series

Impact of IVIG in the Management of Guillain-Barre Syndrome: A Case Series from South India

S Daniel Sundar Singh^{1*} , Harshidha D² , Divya T² , Ektha Promoth Kumar² , Dinesh Kumar G² , Dinesh T²

¹ Assistant Professor, Department of Pharmacy Practice, C L Baid Metha College of Pharmacy, Chennai, Tamil Nadu

² Pharm. D Intern, Department of Pharmacy Practice, C L Baid Metha College of Pharmacy, Chennai, Tamil Nadu

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*Address for Correspondence:

Dr. S Daniel Sundar Singh, Assistant Professor,
Department of Pharmacy Practice, C L Baid Metha
College of Pharmacy, Chennai, Tamil Nadu

Abstract

In Guillain-Barré syndrome, the body's immune system attacks part of the peripheral nervous system. We present a case series of four cases with different variants. Three cases have been diagnosed with nerve conduction studies, one case with positive lumbar puncture test with albumino-cytological dissociation. Each patient was treated with Intravenous Immunoglobulin (IVIG) and improved clinically. This series is being delivered in order to clinically inform individuals on the early diagnosis of GBS and its management.

Keywords: GBS, IVIG, Lower limb, Lumbar puncture test, Nerve conduction studies, Radiating pain.

INTRODUCTION:

In Guillain-Barré syndrome, the body's immune system attacks part of the peripheral nervous system. In addition to the nerves that convey pain, temperature, and touch sensations, the condition can also impair the nerves that regulate muscle movement. This can result in muscle weakness and loss of sensation in the legs and/or arms¹. Weakness and tingling sensation are early signs of GBS. These symptoms typically appear first in both legs in GBS patients. Some patients have numbness and weakness in their arms and upper body as well. Some persons may experience paralysis of the legs, arms, or facial muscles as a result of these symptoms. Breathing becomes difficult in 20%–30% of persons due to a problem with the chest muscles. An infection frequently causes Guillain-Barre syndrome. It can be a viral or bacterial infection. Additionally, surgery or the administration of a vaccination may cause Guillain-Barre syndrome^{1, 2}. There are approximately one or two who are affected by GBS in every 100,000 population³. It is more common in males than in females⁴. Here we describe series of GBS cases with different variants.

CASE PRESENTATION

Case 1:

A 29-year-old female patient with gestation of 5 months presented with complaints of fever for 10 days followed by that she had a history of lower back pain and bilateral thigh pain for about 8 days, bilateral lower limb numbness for 5 days, and pain radiating to the hip. She was a known case of gestational diabetes. On examination, the patient was conscious, oriented, and afebrile. Her extraocular movements and reflexes were normal. She had bilateral ataxia and bilateral lower limb weakness. Her HR (120/min) was found to be elevated and all other vitals were normal. Basic blood laboratory tests were done and showed no significant abnormalities. MRI LS SPINE showed no obvious anomalies. The clinical and electrophysiological examination revealed lower limb proximal weakness due to a neuropathic process. Therefore, she was diagnosed as GBS (AMSAN VARIANT). Hence, she was started on Intravenous Immunoglobulin (IVIG) after explaining the benefits and risk factors.

Case 2:

A 57 years old female patient came to the hospital with complaints of neck pain radiating to bilateral lower limbs for 10 days, which gradually progressed to bilateral lower limbs and not being able to walk for 4 days. On examination, the patient was conscious and oriented. Extraocular movement showed mild weakness of the orbicularis oculi bilaterally. Her neck flexor shows extensor weakness. The patient's reflexes were 1+ in the lower limbs and proximal and distal muscle powers were normal in the upper limbs. Vibration sense was lost up to the anterior superior iliac spine (ASIS) bilaterally. The basic laboratory test showed raised CPK values, and all other values were found to be normal. An MRI brain screening showed no definite abnormalities. Nerve conduction studies (NCS) revealed sensory motor axonal polyradiculopathy involving both upper and lower extremities, proving to be GBS. As a result, IVIG treatment was explained to the patient and her attendants and began as per protocol. She began to improve over the duration of treatment.

Case 3:

A 53 year old male with a tingling sensation in the tips of both upper limb fingers and both lower limb toes for one month presented to the hospital. He had a history of difficulty in walking with coordination since one month, occasional back pain, sleeping disturbances, and difficulty in standing up from a sitting position. No history of unilateral weakness. On examination, this particular individual was conscious, oriented, awake, moving all four limbs and obeying commands. A Romberg's test was performed, and the patient was swaying, which shows loss of balance and coordination. His vitals and basic laboratory tests were normal. Cerebrospinal fluid analysis revealed an elevated protein level (126 mg/dl). From the above mentioned history and complaints, the patient was diagnosed with GBS. Hence, IVIG was started as per protocol.

Case 4:

A 79 year old male presented with complaints of right lower limb weakness for 10 days, followed by left lower limb weakness for the past 3 days, then worsening of weakness, difficulty standing up and walking. The patient has coronary artery disease, hypertension, and diabetes mellitus as comorbidities. On examination, the patient was conscious, oriented, and awake; his vitals and extraocular movements were normal. Bilateral knee reflex bris was present. CSF findings showed no abnormal anomalies. Nerve conduction studies (NCS) showed mixed predominant axonal neuropathy with reduced conduction velocity showed evolving GBS, within few days his leg muscle power was worsened. Clinical possibilities of GBS with exaggerated reflexes 2* to cervical spondylosis were considered in view of pure motor leg weakness, hence IVIG was started.

DISCUSSION:

The immune-mediated disease Guillain-Barré syndrome (GBS), which affects the peripheral nerves and nerve roots, is uncommon but potentially lethal and is typically brought on by infections. Even though the clinical presentation of the disease is varied and there are several distinct clinical variations, patients with GBS often exhibit sensory symptoms and weakness in the legs that extend to the arms and cranial muscles⁵. Early diagnosis of GBS can be challenging since it might exhibit ambiguous symptoms including weakness, back or neck discomfort, and paraesthesia⁶. These cases were presented with similar symptoms such as bilateral lower limb weakness, tingling sensation, radiating pain to lower limbs. In cases 3 and 4, patients showed loss of coordination and balance.

The common variants of GBS are: Acute inflammatory demyelinating polyradiculoneuropathy (AIDP), which is a motor sensory demyelinating disorder; and Acute motor axonal neuropathy (AMAN), and Acute motor and sensory axonal neuropathy (AMSAN), both of which are axonal disorders⁷. Case 1 in the current case series was diagnosed with performing NCS with GBS with an AMSAN variant, Case 2 with sensory motor axonal polyradiculopathy, and Case 4 with axonal neuropathy. The "cytoalbuminologic dissociation," which is characterised by high protein levels and a normal white blood cell count, is a common observation in the cerebrospinal fluid (CSF) of GBS patients⁸. Case 3 shows elevated protein in the CSF, which is a hallmark diagnostic feature for GBS.

There are two therapy approaches now considered the standard of care in Guillain-Barre syndrome randomised controlled trials. These include IVIG or plasma exchange. The usual dose was 2 grams/kg in 5 divided doses. The precise mechanism of action of IVIG is yet unknown. However, it is considered to work through immune-modulating activity. The pathogenic antibodies, humoral mediators, and complement proteins implicated in the development of GBS are considered to be removed by plasma exchange. A volume of exchange across five sessions is often specified for plasma exchange. Similar to IVIG, the precise mechanism by which it treats GBS has not been established. It has been demonstrated that IVIG and plasma exchange are equally effective. The result is evident whether either therapy is taken within 4 weeks, but the stronger effect can exist if the medication is given within 2 weeks⁹. In our series, the treatment given was IVIG, which was different from the case series in which plasmapheresis was used as the treatment option reported by Axel Rodriguez rosa et al¹⁰. To prevent side effects, injections of chlorpheniramine 10 mg and tablets of acetaminophen 650 mg were given as premeditations. The treatment regimen was varied depending upon the severity of the condition, as per Table 1. Physiotherapy was followed throughout the treatment to improve limb weakness.

Table 1 IVIG Dose Regimen

Case Number	Dose	Duration
Case 1	170 grams	Over 5 days
Case 2	120 grams	Over 5 days
Case 3	130 grams	Over 5 days
Case 4	120 grams	Over 5 days

CONCLUSION:

Guillain-Barre syndrome is a neurological condition that typically causes symmetrical muscular paralysis. It is necessary to recognise and immediately refer any possible severe cases so that the proper examinations (such as spinal taps and electro-diagnostic testing) may be carried out and proper care can be given. In this case series the patients became neurologically stable and able to coordinate after giving proper treatment. Early diagnosis is beneficial and effective for the patient and provides a successful outcome of the treatment.

PATIENT'S CONSENT

Written informed consent was obtained from the patients for the publication of this case series.

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AUTHORS CONTRIBUTION

All authors equally contributed.

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CONFLICT OF INTEREST

The authors have no conflicts of interest.

ETHICAL APPROVAL

Not applicable.

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