### ABSTRACT

**Background:** Guillain-Barré syndrome (GBS) is a peripheral nervous system inflammatory disease that is the most prevalent cause of acute flaccid paralysis, with an annual global incidence of 1-2 per 100,000 person-years. GBS typically appears with acute ascending flaccid paralysis and sensory abnormalities in anesthetic glove stockings; paralysis may extend to cranial muscles. Although the disease's clinical presentation is diverse and there are multiple discrete clinical forms, myelopathy as a sign of GBS is a relatively unusual condition.

**Case presentation:** GBS is diagnosed in a 29-year-old woman with myelopathy symptoms such as tetraparesis, hypoesthesia below the level of second thoracic myelum, aberrant proprioceptive in lower extremities, retention of urine and anhidrosis. We perform a lumbar puncture, and a cerebrospinal fluid (CSF) examination reveals albumin–cytological dissociation. Cervico-thoracic magnetic resonance imaging (MRI) revealed no abnormalities. Demyelinating polyradiculopathy was discovered using electromyography (EMG) and nerve conduction studies (NCS).

**Discussion:** The classical presentation of GBS is progressive (ascending) limb weakness with decreased or absent physiological reflexes. Pharyngeal–cervical–brachial variation and face diplegia with paraesthesia are rare variations of GBS. Our patient presented with ascending limb weakness accompanied by a disturbance in the central nervous system but had similar serological biomarker, which may be another rare variant of GBS.

**Conclusion:** Diagnosis of GBS is quite challenging. GBS has a wide range of clinical symptoms. EMG-NCV and lumbar puncture are still required in myelopathic individuals with normal MRI, and unusual GBS symptoms should be explored. As a result, the choice of therapy and management becomes more appropriate.

**Keywords:** Guillain Barre Syndrome, GBS, Mielopathy symptoms.

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### CASE PRESENTATION

We present a 29-year-old woman who had complained of gradual ascending flaccid weakness in both legs for ten days before admission. She also had tingling sensations in both hands and feet. She had a respiratory tract infection with fever and cough a week before. She had urinary retention and other symptoms for five days before being hospitalized. Diabetes, hypertension, stroke, spine trauma, and other medical conditions were denied. Physical examination revealed tetraparesis with extremity strength of Four on both upper extremities and One on both lower extremities, hypoesthesia below the level of the second thoracic myelum, and aberrant proprioceptive in the lower extremity. We observed both lower extremities had diminished physiological reflexes but no pathological reflexes. We discovered urine and alvi retention in the autonomic system, and we assume that with a urinal catheter. She felt dry in her body from chest to foot.
We performed an ECG, and the results were normal. A lumbar puncture was performed, and CSF examination revealed albumin-cytological dissociation (normal leucocyte and increasing protein) (Table 1).

A perspiration test was also performed to assess sweat function and discovered anhidrosis at the level of the bilateral 10th thoracal myelum segment. Meanwhile, the cervical-thoracic MRI was normal (Figure 1). According to EMG and NCS, she had prolonged F wave latency in the right tibial nerve, no response F wave in the left tibial nerve, and no response H reflexes in both left and right tibial nerves (Figure 2); this indicated demyelinating polyradiculoneuropathy.

We used neuroprotectants such as fursultiamine and mecobalamin to treat the patient. After two weeks, she had improved the weakness and tingling sensation; after four weeks, she had improved her autonomic system.

**DISCUSSION**

GBS is clinically diverse: the classical presentation of Guillain-Barré syndrome is progressive (ascending) limb weakness with decreased or absent reflexes. Patients may present with regional weakness, such as a pharyngeal–cervical–brachial variation and face diplegia with paresthesia. Patients may appear with clinical symptoms that differ significantly from classic Guillain-Barré syndrome but share similar serological biomarkers. National Institute of Neurological Disorders and Stroke (NINDS) and Brighton criteria are still extensively employed; a diagnosis of Guillain-Barré syndrome requires the presence of symmetrical flaccid weakness and reduced reflexes in the absence of other causes. GBS is diagnosed by clinical assessment, cerebrospinal fluid examination, and electrophysiological investigations such as electromyography (EMG).

The presence of autonomic symptoms such as segmental anhidrosis, retention of urine and alvi, as well as proprioceptive disorders usually indicate a disturbance in the central nervous system, which involves the spinal cord. Transverse myelitis is the most common cause of these problems. In this case, autonomic

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**Table 1. Cerebrospinal analysis of the patient**

<table>
<thead>
<tr>
<th>Component</th>
<th>Value</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>Clear</td>
<td>Clear</td>
</tr>
<tr>
<td>Clot</td>
<td>Negative</td>
<td>Negative</td>
</tr>
<tr>
<td>Ph</td>
<td>8</td>
<td>7-8</td>
</tr>
<tr>
<td>WBC</td>
<td>0.005</td>
<td>0.000-0.005</td>
</tr>
<tr>
<td>RBC</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>MN</td>
<td>0.000</td>
<td>0.007</td>
</tr>
<tr>
<td>PMN</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>Nonne</td>
<td>Negative</td>
<td>Negative</td>
</tr>
<tr>
<td>Pandy</td>
<td>Negative</td>
<td>Negative</td>
</tr>
<tr>
<td>Glucose</td>
<td>64 (Peripheral 128)</td>
<td>65-200</td>
</tr>
<tr>
<td>Total Protein</td>
<td>177</td>
<td>&lt; 50</td>
</tr>
</tbody>
</table>

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**Figure 1.** Cervico-thoracic sagittal T2-weighted sequence MRI showed normal

**Figure 2.** EMG-NCV showed prolonged F-wave latency on the right tibial nerve, no response F-wave on the left tibial nerve and no response H-wave on both tibial nerve
symptoms were found, which could be one of the atypical symptoms of GBS that resembles symptoms of central nervous system disturbances. Although the pathophysiology of urine dysfunction in GBS is unknown, it has been demonstrated that urinary dysfunction is linked to upper motor neuron activation in GBS. As a result, urine dysfunction was observed in this case, possibly due to inhibitory interneurons in the spinal cord or higher motor neuron involvement.

In individuals with suspected GBS, a lumbar puncture is frequently performed. This procedure should be performed to rule out alternative diagnoses rather than to confirm GBS. GBS is distinguished by high protein levels and normal cell counts in the CSF (termed albumin-cytological dissociation). Albumin-cytological dissociation is a common finding in the GBS CSF study, occurring in 50% of cases in the first week and increasing to 75% in the third week. In this case, we discovered albumin-cytological dissociation, with normal CSF cell count (5/ml) and elevated albumin (177 mg/dL) in CSF analysis at the second week's onset.

Nerve conduction studies (NCS) can aid in the clinical diagnosis of GBS by distinguishing between axonal and demyelinating subtypes. The presence of peripheral neuropathy or polyradiculoneuropathy on NCS can also help confirm GBS. Nerve conduction anomalies typically peak more than two weeks following the beginning of weakness. In our situation, the EMG and NCS results were prolonged F wave latency in the right tibial nerve and no response F wave in the left tibial nerve, H reflexes with no response in both the left and right tibial nerves; this supports the feature of demyelinating polyradiculoneuropathy.

MRI is not routinely used to diagnose GBS; however, it can be useful in excluding alternative diagnoses. A nonspecific but sensitive characteristic of GBS is the presence of nerve root elevation on gadolinium-enhanced MRI. It can help to confirm a GBS diagnosis, especially in young children when clinical and electrophysiological evaluation can be difficult. We performed an MRI on this patient to rule out other possibilities, and the cervico-thoracal MRI revealed no abnormalities.

Furthermore, GBS is a self-limiting condition historically associated with spontaneous recovery after reaching a plateau. Cranial nerve involvement was reported in 50% of total patients, autonomic dysfunction in 25%, and ventilator assistance was required in 19% of patients. At their lowest point, 76% of patients could not walk freely. In this case, we treated the patient with neuroprotectants such as fursultiamine and mecobalamin. She had improved her weakness and tingling sensation after two weeks, and her autonomic system had improved after four weeks.

The Modified Erasmus GBS Outcome Score (mEGOS), which uses assessment variables such as age, diarrhea attacks, and degree of weakness, is one of the scoring systems that can assess the prognosis of GBS. If the score is 1-3, the prognosis is good, and it is possible to run in 6 months; if the number is > 7, the prognosis for recovery is bad. In this situation, we received an mEGOS score of 6 on the first day of therapy, with a predicted chance of being unable to walk alone after six months of 10%, and an mEGOS value of 6 on the seventh day of treatment, with a forecasted likelihood of being unable to walk unaided after six months of 1%. We treated this patient for 17 days. When he was discharged from the hospital, he could stand but was still assisted when walking. After two months of control to the outpatient clinic, the patient could walk without assistance.

CONCLUSION

Diagnosis of GBS patients is quite difficult. GBS has a wide range of clinical symptoms. A myelopathic patient whose clinical course is like that of GBS onset, with other causes of myelopathy ruled out and a normal MRI, EMG-NCV, and lumbar puncture should be considered an unusual characteristic of GBS. As a result, the selection of therapy and management becomes more appropriate.

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ETHICAL APPROVAL

Exempting ethical approval

SOURCE OF FUNDING

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DECLARATION OF COMPETING INTEREST

None

CONSENT

Written informed consent was obtained from the patient to publish this case report and accompanying images. On request, a copy of the written consent is available for review by the Editor-in-Chief of this journal.

AUTHOR CONTRIBUTION

All authors contributed equally to this work, including writing and critical revision.

Registration of Research Studies

None

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