

## Guillain-Barré syndrome

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**Section:** Neuroradiology

**Imaging Technique:** MR

Case Type: Clinical Cases

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**Patient:** 6 years, male

### Clinical History:

Acute lower extremity weakness and urination difficulty.

### Imaging Findings:

The patient presented with lower extremity weakness of 7 days' duration and urination difficulty for one day. Electrodiagnostic studies revealed prolonged distal latencies and slowed motor conduction velocities, confirming an acute demyelinating polyradiculoneuropathy. An MRI examination was performed including T1-weighted images obtained after intravenous administration of paramagnetic contrast medium.

### Discussion:

Guillain-Barré syndrome (GBS) is an acute demyelinating neuropathy characterised by sudden, symmetric progressive weakness, hyporeflexia or areflexia, and little or no sensory changes. Although the precise cause of GBS is unclear, most evidence points to an immune-mediated phenomenon. The diagnosis of GBS mainly depends on the typical clinical picture combined with supportive laboratory data and electrophysiological criteria.

On MRI examination with T1-weighted images with contrast medium it is known that intrathecal nerve roots normally do not enhance, because of the blood-nerve root barrier. As the nerve root travels peripherally, however, progressive loss of the blood-nerve root barrier occurs and by the level of the dorsal root ganglia, enhancement is a normal finding. Abnormal enhancement of the cauda equina has been reported in AIDS-related polyradiculopathy, sarcoidosis, lymphoma, metastatic conditions, and GBS. The abnormal enhancement and thickening of intrathecal nerve roots in GBS is suggestive of the breakdown of the blood-nerve barrier and is correlated with perivascular disease as there is lymphocytic and macrophagic infiltration around endoneural vessels that is associated with demyelination of the affected nerves. The thickness and the degree of enhancement tends to get smaller with clinical resolution of the symptoms after immunoglobulin therapy. It should be noted that T1-weighted images without contrast medium, and T2-weighted images are usually negative in GBS.

**Differential Diagnosis List:** Guillain-Barré syndrome

**Final Diagnosis:** Guillain-Barré syndrome

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**Figure 1**

**a**



**Description:** Sagittal T1-weighted image reveals nerve root enhancement in the conus medullaris and cauda equina regions. **Origin:**

**b**



**Description:** Transverse T1-weighted image reveals enhancement and thickening of the nerve roots.

**Origin:**

**c**



**Description:** Transverse T1-weighted image at a lower level again reveals enhancement and thickening of the nerve roots. **Origin:**