

# An Unusual Presentation of Guillain-Barre Syndrome: Bilateral Ptosis with anti-GQ1b Antibody Positivity

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## Abstract

Guillain-Barre syndrome (GBS) is an acute-onset and immune-mediated disorder of the peripheral nervous system characterized by rapidly developing motor weakness. GBS patients often develop cranial nerve involvement, usually in the form of facial or pharyngeal weakness. Ocular involvement, and in particular, isolated ptosis without ophthalmoplegia are rare manifestations and may bring about considerable diagnostic challenges. Herein, we report a young man presenting with bilateral ptosis along with mild generalized weakness as initial manifestations of GBS.

Keywords: Anti-GQ1b positivity; guillain-Barre syndrome; ptosis.

Guillain-Barre syndrome (GBS) is an acute-onset and immune-mediated disorder of the peripheral nervous system characterized by rapidly developing motor weakness. The term GBS is often considered to be synonymous with acute inflammatory demyelinating polyradiculoneuropathy (AIDP) and GBS is now recognized as an increasingly heterogeneous disorder with several variants, each with its distinctive features. The most common form is the AIDP, while other less common variants are the axonal subtypes, that is, acute motor axonal neuropathy (AMAN), acute motor and sensory axonal neuropathy (AMSAN) and Miller Fisher syndrome (MFS) [1,2].

GBS patients often develop cranial nerve involvement, usually in the form of facial or pharyngeal weakness [3]. Ocular involvement, and in particular, isolated ptosis without ophthalmoplegia are rare manifestations and may pose considerable diagnostic challenges.

Herein, we report a young man presenting with bilateral ptosis along with mild generalized weakness as initial manifestations of GBS.

## Case Report

An otherwise healthy 20-year-old man presented to our hospital with the complaints of fatigue, bilateral ptosis and generalized weakness of both upper and lower extremities. The weakness has begun in the lower extremities five days ago and spread up to upper extremities in two days, followed by bilateral ptosis. He had a preceding history of twice flu-like symptoms two and three weeks ago. There was no history of recent immunization, operation or exposure to chemical agents. There was also no familial history of similar complaints. Patient's consent was obtained for this study. On the neurological examination on the fifth day of onset of symptoms, he was alert, oriented and in cooper-

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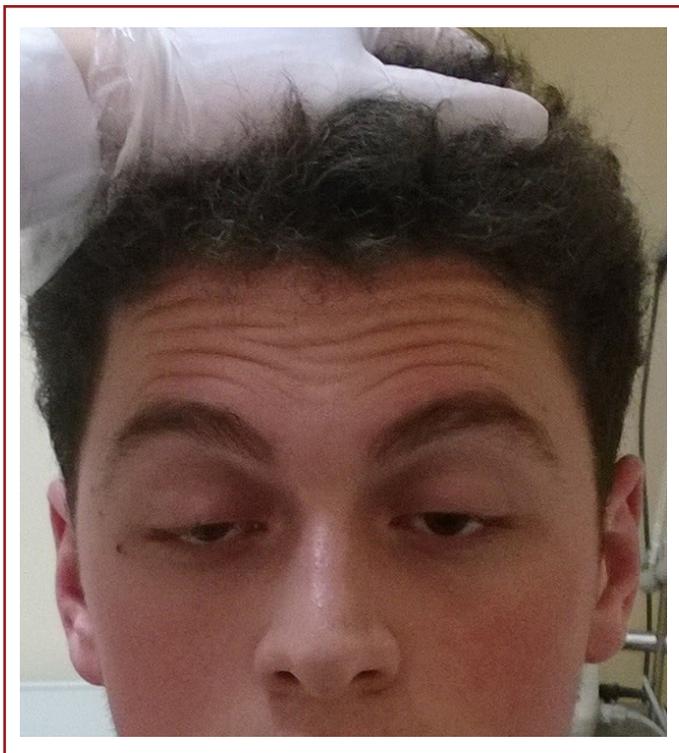
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ation. His speech had characteristics of the nasal voice. The diameters of the pupils were equal and they were reactive to light. There was bilateral ptosis, but without ophthalmoplegia (Fig. 1). The other cranial nerve functions were com-



**Figure 1.** There was bilateral ptosis, but without ophthalmoplegia.

pletely normal. There was mild to moderate muscle weakness graded as 4/5 on both proximal and distal parts of the upper and lower limbs on the MRC scale. Deep tendon reflexes were totally absent. Plantar reflexes were flexor. Sensory examination and autonomic functions were normal. No involuntary movements have been observed. A chest X-ray and electrocardiogram and computed tomography of the brain were normal. Complete blood cell count and biochemical laboratory screening panel were within the normal range. A lumbar puncture was performed on the 5th day of weakness. The cerebrospinal fluid study showed an increased protein level of 101.8 mg/dl (n=15-45mg/dl) and white cell count of 1 per high-power field consistent with albuminocytologic dissociation. CSF glucose was normal and CSF culture was negative for bacterial infection. Serum anti-GQ1B antibodies were found to be positive and serum acetylcholine receptor antibody (AchR Ab) for myasthenia gravis was negative. In the initial motor nerve conduction studies (NCS) (at the 5<sup>th</sup> day) increase in the distal latencies of both tibial nerves was observed. F wave latencies of tibial nerves were also prolonged and multiple A waves have been recorded. The remaining motor NCS and sensory NCS were in normal ranges (Table 1, 2). On needle electromyography study, there were no acute or chronic denervation potentials. Repetitive stimulation test was also applied from the nasal muscles bilaterally, and neither decremental

**Table 1.** Motor nerve conduction studies applied at the 5<sup>th</sup> day, 14<sup>th</sup> day and 2<sup>nd</sup> month

	Latency (msec) 5 <sup>th</sup> day/14 <sup>th</sup> day/ 2 <sup>nd</sup> month	CMAP amplitude (mV) 5 <sup>th</sup> day/14 <sup>th</sup> day/ 2 <sup>nd</sup> month	NCV (m/sec) 5 <sup>th</sup> day/14 <sup>th</sup> day/ 2 <sup>nd</sup> month	F-Wave Latency (msec) 5 <sup>th</sup> day/14 <sup>th</sup> day/ 2 <sup>nd</sup> month
Median R				
Wrist	2.7/ 3.2/2.56 (n=<4.4)	11.36/10.11/10.56 (n=>5.5)	56/64.1/69.5 (n=>49)	24.2/30.5/23.4 (n=<28.5)
Elbow	7.05/6.26/6.24	10.55/10.97/10.73		
Ulnar R				
Wrist	2.7/ 3.0/2.91 (n=<3.5)	9.58/11.77/11.54 (n=>6)	61.6/66.9/68.7 (n=>49)	27.4/27.3/23.2 (n=<29)
Below elbow	6.27/6.66/5.82	9.79/11.25/11.20	61.9/58.8/74.1 (n=>49)	
Above elbow	7.32/8.13/6.9	9.87/11.08/11.69		
Peroneal R				
Ant.ankle	3.87/4.55/3.86 (n=<6.1)	4.81/4.64/4.86 (n=>2)	43.5/47.5/47.2 (n=>41)	42.4/43.8/42.9 (n=<49)
Below fibula	10.53/12.55/10.64	3.4/4.04/4.26	46.2/44.4/53.2 (n=>41)	
Above fibula	12.48/14.35/12.52	3.02/4.08/4.29		
Tibial R				
Ankle	6.78/7.7/4.35 (n=<6.1)	4.83/4.13/4.69 (n=>3)	43.6/38.3/45.9 (n=>41)	55.9/57.8/53.2 (n=<53)
Poplitea	16.53/18.15/12.85	4.79/3.45/4.48		
Tibial L				
Ankle	6.48/6.95/4.5 (n=<6.1)	4.22/4.19/4.55 (n=>3)	50.1/38.6/42.3 (n=>41)	57.2/57.5/54.3 (n=<53)
Poplitea	15.48/17.1/13.95	4.38/4.89/4.15		

**Table 2.** Sensory nerve conduction studies applied at the 5<sup>th</sup> day, 14<sup>th</sup> day and 2<sup>nd</sup> month

Sensory nerves	Latency (msec)	SNAP amplitude (uV)	NCV (m/sec)
	5 <sup>th</sup> day/14 <sup>th</sup> day/2 <sup>nd</sup> month	5 <sup>th</sup> day/14 <sup>th</sup> day /2 <sup>nd</sup> month	5 <sup>th</sup> day/14 <sup>th</sup> day/2 <sup>nd</sup> month
Median R			
3 <sup>rd</sup> finger	2.34/ 2.56/2.49 (n=<3.7)	14.3/18.7/24.7 (n=>20)	53.4/54.7/56.2 (n=>53)
Ulnar R			
5 <sup>th</sup> finger	2.5/2.14/2.41 (n=<3.5)	15.4/16.1/18.2 (n=>10)	53.8/56.1/51.9 (n=>53)
Sural R			
Post.calf	2.34/2.23/2.24 (n=<4.2)	12.3/12.2/13.6 (n=>6)	47/50.5/58 (n=>41)
Sural L			
Post.calf	2.62/2.96/2.38 (n=<4.2)	13.2/ 14.3/14.7 (n=>6)	44.4/ 47.6/54.6 (n=>41)

nor incremental response has been observed. These results have been suggested as an acute motor demyelinating polyneuropathy. Based on the clinical course, neurological examination, laboratory test results and electrophysiological studies, the patient was diagnosed as having GBS and so on the 6<sup>th</sup> day of the illness intravenous immunoglobulin (IVIg) treatment, 0.4g/kg/day IV has been initiated and lasted for five days. After completion of IVIg treatment, we observed rapid and complete resolution of his ptosis and other neurological findings (Fig. 2).

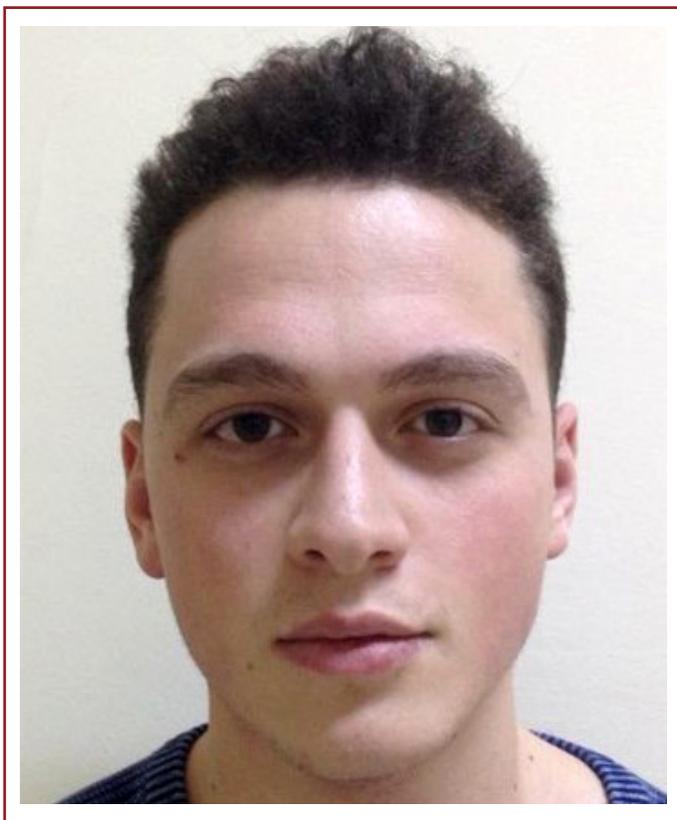
On the second motor NCS, applied at the 14<sup>th</sup> day of the

illness, prolongation of the distal latencies of bilateral tibial nerves was prominent. There was a decrease in the conduction velocities of both tibial nerves and F wave latency prolongation has persisted. Sensory NCS was still in normal values (Table 1, 2). The needle EMG study was also normal. The third motor NCS, applied at the 2<sup>nd</sup> month, revealed improvement in the distal latencies and nerve conduction velocities of the tibial nerves bilaterally. However, F wave latencies were still found to be prolonged. The remaining NCS and needle electromyography studies were normal (Table 1, 2). The patient had no complaints, and neurologic examination was totally normal except mild hypoactivity of deep tendon reflexes. The improvement in the NCS studies confirmed our initial diagnosis of acute demyelinating polyneuropathy.

## Discussion

Ptosis has been rarely described in patients with GBS. In a study out of 92 consecutive patients of GBS, eight patients had severe ptosis without ophthalmoplegia. None of the patients developed other signs of oculomotor weakness [4]. Acute ptosis may cause a diagnostic challenge. Bilateral ptosis may occur secondary to right hemispheric lesions [5], lesions affecting the oculomotor complex in the midbrain and bilateral lesions of the oculosympathetic pathways [6]. We excluded these possibilities by neurologic examination and neuroimaging. Neuromuscular junction disorders, such as myasthenia gravis and botulism, also may present with ptosis, but the history and clinical findings were not consistent with neither of these two diseases. Also, electrodiagnostic tests, serum AchR Ab negativity and preservation of autonomic functions exclude the diagnosis of myasthenia gravis and botulism, respectively.

Anti GQ1b IgG antibodies are found to be positive in more than 85% of the patients with MFS and GBS with ophthal-



**Figure 2.** After IVIg treatment, showing complete resolution of ptosis.

moplegia but rarely are found in GBS without ophthalmoplegia [7,8]. Anti-GQ1b antibodies have been demonstrated in 5% of the GBS patients, most of them with ophthalmoplegia [9]. Serum antiGQ1B antibody positivity in our patient caused diagnostic challenges for differential diagnosis from MFS. However, firstly, absence of ophthalmoplegia and ataxia in the clinical course, secondly, the observation of albuminocytologic dissociation in the first week known to be unusual for MFS, and thirdly, absence of abnormality in sensory nerve conduction studies that is frequent in MFS have led as to exclude the diagnosis of MFS.

Isolated ptosis without ophthalmoplegia is more commonly observed in myasthenia gravis. Acute ophthalmoparesis without ataxia (AO), another anti-GQ1b IgG antibody-associated syndrome, is characterized by external ophthalmoparesis, internal ophthalmoplegia and finally ptosis [8,10]. Given that ocular movements were not affected in our case and the electrophysiological findings suggested an acute demyelinating polyneuropathy, these two diagnoses were seemed to be unlikely.

GBS presenting as isolated ptosis without ophthalmoplegia in an anti-GQ1b IgG antibody negative patient was reported by Yahia et al.[6] In another report, an anti GQ1b negative case of isolated bilateral ptosis associated with ataxia has been diagnosed as GBS [11]. They reported that this negative result might occur because they took the sample after three months of the symptom onset and after receiving IVIg treatment, so the antibodies might disappear. However, in our patient, we have taken the blood sample on the 5th day of the symptom onset. Similarly, Teng and Sung reported a case of ptosis as an early sign of possible GBS, but no serum analysis of anti GQ1b antibody was performed [12].

In the literature, to our knowledge, there is only one report by Geetanjali et al.[13] with isolated ptosis as ophthalmoplegia without ataxia and anti-GQ1b IgG positivity in a patient diagnosed as atypical Miller-Fisher variant. In our case, isolated ptosis is the only ophthalmologic finding, and similarly, he had no ataxia, but he also had generalized weakness known to be unusual for MFS, and this finding confused our diagnosis as a variant of MFS. MFS is known to be affecting predominantly sensory fibers. Thus, normal sensory nerve conduction studies, even in the early period, are very uncommon for these patients [14]. Multiple A-wave persistence is sensitive but not specific for GBS. A-wave is seen in the tibial nerve as twice as a peroneal nerve. The main cause of this difference may be related to motor the

unit number of the muscles used as recording sites [15]. The frequency of A-waves in demyelinating polyneuropathies was reported as 66.7% [16]. Nerve conduction study findings in our case (prolongation of distal latencies of the motor nerves, normal sensory nerve conduction studies and detection of A-waves) are all suggestive of AIDP. Thus, in the light of the clinical and electrophysiological findings, we have diagnosed our patient as GBS with isolated ptosis and anti-GQ1b IgG positivity.

## Conclusion

Our case report underlines the importance of recognizing the atypical presentation of GBS. Ptosis without ophthalmoparesis has a wide differential diagnosis list, and one of them is GBS. In our patient, neurological, biochemical and electrophysiological findings were consistent with the diagnosis of GBS other than bilateral ptosis without ophthalmoparesis. We think that this case report is the rare one not only using the atypical clinical presentation but also, to our knowledge, being the first case in the literature diagnosed as GBS with anti-GQ1b IgG positivity with the only ophthalmoparesis finding as isolated bilateral ptosis.

**Informed Consent:** Written informed consent was obtained from the patient for the publication of the case report and the accompanying images.

**Peer-review:** Externally peer-reviewed.

**Conflict of Interest:** None declared.

**Authorship Contributions:** Concept: M.Ü.; Design: F.D.; Data Collection or Processing: M.D.; Analysis or Interpretation: G.K.; Literature Search: B.Ö.; Writing: M.Ü.

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## References

1. Winer JB. An Update in Guillain-Barre syndrome. *Autoimmune Dis* 2014;2014:793024. [CrossRef]
2. Pithadia AB, Kakadia N. Guillain-Barre Syndrome (GBS). *Pharmacol Rep* 2010;62:220–32. [CrossRef]
3. Yu JY, Jung HY, Kim CH, Kim HS, Kim MO. Multiple Cranial Neuropathies Without Limb Involvements: Guillain-Barre Syndrome Variant?. *Ann Rehabil Med* 2013;37:740–4. [CrossRef]
4. Ropper AH. Unusual clinical variants and signs in Guillain-Barre syndrome. *Arch Neurol* 1986;43:1150–2. [CrossRef]
5. Averbuch-Heller L, Leigh RJ, Mermelstein V, Zagalsky L, Streifler JY. Ptosis in patients with hemispheric strokes. *Neurology* 2002;58:620–4. [CrossRef]
6. Imam YZ, Deleu D. Isolated Bilateral Ptosis as an Early sign of Guillain-Barre Syndrome. *Case Rep Neurol Med*

- 2013;2013:178291. [\[CrossRef\]](#)
7. Anthony SA, Thurtell MJ, Leigh RJ. Miller-Fisher Syndrome Mimicking Ocular Myasthenia Gravis. *Optom Vis Sci* 2012;89:e118–23. [\[CrossRef\]](#)
  8. Odaka M, Yuki N, Hirata K. Anti-GQ1b antibody syndrome: clinical and immunological range. *J Neurol Neurosurg Psychiatry* 2001;70:50–5. [\[CrossRef\]](#)
  9. Chiba A, Kusunoki S, Obata H, Machinami R, Kanazawa I. Serum anti-GQ1b IgG antibody is associated with ophthalmoplegia in Miller-Fisher Syndrome and Guillain-Barre syndrome: clinical and histochemical studies. *Neurology* 1993;43:1911–7. [\[CrossRef\]](#)
  10. Lo YL, Chan LL, Pan A, Ratnagopal P. Acute ophthalmoparesis in the anti-GQ1b antibody syndrome: electrophysiological evidence of neuromuscular transmission defect in orbicularis oculi. *J Neurol Neurosurg Psychiatry* 2004;75:436–40. [\[CrossRef\]](#)
  11. Stalpers XL, Verhagen WI, Meulstee J. Isolated bilateral ptosis as the only ophthalmologic sign in the fisher variant of guillain-barre syndrome. *J Neuroophthalmol* 2009;29:354–5. [\[CrossRef\]](#)
  12. Teng HW, Sung JY. Ptosis as an initial presentation of Guillain-Barre Syndrome. *J Emerg Med* 2012;43:e283–5. [\[CrossRef\]](#)
  13. Jindal G, Parmar VR, Gupta VK. Isolated Ptosis as Acute Ophthalmoplegia Without Ataxia, Positive for Anti-GQ1b Immunoglobulin G. *Pediatr Neurol* 2009;41:451–2. [\[CrossRef\]](#)
  14. Shahrizaila N, Goh KJ, Kokubun N, Tan AH, Tan CY, Yuki N. Sensory nerves are frequently involved in the spectrum of fisher syndrome. *Muscle Nerve* 2014;49:558–63. [\[CrossRef\]](#)
  15. Kornhuber ME, Bischoff C, Mentrup H, Conrad B. Multiple A-waves in Guillain-Barre syndrome. *Muscle Nerve* 1999;22:394–9.
  16. Rowin J, Meriggioli MN. Electrodiagnostic significance of supramaximally stimulated A-waves. *Muscle Nerve* 2000;23:1117–20. [\[CrossRef\]](#)