# Acquired vocal tic disorder following Miller Fisher variant of Guillain-Barré Syndrome: A case report

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**Abstract**

Tics are abnormal, brief, sudden, and repetitive movements or sounds that comprise part of the spectrum of hyperkinetic movement disorders. We report the case of a 57-year-old female who developed intractable 'nasal snorting' and 'throat clearing' five months after treatment for the Miller Fisher variant of Guillain-Barré Syndrome. A diagnosis of acquired vocal tic disorder was made and treatment with tetrabenazine resulted in sustained improvement in her symptoms. There are multiple reports of tics and other hyperkinetic movement disorders being triggered by autoimmune conditions, but this is rarely described in patients with Guillain-Barré Syndrome. This report outlines a rare case of tic disorder in a patient with Guillain-Barré Syndrome with a review of the literature.

**Background:**

Guillain-Barré Syndrome (GBS) is an acute autoimmune demyelinating neuropathy encompassing a spectrum of variants with different phenotypes. Miller Fisher syndrome (MFS), a variant of GBS, is characterised by ophthalmoplegia, ataxia and areflexia. The two syndromes are not always distinct and can have overlapping features (Wakerley, Uncini, & Yuki, 2014). Hyperkinetic movement disorders are characterised by abnormal, excessive and involuntary movements such as tremor, chorea, and tics (Jankovic, 2009). There are reports of GBS or MFS associated with hyperkinetic movement disorders such as tremor or ballism (Odaka, Yuki, & Hirata, 1999; Rajan et al., 2023), but none associated with tic disorders. We present the case of a 57-year-old female who developed an acquired vocal tic disorder following her presentation with MFS-GBS with a review of the literature.

**Case Presentation:**

A 57-year-old Caucasian female presented with a two-week history of nausea, back pain, lip paraesthesia, facial diplegia, and truncal ataxia with no preceding trigger. She subsequently developed diplopia with a right abducens nerve palsy.

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Her medical history included Bell's palsy 20 years prior, and nasal polypectomy.

Baseline blood tests, computed tomography (CT) brain scan and angiography, and magnetic resonance imaging (MRI) of the brain and spine were normal. Cerebrospinal fluid (CSF) protein was elevated at 1.24 g/L with normal glucose and cell count. Oligoclonal bands were not detected. Nerve conduction studies were consistent with a mixed axonal/ demyelinating motor neuropathy.

A presumptive diagnosis of MFS variant of GBS was made, and the patient received induction intravenous immunoglobulin (IVIG) for five days, which resulted in rapid symptom improvement and a return to independent mobility. Antiganglioside GQ1b antibody testing returned negative results in the serum and CSF. Six months later, the patient was treated for a relapse of GBS when she presented with bilateral distal upper limb paraesthesia, hyporeflexia and recurrence of right lower motor neuron facial weakness. She received a further five days of IVIG with complete recovery.

The patient presented to our clinic two years later with a history of intractable 'nasal snorting' and 'throat clearing' which started five months after the MFS-GBS diagnosis. She described an associated 'urge' and 'build up' of tension with a 'release phenomenon'. She had 'semi-voluntary' control over her symptoms which did not occur when she was speaking or sleeping. The symptoms were not distractible or suggestible. Phenomenology was consistent with vocal tics of snorting, throat clearing, and coughing. She later developed infrequent motor tics with right shoulder elevation and perioral, lingual stereotypies. The nonacute onset and lack of suggestibility and distractibility were some of the features against diagnosis of functional tics. Review by an ear, nose and throat specialist did not reveal evidence of sinusitis or postnasal drip. Trials of baclofen and amitriptyline had been unsuccessful.

A diagnosis of acquired vocal tic disorder was made and the patient was prescribed tetrabenazine 12.5 mg twice daily with slow uptitration. Her Phonic Yale Global Tic Severity Score improved from 36 to 24 within days of initiation (Haas et al., 2021). This was sustained over six months in follow up visits and the patient continues on tetrabenazine.

**Discussion and Conclusions:**

Tics are abnormal hyperkinetic, brief, sudden, and repetitive movements or sounds (motor or vocal) that resemble voluntary actions (Mainka et al., 2019). There are very few reports of hyperkinetic movement disorders in patients with GBS (Table 1). During the acute GBS illness, patients have been reported to develop opsoclonus and bilateral ballism (Nicolai & Lazzarino, 1992; Odaka et al., 1999). There are also reports of patients developing neuropathic tremors, and a case of a patient with lower facial muscle spasm at rest with bilateral facial synkinesis several months to years after GBS (Guduru, Morgan, & Sethi, 2018; Rajan et al., 2023).

Conversely, there is a recognised association between autoimmune disorders and involuntary vocalisations including tic disorders (Mainka et al., 2019). Motor and vocal tics have been reported in patients with Behcet's disease, antiphospholipid syndrome, systemic lupus erythematosus, and multiple sclerosis

(Budman & Sarcevic, 2002; Mainka et al., 2019; Martino et al., 2006; Nociti et al., 2009). Nociti et al described the case of a 30-year-old female who developed Tourette syndrome-like symptoms including motor and phonic tics seven years after onset of multiple sclerosis (Nociti et al., 2009). Budman et al reported the case of a 22-year-old male who developed explosive motor and vocal tics associated with obsessive compulsive symptoms one year after diagnosis of Behcet's disease (Budman & Sarcevic, 2002). Similarly to these cases, our patient had no personal or family history of tics. However the reported case, she did not describe development of obsessive-compulsive symptoms.

To our knowledge, this is the first reported case of a tic disorder in a patient presenting with MFS-GBS. The mechanism for this sequential involvement of peripheral and central nervous system disorders remains unknown. This report adds to the current literature of hyperkinetic movement disorders in patients with Guillain-Barré Syndrome.

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Table 1 Summary of cases reporting hyperkinetic movement disorders in patients with Guillain-Barré Syndrome

| | **Patient characteristics** | **GBS syndrome** | **Hyperkinetic movement disorder** | **Time of onset** |
|---|---|---|---|---|
| **Odaka et al., 1999** | 29-year-old Female | Overlapping Miller Fisher Syndrome and GBS | Bilateral ballism with involuntary flinging movements of the face and four limbs | Day 5 of acute illness |
| **Guduru et al., 2018** | 45-year-old Female | GBS | Lower facial muscle spasm and bilateral facial synkinesis | 4 months after acute illness |
| **Rajan et al., 2023** | Five patients Aged 18 – 55 | GBS | Neuropathic tremor – fine, fast, slightly jerky postural tremor of frequency ranging 8 – 10 Hz | 3 months to 5 years after acute illness |
| **Nicolai & Lazzarino, 1992** | 54-year-old Female | GBS | Opsoclonus | During acute illness, day not specified |

GBS: Guillain-Barré Syndrome

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