



## Miller Fisher Syndrome with GBS Overlap- a Rare Case Report

### KEYWORDS

Areflexia, ataxia, Guillain-Barré syndrome, ophthalmoplegia

**Dr Manas Ranjan Sahoo**

Asst Professor, Department of Paediatrics  
ASRAM Medical College, Eluru

**Dr Manas Ranjan Rout**

Asst Professor of ENT, ASRAM Medical College, Eluru

### ABSTRACT

*Miller Fisher syndrome is an uncommon disease and it is a variant of Guillain-Barre syndrome. Miller Fisher syndrome also has rarer variants. Combined features of classic Guillain-Barre syndrome and Miller Fisher syndrome are uncommon. Here we are reporting a case of Miller Fisher variant with Guillain-Barre syndrome overlap in which ataxia, areflexia, oculomotor disturbance and limb weakness, dysautonomia occurred within few days.*

### INTRODUCTION:

Miller Fisher Syndrome (MFS) is an uncommon variant of Guillain-Barre syndrome (GBS), which typically presents as a triad of ophthalmoplegia, ataxia and areflexia. It was first described by Charles Miller Fisher in 1956 (1). In fact, many authors consider Guillain-Barre Syndrome, Miller Fisher Syndrome and Bickerstaff's brainstem encephalitis as a spectrum of inflammatory polyneuropathy sharing many similarities (2). The worldwide incidence of GBS is 1-2 per 100,000 (3). MFS accounts for up to 5% of GBS in Western countries, and 19-25% in Asian countries (4). The diagnosis of MFS depends on the clinical characteristics of the syndrome. A case of Miller Fisher variant with GBS overlap having ataxia, areflexia, ophthalmoplegia with limb weakness is reported here for its rarity.

### CASE REPORT:

A 8-year-old, previously healthy girl child presented to our emergency department with ataxia, slurring of speech & generalized weakness of four limbs since 2 days. Two days back she started with sudden onset of unsteadiness of gait in the early morning. Her imbalance was disproportionate to weakness. She had no history of unconsciousness, abnormal behavior, convulsion, headache, vomiting, hearing difficulty, vertigo, tinnitus, dysphagia. Bladder & bowel function were normal. There was no history of fever, loose motion, upper respiratory tract infection or history of recent vaccination or surgery in last one month. She was 2nd order by birth born out of 2nd degree consanguineous marriage, developmentally normal, immunized child without any history of similar attack in past.

On the day of admission, examination patient was conscious, cooperative. Pallor, icterus, cyanosis, clubbing, lymphadenopathy were absent. Her length was 120cm, and weight was 20kg. Her blood pressure was 100/60mm hg, pulse was regular rate 96/min, respiratory rate 26/min, temperature 99 degree F.

On neurological examination her mental function was normal but speech was weak. She was oriented to time, place person. Cranium and spine examination were normal. Cranial nerve examination revealed, restriction in right eye movement in lateral direction suggesting of right VI nerve palsy. Nystagmus was absent. Optic nerve including fundus was normal. Other cranial nerves were normal. On motor system examination, tone of muscles of lower limbs was reduced. Power of lower limbs was initially 4/5 in both sides. Power of upper limb was normal. There was no wasting of muscles or any involuntary movements. Deep tendon jerks were absent in four limbs. Plantar was flexor, abdominal reflexes were preserved. On sensory examination, all sensory modality were present. Finger nose test was mild impaired. Since child

could not stand so Romberg test could not be done. Rests of the systemic examinations were normal. Clinical diagnosis of GBS was thought. The complete blood count, electrolyte, urea, creatinine, random blood sugar was within normal limit. MRI brain & EEG was normal. Nerve Conduction Velocity (NCV) was also normal. She was treated conservatively with iv methyl prednisolone for 5 days.

On 4th day of admission, child developed dysphagia, mild ptosis in both eye lid as well as respiratory distress. On examination pharyngeal reflex was weak, palatal palsy was there, so diagnosed to have bulbar palsy, hence started on tube feeding. Following 3 days respiratory distress settled but gradually complete III, IV cranial nerve palsy occurred resulting in complete ophthalmoplegia along with ptosis. Same day bilateral lower motor type VII nerve palsy was noticed which gave child an expressionless face. By this time power in lower limbs decreased to 2/5 & in upper limbs 3/5.

CSF examination was normal. ABG showed mild metabolic alkalosis. She was given 5 doses of iv immunoglobulin. For respiratory distress, she required oxygen with face mask but did not require ventilation. As she had ataxia, areflexia, ophthalmoplegia, lower limb weakness clinically she was diagnosed to have Miller Fisher variants with GBS overlap.

On 8th day child developed hypertension. She was started on nifedipine, later metoprolol.

Thereafter progression of disease stopped and recovery started after 2 weeks of hospital stay. After 14 days of admission she could able to walk with support without ataxia. She started taking semisolid food by spoon. On 17th day csf repeat examination showed no cells, sugar 52mg/dl, protein 66mg/dl. Repeat NCV was normal. Among cranial nerves bulbar palsy first improved, followed by IV cranial nerve by 15th day of admission. III cranial nerve started improvement by day 15 & completed by 27th day. VII nerve was last cranial nerve to recover by end of 1 month. She was discharged after 1 month. After 4 months on follow up she recovered well without any residual deficit. Once again repeat NCV was normal. On examination she was neurologically normal except deep tendon reflex which was not elicitable in four limbs.

### DISCUSSION:

Miller Fisher syndrome is an acute demyelinating disorder that is considered a cranial nerve variant of Guillain-Barre syndrome. It has been proposed that Miller Fisher syndrome, Guillain-Barre syndrome, and Bickerstaff brainstem encephalitis may be forms of a continuous spectrum (5). Bickerstaff brainstem encephalitis differs from Miller Fisher syndrome in that the former also includes disturbance of consciousness

and/or hyperreflexia. Although it remains controversial as to whether the central or peripheral nervous system is primarily involved in Miller Fisher syndrome, most authors are proponents of the peripheral hypothesis. In contrast, Al-Din et al.[5], the first proponents of a central origin, revealed that Miller Fisher syndrome is a variant of brainstem encephalitis.

Berlit et al viewed 223 cases of MFS. The first symptom was diplopia(38.6%) or ataxia (20.6%).Areflexia was present in 81.6% of cases. The cranial nerves other than III were involved in 127 cases(56.9%):cranial nerve VII (45.7%),IX and X (39.9%) and XII(13%) were involved. In 53 cases tetraparesis occurred. Elevated CSF protein was present in 134 cases (64.4%).CSF finding were normal in 56 patients and 18 patients had mild pleocytosis. The prognosis of MFS was good. Recovery occurred after a mean time period of 10.1weeks.Residual symptoms were present in 74 cases(33.2%),recurrence of MFS was reported in 7 patients, and 8 patients died.(6)

Variant forms of MFS:—Different variants of MFS are present with a common tie of the GQ1b antibody. Some cases have only one or two symptoms out of the triad. Some patients have combined features of GBS and MFS, in which the oculomotor disturbance and limb weakness occur within a few days of one another (GBS overlap variant: ophthalmoplegia, weakness, areflexia and ataxia). Recurrent

MFS is also reported rarely.(9,10) There are also lower cranial nerve variants of GBS and atypical MFS. It was reported that the oculomotor nerves were involved early in 7 cases of the ophthalmoplegic variants of GBS, and the cranial nerves IX, X and XI were involved early in 9 cases of a lower cranial nerve variant of GBS.(11)

Our patient was diagnosed with Miller Fisher syndrome, as she had ataxia, areflexia and ophthalmoplegia. We excluded Bickerstaff brainstem encephalitis, because she never developed impaired consciousness. Although albuminocytological dissociation in CSF is often present, protein concentration was increased in only 25% of Miller Fisher syndrome patients during the first week, while it was increased in 71% during the second and 84% during the third week(12). Normal CSF findings in our patient might be associated with obtaining the sample during the early period of the symptoms. As was the case in our patient, nerve conduction studies in Miller Fisher

syndrome are usually normal or only slightly abnormal(13). Ito et al.(14) suggested that the most frequent abnormality in nerve conduction and H-reflex studies was the absence of soleus H reflexes, in 75% of four Bickerstaff brainstem encephalitis and 74% of 28 Miller Fisher syndrome patients, whereas routine motor and sensory nerve conduction study results were normal for both groups.

Our patient had bilateral facial nerve palsy and bulbar palsy, which are atypical features of Miller Fisher syndrome. The ophthalmological features of Miller Fisher syndrome are of great clinical interest.. Other ophthalmological abnormalities determined for this syndrome have included divergence paralysis, lid retraction, upper lid jerks, internuclear ophthalmoplegia, convergence spasm, Parinaud's syndrome, defective vestibulo-ocular reflex, chronic ophthalmoplegia, areflexic mydriasis, convergence failure, and acute angle closure

There were signs of corticobulbar dysfunction in our patient. Her speech was slurred and she had a nasal voice with absent pharyngeal reflex. Corticobulbar dysfunction has been described rarely in Miller Fisher syndrome.

Usually MFS is associated with axonopathy affecting predominantly the large diameter sensory fibers with only mild motor conduction abnormalities. F-wave latencies are usually normal in MFS. In contrast our case revealed normal NCV.

Anti- GQ1b antibody is one of the key factors in the pathogenesis of MFS, especially for ophthalmoplegia, and it is a useful marker in diagnosis of MFS but it was not done in our case because of unavailability of the test. Clinically our case is a Miller Fisher variant with GBS overlap with ophthalmoparesis, bulbar palsy, bilateral facial nerve palsy and lower limbs motor weakness.

#### CONCLUSION:

Miller Fisher syndrome may present with a wide range of clinical features, depending on the triggering agent and the specific immune response. Patient initially may present with few features, later may develop full blown picture, so high index of suspicion is required. Our patient started with ataxia, areflexia and later limb weakness progressed along with bulbar palsy and facial palsy. She had also hypertension. In contrast to GBS she had a complete and rapid recovery .

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