Progressive Bulbar Palsy with Facial Diplegia and Proximal Weakness Diagnosed as Juvenile-Onset Myasthenia Gravis

Sir,

Progressive bulbar palsy with facial diplegia is a sparse clinical presentation in neurology.[1] In a juvenile group of disease onset, the differentials include spinal muscular atrophy, lower brainstem syndrome, craniovertebral junction anomaly, base of skull lesion, neurosarcoidosis, malignancies like leukemia, meningioma, and so on.[2] Myasthenia gravis (MG) is an important treatable autoimmune disease of neuromuscular junction.[3] The most common presentations are ocular and generalized myasthenia. Bulbar onset myasthenia with facial weakness without ocular involvement is an uncommon presentation in MG.[4] The diagnosis of MG is aided by clinical presentation, edrophonium challenge test, repetitive nerve stimulation test (RNST), and serological evidence of anti-acetyl choline receptor (ACHR) and/or antimuscle-specific kinase antibody (MUSK). Treatment options include drug (pyridostigmine/neostigmine, corticosteroids, azathioprine, intravenous immunoglobulin [IVIg] with additional immunomodulators in the armamentarium) and thymectomy in all cases except in special considerations with avoidance of specific drugs capable of precipitating attacks.

Case Description

This teenage male in his 17 presented with difficulty in swallowing food which was the insidious in onset, gradually progressive for the last 3 years, which was initially for solid, then over the period of last 7 months progressed to involve liquids as well. There was a change in his voice for last 2 years intermittently. He also developed multiple choking episodes during night-time which increased over last 1 year. He developed inability to close both eyes which was insidious-onset, gradually progressive in nature and leading to opening of both eyes aperture for 24 h and leading to minimal injuries (in the form of recurrent corneo-conjunctival erosions and redness) and tearing of eyes [Figure 1]. During the last 6 months, he also felt weakness in both upper limbs, which was insidious onset and gradually progressive. There was a history of fatiguability without diurnal fluctuation. There was no history of vision impairment, blurring of vision, diplopia, painful eye movements, ocular swelling, hearing loss, difficulty in ocular movements, drooping of eyelid, paresthesia over face or limbs, dropped neck, headache, altered sensorium, behavioral abnormality, convulsion, posturing, truncal or distal limb weakness, tremulousness, swaying, bowel/bladder symptoms, neck pain, or backache. There were six episodes of lower respiratory tract infection over the last 10 months. There is no history of diabetes, asthma, high-risk behavior, or trauma in the past or any similar familial history.

The general examination showed a pulse of 70/min, regular, blood pressure 118/70 mmHg, respiratory rate of 14/min, no icterus, edema, clubbing, cyanosis, edema, rash, joint tenderness, hair fall, significant lymphadenopathy, thyroid swelling, or skin changes. He had healthy teeth and gum with normal tongue and broad lips.

Nervous system examination showed normal higher functions; cranial nerve examination revealed normal vision including

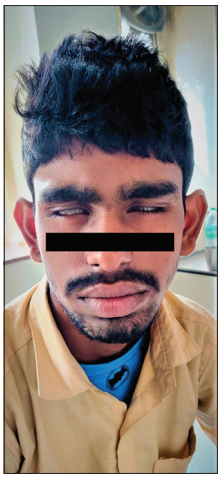

Figure 1: Demonstrating inability to close both eye lids suggestive of bilateral facial weakness

fundus and normal ocular motor functions, with positive Bell's phenomena in both eyes during eye closure. There was decreased taste sensation symmetrically, nasal intonation of voice with nasal regurgitation of liquids during attempted swallowing, and normal tongue without fasciculation. Motor examination showed proximal weakness in both upper limbs with a power of 4+/5 in both shoulders with preserved deep tendon reflexes; the rest of nervous system examination was unremarkable. Another system examination was normal. He was thoroughly evaluated with syndromic diagnosis of progressive bulbar palsy with facial diplegia with proximal weakness.

His laboratorical parameters showed normal hemogram, normal renal function, liver function, thyroid hormones, serum ACE levels, erythrocyte sedimentation rate, normal chest X-ray, normal nerve conduction study of all four limbs including electromyographic study, and normal contrast-enhanced imaging of brain and spine. RNST was conducted in view of mild proximal weakness which yielded the diagnosis. The patient showed decremental response of more than 10% in RNST in deltoid (baseline amplitude 4–1 of −14.6%, facilitation showing −21.1%, postexercise at 1 min showing −32.9%, and at 3 min showing −32.2%). Neostigmine test showed marked improvement in swallowing and speech. Serological test for MG was sent which showed positive result for anti-ACHR antibody with MUSK antibody negative. He was diagnosed with juvenile-onset seropositive MG, presenting with progressive bulbar palsy with facial diplegia and mild proximal weakness with a score of 19 in quantitative MG testing.

Among the main differentials, we kept spinal muscular atrophy, lower brainstem syndrome, craniovertebral junction anomaly, base of skull lesion, and neurosarcoidosis. However, the imaging and basic electrodiagnostic studies could not yield a diagnosis. On the contrary, RNST provided the breakthrough solution in the diagnosis and further management of this patient. He was started on pyridostigmine therapy with oral corticosteroid at a low dose. IVIg therapy was given in the standard dose of 2 g/kg over 5 days in view of his night-time choking episodes and already progressed disease state. Within a week of IVIg therapy, he showed improvement in form of decreased choking episodes with improved swallowing and decrease in nasal intonation. His computed tomography imaging of the chest was negative for thymic lesion, but thymectomy was performed in view of seropositive status.

Discussion

We tried to explore the various possibilities which could lead to progressive bulbar, facial, and proximal weakness in the young male. He was finally diagnosed as seropositive (anti-ACHR-positive, MUSK-negative) bulbar-onset juvenile MG. This type of presentation is quite rare in MG and there is sparse literature globally till date of such case reports. Although there was no oculomotor symptoms in this patient, there was evidence of subclinical electrophysiological involvement in our patient. Another feature in our case was the presence of dysgeusia, which is a unique nonmotor manifestation of MG, observed in around 5% of patients.[5] It is probably due to autoimmune mechanisms of G-protein-coupled receptor cells of taste buds associated with anti-ACHR antibody and thymoma.[6]

Juvenile MG forms approximately 1% of all the cases of MG.[4] In a study by Rodolico *et al*. in 2016, atypical/unusual presentations of MG were observed in 4.4% of patients and have been categorized under seven categories: asymmetric distal upper limb weakness, foot drop, isolated triceps brachii weakness and foot drop, postexertional axial weakness with dropped head, acute facial diplegia, limb-girdle MG, and MG with sudden lower limbs weakness with recurrent falls.[7]

There has been case report of prominent facial and bulbar involvement in patients with MG with anti-MUSK antibody, but the disease mechanism is also unclear. Differences in acetylcholine receptor isoform expression, safety factor, firing frequency, and sensitivity to complement deposition have been suggested to explain the increased vulnerability of extra-ocular muscle in MG compared to other skeletal muscles.[8]

There have been very few similar cases reported in literature till date. One of them was a 36-year-old woman with anti-ACHR antibody-positive MG presenting with bilateral facial weakness and dysarthria who showed moderate improvement with oral pyridostigmine therapy.[9] Another case report was of a 22-year-old anti-ACHR-positive MG women with substantial improvement.[10] A 77-year-old male presenting with progressive dysphonia, dysphagia, and bilateral facial weakness with anti-ACHR-positive MG, without thymoma, requiring IVIG therapy showing good outcome, was reported in Italy.[11] The remaining two female children had MG-associated thymoma, in whom there was clinical remission after thymectomy.[4,12] IVIg therapy showed promising results in these patients.

Conclusion

Bulbo-facial weakness in absence of ocular involvement can occur in MG. A strong suspicion of MG and early RNS can reduce unnecessary morbidity in atypical/unusual cases of myasthenia. The concept of nonmotor features in MG like dysgeusia can expand the autoimmunity and understanding of MG.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient (s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initial s will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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