Medica Hospitalia
Journal of Clinical Medicine
Med Hosp 2024; vol 11 (3) : 337–340

OPEN ACCESS

Case Report

Oropharyngeal Dysphagia as The Presenting Symptom of Myasthenia Gravis with Diabetes Mellitus

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p-ISSN: 2301-4369 e-ISSN: 2685-7898
https://doi.org/10.36408/mhjcm.v11i3.1154

Accepted: July 2nd, 2024
Approved: November 21th, 2024

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Abstract

Background : Oropharyngeal dysphagia may caused by a variety of causes. Myasthenia gravis is a common autoimmune disease affecting the neuromuscular junction. While ocular symptoms are common in myasthenia gravis, bulbar symptoms such as dysarthria and dysphagia are less common. The aims of this study was to present the importance of recognizing atypical presentations of myasthenia gravis and utilizing electromyography in diagnosis when AChR antibody testing is unavailable.
Case Presentation : A 57-year-old woman was referred because of progressive dysphagia for both solid and liquid food. She also experienced weight loss, heaviness of the right eyelid, drooling, and chewing difficulty. Medical history revealed diabetes. Vital signs were stable. Physical examination revealed right ptosis without any other neurological deficits. Wartenberg test and dysarthria counting test were positive. Laboratory examination revealed a blood glucose level of 270 mg/dL and an HbA1c level of 9.4%. The barium swallow study revealedno abnormalities. Esophagogastroduodenoscopy revealed esophageal candidiasis. Electromyography showed more than 20% decremental response of the orbicularis oculi muscle. This result is suggestive of neuromuscular junction disorder. Improvement of the condition was achieved after the administration of intravenous steroids and oral pyridostigmine combined with therapeutic plasma exchange.
Discussion : Oropharyngeal dysphagia accompanied by ptosis and positive Wartenberg & dysarthria counting test is suggestive of myasthenia gravis. Although an AChR antibody test cannot be performed, significant electromyography alongside relevant clinical presentation is sufficient to diagnose myasthenia gravis.
Conclusion : It is crucial to recognize the accompanying signs and symptoms of oropharyngeal dysphagia. EMG may be used to diagnose MG in the appropriate clinical context.

Keywords : Dysphagia, Myasthenia Gravis, Oropharyngeal

INTRODUCTION

Dysphagia is a complaint that is frequently encountered in the daily practice. Oropharyngeal dysphagia (OD) may caused by a variety of causes, including structural and neurological issues.[1,2]

Myasthenia Gravis (MG) is a common autoimmune disease affecting the neuromuscular junction with an estimated incidence rate of 150 to 200 per million people.[3] Bulbar symptoms such as dysarthria and dysphagia are less common. MG with predominantly bulbar weakness can present a diagnostic challenge for non-neurologists, as its symptoms may be confused with those of other more common medical conditions. However, this subtype of MG can lead to significant morbidity if not promptly recognized and treated, due to potential complications such as aspiration and respiratory muscle weakness.[4] We present a case of myasthenia gravis with predominant symptoms of oropharyngeal dysphagia.

CASE ILLUSTRATION

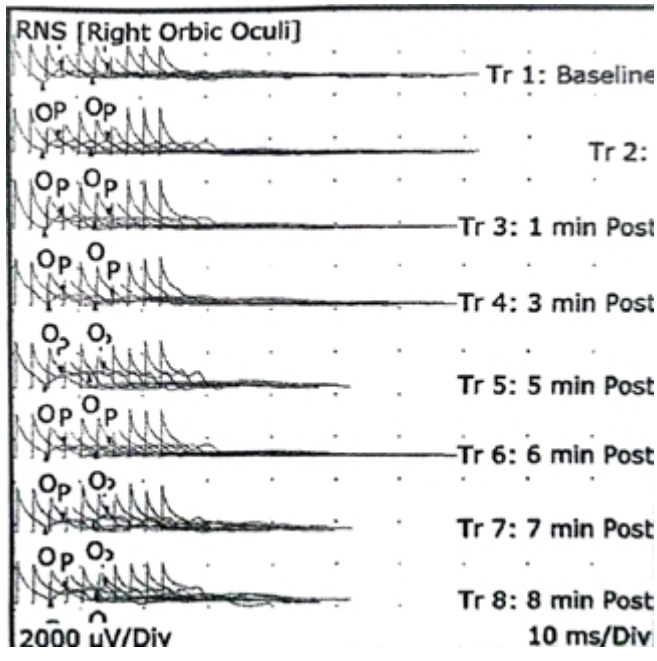
A 57-year-old woman was referred to our hospital because of progressive dysphagia for the last 2 months. Initially, she experienced swallowing difficulty with solid food without any problems with liquid. Her swallowing difficulty worsened over time. She has experienced swallowing difficulty with solid and liquid food for the last 1 month and an inability to initiate swallowing any food for the last 1 week. She also reported a 7-kilogram weight loss during the previous 2 months, heaviness of her right eyelid for the last 2 weeks without any vision problems, drooling, and chewing difficulty during the previous 1 week. She experienced neither fever, slurredspeech, sore throat, hoarseness, nausea, vomiting, shortness of breath, chest pain, or hemiparesis. Medical history revealed diabetes in the last 5 years with routine glimepiridemedication.

Upon admission, she was hemodynamically stable. Physical examination revealed right ptosis without any other neurological deficits. During the water drinking test, she was unable to swallow the water, which collected in her oral cavity. Wartenberg test and dysarthria counting test were positive. Laboratory examination was normal, except for a blood glucose level of 270 mg/dL and an HbA1c level of 9.4%. ECG showed normal sinus rhythm. Chest X-ray showed no abnormalities.

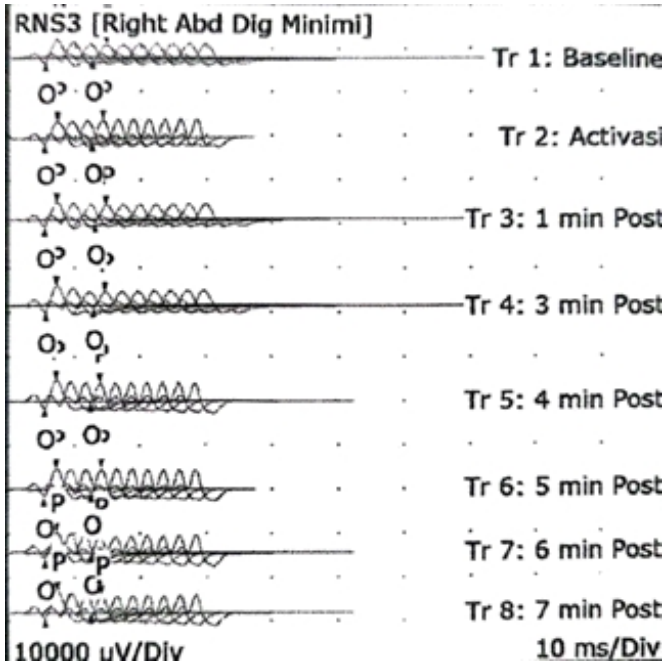
The barium swallow study did not show any abnormalities. Esophagogastroduodenoscopy revealed esophageal candidiasis with erosive gastritis. Subsequent gastric biopsy showed no *Helicobacter pylori* infection.

Myasthenia gravis (MG) was suspected. Acetylcholine receptor antibodies (AChRantibody) examination, which is the gold standard for MG diagnosis was not available. Electromyography (EMG) showed more than 20% decremental response to 1 Hz, 3 Hx, and 20 Hz stimulation to the orbicularis oculi muscle which is considered suggestive of neuromuscular junction disorder. Stimulation of the abductor digiti minimi muscle at 3 Hz, 20 Hz, and 50 Hz showed a decremental response of more than 10%.

Intravenous methylprednisolone at a dose of 125 mg/8 hours and oral pyridostigmine bromide at a dose of 60 mg/8 hours are administered. The dose of



Picture 1. EMG of Orbicularis Oculi Muscle



Picture 2. EMG of Abductor Digiti Minimi Muscle

methylprednisolone was reduced gradually and stopped on the 15th day of hospitalization. Fluconazole at a dose of 200 mg/24 hours was administered in intravenous. Blood glucose level was maintained by insulin and glimepiride. A therapeutic plasma exchange program was performed. After 4 cycles of therapeutic plasma exchange, ptosis and dysphagia resolved, and she was able to swallow solid and liquid food. The patient was then discharged while still being given pyridostigmine bromide.

One week after discharge, she came to the outpatient department. She had no complaint. Pyridostigmine bromide 60 mg/8 hours orally was continued.

DISCUSSION

This patient experienced oropharyngeal dysphagia, resulting in difficulty directing water from the oral cavity. The barium swallow study and electromyography examinations confirm the absence of any structural abnormalities. Oropharyngeal dysphagia, along with ptosis and positive results on the Wartenberg and dysarthria counting tests, strongly suggests a diagnosis of Myasthenia gravis (MG).

Myasthenia gravis (MG) is an autoimmune condition characterized by weakness in skeletal muscles. It arises due to the presence of autoantibodies targeting the postsynaptic membrane at the neuromuscular junction, including acetylcholine receptor (AChR) antibodies, muscle-specific kinase (MuSK) antibodies, and low-density lipoprotein receptor- related protein 4 (LRP4) antibodies.[4]

Most patients experience some level of generalized weakness, while a smaller proportion present only with ocular symptoms. While ocular symptoms are frequently observed in individuals with myasthenia gravis, bulbar symptoms such as dysarthria and dysphagia are less common and rarely occur as isolated symptoms.[1] Dysphagia is observed in 15–40% of cases with the generalized form of MG. However, it serves as the initial presenting symptom in only 6% of MG patients.[5,6]

It is essential to test for antibodies such as AChR, MuSK, or LRP2 to confirm the diagnosis of MG.[4] Unfortunately, we were unable to perform these antibody tests in this case due to the unavailability of necessary reagents at our facility.

However, electrodiagnostic studies, particularly with slow repetitive nerve stimulation, serve as the primary diagnostic approach in acute settings or when antibody testing is unavailable.[4]

In MG, with low stimulation rates, the physiological reduction in end-plate potential (EPP) amplitudes can reach a level where the EPP falls below the threshold needed to activate muscle fibers. With continuous stimuli, an increasing percentage of muscle fibers experience blockage. This leads to a reduction in the amplitude and area of the compound muscle action potential (CMAP) with repeated stimuli, resulting in an observable abnormal decrement. The threshold for an abnormal decrement is set at 10% of the initial amplitude or area. However, with precise recording, any decrement displaying the characteristic pattern warrants further investigation.[7]

The physical examination and EMG findings are

consistent with a diagnosis of Myasthenia Gravis in our patient. As a result, the patient was diagnosed with MG and started on treatment with steroids, pyridostigmine bromide, and therapeutic plasma exchange. The patient's improvement following treatment with steroids, pyridostigmine bromide, and therapeutic plasma exchange further supports the diagnosis of MG. Diabetes Mellitus (DM) is a metabolic disease characterized by high blood sugar due to either insulin deficiency or insulin resistance. It is one of the known risk factors of esophageal candidiasis. Esophageal candidiasis is the most common cause of infectious esophagitis. Esophageal candidiasis can be diagnosed by the presence of erythematous, pseudomembranous, and plaque-like changes. The most common species causing esophageal candidiasis is *Candida albicans* (71%), while the most common non-*Candida albicans* species is C*andida dubliniensis*.[8,9]

A study by Yu-Dong Liu *et al* showed that patients with type 2 diabetes (T2DM) had a higher risk of MG than patients without T2DM. The mean onset age of MG patients with diabetes was significantly higher than that of MG patients without diabetes. This indicates that the clinical type of MG patients with diabetes is mostly late-onset myasthenia gravis (LOMG).[10]

CONCLUSION

Myasthenia gravis may present as oropharyngeal dysphagia, making the recognition of accompanying signs and symptoms crucial. EMG may be used to diagnose MG in the appropriate clinical context. Amultidisciplinary team, consisting of neurologists, internists, and other disciplines is needed to achieve the best outcome and avoid unnecessary management.

INFORMED CONSENT

The patient provided written consent for the publication of this case report and any related photographs. Under privacy protection guidelines, all identifiable information has been anonymized.

CONFLICT OF INTEREST

The authors wish to disclose that they have no conflicts of interest related to this work.

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